Appendix F:
Original Comments

Part 1 of 2

This appendix contains:

- All original comments submitted to Ecology
- An index of all individuals who submitted comments

Ecology reviewed and considered all submitted comments before finalizing this document.

Due to its large size, this appendix has been broken into two separate files. It is available on Ecology's website.

To request an ADA accommodation, contact Ecology by phone at 360-407-6831 or email at ecyadacoordinator@ecy.wa.gov or visit https://ecology.wa.gov/accessibility. For Washington Relay Service or TTY call 711 or 877-833-6341. Visit Ecology's website for more information.

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
A	Danny		Comment
A.	E.		Comment
Aaenson	Terrel		Comment
Abbarno	Peter	Althauser Rayan Abbarno Attorneys at Law	Comment
Abernethy	Helena		Comment
Abers	Mimi		Comment
Abler	Michael		Comment
Abreu	Sharon		Comment
Acena	Sergio		Comment
Acevedo	Nicole		Comment
Ackerman	Shelly		Comment
Ackerman	Jan		Comment
Ackerman	Shelly		Comment
Ackerman	Shelly		Comment
Acking	Inger		Comment
Ackley	Blaine		Comment
Ackley	Blaine		Comment
Acosta	Doris		Comment
Adair	Don		Comment
Adams	Bill		Comment
Adams	Andrea		Comment
Adams	Jessica		Comment
Adams	Bill		Comment
Adams	Nancy		Comment
Adams	Bill		Comment
Adams	Mary		Comment
Adams	Martin		Comment
Adams	Bill		Comment
Adams	Bill		Comment
Adams	Bill		Comment
Adams	Bill		Comment
Adams	Cyndy		Comment
Adriance	William		Comment
Agro	Joan		Comment
Aguirre	Fran		Comment
Ahlstrand	Heidi		Comment
Ahlstrand	Heidi		Comment
Ahrens	William		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Aicone	Kimberly		Comment
Aiello	Claire		Comment
Aiello	Claire		Comment
Aiello	Claire		Comment
Aiken	Dawn		Comment
Aikens	Sonja		Comment
Akizuki	Gary		Comment
Albert	Kathy		Comment
Albert	Donna		Comment
Alder	John		Comment
Aldort	Naomi		Comment
Alexander	Judith		Comment
Alexander	Val		Comment
Alexander	Virginia		Comment
Alexander	Laura		Comment
Alexander	Mike		Comment
Alexander-Brown	Karen		Comment
Alex-Glasser	Hannah		Comment
Alic	Margaret		Comment
Allee	Pamela		Comment
Allen	Wesley		Comment
Allen	Teresa		Comment
Allen	Billie		Comment
Allen	Teresa		Comment
Allen	Wesley		Comment
Allen	Faye		Comment
Allen	Wesley		Comment
Allen	Noelle		Comment
Allen	Brian		Comment
Allen	Teresa		Comment
Allen	Susan		Comment
Allen	Michelle		Comment
Allen	Noel		Comment
Allison	Josie		Comment
Alpha	Ingrid		Comment
Altamirano	Andrew		Comment
Alvarez	Vincent		Comment
Ambrose	Billie		Comment
Ament	Jeff		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Anacker	Celeste		Comment
Anagnostu	Kurt		Comment
And	David		Comment
And	Donald		Comment
And	Terry		Comment
And	Grant		Comment
And	Dale		Comment
And	Bill		Comment
And	Jim		Comment
And	Nadine		Comment
And	John		Comment
Andersen	Larry		Comment
Anderson	Barbara		Comment
Anderson	Jerid		Comment
Anderson	Glen		Comment
Anderson	Coleen		Comment
Anderson	Sharon		Comment
Anderson	Neal		Comment
Anderson	Neal		Comment
Anderson	Sarah		Comment
Anderson	Scott		Comment
Anderson	Neal		Comment
Anderson	Sharon		Comment
Anderson	Matthew		Comment
Anderson	Glen		Comment
Anderson	Diana		Comment
Anderson	Dorothy		Comment
Anderson	Chama		Comment
Anderson	Coleen		Comment
Anderson	Kimber		Comment
Anderson	Sharon		Comment
Anderson	Carrie		Comment
Anderson	Linda		Comment
Anderson	Sharon		Comment
Anderson	Matthew		Comment
Andersson	Alissa		Comment
Angell	Jl		Comment
Angell	Jl		Comment
Anglin	Donna		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Ann	Mary		Comment
Anne	Julie		Comment
Ansolabehere	Jean		Comment
Anthony	Hal		Comment
Antman	Iris		Comment
Antman	Iris		Comment
Antman	Iris		Comment
Antonio	Beverly		Comment
Apfel	Amelia		Comment
Aragon	Maria		Comment
Arbogast	Brian		Comment
Arcana	Judith		Comment
Ardire	Steve		Comment
Armani	Behnoosh		Comment
Armbrust	Diane		Comment
Arms	Paula		Comment
Armstrong	Gretchen		Comment
Armstrong	Laurie		Comment
Arnold	Jim		Comment
Arntson	David		Comment
Arntson	David		Comment
Artle	Thomas		Comment
Ashford	Karen		Comment
Asker	Michelle		Comment
Askew	David		Comment
Asmus	Sigrid		Comment
Aspell	Amy		Comment
Aspell	Amy		Comment
Astaunda	John		Comment
Asteinza	Maria		Comment
Astyk	Robert		Comment
Atkins	Gail		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Carolyn		Comment
Atkinson	Patricia		Comment
Atlansky	Lesley		Comment
Atteridge	Constance		Comment
Atwood	April		Comment
Auer	Patricia		Comment
Aufrecht	M		Comment
Austin	Gayle		Comment
Austin	Zarah		Comment
Avery	Jean M.		Comment
Avery	Jean M.		Comment
Avery	Jean M.		Comment
Avery	Jean		Comment
Avery	Jean		Comment
Avery	Jean		Comment
Avery	Jean M.		Comment
Avery	Jean M.		Comment
Avery	Jean		Comment
Avery	Jean		Comment
Avery	Jean		Comment
Avery	Jean M.		Comment
Avery	Jean		Comment
Avery	Jean		Comment
Avery	Judy		Comment
Avery	Jean		Comment
Avinger	Linda		Comment
Ayers	Russ		Comment
Ayers	Theresa		Comment
Aymond	Laura		Comment
B	Shary		Comment
B	John		Comment
Babcock	Cynthia		Comment
Bachhuber	Stephen		Comment
Bachman	Garth	Union Workers Number 48	Comment
Bader	Henry		Comment
Baer	Timothy		Comment
Baer	Tim		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Bahner	Connie		Comment
Bahr	Dennis		Comment
Bailey	Rena		Comment
Bailey	Stephen		Comment
Bailey	Dori		Comment
Bailor	Ann		Comment
Bain	Karen		Comment
Bain	Jim		Comment
Baine	Dave		Comment
Baine	David		Comment
Baker	Sharon		Comment
Baker	Joanne		Comment
Baker	Lang		Comment
Baker	Norman		Comment
Baker	Julie		Comment
Baker	Chris		Comment
Baker	Darlene		Comment
Baker Blagg	Merna		Comment
Baker-Smith	Gerritt		Comment
Balabanian	Jerry		Comment
Baldwin	Torie		Comment
Baldwin	Elise		Comment
Baley	Patricia		Comment
Balko	Pat		Comment
Ballantine	Dikka		Comment
Balles	Katherin		Comment
Baltin	Brian		Comment
Baltin	Brian		Comment
Bamberger	Joseph		Comment
Bamford	Robert		Comment
Bancroft	Deborah		Comment
Banker	Denise		Comment
Banker	Denise		Comment
Banker	Denise		Comment
Banks	Jerry		Comment
Banks	Charles		Comment
Banks	Janice		Comment
Bannerman	Lynne		Comment
Bannerman	Lynne		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Barcott	Nick		Comment
Barger	John		Comment
Barger	John		Comment
Barger	John		Comment
Barger	John		Comment
Bariekman	Chris		Comment
Barker	Lynn		Comment
Barkett	Pete		Comment
Barlow	Jessica		Comment
Barlow	Kathryn		Comment
Barnes	Stan		Comment
Barnes	Lisa		Comment
Barnes	Noel		Comment
Baron	Gabriel		Comment
Barr	Marsha		Comment
Barreca	Joseph		Comment
Barrows	Tina		Comment
Barrows	Tina		Comment
Barsotti	Teressa		Comment
Bartholomew	Judith		Comment
Bartl	Alan		Comment
Barton	Marsha		Comment
Barton	Bradley		Comment
Bartow	Sally		Comment
Basile	Diane		Comment
Basso	Pix		Comment
Bates	James		Comment
Batten	Serena		Comment
Batway	Jewell		Comment
Bauer	Laura		Comment
Bauer	Chris		Comment
Baumann	Bill		Comment
Baumgardner	Mary		Comment
Baumgart	Monika		Comment
Baumgartner	Laura		Comment
Bax	Catherine		Comment
Bayless	Troy		Comment
Beam	Richard		Comment
Beatley	C		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Beattie	Evan		Comment
Beaver	Judith		Comment
Bebbington	Philip		Comment
Bech	Lynette		Comment
Bechtel	L		Comment
Beck	Kathryn		Comment
Beck	P		Comment
Beck	Dylan		Comment
Becker	Ralph		Comment
Becker	Elaine		Comment
Bedirian	George		Comment
Behrens	Carla		Comment
Bein	Jeanie		Comment
Belcher	Edward		Comment
Beletsky	Agnieszka		Comment
Bell	Bryan		Comment
Bell	Stephanie		Comment
Belshaw	Mary		Comment
Bembridge	Vivienne		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Derek		Comment
Benedict	Matthew		Comment
Bengtsson	Barbara		Comment
Bennett	Lou Ann		Comment
Bennett	Alex		Comment
Bennett	Joan		Comment
Bennett	Anne		Comment
Bennett	Paula		Comment
Bennington	Mary		Comment
Benoit	Ken		Comment
Benson	Hilary		Comment
Benson	Katy		Comment
Benson	David		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Benson	Marta		Comment
Bentley	Kathleen		Comment
Benton	Lori		Comment
Berger	David		Comment
Berger	Joshua		Comment
Berggren	Mark	Methanol Market Services Asia Pte. Ltd.	Comment
Bergner	Richard		Comment
Bergstrom	Bo		Comment
Berkholtz	Ric		Comment
Berkshires	Nova		Comment
Berkwitt	Claire		Comment
Berlin	Sharon		Comment
Berlin	Meredith		Comment
Berman	Steve		Comment
Bernard	James		Comment
Bernard	Alex		Comment
Bernstein	Abbie		Comment
Berntsen	Karen		Comment
Berry	Keren		Comment
Berryman	Karuna		Comment
Bersaas	Sharon		Comment
Berskin	Jeff		Comment
Betourne	Susan		Comment
Betz	Michael		Comment
Betz	Michael		Comment
Beyer	Monica		Comment
Bhakti	Sara		Comment
Biale	Cheryl		Comment
Biale	Cheryl		Comment
Bichl	Fred		Comment
Biederman	William		Comment
Biery	Boni		Comment
Bigelow	Paul		Comment
Biggio	Steven		Comment
Biggio	Steven		Comment
Bin	Gomi		Comment
Birch	Daniela		Comment
Bishop	Martha		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Bishop	Scott		Comment
Bishop	Scott		Comment
Bishop	Tarun		Comment
Bishop	Mikhaila		Comment
Bisset	Diane		Comment
Bittner	Evelyn		Comment
Bjergo	Chris		Comment
Black	Laurie		Comment
Blackburn	Paul		Comment
Blackburn	Adrienne		Comment
Blackburn	Paul		Comment
Blackwood	Barbara		Comment
Blagg	Merna		Comment
Blair	Barbara Jo		Comment
Blair	Frances		Comment
Blair	Cindy		Comment
Blair	Frances		Comment
Blaise	Sharlane		Comment
Blake	Sarah		Comment
Blake	Brian		Comment
Blalack	Kristin		Comment
Blalack	Kristin		Comment
Blandford	Mark		Comment
Bleckinger	Dana		Comment
Blessley	Mark		Comment
Bleyle	Jody		Comment
Blitzer	Mark		Comment
Blumberg	Mary		Comment
Blume	Thomas		Comment
Blumenthal	Robert		Comment
Bodtker	Michael		Comment
Bogart	Brian		Comment
Bogie	Art		Comment
Bogie	Art		Comment
Boguske	Matthew		Comment
Boguske	Matthew		Comment
Boguske	Matthew		Comment
Boling	Beverly		Comment
Bond	Sandi		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Bond	Sandi		Comment
Bone, Md	Margaret		Comment
Bonlender	Brian		Comment
Bonlender	Brian		Comment
Bonlender	Anna		Comment
Bonnell	Ashley		Comment
Bonnell	Ashley		Comment
Bonner	Tracey		Comment
Bonnett	Andrea		Comment
Bonualas	Monica		Comment
Boom	Diana		Comment
Boos	Markus		Comment
Boos	Markus		Comment
Boot	Patrick		Comment
Boot	Patrick		Comment
Borchert	Pete		Comment
Bordelon	Tika		Comment
Bordelon	Tika		Comment
Bordelon	Tika		Comment
Bordelon	Rj		Comment
Borden	Chris		Comment
Borland	John		Comment
Borso	Pamela		Comment
Bos	Katherine		Comment
Boswell	Jo		Comment
Botch	Margaret		Comment
Bottorff	Virginia		Comment
Boudreau	Carol		Comment
Bourlotos	George		Comment
Bowdish	Caroline		Comment
Bowen	John		Comment
Bowers	Joan		Comment
Bowers	Joan		Comment
Bowers	Joan		Comment
Bowers	Joan		Comment
Bowersox-Johnson	Brandon		Comment
Bowman	Wendy		Comment
Bowman	Wendy		Comment
Bowman	Wendy		Comment

Index of Commenters

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Last Name	First Name	Organization	Link to Comment
Bowman	Wendy		Comment
Boxer	Nancy		Comment
Boyd	Linda		Comment
Boyd	Marilyn		Comment
Boyd	Patrick		Comment
Boyd	Ernest		Comment
Boyd	Shauna		Comment
Boyer	Tod		Comment
Boyl	Susan		Comment
Boylan	Kathleen		Comment
Boylan	Kathy		Comment
Boylan	Kathy		Comment
Boyle	Mcblaine		Comment
Boyle	Roxanne		Comment
Boynton-Brown	Meccah		Comment
Boynton-Brown	Meccah		Comment
Brace	Courtney		Comment
Bracher	James		Comment
Brackett	Angus		Comment
Bradley	Mark		Comment
Bradley	Michael		Comment
Bradley	Mark		Comment
Bradley	Mark		Comment
Brahmavar	Sydney		Comment
Brakefield	Tina		Comment
Brakefield	Tina		Comment
Branchflower	Melanie		Comment
Brandes	Michael		Comment
Brandon	Jennifer		Comment
Brandon	Jennifer		Comment
Branson	Bryan		Comment
Brant	Daniel		Comment
Brant	Daniel		Comment
Brasch	Julia		Comment
Brasch	Julia		Comment
Bratsch	Rachael		Comment
Bratz	Cynthia		Comment
Braun	Senator John		Comment
Braun	John	WA State Senate	Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Bray	Karen		Comment
Bremenstuhl	David		Comment
Breneman	Dr		Comment
Brennan	Grace		Comment
Brent	Patti		Comment
Brenton	Victoria		Comment
Brenton	Gregg		Comment
Breslin	Charles		Comment
Breton	Lacey		Comment
Brewer	Holly		Comment
Bridges	Linda		Comment
Bridges	Michael	IBEW Local 48, Columbia Pacific Building & Construction Trades Council	Comment
Bridges	Mike	Longview/Kelso Building Trades Construction Council	Comment
Bridges	Mara		Comment
Bridges	Mike		Comment
Briggs	Robert		Comment
Bright	Margaret		Comment
Bright	Lori		Comment
Bright	Diana		Comment
Bright	Amy		Comment
Brill	Gary		Comment
Brindle	Roger		Comment
Brinkhorst	Allison		Comment
Brocious	Pamela		Comment
Brock	Barbara		Comment
Brockmann	Erich		Comment
Brodie	Jennifer		Comment
Brody	Samuel		Comment
Bromley	Kathryn		Comment
Brooke	Phil		Comment
Brooking	Ann		Comment
Brooks	Melissa		Comment
Brown	Marbella		Comment
Brown	Kris		Comment
Brown	Jeannine		Comment
Brown	Sf		Comment
Brown	Sf		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Brown	Robert		Comment
Brown	Larry	Washington State Labor Council	Comment
Brown	Paul		Comment
Brown	S.F.		Comment
Brown	Robert		Comment
Brown	Paul		Comment
Brown	Laura		Comment
Brown	Art		Comment
Brown	Susan		Comment
Brown	Peggy		Comment
Brown	Tina		Comment
Brown	Thomas		Comment
Browne	Donna		Comment
Browning	Nikki		Comment
Browning	Linda		Comment
Browning	Geoff		Comment
Bruce	Neville		Comment
Bruckner	Kristine		Comment
Bruckner	James		Comment
Brul?	Maureen		Comment
Brunton	Beth		Comment
Brunton	Jim		Comment
Brunton	Beth		Comment
Brunton	Jim		Comment
Bryant	Patricia		Comment
Bryant	Anne		Comment
Bryant	Anita		Comment
Bryant	Anita		Comment
Bryer	P		Comment
Bryson	Clint		Comment
Brzezinski	Matt		Comment
Bubelis	Wally		Comment
Buch	Anthony		Comment
Buch	Anthony		Comment
Buchanan	Jennifer		Comment
Buchanan	Catherine		Comment
Bucher	Sharon		Comment
Buckley	Linda		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Bucklin	Vicki		Comment
Buhle	Eric		Comment
Bull	Alicia	Centralia Chehalis Chamber of Commerce	Comment
Bunge	Denise		Comment
Burcal-Harris	Renee		Comment
Burch	Kristian		Comment
Burchard	L		Comment
Burchard	Liliana		Comment
Burford	Clayton		Comment
Burg	Rev		Comment
Burger	Carole		Comment
Burke	Andrea		Comment
Burke	Andrea		Comment
Burke	Sally		Comment
Burke	Sally		Comment
Burkhalter	Sheldon		Comment
Burnett	Susan		Comment
Burns	John		Comment
Burns	Cathleen		Comment
Burns	Cathleen		Comment
Burnstein	Daniel		Comment
Burrus	Sue		Comment
Burt	Debra		Comment
Burton	Vic		Comment
Busch	Denise		Comment
Bush	Shari		Comment
Busher	Sharmayne		Comment
Butler	Claire		Comment
Butler	Dottie		Comment
Butler	Elsamarie		Comment
Buttry	Corey		Comment
Byers-Grose	Mary		Comment
Byrne	Jim		Comment
Byrne	Jim		Comment
Byrnes	Coleman		Comment
C	D		Comment
C	D		Comment
C	Dennis		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
C	Dennis		Comment
C	D		Comment
Caffrey	Kelly		Comment
Caicco	Jody		Comment
Cain	Keadrin		Comment
Caine	Lisa		Comment
Calderbank	Nancy		Comment
Caldwell	Joel		Comment
Callahan	Debi		Comment
Callas	Linda		Comment
Callis	Janet		Comment
Calma	Madison		Comment
Calvert	Jennifer		Comment
Cameron	Donna		Comment
Camhi	Gail		Comment
Campbell	Michele		Comment
Campbell	Brandon		Comment
Campbell	Rebecca		Comment
Campbell	Liz		Comment
Campbell	James		Comment
Canaan	Kathleen		Comment
Canarsky	Maurine		Comment
Cannon	Lauren		Comment
Cannon	Cynthia		Comment
Canny	Maureen		Comment
Canright	Mark		Comment
Canright	Mark		Comment
Canright	Rebecca		Comment
Canright	Mark		Comment
Canright	Mark		Comment
Canright	Rebecca		Comment
Canright	Mark		Comment
Capan	Cigdem		Comment
Capan	Cigdem		Comment
Capecci	Dawn		Comment
Capestany	Annie		Comment
Caputo	Kent	Northwest Innovation Works	Comment
Caraco	Virginia		Comment
Carbonneau	Karen		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Carcelli	Dennie		Comment
Cardarelli	Barbara		Comment
Carden	Glenn		Comment
Carelli	Kathleen		Comment
Carey	Peter		Comment
Carl	Nancy		Comment
Carley	Carol		Comment
Carlson	Joel		Comment
Carlson	Joel		Comment
Carlson	Joel		Comment
Carlson	Cheri		Comment
Carlson	Priscilla		Comment
Carlson	Joel		Comment
Carlson	Jacob		Comment
Carlson	Joel		Comment
Carlson	Joel		Comment
Carmody	Molly		Comment
Carney	Cheryl		Comment
Carpenter	Lynn		Comment
Carpenter	Barret		Comment
Carpenter	Lois		Comment
Carrick	Helen		Comment
Carroll	Linda		Comment
Carroll	Patricia		Comment
Carroll	Bob		Comment
Carroll	Bob		Comment
Carroll	Linda		Comment
Carroll	Linda		Comment
Carroll	Greg		Comment
Carroll	Patricia		Comment
Carroll	Patricia		Comment
Carter	Marian		Comment
Carter	Earlene		Comment
Casanova	Elizabeth		Comment
Casey	Terry		Comment
Casey	Margaret		Comment
Cash	Judy		Comment
Casillas	Virginia		Comment
Casper	Kim		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Cassensg	Susie		Comment
Castelli-Hill	Susan		Comment
Caster	Cynthia		Comment
Castro	Samuel		Comment
Cate Md, Mph	Sara		Comment
Cates	Caroline		Comment
Caya	Jamie		Comment
Caya	Jamie		Comment
Ceballos	Janet		Comment
Cemulini	Margaret		Comment
Cemulini	Marg		Comment
Cemulini	Renato		Comment
Centurion	Linda		Comment
Ceravalo	Tracy		Comment
Ceravolo	Tracy		Comment
Ceravolo	Gino		Comment
Ceravolo	Tracy		Comment
Ceravolo	Caleb		Comment
Ceravolo	Caroline		Comment
Cetas	Elijah		Comment
Cetas	Elijah		Comment
Cetas	Elijah		Comment
Cetes	Elijah		Comment
Chabot	Christian		Comment
Chadd	Ed		Comment
Chan	Guy		Comment
Chandler	Marcella		Comment
Chandler	Marcella		Comment
Chanen	Philip		Comment
Chanen	Philip		Comment
Chaney	David		Comment
Chaney	David		Comment
Chaney	David		Comment
Chang	Emily		Comment
Chao	Beth		Comment
Chapin	Chris		Comment
Chapin	Ric		Comment
Chaplin	Chris		Comment
Chaplin	Chris		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Chapman	Linda		Comment
Chapman	Jesse		Comment
Chapman	Bill		Comment
Chapman	Adrianne		Comment
Chapman	Lee		Comment
Charlebois	Stacie		Comment
Chebert	Lee		Comment
Chenault	Kimberly		Comment
Chesick	Katherine		Comment
Chesnut	Joanna		Comment
Cheyney	Barbara		Comment
Childs	Emily		Comment
Chin	Vivian		Comment
Chiotti	Lynnette		Comment
Chipman	Uriah		Comment
Chisholm	Robbi		Comment
Christ	M'Lou		Comment
Christ	Mlou		Comment
Christensen	Alison		Comment
Christensen	Carrie		Comment
Christensen	Joan		Comment
Christian	Steven		Comment
Christy	Erik		Comment
Chu	J		Comment
Chudy	Cathryn		Comment
Chudy	Cathryn	Oregon Conservancy Foundation	Comment
Chudy	Cathryn		Comment
Chudy	Cathryn		Comment
Chudy	Cathryn		Comment
Chudy	Cathryn		Comment
Chudy	Cathryn		Comment
Chudy	Catherine		Comment
Church	Janelle		Comment
Church	David		Comment
Cimon	Norm		Comment
Ciske	Sandra		Comment
Ciske	Sandra		Comment
Civiletti	Jane		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Cj	James		Comment
Clark	Kevin		Comment
Clark	Roger		Comment
Clark	Maxine		Comment
Clark	Heinke		Comment
Clark	Todd		Comment
Clark	Irina		Comment
Clark	Maxine		Comment
Clark	Rebecca		Comment
Clark	Maxine		Comment
Clark	Victoria		Comment
Clark	Heinke		Comment
Clarke	Erin		Comment
Clarke	Lauren		Comment
Clarke	Eithne		Comment
Classen	Stephan		Comment
Claus-Mcgahan	Elly		Comment
Clifford	Charissa		Comment
Cloner	Matthew		Comment
Cloquet	Celene	Cowlitz Indian Tribe	Comment
Clothier	Emele		Comment
Clough	Pamela		Comment
Clute	Jim		Comment
Coahran	Scott		Comment
Cobain	Kurt		Comment
Cobb	Sandra		Comment
Cochran	Julie		Comment
Cochran	Rachel		Comment
Cody	Robin		Comment
Cody	Heidi		Comment
Cody	Kathleen		Comment
Coffey	Patricia		Comment
Coffey	Patricia		Comment
Cohen	Judith		Comment
Cohen	Judith		Comment
Cohen	Judith		Comment
Cohen	Beth		Comment
Colbert	Keli		Comment
Cole	Tracy		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Cole	Jackie		Comment
Cole	Doug		Comment
Colegrove	Margaret		Comment
Coleman	Veronika		Comment
Collens	Joanne		Comment
Colleran	Carol		Comment
Colley	Belinda		Comment
Colley	Belinda		Comment
Collier	Katie		Comment
Collins	Diane		Comment
Collins	Amanda		Comment
Collins	Ms		Comment
Collins	Shirley		Comment
Collins	Carol		Comment
Collins	Randall		Comment
Collins	Shirley		Comment
Colombo	Dennis		Comment
Colombo	Dennis		Comment
Colony	Stephanie		Comment
Colony	Stephanie		Comment
Combs	Mary		Comment
Comenole	Madelyn		Comment
Compestine	Amy		Comment
Coniglio	B		Comment
Conlan	Mike		Comment
Conley	Jean		Comment
Conn	Patrick		Comment
Conn	Patrick		Comment
Conn	Patrick		Comment
Connell	Carole		Comment
Conner	John		Comment
Conover	Tacey		Comment
Conrad	Norm		Comment
Cook	Terence		Comment
Cook	Nena		Comment
Cook	Klouise		Comment
Cooke	Harriet		Comment
Cooke	Harriet		Comment
Cooper	Karis		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Cooper	Carolyn		Comment
Cooper	Holly		Comment
Cooper	Enji		Comment
Copenhefer	Roberta		Comment
Corbett	Clivonne		Comment
Corcoran	Sue		Comment
Cordero	David		Comment
Coria	Mark		Comment
Corich	Madeleine		Comment
Corkrum	Gordon		Comment
Cormier	Mary		Comment
Cornwell	Marilyn		Comment
Cornwell	Marylyn		Comment
Cornwell	Marilyn		Comment
Cornwell	Marilyn		Comment
Corona	Marianne		Comment
Corpus	Robert		Comment
Corpus	Robert		Comment
Corpus	Robert		Comment
Corr	Nancy		Comment
Corrigan	Jennifer		Comment
Corso	Rose		Comment
Cortez	Ruth		Comment
Cotta	Michael		Comment
Cotter	Mike		Comment
Couch	Sandra		Comment
Couche	Stephen		Comment
Couche	Stephen		Comment
Couche	Stephen		Comment
Counts	Mark		Comment
Cournoyer	Sadra		Comment
Cournoyer	Sandra		Comment
Cousins-Coleman	Betsy		Comment
Couture	Ray		Comment
Couture	Ray		Comment
Cover	Megan		Comment
Cover	Cameron		Comment
Cover	Nick		Comment
Covert-Bowlds	Chris		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Covert-Bowlds	Chris		Comment
Cowal	Rory		Comment
Cowal	Rory		Comment
Cowan	Keith		Comment
Cowdin	Marielle		Comment
Cowen	Anna		Comment
Cowen	Rachel		Comment
Cowger	Theresa		Comment
Cox	Enid		Comment
Cox	Lanie		Comment
Cox	Sharon		Comment
Cox	Thomas		Comment
Coyne	Tonya		Comment
Craig	Linda		Comment
Craig	Edward		Comment
Craig	Sue		Comment
Craig	Sue		Comment
Craighead	Tom		Comment
Craighead	Tom		Comment
Cramer	Marta		Comment
Cratty	Bruce		Comment
Crawford	Jason		Comment
Crawford	Kristin		Comment
Crawford O'Brien	Suzanne		Comment
Crayne	Brice		Comment
Creager	Cindy		Comment
Creighton	Jodee		Comment
Crenshaw	Shirley		Comment
Cresseveur	Jessica		Comment
Crevier	Jeanne		Comment
Critchlow	Lisa		Comment
Crocker	Layne		Comment
Crockett	Scott		Comment
Cronin	James		Comment
Cross	Steve		Comment
Cross	Elizabeth		Comment
Crowley	Marty		Comment
Crum	Karen		Comment
Crystal	Lakota		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Csabina	Marian		Comment
Csuhta	Tom		Comment
Csuhta	Tom		Comment
Cummings	Joan		Comment
Cummins	Carol		Comment
Cunningh	Lynda		Comment
Cunningham	Janette		Comment
Cunningham	Elizabeth		Comment
Cunningham	Heather		Comment
Cunningham	Lyndee		Comment
Cunningham	Elizabeth		Comment
Cunningham	Janette		Comment
Curry	Karen		Comment
Curry	Stephen		Comment
Curry	Linda		Comment
Curry	Robert		Comment
Curteman	Saundra		Comment
Curtis	Richard		Comment
Curtis	Colleen		Comment
Cushwa	Nancy		Comment
Custer	Julie		Comment
Cwinar	Julie		Comment
Cwinar	Julie		Comment
Czarnecki	Roberta		Comment
Dahmer	Karen		Comment
D'Alessandro	Keith		Comment
Daley	Suzann		Comment
Daley Mosier	Kristen		Comment
Dallas	Ruth		Comment
Dallas	Ruth		Comment
Dalleck	Lynne		Comment
Dalton	Brian		Comment
Daly	Scott		Comment
Dammann	Gin		Comment
Daniell	William		Comment
Danielson	Lori		Comment
Danilovs	I.		Comment
Danks	Lois		Comment
Danoff	Nancy		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Darby	E.		Comment
Darden	Ruth		Comment
Darden	Ruth		Comment
Dart	David		Comment
Das	Anita		Comment
Das	Anita		Comment
Dash	Robert		Comment
Daugherty	Randall		Comment
Daulton	Kelly		Comment
Davern	Brian		Comment
David	Wakil		Comment
Davidson	Heather		Comment
Davidson	Barbara		Comment
Davidson	Adam		Comment
Davis	Sandra		Comment
Davis	Scott		Comment
Davis	Judith		Comment
Davis	Adam		Comment
Davis	Virginia		Comment
Davis	Adam		Comment
Davis	Virginia		Comment
Davis	Sherry		Comment
Davis	Nancy		Comment
Davis	Bonny		Comment
Davis	Sherry		Comment
Davis	Kim		Comment
Davis	Robert		Comment
Davis	Wendy		Comment
Davis	Joan		Comment
Davolos	Loretta		Comment
Dawley	Thomas		Comment
Dawson	Kathy		Comment
Day	Brayden		Comment
Dayton	Gary		Comment
Dayton	Gary		Comment
De	Jeanne		Comment
De Avalon	Ariannah		Comment
De Campos	Miguel		Comment
De Puma	Julian		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
De Roos	Jan		Comment
Dea	Marilee		Comment
Dea	Marilee		Comment
Dea	Marilee		Comment
Dea	Marilee		Comment
Deal	Brandie		Comment
Deal	Brandie		Comment
Deal	Brandie		Comment
Dean	Connie		Comment
Dean	William		Comment
Debolt	Eric		Comment
Debroeck	Lynn		Comment
Decent	Jennifer		Comment
Decker	Vivian		Comment
Decorsey	James		Comment
Decorsey	James		Comment
Decristofaro	Phyllis		Comment
Defoe	Martha		Comment
Defoer	Casey		Comment
Degooyer	Elise		Comment
Degrandchamp	Jan		Comment
Deleon	David		Comment
Deller	Jeanne		Comment
Delles	Susan		Comment
Delshire	Victoria		Comment
Deluca	Theresa		Comment
Deluca	Theresa		Comment
Deluca	Theresa		Comment
Demarco	Framces		Comment
Demaris	C		Comment
Demers	Douglas		Comment
Demetri	Joe		Comment
Demian	Dr		Comment
Demian	Dr.		Comment
Denike	Susan		Comment
Denison	Marcia		Comment
Dennard	Barbara		Comment
Denning	Asphodel		Comment
Denning	Asphodel		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Dennis	Clay		Comment
Dennis	Clay		Comment
Dennison	Lisa		Comment
Denton	James		Comment
Denton	Gregory		Comment
Derie	Joann		Comment
Derooy	Constance		Comment
Derzon	James		Comment
Desimone	Richard		Comment
Desjardins	Paul		Comment
Desjardins	Paul		Comment
Desmond	Laird		Comment
Desmond	Rebecca		Comment
Desrosier	Charlene	Camp Kalama RV Park and Campground	Comment
Destro	Greg		Comment
Detering	L		Comment
Deutsch	Rebecca		Comment
Deutsch	Eileen		Comment
Devlaeminck	Michelle		Comment
Devries	Joan		Comment
Devry	Mary Anne		Comment
Dexheimer	Derek		Comment
Dexheimer	Derek		Comment
Dexter	Heather		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Diane		Comment
Dick	Norman		Comment
Dickerson	Mary Lou		Comment
Dickerson	Mary		Comment
Dickey	Helen		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Dickinson	Amanda		Comment
Dickinson	Amanda		Comment
Dicus	Laura		Comment
Diehl	Cora		Comment
Diener	Thomas		Comment
Dietrich	Carey		Comment
Digiacomo	Ron		Comment
Digiacomo	Ron		Comment
Digiacomo	Ronald		Comment
Digiandomenico	David		Comment
Dilabio	Gena		Comment
Dileva	Dan		Comment
Dillard	Troy		Comment
Dilles	Mary		Comment
Dils	Laurie		Comment
Dirks	Judy		Comment
Dirks	Gary		Comment
Ditore	Steve		Comment
Dittrich	Sean		Comment
Ditullio	Dante		Comment
Dixon	Angie		Comment
Dlugonski	Melba		Comment
Doan	Thi		Comment
Doane	Anne		Comment
Dobson	Erik		Comment
Doctor	Jani		Comment
Dodge	Tiffany		Comment
Dodson	Linda		Comment
Doering	David		Comment
Doherty	Mary		Comment
Doimas	Amanda		Comment
Dolph	Phyllis		Comment
Dominick	Gail		Comment
Domke	Del		Comment
Donaby	Haillee		Comment
Donahue	Robin		Comment
Donaldson	Jamie		Comment
Donaldson	Patrick		Comment
Donaldson	Jamie		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Done	David		Comment
Donnelly	Robin And Tom, Md		Comment
Donnelly	Serena		Comment
Donnelly	Serena		Comment
Donohoe	Susan		Comment
Doob	Jennifer		Comment
Dooley Md	Annemarie		Comment
Dor	Anne		Comment
Dor	Anne		Comment
Dorer	Russell		Comment
Dorsey	Ann		Comment
Doty	Anna	Washington Environmental Council	Comment
Dotzauer	Uwe		Comment
Doucet	Liam		Comment
Doucet	Liam		Comment
Douwes	Clary		Comment
Dowdy	Margaret		Comment
Downes	Linda		Comment
Downey	Lisa		Comment
Downey	Judith		Comment
Dowson	Eleanor		Comment
Dragon	David		Comment
Dragonwyck	Cs		Comment
Drescher	Sara		Comment
Dreyfus	Chas		Comment
Driscoll	Breana		Comment
Druffel	Pauline		Comment
Drumright	Chris		Comment
Drury	Anne		Comment
Dubois	Eleanor		Comment
Dubois	Barbara		Comment
Dubois	Christina		Comment
Duda	Tim		Comment
Dudley	William		Comment
Duffy	Pauline		Comment
Dugar	Alice		Comment
Duhring	Frederick		Comment
Dumala	Terri		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Duncan	Brian		Comment
Duncan	Angus Duncan		Comment
Dundas	Terri		Comment
Dunn	John		Comment
Dunn	Carol		Comment
Dunn	John		Comment
Dunn	Sharon		Comment
Dunneback	David		Comment
Durni	Jedediah		Comment
Duskin	Hollyann		Comment
Dutka	Janice		Comment
Duvall	Mary		Comment
Dye	Hollis		Comment
Dyer	Anna		Comment
Dyson	Christina		Comment
Earnest	Jennifer		Comment
Eastman	Amanda		Comment
Easton	Mary		Comment
Eby	Amber		Comment
Eby	Carole		Comment
Eckels	Alison		Comment
Eckhart	Monika		Comment
Ecklund	Susan		Comment
Eddington	Marianne		Comment
Eden	Carolyn		Comment
Eden	Carolyn		Comment
Edison	John		Comment
Edmark	Kristin		Comment
Edmark	Kristin		Comment
Edmark	Kristin		Comment
Edmark	Kristin		Comment
Edmark	Kristine		Comment
Edmison	Sean		Comment
Edmison	Sean		Comment
Edwards	Karen		Comment
Edwards	Dixie		Comment
Edwards	Elizabeth		Comment
Edwards	David		Comment
Ehle	Lisa		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Ehler	Noah		Comment
Ehrenfreund	Janet		Comment
Ehrlich	Isaac		Comment
Ehrlich	Isaac		Comment
Einig	Richard		Comment
Eisenberg	Paul		Comment
Eisenfeld	Joel		Comment
Eklund	Glenn		Comment
Ekstrand	Mary		Comment
Elbert	Nancy		Comment
Eldridge	Sara		Comment
Elizabeth	Gerritt		Comment
Elkins	Carol		Comment
Elle	P		Comment
Elledge	Vicki		Comment
Ellen	Mary		Comment
Ellenberger	Charles		Comment
Ellingham	Nancy		Comment
Elliott	Benton		Comment
Elliott	Jenny		Comment
Elliott	Leonard		Comment
Elliott-Cattell	June		Comment
Ellis	Marion		Comment
Ellis	Jan		Comment
Ellis	Elizabeth		Comment
Ellis	Kathryn		Comment
Ellis	Jan		Comment
Ellis	Suzanne		Comment
Ellison	Mike		Comment
Ellison	Catherine		Comment
Ellison	Brittany		Comment
Elohim	Shemayim		Comment
Ely	Donald		Comment
Emerson	Wendy		Comment
Enderlein	Andreas		Comment
Engel	Vianna		Comment
Engelfried	Nick		Comment
Engelfried	Nick		Comment
Engelfried	Nick		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
England	Jennifer		Comment
England	Jenny		Comment
Englert	Mary		Comment
Englert	Walter		Comment
English	Kay		Comment
Englund	Phillip		Comment
Englund	Klaudia		Comment
Englund	Phillip		Comment
Engstrom	Karin		Comment
Enlow	Cynthia		Comment
Enright	Elizabeth		Comment
Ensign	Dianne		Comment
Ensor	Brett		Comment
Ensor	Brett		Comment
Entzeroth	Katelyn		Comment
Erb	Cheryl		Comment
Erbs	Lori		Comment
Erbs	Lori		Comment
Erbs	Lori		Comment
Erickson	Allan	Port of Longview	Comment
Erickson	Lynda		Comment
Erickson	Jane		Comment
Erickson	Dave		Comment
Erickson	Peter	Stockholm Environment Institute	Comment
Ericson	Hilarie		Comment
Eriksen	Melissa		Comment
Ernst	Stephen		Comment
Erpelding-Garratt	Liz		Comment
Erwin	Robert		Comment
Erwin	Robert		Comment
Erwin	Kirk		Comment
Espana	Theresa		Comment
Espe	Greg		Comment
Espe	Gregory		Comment
Espinosa	Gale		Comment
Esposito	Eric		Comment
Estes	Elizabeth		Comment
Evans	Mason		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Evans	Bronwen		Comment
Evans	Bronwen		Comment
Evans	Masono	JH Kelly	Comment
Evans	Amanda		Comment
Everett	Todd		Comment
Everett	Robin		Comment
Eversole	April		Comment
Eversole	April		Comment
F	Beth		Comment
F	K		Comment
Faber	Hilke		Comment
Faber	Megan		Comment
Faber	Megan		Comment
Fabian	Dagmar		Comment
Fadden	Delmar		Comment
Fahrenwald	Gill		Comment
Fahrenwald	Gill		Comment
Fairbanks	Randy		Comment
Fairbanks	Traci		Comment
Fairchild	Jennifer		Comment
Faletti	Diane		Comment
Falk	William		Comment
Falk	Diane		Comment
Family	Durr		Comment
Faraone	Cleo		Comment
Farber	Joan		Comment
Farbstein	Sarah		Comment
Farhoud	Aisha		Comment
Farhoud	Aisha		Comment
Farrell	Bob		Comment
Farwell	Tracy	Better Energy LLC	Comment
Fasnacht	Sharon		Comment
Fasnacht	Sharon		Comment
Faste	Andrea		Comment
Faste	Andrea		Comment
Faste	Andrea		Comment
Favro	Janette		Comment
Fay	Alexa		Comment
Faz	Aimee		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Feck	Charlotte		Comment
Feck	Charlotte		Comment
Feder	Melanie		Comment
Federman	Catherine		Comment
Fedorov	Karen		Comment
Feeney	Sharon		Comment
Feise	Christopher		Comment
Feldman	Max		Comment
Feldman	Laura		Comment
Feldman	Andrew		Comment
Feldman	Max		Comment
Feldman	Virginia		Comment
Feldman	Virginia		Comment
Feldman	Sheryl		Comment
Felix	Kristin		Comment
Felnagle	Debby		Comment
Fels	Peter		Comment
Fels	Peter		Comment
Ferguson	Lorna		Comment
Ferguson	M Judith		Comment
Ferland	Linda		Comment
Ferland	Linda		Comment
Fernandes	Jeff		Comment
Ferrari	Paul		Comment
Ferraris	Alfred		Comment
Fexis	Deborah		Comment
Fielder	Dr		Comment
Fielder	Aixa		Comment
Fields	Ahnetta		Comment
Fields	Deann		Comment
Fields	Marjorie		Comment
Fields	Marjorie		Comment
Fiestal	Judy Arielle		Comment
Finch	Carolyn		Comment
Fink	Peter		Comment
Finkelstein	Laura		Comment
Finlay-Kochanowski	Jeannie		Comment
Finlay-Kochanowski	Jeannie		Comment
Finn	Charlene		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Fischer	Jessica		Comment
Fischer	Gloria		Comment
Fischer	Elaine		Comment
Fish	Marian		Comment
Fish	Marian		Comment
Fish	Marian		Comment
Fisher	Marie		Comment
Fisher	Regan		Comment
Fisher	Amy		Comment
Fisher	Martin		Comment
Fisher	Jim		Comment
Fisher	Karen		Comment
Fisher	Anne		Comment
Fitzgibbons	Kerry		Comment
Fitz-Hugh	Lynn		Comment
Fitz-Hugh	Lynn		Comment
Fitzmaurice	Shannon		Comment
Fitzpatrick	Judy		Comment
Flaherty	Lorraine		Comment
Flank	Joel		Comment
Fleming	Elizabeth		Comment
Fleming	Mark		Comment
Fleming	Michael		Comment
Fleming	Tracy		Comment
Fleming	Elizabeth		Comment
Fletcher	Becky		Comment
Fletcher	Rebecca		Comment
Fletcher	Karen		Comment
Flynn	John		Comment
Flynn	Teresa		Comment
Flynn	John		Comment
Flynn	John		Comment
Flynn	Teresa		Comment
Flynn	Teresa		Comment
Flynn	Teresa		Comment
Flynn	Teresa		Comment
Flynn	John		Comment
Flynn	John		Comment
Flynn	Teresa		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Flynn	John		Comment
Flynn	John		Comment
Flynn	Teresa		Comment
Flynn	John		Comment
Flynn	Teresa		Comment
Flynn	John		Comment
Flynn	Teresathe Departmentthe		Comment
Flynn	Teresa		Comment
Flynn	John		Comment
Flynn	Teresa		Comment
Flynn	Teresa		Comment
Flynn	John		Comment
Flynn	John		Comment
Flynn	John		Comment
Flynn	John		Comment
Flynn	John		Comment
Follingstad	Joyce		Comment
Follmer	Kristin		Comment
Fonseca	Simone		Comment
Forbes	William		Comment
Ford	Claudia		Comment
Forgey	Patricia		Comment
Forman	Fay		Comment
Forti	Jen		Comment
Forti	Jen		Comment
Fortin	Andre		Comment
Foster	Carrie		Comment
Foster	Lorraine		Comment
Foster-Campbell	Carrie		Comment
Fournier	Dean		Comment
Fox	Sharon		Comment
Fox	Kurt		Comment
Fox	Carolyn		Comment
Fradkin	Allison		Comment
Frampton	Norm		Comment
France	Laureen		Comment
Francesconi	Michele		Comment
Francesconi	Michele		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Francis	Deborah		Comment
Frank	Rebecca		Comment
Franklin	Doug		Comment
Franklin	L		Comment
Franzmann	Paul		Comment
Fraser	Mary		Comment
Fredgant	Daniel		Comment
Fredricks	Katherine		Comment
Freeman	Kris		Comment
Freeman	Patricia		Comment
Freeman	Lorraine		Comment
Freeman	Polly		Comment
Freeman	James		Comment
Freese	Lisanne		Comment
Freiberg	Pat		Comment
Freitag	Angelica		Comment
French	Tamara		Comment
French	James		Comment
Friedman	Randal		Comment
Friedman	Esther		Comment
Friedman	Ilene		Comment
Friedman	Terry		Comment
Friedmann	Jessie		Comment
Friedrick	Stephen		Comment
Friis	Rolf		Comment
Frisbie	Sasha		Comment
Frisbie	Annette		Comment
Fristoe	Barbara		Comment
Fristoe	Barbara		Comment
Fritch	Alyce		Comment
Fritchie	M.		Comment
Fritz	Nathan		Comment
Fromer	Eileen		Comment
Fromer	Eileen		Comment
Fromer	Eileen		Comment
Frost	James		Comment
Fujii	Grant		Comment
Fujitasacco	Noreen		Comment
Fujita-Sacco	Noreen		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Funk	Stephen		Comment
Furchner	Russell		Comment
Furlong	Josh		Comment
Furlong	Thomas		Comment
Furness	Kathleen		Comment
Furnish	Shearle		Comment
Fury	Kristina		Comment
Futterman	Sanja		Comment
G	R		Comment
G	R		Comment
G	C		Comment
G	K		Comment
Gabbard	Nanci		Comment
Gabbay	Deirdre		Comment
Gable	Mary		Comment
Gadbaw	Holly		Comment
Gaddis	Hilary		Comment
Gaiser	Jörg		Comment
Gaiser	Jörg		Comment
Galdo	Querido		Comment
Galdo	Querido		Comment
Gale	Kent		Comment
Gallagher	Mary		Comment
Gallagher	Kevin		Comment
Gallant	Kara		Comment
Galvan	Jodie		Comment
Gambol	Rhett		Comment
Gamel	Matt		Comment
Gandolfo	Deborah		Comment
Ganz	Ulrich		Comment
Garberding	Bruce		Comment
Garcia	Sandra		Comment
Garcia	Jose		Comment
Gardner	Joy		Comment
Gardner	Peggy		Comment
Gargas	Don		Comment
Garner	Debra		Comment
Garratt	Stephen		Comment
Garrison	Brian		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Garrison	Joy		Comment
Garvett	Esther		Comment
Gasman	Christina		Comment
Gaspar	Lawrence		Comment
Gasperoni	John		Comment
Gassenberg	Daniel		Comment
Gaster	Tova		Comment
Gaudioso	Sofia		Comment
Gaul	Michael		Comment
Gause	Jackie		Comment
Gause	Jackie		Comment
Gaxiola	Rebekah		Comment
Geballe	E		Comment
Gedrose	Karlyn		Comment
Gedrose	Karlyn		Comment
Gedrose	Corey		Comment
Gehri-Bergman	Sandra		Comment
Gehri-Bergman	Sandra		Comment
Gemmell	Douglas		Comment
Gemmell	Doug		Comment
Gendaszek	Andrew		Comment
Gendvil	Derek		Comment
Gendvil	Derek		Comment
Georgette	Lisa		Comment
Gerber	Jennifer		Comment
Gerell	Sherril		Comment
Gerell	Sherril		Comment
Gerhard	Bruce		Comment
Gernez	Sept		Comment
Gernez	Sept		Comment
Gernez	Sept		Comment
Gersten	Ken		Comment
Geveshausen	Julie		Comment
Gibbons	Brian		Comment
Gibbons	Brian		Comment
Gibbons	Laura		Comment
Gibbons	Laura		Comment
Gibbs	Stefanie		Comment
Gibbs	Molly		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Gibbs	Molly		Comment
Gibson	Jody		Comment
Gibson	Jody		Comment
Gibson	Raymond		Comment
Gifford	Barrett		Comment
Gigliotti	Robert		Comment
Gilardi	Gary		Comment
Gilbert De Vargas	Sally Jo		Comment
Gilchrist	Gwen		Comment
Giles	James		Comment
Giles	William		Comment
Gillaspy	Betsy		Comment
Gillespie	Bob		Comment
Gillespie	Bob		Comment
Gillespy	Nicole		Comment
Gillis	Marian		Comment
Gillis	Edith		Comment
Gillis	Marian		Comment
Gillis	Marian		Comment
Gilman	Christina		Comment
Gilman	Monica		Comment
Gilmore	Timothy		Comment
Gindt	Jennifer		Comment
Ginsberg	Mel		Comment
Gish	Edith		Comment
Given	Curt		Comment
Glanz	Emily		Comment
Glaser	Donna		Comment
Glass	Sherry		Comment
Glass	Rachel		Comment
Glassman	Greg		Comment
Gleichman	Ted		Comment
Gleim	Nancy		Comment
Gleim	Nancy		Comment
Glenn	Dashiell		Comment
Glennon	Troy		Comment
Glickfeld	Carole		Comment
Glidden	Hal		Comment
Glidden	Talmon		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Gloger	David		Comment
Gloger	David		Comment
Gloss	Adam		Comment
Glover	Julie		Comment
Glover	Julie		Comment
Glover	William		Comment
Glover	Robert		Comment
Glynn	Richard		Comment
Godfrey	Earl		Comment
Goebel	Julie		Comment
Goetschius	Lascinda		Comment
Goetschius	Lascinda		Comment
Goff	Emery		Comment
Goffard	Amanda		Comment
Goldberg	Susan		Comment
Goldberg	R. David		Comment
Goldberg	David		Comment
Goldberg	Laura		Comment
Goldberg	Susan		Comment
Golde	Marcy		Comment
Golding	William		Comment
Golding	William		Comment
Golding	Will		Comment
Goldsmith	Dell		Comment
Golley	Linda		Comment
Gomez	Sept	Sierra Club	Comment
Gonzales	Mikhaila		Comment
Gonzalez-Green	Vanessa		Comment
Gonzaqles	Michelle		Comment
Goodall	Carol		Comment
Goodin	Ben		Comment
Goodman	James		Comment
Goodson	Lindsey		Comment
Goodwin	Greg		Comment
Goodwin	Greg		Comment
Goodwin	Mike		Comment
Gordom	Thomas		Comment
Gordon	Thomas		Comment
Gordon	Thomas		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Gordon	Diana		Comment
Gordon	Thomas		Comment
Gordon	Thomas		Comment
Gordon	Thomas		Comment
Gordon	Diana		Comment
Gordon	Diana		Comment
Gordon	Thomas		Comment
Gordon	Thomas		Comment
Gordon	Diana		Comment
Gordon	Diana		Comment
Gordon	Thomas		Comment
Gordon	Thomas		Comment
Gordon	Thomas		Comment
Gordon	Jan		Comment
Gorgon	Diana		Comment
Goss	Shari		Comment
Goss	Alice		Comment
Gossen	Dr. Candace		Comment
Gottfried	Susan		Comment
Gowing	Marcia		Comment
Graber	John		Comment
Grabow	Cole		Comment
Grace	Jennifer		Comment
Grace	Keli		Comment
Graff	Steve		Comment
Graff	Wanda		Comment
Graham	Holly		Comment
Graham	Janice	Woodland Chamber of Commerce	Comment
Graham	Margaret		Comment
Graham	Brian		Comment
Graham	Margaret		Comment
Grajczyk	Joyce		Comment
Granato	Linda		Comment
Grant	Elizabeth		Comment
Grant	Renee		Comment
Grant	Elizabeth		Comment
Grant	Mary		Comment
Graver	Chuck		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Gravette	Kristina		Comment
Gray	Barbara		Comment
Grayum	Kelly		Comment
Greef	Fred		Comment
Greef	Fred		Comment
Green	Jeff		Comment
Green	Marjorie		Comment
Green	Stacy		Comment
Green	Arden		Comment
Green	Brian		Comment
Green	Jude		Comment
Green	Julia		Comment
Green	Judith		Comment
Green	Joel		Comment
Greenberg	Joy		Comment
Greenberg	Donald		Comment
Greene	Linda		Comment
Gregg	Gregory		Comment
Gregory	Marc		Comment
Gregory	Bob		Comment
Gregory	Linda		Comment
Gregory	Barbara		Comment
Gregory	William		Comment
Grice	Karen		Comment
Grieger	Samantha		Comment
Griffin	Mark		Comment
Griffith	Jonah		Comment
Griffith	Ed	New Progressive Alliance	Comment
Grimbly	Kathleen		Comment
Grimley	Daniel		Comment
Grimley	Daniel		Comment
Grimmett	Kathy		Comment
Groenendaal	Susanne		Comment
Gronert	Elizabeth		Comment
Groom	Gene		Comment
Grossman	Marianna		Comment
Grossman	Marianna		Comment
Grossman	Deena		Comment
Grossman	Deena T.		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Grossman	Deena Tyrell		Comment
Grossman	Deena Tyrell		Comment
Grossman	Marianna		Comment
Grossman	Marianna		Comment
Grossman	Marianna		Comment
Grout	Nancy		Comment
Grube	Heather		Comment
Grunbaum	Arthur		Comment
Grunbaum	Arthur	FOGH (Friends of Grays Harbor)	Comment
Grush	Leslie		Comment
Gruszecki	Andrea		Comment
Gruszecki	Andrea		Comment
Grzegorzewski	Mark		Comment
Guard	Mary		Comment
Guard	Mary		Comment
Guard	Mary		Comment
Gubelman	Serge		Comment
Gudmundson	Lori		Comment
Gudowski	Pat		Comment
Guenther	Mary		Comment
Guillaume	Nicolas		Comment
Guillory	Chris		Comment
Guillory	Chris		Comment
Gunn	Jef		Comment
Gurdin	Barry		Comment
Gurney	Beth		Comment
Guros	John		Comment
Gusch	Linda		Comment
Gussman	Toby		Comment
Guthrie	Vere		Comment
Guthrie	Rand		Comment
Guttenberg	Marta		Comment
Gwinn	Anita		Comment
Gwinn	Anita		Comment
Gwinn	Anita		Comment
Gwold	Warren		Comment
Gx	Perry		Comment
Gx	Perry		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Gyncild	Brie		Comment
Gyncild	Brie		Comment
Gyncild	Brie		Comment
H	Carole		Comment
H	Carole		Comment
Haase	Sheryl		Comment
Habib	David		Comment
Hackman	Wilma		Comment
Hackman	James		Comment
Haegele	Wayne		Comment
Hagen-Lukens	Deborah		Comment
Haggin	Lindell		Comment
Hait	Gordon		Comment
Hajnosz	Jan		Comment
Hale	Dave		Comment
Haley	Jim		Comment
Haley	Stacia		Comment
Haley	Stacia		Comment
Hall	Anne		Comment
Hall	Dorothy		Comment
Hall	Victoria		Comment
Hall	Anne		Comment
Hall	David		Comment
Hall	Jerilyn		Comment
Halloran	Michael		Comment
Halpern	Lisa		Comment
Halsell	David		Comment
Hamer	Suzanne		Comment
Hamill	Clayton		Comment
Hamill	Stevi		Comment
Hamilton	Larry		Comment
Hamilton	Paula		Comment
Hamilton	Michelle		Comment
Hamilton	Del		Comment
Hamilton	Beth		Comment
Hammons	Joseph		Comment
Hampel	Susan		Comment
Hampel	Susan		Comment
Hance	Judith		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Hance	Judith		Comment
Handler	Frank		Comment
Hankins	Tylor		Comment
Hanlon	Linda		Comment
Hannon	Daniel		Comment
Hansen	Nancy		Comment
Hansen	Elizabeth		Comment
Hansen	Amy		Comment
Hansen	Patricia		Comment
Hansen	Amy		Comment
Hansen	Amy		Comment
Hansen	Sherry		Comment
Hansen	Cindy	Orca Network	Comment
Hanson	Joel		Comment
Hanson	Susan		Comment
Hanson	Art		Comment
Hanson	Lois		Comment
Hanson	Art		Comment
Hanson	Susan		Comment
Hanson	Lois		Comment
Hapham	William		Comment
Hapke	Peter		Comment
Haraldsdottir	Aslaug		Comment
Haraldsdottir	Aslaug		Comment
Hardcastle	Alan		Comment
Hardy	Theresa		Comment
Hargrave	Tim		Comment
Hargrove	Stacey		Comment
Harju	Phillip		Comment
Harju	Phillip	Cowlitz Indian Tribe	Comment
Harkins	Katharine		Comment
Harlib	Amy		Comment
Harlow	Batya		Comment
Harmon	Michael		Comment
Harmon	K		Comment
Harms	Kara		Comment
Harms	Kara		Comment
Harney	Denis		Comment
Harp	Patricia		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Harrington	Lisa		Comment
Harrington	Julie		Comment
Harris	Andrew		Comment
Harris	John		Comment
Harris	Mona		Comment
Harris	Jeri		Comment
Harris	Julie		Comment
Harris	Shirlene		Comment
Harris	Perry		Comment
Harris	Rob		Comment
Harris	Bill		Comment
Harris	Pamela		Comment
Harris	Hope		Comment
Harris	Tom		Comment
Harrison	Hamboyan		Comment
Harrison	Nancy		Comment
Harrison	Cheryl		Comment
Harrison	Diana		Comment
Harrison	Randy		Comment
Harrison	Randy		Comment
Harron	Elli		Comment
Hart	Madelyn		Comment
Harter	Patti		Comment
Hartman	John		Comment
Hartmann	Lorraine		Comment
Hartmann	Lorraine		Comment
Harty	Florence		Comment
Harvey	Jo		Comment
Harvey	Jo		Comment
Harvey	Jo		Comment
Haskins	Eric		Comment
Haslag	Robert		Comment
Hatch	Tim		Comment
Hatfield	Judith		Comment
Hatfield	Beth		Comment
Hathaway	Pamela		Comment
Hatton	Esther		Comment
Hauber	Barclay		Comment
Hauber	Barclay		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Haubrich	Gail		Comment
Haubrich	Gail		Comment
Hauer	Nancy		Comment
Hauer	Nancy		Comment
Haupt	Carolyn		Comment
Hausauer	Nancy		Comment
Havekotte	John		Comment
Hawk	Ronald		Comment
Hawkins	Anne		Comment
Hawthorn	Pat		Comment
Haxtema	Rachel		Comment
Hayden	Nancy		Comment
Hayden	Marlene		Comment
Hayes	Marian		Comment
Hayes	Austin		Comment
Haywood	Susan		Comment
Haywood	Susan		Comment
Haywood	Susan		Comment
Haywood	Susan		Comment
Hazard	Margaret		Comment
Hazelton	Emily		Comment
Hazynski	Chris		Comment
Hazynski	Chris		Comment
Heald	Deb		Comment
Heath	Susan		Comment
Heavyrunner	Mia		Comment
Heavyrunner	Mia		Comment
Heavyrunner	Mia		Comment
Hebberger	Jo		Comment
Hebrank	Jeff		Comment
Hedgepath	Janet		Comment
Hedgepath	Janet		Comment
Hedgepath	Janet		Comment
Hedger	Lloyd		Comment
Hedgpath	Janth		Comment
Heiks	Kristina		Comment
Heiman	Wendy		Comment
Heinen	Linda		Comment
Heinly	Bridgett		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Heinz	Rita		Comment
Heisler	Jane		Comment
Heisman	Rebecca		Comment
Helget	Nancy		Comment
Helget	Nancy		Comment
Helget	Nancy		Comment
Hellegers	Desiree		Comment
Heller	Lorraine		Comment
Heller	Margie		Comment
Heller	Margie		Comment
Heller	Margie		Comment
Hembury	Phil		Comment
Hemenway	Gary		Comment
Hendrickson	Alana		Comment
Hendrix	Donna		Comment
Henkel	Luke		Comment
Henley	Cheryl		Comment
Henling	Julie		Comment
Henrich	Dr		Comment
Henrich	Dr.		Comment
Henry	Amy		Comment
Henry	Anne		Comment
Henry	Carole		Comment
Henry	Amy		Comment
Hensley	Max		Comment
Henson	Amy		Comment
Hepner	Matthew		Comment
Herald	Sandra		Comment
Herald	Sandra		Comment
Herberg	Raimund		Comment
Herbert	Emily		Comment
Hermosillo	Domingo		Comment
Hernandez	Darlene		Comment
Hernandez	Richard		Comment
Hernandez	Robin		Comment
Hernandez	Thomas		Comment
Heron	Carrie		Comment
Heron	Carrie		Comment
Hession	Sherry		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Heverly	Craig		Comment
Heverly	Craig		Comment
Heverly	Craig		Comment
Heverly	Craig		Comment
Hewlett	Deborah		Comment
Heyer	Nicholas		Comment
Heyer	Nicholas		Comment
Heyes	Ronelle		Comment
Heyes	Ruth		Comment
Hiatt	Carole		Comment
Hickey	Jennifer		Comment
Hickman	Kelly		Comment
Hickman	Shelley		Comment
Hicks	Gina		Comment
Hicks	Gina		Comment
Hicks	Gina		Comment
Hicks	Cynthia		Comment
Hiett	Kirsten		Comment
Hildebrandt	Joel		Comment
Hildreth	Susan		Comment
Hildreth	Maureen		Comment
Hill	Blanche		Comment
Hill	Megan		Comment
Hill	Olivia		Comment
Hill	Barbara		Comment
Hill	Michael		Comment
Hill	Jacqueline		Comment
Hillman	Stephanie	Sierra Club	Comment
Hilton	Marylois		Comment
Hines	Jerry		Comment
Hink	Lani		Comment
Hinkle	Gordon		Comment
Hipp	James		Comment
Hirai-Hadley	Bryson		Comment
Hiss	Joseph		Comment
Hister	Jonah		Comment
Hite	Neena		Comment
Hite	Jacob		Comment
Hoang	Lynn		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Hobson	Arlene		Comment
Hocker	Steve		Comment
Hodgin	Richard		Comment
Hoerlein	Sara		Comment
Hof	Charles K.		Comment
Hoff	Michelle		Comment
Hoffer	William		Comment
Hoffman	Greg		Comment
Hoffman	Steven		Comment
Hofmann	Michelle		Comment
Hofmann	Michelle		Comment
Hogan	Randolph		Comment
Hogan	Rachael		Comment
Hogan	Rachael		Comment
Hogan	Rachael		Comment
Hogan	Rachel		Comment
Hogan	Karen		Comment
Hogan	Rita		Comment
Hogan	Raymond		Comment
Hogness	David		Comment
Hohensee	Matt		Comment
Hohenshelt	Felicity		Comment
Holborn	Kimberly		Comment
Holcomb	Peter		Comment
Holder	Lehman		Comment
Holderman	Karen		Comment
Holko	Howard		Comment
Holland	Valerie		Comment
Holland	Deeanna		Comment
Hollett	John		Comment
Hollyfield	Ann		Comment
Holmes	Corey		Comment
Holt	Sandra		Comment
Holtz	Rayna		Comment
Holtz	Rayna		Comment
Holtz	Rayna		Comment
Holtzman	Julie		Comment
Homenko	Deborah		Comment
Homer	Rona		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Homsey	Ellen		Comment
Homsi	Isabel		Comment
Hooper	Ruth		Comment
Hooser	Paula		Comment
Horman	Nancy		Comment
Hornbuckle	Jovohn		Comment
Hornbuckle	Jovohn		Comment
Horneck	Oriana		Comment
Horst	Linda		Comment
Horst	Linda		Comment
Horst	Linda		Comment
Horst	Larry		Comment
Horst	Linda		Comment
Horst	Linda		Comment
Horst	Linda		Comment
Horst	Linda		Comment
Horst	Linda		Comment
Horst	Megan		Comment
Hoskinson	Deborah		Comment
Houck	John		Comment
Houghten	Charles		Comment
Houghton	Abigail		Comment
Houghton	Abigail		Comment
Houghton	Abigail		Comment
Houk	Barbara		Comment
Houston	Jynx		Comment
Hover	Leila		Comment
Hover	Leila		Comment
Howe	Jared		Comment
Howe	Jared		Comment
Howe	Barbara		Comment
Howe	Jared		Comment
Howe	Jared		Comment
Howe	Jon		Comment
Howe	Jared		Comment
Howell	Lori		Comment
Howell	Tamara		Comment
Howisey	Ashley		Comment
Hubbard	Shaun		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Hubbard	Shaun		Comment
Hubbard	Shaun		Comment
Hubbard	Shaun		Comment
Hubbe	Cameron		Comment
Huddlestone	Laura		Comment
Huddlestone	Laura		Comment
Huddlestone	Laura		Comment
Huelsberg	Carole		Comment
Huff	Emily		Comment
Huff	C.		Comment
Huff	Bret		Comment
Huffine	Joy		Comment
Huggins	L		Comment
Hughes	Becky		Comment
Hughes	Jan		Comment
Hulett	Mark		Comment
Hulick	Stephen		Comment
Huljev	M		Comment
Hulsey	Luana		Comment
Hungar	Julie		Comment
Hungate	Eleanor		Comment
Hunt	David		Comment
Hunter	Rhonda		Comment
Hupp	David		Comment
Hupp	David		Comment
Hupp	David		Comment
Hurd	L		Comment
Hurley	Sharon		Comment
Hurst	Sally		Comment
Hurst	Dianne		Comment
Hurt	Janet		Comment
Huseby	Brian		Comment
Huseman	Sue		Comment
Husser	Norman		Comment
Hutchinson	Barry		Comment
Hutton	Joan		Comment
Hutton	Inger		Comment
Huynh	Maddy		Comment
Hyun	Philip		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Ibach	Jennifer		Comment
Iberle	Kathleen		Comment
Idzerda	Rejean		Comment
Idzerda	Rejean		Comment
Idzerda	Rejean		Comment
Igoe	Pauline		Comment
Ingram	Catherine		Comment
Insley	William		Comment
Insley	William		Comment
Irish	Rick		Comment
Iriye	Mia		Comment
Irons	Bridget		Comment
Irons	Bridget		Comment
Isaacson	Peter		Comment
Isongus	Theodora		Comment
Israel	Nancy		Comment
Ivan	Mark		Comment
Iverson	Jon		Comment
Iverson	Jon		Comment
J	Amber		Comment
J	J		Comment
J	Deborah		Comment
Jack	Janice		Comment
Jackson	Andrew		Comment
Jackson	Bud		Comment
Jacky	S		Comment
Jacky	S		Comment
Jacobowitz	Emanuel		Comment
Jacobs	Nancy		Comment
Jacobs	Kathryn		Comment
Jacobson	Sheri		Comment
Jacobson	Sheri		Comment
Jacobson	Russell		Comment
Jaehning	Jane		Comment
Jaffee	Dan		Comment
James	Jeff		Comment
James	Miranda		Comment
Janeway	Jennifer		Comment
Janssen	Liz		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Janzen	Gayle		Comment
Jardini	Caterina		Comment
Jarvis	Kimberly		Comment
Jarvis	Jacquelin		Comment
Jarvis	Amy		Comment
Jarvis	Kimberly		Comment
Jatul	Cynthia		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeff	Zenk,		Comment
Jeffers	Jacqueline	Jackie Jeffers	Comment
Jeffers	Jacqueline		Comment
Jeffrey	Mary		Comment
Jenifer	Dr.		Comment
Jenkins	Marrene		Comment
Jenkins	Marrene		Comment
Jenkins	Marrene		Comment
Jenkins	Marren		Comment
Jensen	Eric		Comment
Jensen	Lynette		Comment
Jensvold	Kelly		Comment
Jewett	Stan		Comment
Jezorek	Ian		Comment
Jo	Mary		Comment
Johanson	Laura		Comment
Johnsen	William		Comment
Johnson			Comment
Johnson	Lorraine		Comment
Johnson	Richard		Comment
Johnson	Corbin		Comment
Johnson	Anna		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Johnson	Nancy		Comment
Johnson	Erik		Comment
Johnson	Lawrence		Comment
Johnson	Dee		Comment
Johnson	Larry		Comment
Johnson	Vicki		Comment
Johnson	Richard		Comment
Johnson	William	William Johnson	Comment
Johnson	Betti		Comment
Johnson	Lorraine		Comment
Johnson	Larry		Comment
Johnson	Miles	Columbia Riverkeeper	Comment
Johnson	Eileen		Comment
Johnson	Evan		Comment
Johnson	Darlene		Comment
Johnson	Michelle		Comment
Johnson	Jennifer		Comment
Johnson	Jim		Comment
Johnson	Elizabeth		Comment
Johnson	Lorraine		Comment
Johnson	Richard		Comment
Johnson	Larry		Comment
Johnson	Dee		Comment
Johnson	Elizabeth		Comment
Johnson	Nancy		Comment
Johnson	Anna		Comment
Johnson	Lorraine		Comment
Johnson	Erik		Comment
Johnson	Mark		Comment
Johnson	Thomas		Comment
Johnson	Betti		Comment
Johnson	Darlene		Comment
Johnson	Miles	Columbia Riverkeeper	Comment
Johnson	Miles	Columbia Riverkeeper	Comment
Johnson-Deal	Dawn		Comment
Johnston	Tod		Comment
Jokela	Danielle		Comment
Jokela	Mary		Comment
Jones	Bobette		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Jones	Dorothy		Comment
Jones	Kaija		Comment
Jones	Cynthia		Comment
Jones	Clayton		Comment
Jones	Olen		Comment
Jones	Karen		Comment
Jones	Melanie		Comment
Jones	Jenny		Comment
Jones	Cynthia		Comment
Jones	Susan		Comment
Jones	Mary		Comment
Jonsson	Kathleen		Comment
Jonsson	Kathleen		Comment
Joos	Sandra		Comment
Joos	Sandra		Comment
Jordan	Dorothy		Comment
Josephson	Stephen		Comment
Josh	Bill		Comment
Joy	Charles		Comment
Juric	Eileen		Comment
K	Rick		Comment
K	Colleen		Comment
K	K		Comment
K	Kili		Comment
K	Pamela		Comment
Kade	Rowen		Comment
Kaeufer	Edward		Comment
Kaeufer	Edward		Comment
Kahan	Janet		Comment
Kahle	Anne		Comment
Kalahan	Deb		Comment
Kalahan	Deb		Comment
Kalb	Candice		Comment
Kalister	Sharon		Comment
Kaminski	Bob		Comment
Kane	Susan		Comment
Kane	Pamela		Comment
Kane	Susan		Comment
Kane	Kevin		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Kane	Kevin		Comment
Kane	Susan		Comment
Kantha	Sajal		Comment
Kapoor	Vikesh		Comment
Kapsar	Leslie		Comment
Kaptanoglu	Alan		Comment
Karlson	Fred		Comment
Karpoff	Marian		Comment
Karras	Gabrielle		Comment
Kastama	Isaac		Comment
Kastama	Isaac		Comment
Katz	Donna		Comment
Kauffman	Katherine		Comment
Kaushik	Kimber		Comment
Kavage	Sarah		Comment
Kavas	Lisa		Comment
Kawamura	James		Comment
Kaye	Deborah		Comment
Kaye	Deborah		Comment
Kays	Noah		Comment
Keating	Michelle		Comment
Keefe	George		Comment
Keefe	John		Comment
Keefe	Daniel		Comment
Keefe	John		Comment
Keefer	Kelly		Comment
Keefer	Kelly		Comment
Keele	Jackie		Comment
Keeler	Mary		Comment
Keeler	Mary		Comment
Keeley	Jim		Comment
Keely	Cambria		Comment
Keely	Cambria		Comment
Keely	Mark		Comment
Keely	Mark		Comment
Keely	Mark		Comment
Keely	Cambria		Comment
Keely	Sally		Comment
Keely	Mark		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Keely	Sally		Comment
Keely	Sally		Comment
Keely	Mark		Comment
Keely	Sally		Comment
Keely	Sally		Comment
Keely	Sally		Comment
Keely	Sally		Comment
Keely	Mark		Comment
Keely	Mark		Comment
Keely	Cambria		Comment
Keely	Cambria		Comment
Keely	Cambria		Comment
Keely	Sally		Comment
Keely	Mark		Comment
Keene	Margaret		Comment
Kegebein	Dan		Comment
Keifner	Shannon		Comment
Keim	Debra Lee		Comment
Keiser	K		Comment
Keiser	Kathryn		Comment
Keiser	John		Comment
Kellam	Marcia		Comment
Kellam	Karin		Comment
Keller	Sophia		Comment
Kellogg	Devon		Comment
Kelly	Felice		Comment
Kelly	Gordon		Comment
Kemper	Anna		Comment
Kendall	Ruth		Comment
Kennedy	Michael		Comment
Kennedy-Wong	Lucy		Comment
Kennedy-Wong	Lucy		Comment
Kepl	Elizabeth		Comment
Kerfoot	Mary		Comment
Kern	Sam		Comment
Kern	Sam		Comment
Kern	Debra		Comment
Kerr	Tara		Comment
Kershner	Harry		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Kershner	Harry		Comment
Kersten	Mary		Comment
Kessinger	Beth		Comment
Kessler	Karey		Comment
Kessler	Harrie		Comment
Keys	Thomas		Comment
Kiba	Amy		Comment
Kiba	Amy		Comment
Kilgore	Barb		Comment
Kim	Ji-Young		Comment
Kim	Paul		Comment
Kimball	Vance		Comment
Kimball	Vance		Comment
Kimmel	Kevin		Comment
Kindt	Carol		Comment
King	Ruth		Comment
King	Fawn		Comment
King	Fawn		Comment
King	Kelsey		Comment
King	Ruth		Comment
King	Dave		Comment
King	Judith		Comment
King	Patti		Comment
King	Ferrel		Comment
King	Ruth		Comment
King	Laurie		Comment
Kinney-Dobbins	Donna		Comment
Kiplinger	Susan		Comment
Kirby	Betsy		Comment
Kirchhoff	Joana		Comment
Kirchhoff	Joana		Comment
Kirchhoff	Joana		Comment
Kirchhoff	Joana	Portland Raging Grannies	Comment
Kirkland	Janet		Comment
Kirkland	Bill		Comment
Kirkland	Janet		Comment
Kirkland	Bill		Comment
Kirkland	Janet		Comment
Kirkman	Inger		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Kirschner	Dan	Northwest Gas Association	Comment
Kirshon	Bryan		Comment
Kitchen	Rowena		Comment
Kledzik	Michael		Comment
Klee	Heidi		Comment
Klein	James		Comment
Klein	Emma		Comment
Klein	James		Comment
Kleiner	G.		Comment
Kliment	Wendy		Comment
Klooster	Kristen		Comment
Klopp	Basey		Comment
Klopp	Basey		Comment
Knickrehm	Kristy		Comment
Knowles	Lorelette		Comment
Knudson	Dorothy		Comment
Knutson	Chris		Comment
Knutzen	Steve		Comment
Koch	Karen		Comment
Kochanowski	Evelyn		Comment
Kochendorfer	Diane		Comment
Kochta	Carol		Comment
Koehn	Blake		Comment
Koehnen	Mark		Comment
Koepp	Christina		Comment
Kofoed	Kathrine		Comment
Kohk	Lauren		Comment
Kohn	Ericka		Comment
Kokowski	Diane		Comment
Kolker	Kathryn		Comment
Kolstad	Patricia		Comment
Komor	Irene		Comment
Koolsbergen	Sarah		Comment
Koopman	W		Comment
Koritz	Raleigh		Comment
Korn	Meryle		Comment
Kornbau	Mary		Comment
Kosowicz	Aleks		Comment
Kosowicz	Aleks		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Kowalke	Peter		Comment
Kozel	Tom		Comment
Kozisek	Katherine		Comment
Kram	Ruth		Comment
Kramer	Brian		Comment
Kramer	Deborah		Comment
Kramer	Kimberly		Comment
Kramer	Deborah		Comment
Kraus	Betsy		Comment
Krause	Fayette		Comment
Krause	Fayette		Comment
Kreeck	Heather		Comment
Kreger	Akaya		Comment
Kreitz	Cynthia		Comment
Krenzer	Ethan		Comment
Kress	Thomas		Comment
Kroeker	Anne		Comment
Kroeker	Anne		Comment
Kroger	Frank		Comment
Kroll	Jean		Comment
Kronenberg	Esther		Comment
Kronenberg	Esther		Comment
Kronenberger	Eliza		Comment
Krueger	Jon		Comment
Kueffler	Dolores		Comment
Kuenz	Jennie		Comment
Kuhns	Randall		Comment
Kukovich	Kara		Comment
Kullberg	Patricia		Comment
Kullberg	Patricia		Comment
Kulp	Jeff		Comment
Kulp	Roger		Comment
Kumar	Lakshin		Comment
Kutilek	Mike		Comment
Kutter	Bob		Comment
L	Vince		Comment
L	Jj		Comment
L	D		Comment
L.	Jj		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
L.	Jj		Comment
L.	Jj		Comment
L.Wallace	Leilani		Comment
La Claire	Russell		Comment
Laberge	Natalie		Comment
Laberge	Natalie		Comment
Lackland	Edie		Comment
Lacroix	Steve		Comment
Lafleur	Teresia		Comment
Lafley	Luke	Boilermakers Union Local 242	Comment
Lagasse	Jeffrey		Comment
Laguerta	Monica		Comment
Lahey	Zoey		Comment
Lamb	Elsie		Comment
Lamb	Barbara		Comment
Lamb	Barbara		Comment
Lambert	David		Comment
Lambeth	Larry		Comment
Lambros	Kathryn		Comment
Landau	Charles		Comment
Lane	Karen		Comment
Laney	Kathleen		Comment
Lang	Renee		Comment
Lang	Maureen		Comment
Langabeer	Julie		Comment
Langgin	Diane		Comment
Lanskey	Marcus		Comment
Laporte	Candace		Comment
Lapsley	Robert		Comment
Lario	Rocio		Comment
Larrabee	Katherine		Comment
Larson	Gary		Comment
Larson	Elizabeth		Comment
Larson	Brian		Comment
Larue	Erik		Comment
Larue	Erik		Comment
Larue	Erik		Comment
Larue	Erik		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Lasko	Judy		Comment
Lasley	Lana		Comment
Laslie	Maude		Comment
Lasuk	Tanya		Comment
Latierra	Carolyn		Comment
Laulainen	Carolyn		Comment
Laurino	Amy		Comment
Lavery	Barbara		Comment
Lavezzi	Elaine		Comment
Lawrence	Sharon		Comment
Lawson	Joseph		Comment
Lawther	Maureen		Comment
Lawton	Larry		Comment
Layton	Reta		Comment
Layton	Robert		Comment
Le Baron	Nina		Comment
Leatzow	Vic		Comment
Leavitt	Jane		Comment
Leavitt	Donna		Comment
Lebaron	Nina		Comment
Lebert	Mary		Comment
Leblanc	Judy		Comment
Lee	Felix		Comment
Lee	Ron		Comment
Lee	Mona		Comment
Lee	Wrenna		Comment
Lee	Tanya		Comment
Lee	Jonah		Comment
Lee	Rebecca		Comment
Lee	Felix		Comment
Lee	Mary		Comment
Leed	Mark		Comment
Leeson	Lorana		Comment
Leff	Michael		Comment
Lehtinen	Bill		Comment
Leidel	Gunnar		Comment
Leistman	Victoria	Sierra Club	Comment
Leistman	Victoria	Sierra Club	Comment
Leitner	Joel		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Lenart	Janet		Comment
Lenski	Francis		Comment
Leonard	Linda		Comment
Leonard	Linda		Comment
Leonard	Linda		Comment
Leonard	Kirk		Comment
Leonard	Linda		Comment
Leonard	Kirk		Comment
Leonard	Jason		Comment
Leonard	Linda		Comment
Leonard	Linda		Comment
Leonard	Kirk		Comment
Leonard	Linda		Comment
Leonard	Linda		Comment
Leonard	Linda		Comment
Leonard	Kirk		Comment
Leonard	Linda		Comment
Leonard	Linda		Comment
Leonard	Deni		Comment
Leppo	Bob		Comment
Lerchen	Katrina		Comment
Leszczynski	Milly		Comment
Letaw	Alathea		Comment
Letourneau	Philippe		Comment
Leuba	Jim		Comment
Leuning	Eldon		Comment
Levan	Patricia		Comment
Levaniouk	Olga		Comment
Levaniouk	Olga		Comment
Levaniouk	Olga		Comment
Levin	Beth		Comment
Levin	Mark		Comment
Levin	Beth		Comment
Levin	Beth		Comment
Levine	Adam		Comment
Levine	Adam		Comment
Levine	Adam		Comment
Levinson	Rebecca		Comment
Leviten	Alisha		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Lewandowsky	Kathryn		Comment
Lewin	Larry		Comment
Lewis	Nancy		Comment
Lewis	Ann		Comment
Lewis	Timothy		Comment
Lewis	Stefan		Comment
Lewis	Mary		Comment
Lewis	Stefan		Comment
Liang	Alicia		Comment
Libbey	Thomas		Comment
Liberge	Marcel		Comment
Lichtenberg	Lynn		Comment
Lichtenstein	Wolf	Evergreen Carbon	Comment
Lichter	Skip		Comment
Lichtman	Lauren		Comment
Lider	Sally		Comment
Lienhard	Judith		Comment
Ligrano	Michael		Comment
Liljegren	Delbert		Comment
Lill	Mandy		Comment
Lill	Mandy		Comment
Limberg	Leslie		Comment
Lindberg	Robert		Comment
Lindell	Ashley		Comment
Lindley	Jane		Comment
Lindmark	Kelly		Comment
Lindquist	Lauri		Comment
Lindsay	Paula		Comment
Lindstrom	Gary		Comment
Lindstrom	Gary		Comment
Link-New	Virgene		Comment
Link-New	Virgene		Comment
Linton	Charlotte		Comment
Linton	Charlotte		Comment
Lipman	Deborah		Comment
Lippiello	John		Comment
Lish	Christopher		Comment
Liska	Collum		Comment
Liss	Sue		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Little	James		Comment
Littlewood	Ann		Comment
Littlewood	Ann		Comment
Livella	Therese		Comment
Livella	Therese		Comment
Livingston	Cj		Comment
Lockett	Jennifer		Comment
Locklear	Clyde		Comment
Lockwood	George		Comment
Loehlein	Ken		Comment
Loerch	Jessi		Comment
Lombard	James		Comment
Lombard	James		Comment
Lon	Jody		Comment
Long	Karen		Comment
Long	Anthony		Comment
Long	Meredith		Comment
Long	Karol		Comment
Long	Meredith		Comment
Long	Marie		Comment
Longley	Jeanne		Comment
Loo	Chris		Comment
Loomis	Gregry		Comment
Looney	William		Comment
Looney	William		Comment
Loosa	Tanya		Comment
Lopez	Covi		Comment
Lopez	Coco		Comment
Lord-Wood	Dominica		Comment
Lorentzen	Robin		Comment
Lorenz	Lara		Comment
Loser	Callie		Comment
Lou	Mary		Comment
Lovelady	Delorse		Comment
Lovik	John		Comment
Low	Jody		Comment
Low	Sammy		Comment
Lowe	Kay		Comment
Lowe	Tom		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Lowney	Kathleen		Comment
Lozano	Donna		Comment
Lubienski	Maria		Comment
Lucas	Steve		Comment
Luce	Tom		Comment
Luce	Tom		Comment
Luce	Tom		Comment
Luce	Emma		Comment
Luce	Tom	Let's Build This	Comment
Lucero	Antonio		Comment
Luchsinger	Johan		Comment
Lucht	Lane		Comment
Lucht	Lane		Comment
Luciano	Peter		Comment
Lufkin	Thom		Comment
Lufkin	Thom		Comment
Luke	Linda		Comment
Luke	Linda		Comment
Lukowitz	Wendy		Comment
Lunceford	Kate		Comment
Lund	Cindi		Comment
Lund	Cindi		Comment
Lunde	Bjørn		Comment
Lundheim	Vanassa		Comment
Lundheim	Vanassa		Comment
Lundholm	Mark		Comment
Luther	Laura		Comment
Luther	Richard		Comment
Lutje	Debra		Comment
Lux	Tom		Comment
Lux	Kevin		Comment
Lybarger	Lisa		Comment
Lyles	Jeffery		Comment
Lyndemere	Marie		Comment
Lynn	Shannon		Comment
Lynott	Sean		Comment
Lytle	Denise		Comment
M	She		Comment
M	Monica		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
M	Danielle		Comment
M	K		Comment
M.	James		Comment
M.D.	Gerald		Comment
Mabry	Callie		Comment
Mabwa-Childress	Imani		Comment
Macdonald	Jennifer		Comment
Macdonald	Alexis		Comment
Macdonald	Hillary		Comment
Macdonald	Dori		Comment
Macdonald	Alex		Comment
Macdonald	Jennifer		Comment
Mace	Dennis		Comment
Mace	Dennis		Comment
Macgregor	Susan		Comment
Macgregor	Susan		Comment
Macgregor	Susan		Comment
Macgregor	Susan		Comment
Mack	Frances		Comment
Mackey	Sally		Comment
Macleod	James		Comment
Macleod	Dianna		Comment
Macphail	Kristyn		Comment
Macwilliams	Janice		Comment
Macy	Michelle		Comment
Macy	Michelle		Comment
Maddex	Ellen		Comment
Maddex	Ellen		Comment
Maddux	Margie		Comment
Madigan	Sally		Comment
Madrigal	Elizabeth		Comment
Madrigal	Javier		Comment
Maes	Larry		Comment
Maes	Larry		Comment
Magallon	Andrew		Comment
Mager	Melissa		Comment
Magliola	Lawrence		Comment
Magliola	Lawrence		Comment
Magner	Millie		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Magnotto	Luke		Comment
Magnuson	Linda		Comment
Magruder	Nick		Comment
Mahaffa	Mike And Rita		Comment
Maher	Harry		Comment
Mahlis	Larry		Comment
Maier	Russell		Comment
Maillard	Danielle		Comment
Maki	Art		Comment
Malcolm	David		Comment
Malloy	William		Comment
Maloff	Sandra		Comment
Malven	Tania		Comment
Mangan	Staci		Comment
Manglass	Joel		Comment
Mangold	Deborah		Comment
Mangrum	Jessica		Comment
Mangum	Vicki		Comment
Manildi	Barbara		Comment
Manildi	Barbara		Comment
Manion	Andrea		Comment
Mank	Mickey		Comment
Mann	Michael	Cyan Strategies	Comment
Mann	Mary		Comment
Mann	Mary		Comment
Marabetta	Cortney		Comment
Margolis	Margo		Comment
Margulies	Miriam		Comment
Marier	Carol		Comment
Marier	Carol		Comment
Marinello	Genjo		Comment
Mariotti-Jones	Rossella		Comment
Mark	Dan		Comment
Markley	Shannon		Comment
Markley	Shannon		Comment
Markowitz	John		Comment
Marks	Diane		Comment
Marks	Diane		Comment
Maron-Oliver	Dani		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Marquez	Camilo		Comment
Marquez	Camilo		Comment
Marre	Frank		Comment
Marre	Dr.		Comment
Marrs	Marie		Comment
Marrs	Marie		Comment
Marrs	Christopher		Comment
Marrs	Marie		Comment
Marsh	Shawn		Comment
Marsh	Don		Comment
Marshall	Leslie		Comment
Marshall	Richard		Comment
Marshall	Richard		Comment
Martin	Kathleen		Comment
Martin	Melodie		Comment
Martin	Kathleen		Comment
Martin	Leslie		Comment
Martin	Kathleen		Comment
Martin	Monte		Comment
Martin	Greg		Comment
Martin	Julie		Comment
Martin	Kate		Comment
Martin	Melodi		Comment
Martin	Monte		Comment
Martin	Sarah		Comment
Martin	Alexis		Comment
Martin	Larry		Comment
Martin	Jane		Comment
Martin	Roger		Comment
Martin	Melodie		Comment
Martin	Kelly		Comment
Martin	Liza		Comment
Martinell	Amber		Comment
Martinez	Priscilla		Comment
Martinez	Priscilla		Comment
Martinez	Cass		Comment
Martinez	Lorraine		Comment
Martinez	Patricia		Comment
Martinez	Priscilla		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Martinez	Priscilla		Comment
Martinez	Lorraine		Comment
Martinez	Priscilla		Comment
Martinez	Priscilla		Comment
Martinez	Catherine		Comment
Martinez	Priscilla		Comment
Martinez	Catherine		Comment
Martinson	Julie		Comment
Martinson	Julianne		Comment
Martynowych	Denis		Comment
Marx	Janet		Comment
Mas	Aex		Comment
Mason	Donna		Comment
Mason	Kathy		Comment
Masri	Holly		Comment
Massengill	Phil		Comment
Massey	Carolyn		Comment
Massey	Linda		Comment
Massoni	Sheila		Comment
Mastenbroek	Peter		Comment
Masters	Mary		Comment
Mastri	Francis		Comment
Mastri	Francis		Comment
Masura	Julie		Comment
Masura	Julia		Comment
Mathews	Holger		Comment
Mathison	Jon		Comment
Matsuda	Rachel		Comment
Matthews	Linda		Comment
Matthews	Wakil David		Comment
Matti-Spickard	Kathryn		Comment
Matzenbachar	April		Comment
Matzenbacher	April		Comment
Matzenbacher	April		Comment
Matzenbacher	April		Comment
Mauch	Beth		Comment
Mauldin	Eldon		Comment
Mauldin	Marianne		Comment
Mauser	Jane		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Maxfield	Tania		Comment
Maxwell	Pamelia		Comment
Maxwell Vassilakis	Noemie		Comment
Mayer	Elizabeth		Comment
Mayer	David		Comment
Mayer	David		Comment
Mayers	Marilyn		Comment
Mayhew	Joanne		Comment
Mayhew	Joanne		Comment
Mayo	Tosha		Comment
Mazuca	Jennifer		Comment
Mazuji	Nasrin		Comment
Mcadoo	Buck		Comment
Mcbeth	Kathleen		Comment
Mccabe	Eileen		Comment
Mccall	Aedan		Comment
Mccallum	Jon		Comment
Mccann	Ellen		Comment
Mccann	Kris		Comment
Mcclain	R		Comment
Mcclay	Mauria		Comment
Mcclintock	Gloria		Comment
Mcclure	Leslie		Comment
Mcclure	Leslie		Comment
Mcclure	Luke		Comment
Mcclure	Eve		Comment
Mccluskey	Ian		Comment
Mccollough-Howard	Celeste		Comment
Mccollum	Paul		Comment
Mccollum	Paul		Comment
Mcconaughy	Jeffery		Comment
Mcconaughy	Jeff		Comment
Mccool	Brenda		Comment
Mccool	Kerry		Comment
Mccormick	Mark		Comment
Mccoy	Megan		Comment
Mccuen	Annie		Comment
Mcculloch	Emily		Comment
Mccutcheon	Diane		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Mccutcheon	Diane		Comment
Mcdaniel	Pj		Comment
Mcdonagh	Lars		Comment
Mcdonald	Kaye		Comment
Mcdonough	Rebecca		Comment
Mcdougall	C.D.		Comment
Mcelligott	Tara	Cowlitz Wahkiakum Central Labor Council	Comment
Mcelroy	Christopher		Comment
Mcelroy	Christopher		Comment
Mcfadden	Katy		Comment
Mcfarland	Virginia		Comment
Mcfarland	Teresa		Comment
Mcfarland	Teresa		Comment
Mcferran	Michele		Comment
Mcgee	Debra		Comment
Mcgee	Debra		Comment
Mcgill	Ann		Comment
Mcgill	Jen		Comment
Mcgill	John		Comment
Mcglannan	Dorian		Comment
Mcgovern	Donlon		Comment
Mcgowan	Wendy		Comment
Mcguire	Timothy		Comment
Mcgunagle	William		Comment
Mcintire	Mark		Comment
Mcintyre	Karli		Comment
Mckee	Julien		Comment
Mckeirnan	Leigh		Comment
Mckeirnan	Leigh		Comment
Mckenna	Lori		Comment
Mckiernan	Lee		Comment
Mckim	Tina		Comment
Mckinlay	Bonnie		Comment
Mckinlay	Bonnie		Comment
Mckinlay	Bonnie		Comment
Mckinlay	Bonnie		Comment
Mckinley	Bonnie		Comment
Mckole	Lori		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Mckole	Lori		Comment
Mclary	Fiona		Comment
Mclaughlin	Julia		Comment
Mclaughlin	Julia		Comment
Mclaughlin	Julia		Comment
Mclaughlin	Gary		Comment
Mcmahon	Nancy		Comment
Mcmahon	Nancy		Comment
Mcmahon	Carol		Comment
Mcmullen	Gail		Comment
Mcneil	Mona		Comment
Mcneil	Mona		Comment
Mcneil	Mona		Comment
Mcneil	Mona		Comment
Mcneil	Mona		Comment
Mcpherson	William		Comment
Mcrae	Michelle		Comment
Mcswigan	John		Comment
Mcvaugh	Skyler		Comment
Mcwiggins	Kate		Comment
Md	John		Comment
Meade	Audrey		Comment
Megraw	Robert		Comment
Mehemed	Sharleen		Comment
Mehemed	Sharleen		Comment
Mehring	Valerie		Comment
Meier	Linda		Comment
Meisenhelter	Diane		Comment
Meisenhelter	Diane		Comment
Meleg	Christine		Comment
Melfi	Kevin		Comment
Melin	Ron	Cowlitz County	Comment
Melocik	Grant		Comment
Mendes	Maria		Comment
Mendieta	Vince		Comment
Menne	Barbara		Comment
Meriwether	Don		Comment
Merker	Fran		Comment
Merkow	Carla		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Merrell	Greg		Comment
Merrill	John		Comment
Merrill	Deborah		Comment
Merritt	Regna		Comment
Merritt	Regna		Comment
Messinger	Lisa		Comment
Messinger	Lisa		Comment
Meston	Kristen		Comment
Metcalf	Elizabeth		Comment
Mettler	Nina		Comment
Mettler	Allison		Comment
Metz	Gretchen		Comment
Metz	Gretchen		Comment
Meyer	Edgar		Comment
Meyer	Leonard		Comment
Meyer	Marlene		Comment
Meyer	Marlene		Comment
Meyer	Erin	Seattle Aquarium	Comment
Meyerding	Lyn		Comment
Meyerhoff	Joan		Comment
Meyers	Donna		Comment
Meyers	Amy		Comment
Michael	Mary		Comment
Michaels	Brenda		Comment
Michaelson	Liza		Comment
Michaelson	Liza		Comment
Michaelson	Liza		Comment
Michaelson	Liza		Comment
Mickle	Ellen		Comment
Miescher	Richard		Comment
Milam	Kevin		Comment
Miles	Debrah		Comment
Milhaupt	Shannon		Comment
Milhaupt	Shannon		Comment
Millard	Jane		Comment
Miller	Rex		Comment
Miller	Grace		Comment
Miller	Nicole		Comment
Miller	Lee		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Miller	Marylin	Marilyn Miller	Comment
Miller	Sharon		Comment
Miller	Jack		Comment
Miller	Travis		Comment
Miller	Krystal		Comment
Miller	Bonnie		Comment
Miller	Maurice		Comment
Miller	Jean		Comment
Miller	Colin		Comment
Miller	Marylin		Comment
Millhollin	Tyler		Comment
Mills	Damon		Comment
Millu	Janis		Comment
Minato	Amy		Comment
Mincin	Ken		Comment
Minick	Jim		Comment
Minor	Carmen		Comment
Minor	Carmen		Comment
Minsky	Nina		Comment
Mintun	Linda		Comment
Mitchell	Jonathan		Comment
Mitchell	Karen		Comment
Mitchell	Cheryl		Comment
Mitton	Marilyn		Comment
Mizuki	Michelle		Comment
Mjos	Brita		Comment
Mlekarov	Noemia		Comment
Mo	T		Comment
Mocha	Claire		Comment
Moe-Lobeda	Cynthia		Comment
Moen	Alan		Comment
Mogielnicki	Nancy		Comment
Mohamedali	Teizeen		Comment
Moissant	Helen		Comment
Moissant	Helen		Comment
Monical	Janet		Comment
Monk	Jay		Comment
Monprode	Lorraine		Comment
Monroe	Dana		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Montgomery	Chris		Comment
Montijo	River		Comment
Moon	Emily		Comment
Moon	Emily		Comment
Moonves	Melissa		Comment
Moore	Robin		Comment
Moore	Kristine		Comment
Moore	Merry		Comment
Morgan	Tess		Comment
Morgan	Nj		Comment
Morgan	Betty		Comment
Morin	Carla		Comment
Moritz	Jules		Comment
Moritz	Jules		Comment
Moritz	Jules		Comment
Mork	Stuart		Comment
Mork	Stuart		Comment
Morrigan	Mckenna		Comment
Morris	Arvia		Comment
Morris	Deirdre		Comment
Morris	Eleanor		Comment
Morrison	Tonya		Comment
Morrison	Charles		Comment
Morrison	Charles		Comment
Morrow	France		Comment
Morse	Susan		Comment
Mortensen	Harold		Comment
Mortimer	Karl		Comment
Moschetti	Carla	Carla Moschetti	Comment
Moschetti	Carla		Comment
Moskowitz	Mignon		Comment
Moss-Racusin	Lauren		Comment
Motley	Megan		Comment
Motta	Denise		Comment
Mottet	Julia		Comment
Mottet	Julia		Comment
Motz-Storey	Damon	Oregon Physicians for Social Responsibility	Comment
Mower	Amy		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Mowry	Dorothy		Comment
Moyer	Paul		Comment
Moyer	Paul		Comment
Moyle	Eric		Comment
Mrkvicka	Edward		Comment
Mudd	David		Comment
Mueller	Abigail		Comment
Muir	Guila		Comment
Muir	Guila	Say Yes to Life Swims LLC	Comment
Mulcare	James		Comment
Mulcare	James		Comment
Mulcare	James		Comment
Mulcare	James		Comment
Mulcare	James		Comment
Mulcare	James		Comment
Mullein	Tui		Comment
Muller	Katherine		Comment
Mullin	Bryant		Comment
Mullin	Bryant		Comment
Murawski	Heather		Comment
Murdock	Lauren		Comment
Murphy	Christopher		Comment
Murphy	Maryann		Comment
Murphy	Kate	Columbia River Keeper	Comment
Murphy	Kate	Columbia Riverkeeper	Comment
Murphy	Kate	Columbia River Keeper	Comment
Murphy	Kate	Columbia Riverkeeper	Comment
Murphy	Kate	Columbia Riverkeeper	Comment
Murphy	Donna		Comment
Murphy	Patricia		Comment
Murphy	Stacy		Comment
Murphy	Kate		Comment
Murr	Bobbee		Comment
Murray	Susanne		Comment
Murray	Mckenzie		Comment
Murtfeldt	Linda		Comment
Musser	William		Comment
Mustain	Jan		Comment
Myer	Ralph		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Myers	Blayney		Comment
N	Mary		Comment
Nace	Janet		Comment
Nagel	Lawrence		Comment
Nagyfy	Desiree		Comment
Naik	Anand		Comment
Nakamura	Roxanne		Comment
Narducy	Suzanne		Comment
Nash	Lynn		Comment
Nattrass	Suzanne		Comment
Neal	Stacy		Comment
Nedeau	Rochelle		Comment
Neese	Harvey		Comment
Neft	Darrell		Comment
Neighbor	John		Comment
Neighbor	John		Comment
Nelsen	Tim		Comment
Nelsen	Tim		Comment
Nelsen	Marianne		Comment
Nelson	Michael		Comment
Nelson	Nancy		Comment
Nelson	Katherine		Comment
Nelson	Katherine		Comment
Nelson	Anna		Comment
Nelson	Vikki		Comment
Nelson	Zak		Comment
Nelson	Katherine		Comment
Nelson	Zak		Comment
Nelson	Christine		Comment
Nelson	Katherine		Comment
Nelson	Lori		Comment
Nelson	Connie		Comment
Nelson	Nancy		Comment
Nerwick	Randall		Comment
Ness	Cheyenne		Comment
Ness	Cheyenne		Comment
Nettleton	Jilda		Comment
Nettleton	John		Comment
Neu	James		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Neu	Shel		Comment
Neus	Marleen		Comment
Nevins	Suzanne		Comment
Newkirk	Mary		Comment
Newman	Rae		Comment
Newman	Erin		Comment
Nguyen	Minh		Comment
Niblack	Natalie		Comment
Nicholas	Jill		Comment
Nicholls	Haley		Comment
Nichols	David		Comment
Nickerson	Susan		Comment
Nickerson	Donna		Comment
Nickerson	Sue		Comment
Nicola	Michelle		Comment
Nicolai	Jane		Comment
Nicolai	Jane		Comment
Nielsen	Karen		Comment
Nielsen	Michael		Comment
Niles	Donna		Comment
Niles	Amanda		Comment
Nimmons	Rebecca		Comment
Nimmons	Rebecca		Comment
Nimmons	Rebecca		Comment
Norberg	Jessica		Comment
Norby	Danell		Comment
Nordby	Patricia		Comment
Noreen	Kristin		Comment
Norman	Phillip		Comment
Norman	Phillip		Comment
Norman	Cyndra		Comment
Norman	Cyndra		Comment
Norman	Phillip		Comment
Norman	Pillip		Comment
Norman	Phillip		Comment
Noseworthy	Steve		Comment
Not Provided	Audrey		Comment
Not Provided	Not Provided		Comment
Not Provided	Not Provided		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Not Provided	Thomas		Comment
Not Provided	Alicia		Comment
Not Provided	Brian		Comment
Nowlis	David		Comment
Noyes	Donna		Comment
Nugent	Virginia		Comment
Nugent	Virginia		Comment
Nurius	John		Comment
Nussbaum	Berl		Comment
O	K		Comment
O	Noriko		Comment
O	Wendy		Comment
O?Laughlin	Matt		Comment
Obermeier	A		Comment
Obert	Leonard		Comment
O'Brien	Coleen		Comment
Ochiltre	Annalisa		Comment
O'Claire	Margaret		Comment
Oconnell	Kathleen		Comment
Ocskai	Barbara		Comment
Odell	Brian		Comment
O'Donahue	April		Comment
O'Donahue	Jamie		Comment
O'Donald	Julie		Comment
O'Donnell	Timothy		Comment
O'Ferrall	Andrea		Comment
O'Ferrall	Andrea		Comment
Ogden	Jackson		Comment
Ogden	Bea		Comment
Ogden	B.J.		Comment
Oh	Teresa		Comment
O'Hanley	Kelly		Comment
Ohrt	Velindadawn		Comment
Ohta	Tara		Comment
Ohta	Tara		Comment
Ohta	Tara		Comment
O'Leary	Anne		Comment
O'Leary	Anne		Comment
Oliver	Anne-Marie		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Oliver-Poore	Sandra		Comment
Olivier	Carol		Comment
Olivier	Carol		Comment
Olivier	Carol		Comment
Olsen	Amy		Comment
Olsen	Debra		Comment
Olson	Court		Comment
Olson	R.C.		Comment
Olson	Lars		Comment
Onasch	Carole		Comment
O'Neal	Maureen		Comment
O'Neill	Jenny		Comment
Onessimo	Dean		Comment
Onover	Tacey		Comment
Onufer	Mary		Comment
Onufer	Mary		Comment
Orcutt	Ed	State Representative 20th District	Comment
Orgel	Linda		Comment
O'Rourke	Melissa		Comment
O'Rourke	John		Comment
O'Rourke	Janine	350PDX	Comment
Orr	Donna		Comment
Orr	Lou		Comment
Orszulak	Samantha		Comment
Osborn	Lara		Comment
Osmun	Richard		Comment
Osmun	Richard		Comment
O'Steen	Barbara		Comment
Ostfeld	Jessica		Comment
Ostrander	Lucy		Comment
Ostrander	Lucy		Comment
Ostrer	Allison		Comment
Ostrer	Allison		Comment
Ostrer	Allison		Comment
Ostrow	Hillary		Comment
Ostrow	Hillary		Comment
Oswald	Tim		Comment
Ouellette	Tracy		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Ouellette	Tracy		Comment
Oulman	Lynne		Comment
Overholtzer	Paula		Comment
Overholtzer	Paula		Comment
Owen	Jennifer		Comment
P	Hoa		Comment
P	Gregory		Comment
P	Hoa		Comment
P.	G.		Comment
Pacheco	Helen		Comment
Pacios	Stephen		Comment
Packard	William		Comment
Page	Elizabeth		Comment
Paget	Pete		Comment
Pahmeier	Trisha		Comment
Paige	Jessica		Comment
Pakaln	Laura		Comment
Palmer	Melanie		Comment
Palmer	Rhonda		Comment
Palmer	Sarah		Comment
Paltep	Cece		Comment
Palumbo	Julieann		Comment
Palumbo	Julieann		Comment
Palumbo	Julieann		Comment
Palumbo	Julie		Comment
Pankanin	Jim		Comment
Pape	Robyn		Comment
Pappano	Rachael		Comment
Parapar	Alejandra		Comment
Parikh	Anand		Comment
Park	Jeannie		Comment
Park	Jeannie		Comment
Parker	Liz		Comment
Parker	Deborah		Comment
Parker	Barry		Comment
Parker	Deborah		Comment
Parks	C		Comment
Parks	Carrie		Comment
Parks	Lethane		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Parks	Carrie		Comment
Parks	Carrie		Comment
Parks	Kimberly		Comment
Parman	Teree		Comment
Parrent	Joanne		Comment
Parriott	Maureen		Comment
Parsley	Adina		Comment
Parsons	Camey		Comment
Pasillas	Christina		Comment
Pasqua	John		Comment
Pasta	Diane		Comment
Pate	Jessica		Comment
Paterson	Mary		Comment
Patterson	Roni		Comment
Patton	Kathleeen		Comment
Patton	Kathleen		Comment
Patzkowsky	Kiah		Comment
Pauer	Jenney		Comment
Paul	Ryan		Comment
Pauley	Jean		Comment
Pauley	Kyle		Comment
Pavcovich	Michelle		Comment
Paynter	Mary		Comment
Payton	Fay		Comment
Payton	Fay		Comment
Pearson	Tia		Comment
Pearson	Marcia		Comment
Peart	Mirabai		Comment
Peart	Mirabi		Comment
Peart	Mirabai		Comment
Peck	Elizabeth		Comment
Pedersen	Patrick		Comment
Pederslie	Sharon		Comment
Pederson	Col		Comment
Pederson	D		Comment
Peha	David		Comment
Pellerin	Tyra		Comment
Pelton	Rebecca		Comment
Pence	H Thom		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Pence	Mike		Comment
Penchoen	Gregory		Comment
Pendergast	Mary		Comment
Pennell	Dennis		Comment
Pepper	Mr.		Comment
Peranio	Giana		Comment
Percich	Danny		Comment
Perdios	Dan		Comment
Perez	Aldora		Comment
Perfrement	Eileen		Comment
Perkins	Sandra		Comment
Perkins	Sherry		Comment
Perkins	Elizabeth		Comment
Perklns	Jean		Comment
Perro	P		Comment
Perron	P		Comment
Perron	Patricia		Comment
Perry	Scout		Comment
Persky	William		Comment
Peters	Nancy		Comment
Peters	Thom		Comment
Petersen	Sherry		Comment
Petersen-Ries	Marianne		Comment
Peterson	Janet		Comment
Peterson	Jimmy		Comment
Peterson	Janet		Comment
Peterson	Daniel		Comment
Peterson	Mary		Comment
Peterson	Michael		Comment
Peterson	Shelly		Comment
Petrulias	Linda		Comment
Petsch	Timothy		Comment
Petsch	Timothy		Comment
Pettis	Ruth		Comment
Pfahl	Ethan		Comment
Pfeiffer-Johnson	Sue		Comment
Phillippe	Kathy		Comment
Phillips	William		Comment
Phillips	Cheryldene		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Phillips	Hannah		Comment
Phillips	Suzanne		Comment
Phillips	Cheryldene		Comment
Phipps	William		Comment
Phipps	William		Comment
Pickering	Ruth		Comment
Pierce	Lucy		Comment
Pierson	Neilia		Comment
Pietrowski-Ciullo	Evelyn		Comment
Pietrusiak	Rick		Comment
Pilcher	Tonya		Comment
Pinc	Michael		Comment
Pinc	J		Comment
Pine	Jay		Comment
Pinson	Luan		Comment
Piotrowski	Marshall		Comment
Piper	Edward -1-Ned-1-		Comment
Pirot	Emerson		Comment
Pistor	Walter		Comment
Platt	Amy		Comment
Platt	Emily		Comment
Plaut	Melanie		Comment
Plendl	Bobette		Comment
Pletcher	Jennifer		Comment
Plisga	Kristine		Comment
Ploger	Jim		Comment
Plunkett	James		Comment
Pluth	John		Comment
Pochmara	John		Comment
Poirier	Jeanne		Comment
Poirier	Joseph		Comment
Poirier	Jeanne		Comment
Poirier	Jeanne		Comment
Polanshek	Emily		Comment
Poling	Victoria		Comment
Polishuk	Sandy		Comment
Polk	Nora		Comment
Polk	Nora		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Poncz	Louis		Comment
Popik	Lezlie		Comment
Porcelli	Maureen		Comment
Porter	Linda		Comment
Porter	Carol		Comment
Porter	Kathy		Comment
Potts	Randall		Comment
Poulsen	Barbara		Comment
Powers	Carolyn		Comment
Powers	James		Comment
Pratt	Debbi		Comment
Prentice	Selden		Comment
Prestat	Nelly		Comment
Preston	John		Comment
Pretty	Joelle		Comment
Price	Carol		Comment
Price	Noelle		Comment
Price	Mara		Comment
Prince	Meagan		Comment
Prince	Merry		Comment
Printz	Peggy		Comment
Printz	Peggy		Comment
Propp	Leslie		Comment
Provazek	Janeen		Comment
Provost	Lin		Comment
Provost	Pierre		Comment
Psyk	Christine		Comment
Ptak	Andrea		Comment
Pulido	Shannon		Comment
Pulido	Montana		Comment
Purcell	Teresa		Comment
Purcell	Nancy		Comment
Purdom	Hans		Comment
Purdy	Steven	UA Local 669 Fire Sprinkler Fitters	Comment
Purkerson	David		Comment
Pyle	Michael		Comment
Pyz	Anastasia		Comment
Pyz	Anastasia		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Quackenbush	Nancy		Comment
Quackenbush	Nancy		Comment
Quesenberry	Rachel		Comment
Quinn	Jenina		Comment
Quinn-Shea	Anna		Comment
Quintanilla	Ladislao		Comment
Quintus	Patsy		Comment
Quirk	Leo		Comment
Quist	Graden		Comment
Quist	Graden		Comment
Quitta	Aaron		Comment
Rabenstein	Lynn		Comment
Rabenstein	Lynn		Comment
Radbill	Colleen		Comment
Radtke	David		Comment
Radtke	David		Comment
Raebeck	Tessa		Comment
Raggio	Julie		Comment
Rahm	Christopher		Comment
Railey	Rebecca		Comment
Raimondo	Terri		Comment
Rains	Pamela		Comment
Raiter	George		Comment
Rall	Ben		Comment
Rall	Ben		Comment
Rall	Ben		Comment
Ramey	Barbara		Comment
Ramos	Debbie		Comment
Ramos	Debbie		Comment
Ramsden	Jeff		Comment
Ramsey	Patricia		Comment
Randall	Kirsten		Comment
Ranker	Natalie		Comment
Rankin	James		Comment
Ranz	Gary		Comment
Raphael	Carol		Comment
Rappaport	Rick		Comment
Rappaport	Rick		Comment
Rappaport	Rick		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Rappaport	Rick		Comment
Rappaport	Rick		Comment
Rappaport	Rick		Comment
Rappaport	Rick		Comment
Rappaport	William		Comment
Rasmussen	Nancy		Comment
Raspa	Doris		Comment
Ratcliff	Philip		Comment
Ratcliff	Philip		Comment
Rauh	Robert		Comment
Rauworth	Steve		Comment
Ray	Rene		Comment
Ray	Laura		Comment
Ray	Rick		Comment
Raymond	Charles		Comment
Red	Bernadette		Comment
Redenbaugh	Linda		Comment
Redish	Maryellen		Comment
Redman-Smith	Joanna		Comment
Reed	Julie		Comment
Reed	Hunter		Comment
Rees	Les		Comment
Rees	Carol		Comment
Reeves	Lenore		Comment
Refes	N		Comment
Regelin	Lynn		Comment
Rehn	Debbie		Comment
Reich	Natalie		Comment
Reid	Karen		Comment
Reid	Barbara		Comment
Rein-Weston	Annie		Comment
Remle	Matt		Comment
Renhard	Susan		Comment
Renner	Jeff		Comment
Resnick	Adam		Comment
Ress	Richard		Comment
Rettmann	Tim		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Kalama		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Rocky		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Kalama		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reuter	Mike		Comment
Reynolds	Michele		Comment
Reynolds	Adele		Comment
Reynolds	Adele		Comment
Reynolds	John		Comment
Rhein	Sandy		Comment
Rhoades	Jan		Comment
Rice	Beverly		Comment
Rice	Robert		Comment
Rice	Virginia		Comment
Rice	Kim		Comment
Rice	Kim		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Rich	Sam		Comment
Rich	Sam		Comment
Rich	Janelle		Comment
Rich	Lebrie		Comment
Richard	Louis		Comment
Richard	Jennifer		Comment
Richards	Claire		Comment
Richards	Claire		Comment
Richards	Natalie		Comment
Richardson	Diana		Comment
Richardson	Alexandra		Comment
Richardson	Will		Comment
Richardson	Ella		Comment
Richie	Megan		Comment
Richins	Sam		Comment
Richter	Laney		Comment
Rickman	Sharon		Comment
Rickman	Sharon		Comment
Riddell	Susan		Comment
Riggin	Joyce		Comment
Riker	Mark	Washington State Building and Construction Trades Council	Comment
Riker	Jennifer		Comment
Riker	Mark	Washington State Building & Construction Trades Council	Comment
Rimbos	Peter		Comment
Rimbos	Peter		Comment
Riordan	Janet		Comment
Riordan	Janet		Comment
Ripley	Virgil		Comment
Risser	Mrs		Comment
Ritson	Francesca		Comment
Ritter	Phil		Comment
Ritting	Lucas		Comment
Rivas	Mayor Joyce	Prescott City Council	Comment
Rivera-Diaz	Javier		Comment
Ro	Katz		Comment
Robb	Annie		Comment
Robert	Leon		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Robert	Leon		Comment
Roberts	Daniel		Comment
Roberts	Tess		Comment
Roberts	Don		Comment
Roberts	Jim		Comment
Roberts	Chris		Comment
Roberts	Daniel And Diane		Comment
Roberts	Joan		Comment
Roberts	Jim		Comment
Roberts	Amy		Comment
Roberts	Joan		Comment
Roberts	Melissa		Comment
Roberts	Nancy		Comment
Robertson	Karen		Comment
Robinson	David		Comment
Robinson	Mallory		Comment
Robinson	Fatma		Comment
Robinson	Kathryn		Comment
Robinson	Wayne		Comment
Robinson	Wayne		Comment
Robinson	Dave		Comment
Rochkind	Iris		Comment
Rocks	Brent		Comment
Roda	Anne		Comment
Rodgers	Camie		Comment
Rodgers	Bob		Comment
Rodgers	Sandra		Comment
Rodrigue	Jim		Comment
Rodriguez	Theresa		Comment
Roe	Julie		Comment
Roepcke	Lois		Comment
Rogers	Kerstin		Comment
Rogers	Don		Comment
Rogers	Laura		Comment
Rogers	Ruth		Comment
Rogich	Joyce		Comment
Roh	Marian		Comment
Roh	Marian		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Rohder	Susan		Comment
Rohrer	Rose		Comment
Roland	Jelica		Comment
Rolf	Carol		Comment
Rolf	Margo		Comment
Rolland	Seth		Comment
Rolland	Janna		Comment
Rollins	Judith		Comment
Rolston	Stephen		Comment
Romano	Judy		Comment
Romerein	Deborah		Comment
Romero	Joseph		Comment
Romine	Janet		Comment
Rominger	Roberta		Comment
Romito	Rick		Comment
Rooney	Sue		Comment
Rose	Rebecca		Comment
Rose	Kathryn		Comment
Rose	Rebecca		Comment
Rose	Alex		Comment
Rosemeyer	Jere		Comment
Rosen	Michael		Comment
Rosen	Michael		Comment
Rosenfeld	Daniel		Comment
Rosenkotter	Barbara		Comment
Rosenkranz	Ginny		Comment
Rosenthal	Elizabeth		Comment
Rosner	Anthony		Comment
Ross	Wendi		Comment
Rossman	Ann		Comment
Roth	Janine		Comment
Rothman	Robert		Comment
Rott	Noah		Comment
Rowe	Gret		Comment
Rowe	Rob		Comment
Rowe	Gret		Comment
Rowland	Danielle		Comment
Rowland	Danielle		Comment
Rowland	Donna		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Roy	Merry		Comment
Roy	Janalee		Comment
Ru	Su		Comment
Rudnick	Deborah		Comment
Ruehl	Beth		Comment
Ruff	Meredith		Comment
Ruggeri	Dylan		Comment
Ruggles	Derya		Comment
Ruggles	Derya		Comment
Ruggles	Derya		Comment
Ruha	Catherine		Comment
Ruhl	Kathy		Comment
Ruiz	George		Comment
Ruiz	Jen		Comment
Rumiantseva	Elena		Comment
Rumiantseva	Elena		Comment
Russ	Dale		Comment
Russell	Sandra		Comment
Russell	Ruth		Comment
Rusterholz	Paula		Comment
Ruth	Lucymarie		Comment
Rutherford	Sue		Comment
Rutherford	Francie		Comment
Rutherford	Sue		Comment
Ruud	Jan		Comment
Ryan	Judith		Comment
Rynders	Lynette		Comment
S	Rebecca		Comment
S	John		Comment
S	John		Comment
S	John		Comment
S	John		Comment
S	Ron		Comment
Saarinen	Tamara		Comment
Sacha	Kurt		Comment
Sachs	Stephen		Comment
Saito	Ute		Comment
Salzman	Cynthia		Comment
Samaras	John		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Sampson	Paul		Comment
Sampson	Bill		Comment
Sampson-Kruse	Cathy		Comment
Samuels	Tom		Comment
Sanborn	Barbara		Comment
Sanchez	Jesus		Comment
Sanchez	Sierra		Comment
Sanchez	Mariana		Comment
Sanchez	Mariana		Comment
Sandel	Norman		Comment
Sanders	Diane		Comment
Sanders	Cheryl		Comment
Sandomirsky	Sev		Comment
Sandvig	Daniel		Comment
Sarancik	Lori		Comment
Sargeant	Helen		Comment
Sargent	Todd		Comment
Sartor	Kristen		Comment
Satiacum	Elizabeth		Comment
Saul	Susan		Comment
Saunders	Michael		Comment
Savett	Adam		Comment
Savoca	Dorothy		Comment
Saxon	Diana		Comment
Scalzo	Miranda		Comment
Scantlebury	E		Comment
Scarborough	Sheryl		Comment
Scarlata	Rachel		Comment
Scarlett-Lyon	James		Comment
Scarpelli	Constance		Comment
Schaef	Dennis		Comment
Schaef	Dennis		Comment
Schaeffer	Kathy		Comment
Schaetzel-Hill	Laurie		Comment
Schafte	Denise		Comment
Schafte	Denise		Comment
Schainen	Judith		Comment
Scharin	Lisa		Comment
Schaures	Lucinda		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Scheer	Marilyn		Comment
Schell	Beverly		Comment
Schemkes	Anastasia		Comment
Schenck	John		Comment
Schenkel	Susan		Comment
Schepers	Eileen		Comment
Scherer	Ellen		Comment
Scherrer	Katie		Comment
Scheuer	Christina		Comment
Schlee	Susan		Comment
Schmelter	Bob		Comment
Schmidt	Nicole		Comment
Schmidt	Susan		Comment
Schmidt	Robert		Comment
Schmidt	John		Comment
Schminke	Karin		Comment
Schmitt	Richard		Comment
Schmitt	Lana		Comment
Schmitt	Walter		Comment
Schmitz	Miranda		Comment
Schnaidt	Sue		Comment
Schneider	Dan		Comment
Schneider	Dan		Comment
Schneider	Dan		Comment
Schnelle	Rob		Comment
Scholz	Melodie		Comment
Schoonover	Richard		Comment
Schrader	Ryan		Comment
Schrammeck	Joan		Comment
Schuch	Janice		Comment
Schulman	Dani		Comment
Schultz	Lois		Comment
Schultz	Betsy		Comment
Schultz	Kasey		Comment
Schultz	Margaret		Comment
Schultz	Lois		Comment
Schumacher	Sandra		Comment
Schumacher	Theresa		Comment
Schutt	Paul		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Schutt	Paul		Comment
Schwab	Maryann		Comment
Schwartz	Marge		Comment
Schwartz	Susan		Comment
Schwartz	Susan		Comment
Schwinberg	Jean		Comment
Schwinberg	Jean		Comment
Schwinberg	Jean		Comment
Scott	Philip		Comment
Scott	Sarah		Comment
Scott	Mary		Comment
Scott	Philip		Comment
Scott	Nolen		Comment
Scribner	Denee		Comment
Scribner	Denee		Comment
Scribner	Denee		Comment
Scribner	Shea		Comment
Sears	Sheryl		Comment
Seater	Kimberly		Comment
Seater	Kimberly		Comment
Seater	Kim		Comment
Seater	Kimberly		Comment
Seger	Kimberly		Comment
Selting	Katherine		Comment
Sennesael	Menno		Comment
Sennett	Mike		Comment
Sentesy	Mark		Comment
Sequichie-Kerchee	Debbie		Comment
Serafini	Linda		Comment
Serres	Daniel	Columbia River Keeper	Comment
Serres	Daniel		Comment
Serres	Daniel	Columbia Riverkeeper	Comment
Serres	Dan	Columbia Riverkeeper	Comment
Severtson	Laurence		Comment
Sevilla	Dustin		Comment
Sévilla	Caroline		Comment
Sévilla	Caroline		Comment
Sewald	Michelle		Comment
Seward	Maryann		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Sewell	Lauren		Comment
Sewell	Lauren		Comment
Sewell	Lauren		Comment
Sewell	Lauren		Comment
Shachat	Madeleine		Comment
Shafransky	Paula		Comment
Shalvey	Jamie		Comment
Shank	Genevieve		Comment
Shank	Meredith		Comment
Shankar	Meghna		Comment
Shanks	Bill		Comment
Shapiro	Beppie		Comment
Shapiro	Alice		Comment
Shapiro	Howard		Comment
Shapiro	Steve		Comment
Shapiro	Steven		Comment
Shapiro	Alice		Comment
Shapiro	Alice		Comment
Shapiro	Alice		Comment
Shapiro	Gena		Comment
Shapiro	Howard		Comment
Shapiro	Howard		Comment
Shapiro	Alice		Comment
Shapiro	Alice		Comment
Shapiro	Coquette		Comment
Shapiro	Howard		Comment
Shapiro	Howard		Comment
Sharp	Kathryn		Comment
Sharp	Beverly		Comment
Sharpe	Kathryn		Comment
Sharpe	Rosie		Comment
Sharples	Vivien		Comment
Shaughnessy	Diane		Comment
Shaw	Nancy		Comment
Shaw	Nancy		Comment
Shaw	Mike		Comment
Shaw	S		Comment
Shea	Jillian		Comment
Shearer	Cornelia		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Shearer	Cornelia		Comment
Sheck	Sally		Comment
Sheehy	Steve		Comment
Sheeran	Scott		Comment
Shelby	Bc		Comment
Shelby	Bc		Comment
Sheldon	Michelle		Comment
Sheldon	Diann		Comment
Sheldon	Gary		Comment
Shelley	Ian		Comment
Shelman	Dave		Comment
Shelman	Kathleen		Comment
Shelman	Dave		Comment
Shelzam	Lauren		Comment
Shepherd	Marilyn		Comment
Shepherd	Elizabeth		Comment
Sherman	Roger		Comment
Sherman	Arlene		Comment
Shields	Jamie		Comment
Shifley	Sarah		Comment
Shilling	Bruce		Comment
Shipley	George		Comment
Shirley	Linda		Comment
Shoemaker	Lynn		Comment
Shoji	Dylan		Comment
Shomer	Forest		Comment
Shouse	Susan		Comment
Shriner	Sylvia		Comment
Shrock	Marla		Comment
Shubert	Stephen		Comment
Siedentop	Melissa		Comment
Sielaff	David		Comment
Sieler	Dennis		Comment
Sierra	Shanna		Comment
Sierra	Shanna		Comment
Sievert	Gunnar		Comment
Siggs	Pat		Comment
Sigler	Dean		Comment
Sigler	Dean		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Sigler	Dean		Comment
Signoretti	Barry		Comment
Siipola	Rosemary		Comment
Siipola	Rosemary		Comment
Siipola	Rosemary		Comment
Sikes	Ron		Comment
Sikes	Rosemary		Comment
Silva	Will		Comment
Silver	Ilene		Comment
Silverman	Goldie		Comment
Silverstein	Judy		Comment
Silvey	Kevin		Comment
Sim	Barbara		Comment
Simcox	Shelley		Comment
Simon	Patricia		Comment
Simon	Philip		Comment
Simon-Behrnes	Sara		Comment
Simone	Roberta		Comment
Simone	Dorethea		Comment
Simpson	Kristina		Comment
Simpson	Bernice		Comment
Simpson	Brian		Comment
Sims	Kimberly		Comment
Sinclair	Maggie		Comment
Singleton	Jon		Comment
Singman	Bonnie		Comment
Singman	Bonnie		Comment
Siptroth	Michael		Comment
Sirota	Ana		Comment
Sisson	Paul		Comment
Sizer	Evelyn		Comment
Skelton	Laura		Comment
Skerlec	Ernetta		Comment
Sketo	Steve		Comment
Skinner	Ann		Comment
Skinner	Will		Comment
Skouge	Gloria		Comment
Slaten	Tom		Comment
Slowik Siciliano	Mary		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Smiley	Jane		Comment
Smith	Winston		Comment
Smith	Mark		Comment
Smith	Toby		Comment
Smith	Joan		Comment
Smith	Carol		Comment
Smith	Michael		Comment
Smith	Neil		Comment
Smith	Alan		Comment
Smith	Kim		Comment
Smith	Mary Ellen		Comment
Smith	Stephanie		Comment
Smith	Maddie	Earth Ministry	Comment
Smith	Bryan		Comment
Smith	Analeigh		Comment
Smith	Dennis		Comment
Smith	Mollie		Comment
Smith	Leslie		Comment
Smith	Shannon		Comment
Smith	Alan		Comment
Smith	Jane		Comment
Smith	Kate		Comment
Smith	Mason		Comment
Smith	Neil		Comment
Smith	Diane		Comment
Smith	Cheri		Comment
Smith	Chris		Comment
Smolar	Darian		Comment
Smyth	Winston		Comment
Sneddon	Sharon		Comment
Sneiderwine	William		Comment
Snell	David		Comment
Snouffer	Brian		Comment
Snouffer	Brian		Comment
Snow	Donna		Comment
Snydel	Alice		Comment
Snyder	Jonah		Comment
Snyder	Dan		Comment
Snyder	Nichole		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Snyder	Nichole		Comment
Snyder	Maxine		Comment
Snyder	David		Comment
Soares	James		Comment
Soeldner	Walther		Comment
Soenksen	Mark		Comment
Sokoloff	Julia		Comment
Sollenberger	Sharon		Comment
Sollenberger	Sharon		Comment
Solomon	Laurie		Comment
Solomon	Jan		Comment
Solum	Mary		Comment
Soman-Faulkner	Dr.		Comment
Sorensen	Brenda		Comment
Sosin	Madeleine		Comment
Spain	Kelly		Comment
Spear	Christy		Comment
Spear	Debbie		Comment
Spear	Debbie		Comment
Spector	Joshua		Comment
Speed	Andrea		Comment
Speer	Cheryl		Comment
Speer	Cheryl		Comment
Spengler	Melissa		Comment
Spindel	Paul		Comment
Spiropoulou	Zoe		Comment
Spivey	Marilyn		Comment
Spofford	Catherine		Comment
Spofford	Cathy		Comment
Spoor	Constance		Comment
Sprague	Ted	Cowlitz Economic Development Council	Comment
Spratley	Richard		Comment
Spring	Katherine		Comment
Springer	Aleta		Comment
Spurling	Leslie		Comment
St	Patricia		Comment
St August	Patricia		Comment
Staats	Alycia		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Stafford	Lee		Comment
Stafford	Marcy		Comment
Stair	Ruchi		Comment
Staley	Sheri		Comment
Stalp	Melissa		Comment
Stanley	Carol		Comment
Stanley	Carol		Comment
Stanley	Becky		Comment
Stanley	Carol		Comment
Stansbery	Christine		Comment
Stansfield	Gerald		Comment
Starbuck	Scott		Comment
Starbuck	Judith		Comment
Starichenok	Mariya		Comment
Stein	Adam		Comment
Steiner	A.L.		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Alana		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Alona		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Steinke	Don		Comment
Stempf	Debbie		Comment
Stempf	Debbie		Comment
Stenger	Joseph		Comment
Stenger	Joseph		Comment
Stephanopoulos	Dimitri		Comment
Stephens	Brent	Boilermakers Local 242	Comment
Stephens	Gregory		Comment
Stepp	Michelle		Comment
Stepp	Michelle		Comment
Stern	Richard		Comment
Stern	Alison		Comment
Stern	Richard		Comment
Stern	Michael		Comment
Stetler	David		Comment
Stevens	Summer		Comment
Stevens	Summer		Comment
Stevens	Carol		Comment
Stevens	Dixie		Comment
Stevens	Carol		Comment
Stevens	Sally		Comment
Stevenson	Barbara		Comment
Stevenson	Barbara		Comment
Stevenson	Ben		Comment
Stevenson	Matt		Comment
Stevenson	Matt		Comment
Stevenson	Matt		Comment
Stiehl	Joanna		Comment
Stiehl	Joanna		Comment
Stiffler	Tonya		Comment
Stiglich	Lynn		Comment
Stingle	Karen		Comment
Stinson	Timothy		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Stirpe	D		Comment
Stitt	Cary		Comment
Stobbe	David		Comment
Stokes	Nate		Comment
Stolfi	Jackie		Comment
Stoll	Noel		Comment
Stone	Mary		Comment
Stone	Miriam		Comment
Stone	Julie		Comment
Stone	Jen		Comment
Stone	Julie		Comment
Stone	Frederick		Comment
Stover	Jaye		Comment
Stover-Volker	Sherry		Comment
Strang	Arnold		Comment
Stratten	Ann		Comment
Strawman	Tom		Comment
Strawman	Tom		Comment
Street	Kergan		Comment
Strelecky	Martin		Comment
Strickland	Scott		Comment
Strid	Cynthia		Comment
Strong	Janet	Grays Harbor Audubon Society	Comment
Strong	Janet	Grays Harbor Audubon Society	Comment
Struck	Fred		Comment
Strunk	Joleen		Comment
Strutz	Randall		Comment
Stubbs	Gene		Comment
Studley	Linda		Comment
Studley	Linda		Comment
Sugarman	Kathy		Comment
Sugnet	Kent		Comment
Sulakshana	Elana		Comment
Sullivan	Diane		Comment
Sullivan	Diane		Comment
Sullivan	Terry		Comment
Sullivan	Meg		Comment
Sullivan	Diane		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Sullivan	Barbara		Comment
Sundermann	Kathryn		Comment
Sundquist	Elizabeth		Comment
Sundstrom	Shana		Comment
Sutaria	Shreeraj		Comment
Suter	Fred		Comment
Suter	Fred		Comment
Sutherland	Dolly		Comment
Sutherland	Dolly		Comment
Sutherland	Dolly		Comment
Sutry	Anne		Comment
Sutter	James		Comment
Svadlenka	Jean		Comment
Svensson	John		Comment
Svensson	Cynthia		Comment
Svensson	Cynthia		Comment
Svensson	Cynthia		Comment
Svete	Irene		Comment
Swanson	Doug		Comment
Sweet	Selina		Comment
Sweet	Selina		Comment
Swenson	Amanda		Comment
Swihart	Janet		Comment
Swoffer	Thomas		Comment
Sword	Carol		Comment
Sword	Carol		Comment
Sydnor	Giles		Comment
Symonds	Michael		Comment
Symonds	Russell		Comment
S鳌lla	Caroline		Comment
T	G		Comment
T.	Scott		Comment
Tagalog	Claire		Comment
Takush	Kathie		Comment
Talcott	Diana		Comment
Tall	Merideth		Comment
Tan	Shirlee		Comment
Tan	Shirlee	Shirlee Tan	Comment
Tan	Shirlee		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Tandoo	James		Comment
Tapfer	Christopher		Comment
Tapley	Dennis		Comment
Tartaglia	Prof		Comment
Tasker	Heidi		Comment
Tauscheck	Steve		Comment
Tauson	Chris		Comment
Tauson	Chris		Comment
Tauson	Chris		Comment
Taylor	Polly		Comment
Taylor	Ed		Comment
Taylor	Tim		Comment
Taylor	Martha	Martha Taylor	Comment
Taylor	James		Comment
Taylor	Jessica		Comment
Taylor	Polly		Comment
Taylor	Jeanne		Comment
Taylor	Shambhavi		Comment
Taylor	Kirsten		Comment
Taylor	Karla		Comment
Taylor	Polly		Comment
Taylor	Martha		Comment
Teed	Cornelia		Comment
Teed	Cornelia		Comment
Teed	Cornelia		Comment
Teed	Cornelia		Comment
Teigen	Terry		Comment
Tejcka	James		Comment
Tejcka	Amy		Comment
Tejcka	Amy		Comment
Tell	Jodi		Comment
Tempest	Kevin		Comment
Tempest	Kevin	Low Carbon Prosperity Institute	Comment
Temple	Joan		Comment
Templeton	Lori		Comment
Tennant	Pamela		Comment
Teraberry	Kimberly		Comment
Teraberry	Kimberly		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Terleski	Sharon		Comment
Terry	James		Comment
Terry	Elizabeth		Comment
Thaller	Fred		Comment
Tharp	Rod		Comment
Thatcher	Janese		Comment
Thayer	Marguerite		Comment
Thayer	Marguerite		Comment
Theil	Mary Elizabeth		Comment
Theil	Zach		Comment
Theisen	Scott		Comment
Thiel	Susan		Comment
Thiel	Susan		Comment
Thiessen	Greg		Comment
Thoennes	Jason		Comment
Thoennes	Betsey		Comment
Thoennes	Betsey		Comment
Thoennes	Jason		Comment
Thomas	Sheila		Comment
Thomas	Sandra		Comment
Thomas	Liane		Comment
Thomas	Lorinda		Comment
Thomas	Anita J.		Comment
Thomas	Chris		Comment
Thomas	Vicki		Comment
Thomas	Kat		Comment
Thomas	Antoinette		Comment
Thomasson	Tabitha		Comment
Thompsen	Linda		Comment
Thompson	T		Comment
Thompson	Irina		Comment
Thompson	Aimee		Comment
Thompson	T		Comment
Thompson	John		Comment
Thompson	Jim		Comment
Thompson	Sue	Sue Thompson	Comment
Thompson	Janet		Comment
Thompson	Eileen		Comment
Thompson	Dana		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Thompson	Stephen		Comment
Thompson	Stephen		Comment
Thompson	Lester		Comment
Thompson	Trula		Comment
Thompson	John		Comment
Thompson	Sue		Comment
Thomqas	Mike		Comment
Thomsen	Roseann		Comment
Thomsen	Don		Comment
Thor	Carl		Comment
Thorn	Debbie		Comment
Thornton	Suzanne		Comment
Thornton-Tang	Cynthia		Comment
Tibbot	Ann		Comment
Tiefer	Hillary		Comment
Tiefer	Hillary		Comment
Tighe	Patsy		Comment
Tippens	Linda		Comment
Titchenal	Nichole		Comment
Titcomb	Suzy		Comment
Titcomb	Suzy		Comment
To Life Swims Llc	Say Yes	Say Yes to Life Swims LLC	Comment
Todd	Mary		Comment
Tomasovic	Debbie		Comment
Tomasovic	Debbie		Comment
Tomasovic	Debbie		Comment
Tompkins	Marianne		Comment
Tonnemaker	Teresa		Comment
Toth	Myra		Comment
Towle	Susan		Comment
Tralnes	I'M		Comment
Tramposh	Debora		Comment
Trapanese	Errolyn		Comment
Trasoff	Stephanie		Comment
Trasoff	Stephanie		Comment
Trasoff	Stephanie		Comment
Traum	Norman		Comment
Traum	Norman		Comment
Traxler	Maureen		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Treadway	Carolyn		Comment
Treadway	Carolyn		Comment
Treadway	Carolyn		Comment
Treat	Lynne		Comment
Trickey	Michele		Comment
Trickey	Michelle		Comment
Trimble	Ursula		Comment
Trimble-Kreutz	Christi		Comment
Trosper	Michelle		Comment
Trosper	Michelle		Comment
Trosper	Cheryl		Comment
Trosper	Michelle		Comment
Trott	Nicole		Comment
Truman	Barry		Comment
Truskoff	Lou		Comment
Tryon	Jean		Comment
Tryon	Laura		Comment
Tsongas	Theodora		Comment
Tsongas	Theodora		Comment
Tsongas	Theodora		Comment
Tt	Pr		Comment
Tunstall	Kyle		Comment
Turner	Kathy		Comment
Turner	Dena		Comment
Turner	Dena		Comment
Turner	Dr. Ann		Comment
Turner	Frank	Earth Ministry	Comment
Turner	Dena		Comment
Turner	Ann		Comment
Turner	Dena		Comment
Turner	Dena		Comment
Twiggs	Frances		Comment
Twyman	Patricia		Comment
Tyrell	Larry		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark Or		Comment
Uhart	Mark Or		Comment
Uhart	Mark		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Uhart	Mark		Comment
Uhart	Gloria		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Uhart	Mark		Comment
Ulanov	Sergey		Comment
Ullrey	Peter		Comment
Ulmer	Gene		Comment
Ulrich	Daniel	Association of Firefighters, local 4447	Comment
Umphred	Neal		Comment
Umphred	Neal		Comment
Underwood	Andrew		Comment
Underwood	Dennis		Comment
Unger	Wanda		Comment
Ungnade	Robert		Comment
Urban	Carolyn		Comment
Urhart	Mark		Comment
Uschyk	Carol		Comment
Uyenishi	Steve		Comment
Uyenishi	Steve		Comment
Uyenishi	Steven		Comment
Uzuner	Selim		Comment
Uzuner	Selim		Comment
Uzuner	Selim		Comment
Valenteen	Samantha		Comment
Valentine	Jennifer		Comment
Valentine	Jennifer		Comment
Van	Emily		Comment
Van	Alice		Comment
Van	Amy		Comment
Van Alyne	Emily		Comment
Van Cleve	Margie		Comment
Van Eenwyk	John		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Van Leekwijck	Natalie		Comment
Van Schijndel	Amy		Comment
Van Voast	Jordan		Comment
Van Zee	Cal		Comment
Van Zee	Virginia		Comment
Vancouver Audubon Society		Vancouver Audubon Society	Comment
Vandenberg	Nancy		Comment
Vandenberg	Paul		Comment
Vandenbosch	Vincent		Comment
Vandenheuvel	Brett	Columbia Riverkeeper	Comment
Vanderbilt	Linda		Comment
Vanderkamp	Robert		Comment
Vandermaten	Judy		Comment
Vandermaten	Judy		Comment
Vandermay	Lisa		Comment
Varney	Karen		Comment
Vassilakis	Noemie		Comment
Vaughan	George		Comment
Vayda	Karen		Comment
Vayu	Satya		Comment
Vayu	Satya		Comment
Veith	Joachim		Comment
Veith	Joanchim		Comment
Veler	Frederick		Comment
Venidis	Maria		Comment
Vennard	Jennifer		Comment
Verbeck	Elizabeth		Comment
Versteeg	Diane		Comment
Vesque	Gunda		Comment
Victor	Sharon		Comment
Viers	Joan		Comment
Viertel	William		Comment
Vigars	Barbara		Comment
Vilgalys	Justas		Comment
Vilgalys	Justas		Comment
Villa	Daniel		Comment
Villasenor	Victor		Comment
Villasenor	Victor		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Villesvik	Dottie		Comment
Vinnard	Jennifer		Comment
Vinnard	Jennifer		Comment
Vinnard	Jennifer		Comment
Vinnard	Jennifer		Comment
Vinnard	Jennifer		Comment
Vinnard	Jennifer		Comment
Vinton	Janine		Comment
Viola	Robert		Comment
Viscon	Graycie		Comment
Vlaskamp	Jon		Comment
Vocke	Janice		Comment
Voget	Richard		Comment
Voget	Richard		Comment
Vogt	Niki		Comment
Vogt	Niki		Comment
Vogt	Niki		Comment
Voli	Carlo		Comment
Voliva	Steve		Comment
Volk	Cynthia		Comment
Volk	Andy		Comment
Volmut	Mark		Comment
Volz	Candace		Comment
Von	Peter		Comment
Von Borstel	Carol		Comment
Von Dassow	Elizabeth		Comment
Voorhees	Virginia		Comment
Vorhees	Miranda		Comment
Vossler	Susan		Comment
Votolato	Rocky		Comment
Vrbas	Alison		Comment
W	A		Comment
W	A		Comment
Wachter	Janna		Comment
Wacker	Cynthia		Comment
Waddington	John		Comment
Wade	Sherry		Comment
Wade	Deanne		Comment
Wadsworth	Andrew		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Waendelin	Anna		Comment
Waendelin	Ann		Comment
Wagman	Abby		Comment
Wagner	Marshall		Comment
Wagner	Stan		Comment
Wagner	Laura		Comment
Wagner	Robert		Comment
Wagner	Jennifer		Comment
Wagner	Kirstin		Comment
Wagner	Tyler		Comment
Wagnitz	Emily		Comment
Waite	Janet		Comment
Waitkus	Stephen		Comment
Wald	Aloysius		Comment
Wale	Liisa		Comment
Wale	Liisa		Comment
Wales	Lee		Comment
Walker	Jane		Comment
Walker	Joan		Comment
Wallace	Gary		Comment
Wallace	Patrice		Comment
Wallace	Patrice		Comment
Wallace	Gary		Comment
Wallace	Gary		Comment
Wallace	Mary		Comment
Wallace	Karlen		Comment
Wallblom	Charlie		Comment
Wallblom	Charlie		Comment
Walling	John		Comment
Wallis	Maryalice		Comment
Wallis, Mayor	Maryalice	City of Longview	Comment
Walsh	Kevin		Comment
Walsh	Kevin		Comment
Walsh	Iris		Comment
Walsh	Jim	State Representative, 19th District	Comment
Walsh	Sharon-Shay		Comment
Walter	Amy		Comment
Waltner	Heidi		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Walton	Andrew		Comment
Wang	Tracy		Comment
Wang	Tracy		Comment
Ward	Deborah		Comment
Ward	Lindsay		Comment
Ward	Marion		Comment
Ward	Diana		Comment
Ward	Penelope		Comment
Warden	Caleb		Comment
Warden	Patricia		Comment
Warming	Patricia		Comment
Wasgatt	Ann		Comment
Wasserman	Linda		Comment
Wasserman	Linda		Comment
Wasserman	Linda		Comment
Wasserman	Linda		Comment
Wasserman	Linda		Comment
Watchie	Joanne		Comment
Waterman	Rae		Comment
Waters	Andrew		Comment
Waterston	Patricia		Comment
Watson	Harold		Comment
Watson	Jeffrey		Comment
Watson	Claire		Comment
Watt	Celeste		Comment
Watt	Donald		Comment
Watt	Don		Comment
Watts	Janine		Comment
Watts	Martin		Comment
Waugaman	Joel		Comment
We	Barbara		Comment
Weant-Leavitt	Margaret		Comment
Weaver	Stefanie		Comment
Webb	Dean		Comment
Webb	Dean		Comment
Webb	Randall		Comment
Webb	Dean		Comment
Webb	Randall		Comment
Webb	Dean		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Webster	Jennifer		Comment
Webster	Pamela		Comment
Wechsler	Susan		Comment
Weedman	Ruth		Comment
Wehner	Michaela		Comment
Wehrley	Donna		Comment
Weil	Susanne		Comment
Weingarten	Jamie		Comment
Weinhold	Richard		Comment
Weinstein	Diane		Comment
Weinstein	Elyette		Comment
Weintraub	Dana		Comment
Weintraub	Dana		Comment
Weir	Charlie		Comment
Weir	Kristi		Comment
Weir	Keith		Comment
Weir	Kristi		Comment
Weir	Douglas		Comment
Weis	Karen		Comment
Weisbrot	Amy		Comment
Weisman	Paula		Comment
Weiss	Elizabeth		Comment
Weissman	Melissa		Comment
Weissman	Warren		Comment
Weissmann	George		Comment
Welch	Ryan	Ituna Environmental Club	Comment
Weldon	Tracy		Comment
Wells	Mark		Comment
Wells	Mark		Comment
Welte	Heidi		Comment
Welzen	Kaitlyn	Kaitlyn Welzen	Comment
Welzen	Kaitlyn		Comment
Wend	Daniel		Comment
Wenzel	Joseph		Comment
Wesley	Kathy		Comment
Wesley	James		Comment
Wesley	James		Comment
Wesley	Ethan		Comment
Wesley	James		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
West	Rusty		Comment
West	Alice		Comment
West	Rusty		Comment
West	Russel		Comment
Westbrook	Tamara		Comment
Westre	Willard		Comment
Weyer	Dora		Comment
Weyer	Diane		Comment
Weymiller	Pete		Comment
Weymiller	Pete		Comment
Weymiller	Pete		Comment
Wheat	Gordon		Comment
Wheeler	Cheryl		Comment
Wheeler	Jerry		Comment
Wheeler	Dylan		Comment
Wheeler	Cheryl		Comment
Wheelock	Christi		Comment
Whirledge-Karp	Anne		Comment
Whitacre	Julie		Comment
White	Ken		Comment
White	Nancy		Comment
White	Nancy		Comment
White	Chris		Comment
White	Carol		Comment
White	Nancy		Comment
White-Hall	Daphne		Comment
Whitehurst	Carol		Comment
Whitehurst	Carol		Comment
Whitehurst	Carol		Comment
Whitehurst	M. Laurel		Comment
Whitehurst	Carol		Comment
Whitesides	Mary		Comment
Whitley	Brandon		Comment
Whitmore	Sandra		Comment
Whittaker	Lori		Comment
Wichar	Den Mark		Comment
Widen	Randy		Comment
Widman	Jared		Comment
Wiederhold	Joe		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Wiegmann	Mira		Comment
Wight	Barbara		Comment
Wight	Barbara		Comment
Wikowsky	Teri		Comment
Wilcox	Rebecca		Comment
Wile	Robert	Port of Woodland	Comment
Wiley	Kimberly		Comment
Wiley	Kimberly		Comment
Wiley	James		Comment
Wilfing	Janice		Comment
Wilfing	Janice		Comment
Wilhelmsen	Larry		Comment
Wilke	Larry		Comment
Wilkins	Maryjo		Comment
Wilkins	Maryjo		Comment
Wilkins	Alixandre		Comment
Wilkinson	Art		Comment
Wilkinson	Cameron		Comment
Wilkinson	Cameron		Comment
Willett	Greg		Comment
Williams	Karen		Comment
Williams	Kathleen		Comment
Williams	Michael		Comment
Williams	Don		Comment
Williams	Celina		Comment
Williams	Karen		Comment
Williams	Sara		Comment
Williams	Steve		Comment
Williams	Diane		Comment
Williamson	Robert		Comment
Williard	Susan		Comment
Williard	Sue		Comment
Willis	Jessica		Comment
Willoughby	Emily		Comment
Willoughby	Emily		Comment
Willoughby	Rita		Comment
Willson	Kathryn		Comment
Wilmering	Kathy		Comment
Wilson	Merlin		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Wilson	Patricia		Comment
Wilson	Patricia		Comment
Wilson	Steve		Comment
Wilson	Donald		Comment
Wilson	Jeff		Comment
Wilson	Steve		Comment
Wilson	Winn		Comment
Wilson	Geoff		Comment
Wilson	Sharon		Comment
Wilson	Howard		Comment
Wilson	William		Comment
Wilson	Michelle		Comment
Wilson	Dylan		Comment
Wilson	Susan		Comment
Wilson	Mark	Port of Kalama	Comment
Winchell	Julia		Comment
Windham	Dallas		Comment
Windrum	Ken		Comment
Wineman	Marian		Comment
Wing	Emily		Comment
Winger	Michael		Comment
Winkel	Marguerite		Comment
Winnie	Stuart		Comment
Winterowd	Dalvin		Comment
Winter-Stoltzman	Jessica		Comment
Winther	Wayne		Comment
Winther	Diana		Comment
Winthrop	David		Comment
Wise	Allan		Comment
Wisel	Cathy		Comment
Withnall	Emily		Comment
Withrow	Linda		Comment
Witt	Diane		Comment
Wittlinger	Jennifer		Comment
Wojcicki	Danielle		Comment
Wolf	Darlene		Comment
Wolf	Michael		Comment
Wolfe	Christina		Comment
Wolfe	Sue		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Wolfe	Barton		Comment
Wolff	Kathy		Comment
Wolgamott	Carleen		Comment
Woll	Margaret		Comment
Wollman	Jill		Comment
Wong	Marie		Comment
Wood	Judith		Comment
Wood	Peter		Comment
Wood	R		Comment
Wood	Angela		Comment
Wood	John		Comment
Wood	R		Comment
Wood	Elena		Comment
Wood	Katie		Comment
Woodall	Linda		Comment
Woodbridge	Jennifer		Comment
Woods	Michael		Comment
Woolpert	Steven		Comment
Woolpert	Steven		Comment
Worley	Don		Comment
Worley	Don		Comment
Worley	Don		Comment
Wos-Elledge	Barbara		Comment
Wozny	Lacey		Comment
Wright	Katherine		Comment
Wright	Georgina		Comment
Wright	Linda		Comment
Wright	Steven		Comment
Wright	Priscilla		Comment
Wright	Linda		Comment
Wright-Tenenberg	Jody		Comment
Wu	Blake		Comment
Wuebbels	Rosie		Comment
Wyatt	Aimee		Comment
Wyman	Jean		Comment
Wyman	Jean		Comment
Wynne	Janet		Comment
Wynne	Janet		Comment
Wynne	Janet		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Wysong	Linda		Comment
Yadrick	Michael		Comment
Yampolsky	Amanda		Comment
Yamrick	June		Comment
Yanez	Guadalupe		Comment
Yarbrough	Jim		Comment
Yarrington	Jennifer		Comment
Yates	Jill		Comment
Ybarra	Alex	State Representative from District 13	Comment
Yeager	Sky		Comment
Yeilding	Nancy		Comment
Yencich	Joseph		Comment
Yencich	Joseph		Comment
Yencich	Joseph		Comment
Yenderrozos	Michelle		Comment
Yeoman	Kyla		Comment
Yeomans	Ronald		Comment
Yerden	Carol		Comment
Yogev	Yonit		Comment
Yokers	Phil And Kathe		Comment
Yost	Helen	Wild Idaho Rising Tide	Comment
Young	Rick		Comment
Young	William		Comment
Young	Robert		Comment
Young	Kc		Comment
Young	Anne		Comment
Zaback	Megan		Comment
Zambrano	Sariah		Comment
Zanzi	Julie		Comment
Zanzi	Gianna		Comment
Zanzi	John		Comment
Zaugg	Linda		Comment
Zazueta	Monica		Comment
Zeigler	Bob		Comment
Zeigler	Bob		Comment
Zeitin	Patty		Comment
Zerr	Laura		Comment
Zettel	Stephen		Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
Zey	John		Comment
Zickefoose	Debi		Comment
Ziemann	Renee		Comment
Zieve	Wendy		Comment
Zimmer	Cheryn		Comment
Zimmer	Cheryn		Comment
Zimmerle	Jessica		Comment
Zimmerman	Austin		Comment
Zimmer-Stucky	Jasmine		Comment
Zinn	Eric		Comment
Zirinsky	Kenneth		Comment
Zirinsky	Kenneth		Comment
Zitkus	Dela		Comment
Zolotareva	Tatiana		Comment
Zolotareva	Tatiana		Comment
Zontek	Ken		Comment
Zowader	Ruth		Comment
Zucker	Lee		Comment
Zucker	Lee		Comment
Zuckerman	Jan Hydra Fracka		Comment
Zugel	Joann		Comment
Zugel	Joann		Comment
Zwilling	Sonia		Comment
Zwilling	Sonia		Comment
Zylstra	Nancy		Comment
	Reuter		Comment
	Reuter		Comment
			Comment
			Comment
			Comment
	Portland Raging Grannies		Comment
	Vikki		Comment
	Tracy		Comment
			Comment
	Diana		Comment
			Comment
			Comment

Index of Commenters

Click on the link in the "Link to Comments" column to open individual comments.

Last Name	First Name	Organization	Link to Comment
	Stephen		Comment
			Comment
	Mark		Comment
	Carolyn		Comment
			Comment
			Comment
		Columbia River Keeper	Comment
	Anonymous		Comment
	Portland Raging Grannies	Portland Raging Grannies	Comment
	Oregon Conservancy Foundation		Comment
		Lets Build This WA!	Comment

The City of Longview Washington

P.O. Box 128
Longview, WA 98632-7080
www.mylongview.com

SUBMITTED: DOE PUBLIC COMMENT FORM
September 24, 2020

To Washington State Department of Ecology Review Board,

On behalf of the Longview City Council we express our enthusiastic support of the Northwest Innovation Works (NWIW) proposed methanol project in Kalama, Washington.

The founder of the City of Longview, Robert A Long, was an individual with a grand vision for development and industry along the Columbia River water highway.

NWIW is such an industry being proposed along the Columbia River, and the Longview City Council recognizes that the NWIW project will contribute to our community as a whole by offering an abundance of family wage jobs desperately needed for a sustainable and vigorous economy. Not only will this project employ 1,000 workers during construction and 200 to operate the facility upon the completion of construction, the investment in the NWIW project will provide a much-needed boost to a struggling Cowlitz County economy, promising to generate $30-40 million in new local taxes.

The tax contributions that Northwest Innovation Works will contribute to Cowlitz County as a whole, the City of Kalama (including Kalama schools, and Kalama Fire District #5), and the State of Washington will be significant and will add to a robust tax base to help build up the surrounding communities offering improved and more efficient roads, public safety, infrastructure and schools.

We celebrate the fact that the proposed NWIW project will provide for the first "Zero Liquid Discharge" system on the Columbia River and the removal of 9.7 to 12.6 metric tons in climate change-inducing carbon dioxide annually. This facility will protect the Columbia River system by recycling 100% of the plant's wastewater and provides for a significant positive impact on global greenhouse gas emissions- the equivalent to removing approximately 2.2 million cars off -the road. This is the win-win we have been looking for in Southwest Washington.

We are encouraged by the positive environmental and economic benefits this project offers and the thorough review by the Department of Ecology over the past seven years. The Longview City Council urges the Department of Ecology to promptly issue the necessary permits for this project to proceed.

Respectfully,

MaryAlice Wallis, Mayor

cc: Mayor MaryAlice Wallis
Mayor Pro-Tem Mike Wallin
Councilmember Chet Makinster
Councilmember Steve Moon
Councilmember Hillary Strobel
Councilmember Christine Schott
Councilmember Ruth Kendall

Cowlitz County

Please see Cowlitz County's comments attached.

Department of Building & Planning
207 Fourth Avenue North #119
Kelso, WA 98626
TEL (360) 577-3052
FAX (360) 414-5550

www.co.cowlitz.wa.us/buildplan

Board of County Commissioners
Arne Mortensen District 1
Dennis P. Weber District 2
Joe Gardner District 3

October 8, 2020

Attn: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

RE: Comments on the Draft Second Supplemental Environmental Impact Statement for the Kalama Manufacturing and Marine Export Facility (Ecology Publication 20-06-011)

Dear Mr. Doenges,

Thank you for the opportunity to comment on the Draft Second Supplemental Environmental Impact Statement (DSSEIS) for the Kalama Manufacturing Marine Export Facility (KMMEF). As you know, Cowlitz County is the Nominal Co-Lead Agency with the Port of Kalama for the original FEIS and SEIS for the KMMEF project. Separately, Cowlitz County is a regulatory agency sharing responsibility with the Department of Ecology (Ecology) for implementation of the Shoreline Management Act. With such roles, the County's comments are focused on the overall SEPA review as applied by Ecology, and not on specific, technical presentations within the DSSEIS. Detailed commentary on such presentations is being submitted by County's co-lead, the Port of Kalama, and for purposes of economy the County would incorporate as its own the contemporaneous comments submitted by the Port.

As an agency asserting jurisdiction in this matter, Ecology concluded that the Port's and County's draft of the first SEIS warranted additional discussion of the impacts of the project's potential greenhouse gas (GHG) emissions—as well as the mitigation of those impacts. This led to Ecology's preparation of the DSSEIS which broadened the scope of analysis of GHGs associated with the KMMEF project. Ecology chose to pursue an SSEIS. The County's position is that your DSSEIS, as written, expands the scope of the Port and County's original SEIS analyses beyond all legal standards and authorities established for SEPA. Simply stated, the DSSEIS improperly clouds and endeavors to supplant the existing SEPA record of probable impacts under a reasonable review of KMMEF.

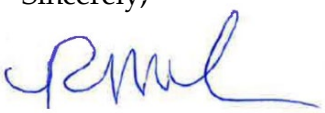
First, the DSSEIS reaches beyond your agency's legal authority under SEPA by hypothesizing about end uses unsupported by the established purpose – on record – for the KMMEF project. The DSSEIS relies upon remote and speculative scenarios for KMMEF to then assess "possible" project impacts – contrary to SEPA mandates to assess "probable" impacts of reasonable scenarios. The County believes the SSEIS, as written, is improper application of the State Environmental Policy Act, and should not be relied upon by itself to make permit decisions for the KMMEF project.

Secondly, the DSSEIS, as written, fosters unnecessary confusion about the content and measure of the official SEPA record of the KMMEF project. By example, the DSSEIS recites an inaccurate presentation of the findings and conclusions of the original SEIS. By further example, the DSSEIS offers misrepresentations and mischaracterizations when advocating how the data and analyses within the DSSEIS compare to the data

and analyses in the original SEIS. It must not be lost on Ecology when it revisits its DSSEIS that the records for the FEIS, SEIS and final SSEIS contain an amalgamation of information for comprehensive consideration which is required for a thorough and adequate and legal environmental review. The name of the document – "supplemental" – defines the purpose of the SSEIS, as to supplement the record and not supplant the records of the SEIS or EIS.

In sum, the County would encourage Ecology to revisit it decision to use hypothetical and speculative end use scenarios and to confine its review to gaging the probable environmental impacts of the KMMEF project. Finally, the County requests that Ecology, for its SSEIS, revisit and fully and accurately represent the facts, findings and conclusions of the original SEIS within the SSEIS.

Sincerely,



Ron W. Melin, CFM
Planning Division Manager
SEPA Responsible Official
Cowlitz County

Port of Kalama

Comments from the Port of Kalama are contained in the attached letter.

October 9, 2020

ATTN: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
P.O. Box 47775
Olympia, WA 98504-7775

RE: Comments on the Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement Ecology Publication 20-06-011

Dear Mr. Doenges,

The Port of Kalama (Port) submits the following comments on the Draft Kalama Manufacturing Marine Export Facility (KMMEF or Project) Second Supplemental Environmental Impact Statement (DSSEIS). The Port appreciates the significant work that the Department of Ecology (Ecology) invested in the DSSEIS and its efforts to timely publish this draft. While the DSSEIS broadens the scope of the analysis from that contained in the Port and Cowlitz County's (County) original Supplemental Environmental Impact Statement (SEIS), and in some cases in ways that the Port believes to be beyond the State Environmental Policy Act (SEPA), the Port notes that the DSSEIS concurs in two fundamental conclusions:

(1) the impacts from the in-state Greenhouse Gas (GHG) emissions from the Project are capable of being mitigated; and

(2) global GHG emissions from the manufacture of olefins are expected to be less if the Project is built than under a no action scenario.

The Port concludes that Northwest Innovation Work's (NWIW's) commitment to fully mitigate for in-state emissions, however, reduces the Project's GHG impacts to a less than significant level, and has several questions and concerns regarding some of the analysis undertaken and assumptions used in the DSSEIS.

First, the DSSEIS creates confusion by not fully (or in some cases accurately) describing the contents of the original SEIS and how that data compares to the data and analysis in the DSSEIS. Because both the original SEIS prepared by the Port and the County together with this SSEIS prepared by Ecology will serve as the complete environmental record upon which the Project permits should be evaluated, it is imperative that the Final SSEIS (FSSEIS) provide

decision makers and the public with a complete and accurate explanation of the contents of each, including how they are consistent and how they vary. The Port accordingly requests that the FSSEIS be corrected to accurately present the full record.

Second, the DSSEIS reaches beyond SEPA by assuming end uses and Project purposes that are neither proposed by NWIW nor reasonably foreseeable and by evaluating scenarios which the DSSEIS describes as "unlikely."[1] Evaluating "unlikely scenarios" and "possible" impacts,[2] rather than probable impacts from foreseeable scenarios, is speculation and is not permitted under SEPA.[3] It also unnecessarily confuses the public. Two examples of this include the unsupported assumptions regarding the use of KMMEF methanol as fuel and the range of market substitutions scenarios evaluated to forecast GHG emissions from global methanol demand. As discussed in more detail in the separate comment letter submitted by Mark Berggren from Methanol Market Services Asia (MMSA), with a careful and more accurate evaluation of global methanol market data, likely alternative sources of supply, including several recent announcements of new coal-to-methanol projects in China, the High Coal Case (HCC) alternative scenario is actually the much more likely Reference Case (RC) for GHG emission evaluation. The Port requests that the FSSEIS include this correction, which confirms that the Project is likely to provide greater GHG benefits than currently represented.

Third, the DSSEIS's statements and conclusions regarding the significance of the life cycle GHG emissions of KMMEF, particularly when compared to the no-action alternative, are ambiguous and not supported by the document's conclusions. Decision makers and the public would benefit from a clear conclusion as to the effectiveness of the Project's proposed mitigation program and the substantive effect, under SEPA, of the market displacement analysis.

The FSSEIS should clearly recognize that with the proposed mitigation program for in-state GHG emissions, and based on the expected reduction in global GHG emissions if the Project is built, GHG impacts cannot be labeled as significant. As currently drafted, the

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[1] DSSEIS at 55 ("These represent two unlikely cases that could transpire, although they depend on a specific combination of input variable values. These outlier cases are intended to show what would happen in the lower probability scenarios.") (emphasis added).

[2] *See, e.g.*, DSSEIS at 18 ("It is possible, however, that the methanol could be used as a fuel once it is acquired by importers in Asia and elsewhere."); *id.* ("The SEPA environmental review process helps state and local agencies identify and consider possible environmental impacts that could result from government actions, including the issuance of permits."); *id.* at 20 ("A sensitivity analysis providing a range of possible GHG emissions is also provided.") (emphasis added).

[3] WAC 197-11-060(4)(a); WAC 197-11-080 (defining "probable" as "…likely or reasonably likely to occur, as in 'a reasonable probability of more than a moderate effect on the quality of the environment'… Probable is used to distinguish likely impacts from those that merely have a possibility of occurring, but are remote or speculative. This is not meant as a strict statistical probability test.").

document avoids that obvious conclusion. It is confusing at best, if not nonsensical to conclude impacts are significant, when they are reduced to net zero through in-state mitigation, and globally are less if the Project is built than would be the case if the Project is not built. The SSEIS should objectively and accurately recognize these facts.

The next section of this letter elaborates on these over-arching concerns. The second section, then identifies in detail (with reference to DSSEIS section or page) the specific places in the document where corrections, revisions or clarifications are required.

I. KEY ISSUES

A. The Public Benefits from Improved Disclosure of Complementary Content in Both the DSSEIS and 2019 SEIS.

Notwithstanding significant overlap and consistency in content, the DSSEIS and Ecology's public hearing presentations go to great effort to distinguish Ecology's analysis from the SEPA Responsible Official's (SRO's) SEIS. This effort doesn't serve the public's interest in full disclosure of the entire SEPA record. The Port requests corrections to ensure the FSSEIS is fair and accurate in its depiction of SEIS statements. The following table identifies statements in the DSSEIS that should be corrected:

DSSEIS Statement	Correction Requested
DSSEIS, p. 22: "The SEIS found that the proposed project would reduce greenhouse gas emissions globally by between 12 and 14 million metric tons annually."	This misstates information from the SEIS. The SEIS, Section 3.5.6 states that the Project "results in the potential for a net reduction in overall cumulative GHG emissions from the proposed project of between 9.6 and 12.6 million metric tonnes CO_2e" annually. Note this same mischaracterization occurs elsewhere on page 22.
DSSEIS, p. 22: Ecology characterized their comment letter as follows: "Among other things, Ecology questioned the Draft SEIS's conclusion that the proposed project would have no significant adverse environmental impacts."	This is an overly simplistic summary of Ecology's comment letter. There are several locations within Ecology's letter that provide suggestions on assumptions or analysis that could ultimately impact emissions calculations, but the letter notably lacks criticism or challenge to the actual conclusion that impacts would not be significant.
DSSEIS, p. 22-23: The DSSEIS states that the FSEIS's significance determination concluded that the project "would displace between 12 and 14 million metric tons of	The SEIS in section 3.5.6 states "The project would result in a displacement of GHG emissions of between 15.02 and 12.68 million metric tonnes CO_2e per year, assuming that an amount equal to the total volume of methanol produced by the proposed project is displaced."

greenhouse gas emissions annually, and did not consider the use of methanol as fuel in determining the significance of the proposed project's environmental impacts under SEPA."	The DSSEIS uses the wrong figure and also does not provide the same qualification regarding assumptions about displacement. The SEIS goes further into this analysis in Section 4.3.6 where comments regarding market displacement are discussed. The SEIS acknowledges that full displacement may not occur and even without that full displacement can result in emissions reductions: > In addition, the Final Supplemental EIS considered the effect of full displacement of an equal volume of methanol from coal-based processes in its analysis. Because of the significant differences in GHG emissions between the displaced methanol and the proposed project, a result that assumes less than total displacement would still result in GHG emissions benefits. Table 3.7 of the Final Supplemental EIS reports the total emissions calculated from the proposed project and the displacement effect. When considering the commitment to mitigate for Washington State emissions, the Project would result in the emissions of 1.58 to 2.05 MT CO_2e per year and the displacement of between 12.68 and 15.02 MT CO_2e per year. Based on these results, the Project would need to only result in displacement of approximately 12 percent of the production volume to result in neutral (no increase) GHG emissions. The SEIS also considered the emission that could be associated with methanol use as fuel. Section 4.3.7 contains a detailed discussion of this issue in responding to those comments on the DSEIS regarding methanol use as fuel. This provides a detailed discussion of the issue including calculations of the emissions that would result from using the entire yearly production as fuel. The oversimplification found within the DSSEIS should be corrected.
DSSEIS, Table 3.5-13 compares the	For example, Table 3.5-13 represents a much higher

assumptions used in the low, medium and high cases in each document, but omits clarification that some of the content identified as differing is actually contained elsewhere in the SEIS.	upper end value for the "Upstream, Construction, Decommissioning, Process, and Transport of the facility" row and a row for "End Use: Methanol to Fuel," which is represented as missing from the SEIS. This is inaccurate. Both the impact of KMMEF being used as fuel and using the NW Power and Conservation Council's marginal power mix were included in the original SEIS, but rather than including these variables in a low, baseline or high scenario, they were included as sensitivities and in response to comments because either their application was not probable or it was not the applicant's Project proposal. *See* SEIS, Section 4.3.7. at 4-10—4-11 (Standard Response 7; summarizing the SEIS's analysis of the potential use of fuel); SEIS, Section 4.3.4 at 4-6—4-8 (Standard Response 4; explaining why the NW Power and Conservation Council's marginal mix was excluded from the low, baseline and high scenarios and explaining that "Appendix B evaluated the use of the marginal mix as reported by the Northwest Power and Conservation Council (NPCC), including calculating the annual GHG emissions, which are estimated at 0.37 million metric tonnes GHGs per year.").

The Port respectfully requests specific edits to the DSSEIS to easily connect the reader to analogous analysis in the SEIS throughout the document and a clearer identification of any new information not found in the SEIS (e.g., comparison of KMMEF to a Chinese natural gas-derived methanol). The Port offers our SEIS technical team to assist Ecology in accurately portraying and citing to the original SEIS.

B. Ecology's Significance Determination Requires Clarification

Under SEPA, "the substantive decisions or recommendations" in an EIS "shall be clearly identifiable..." RCW 43.21C.031(1). The DSSEIS, however, lacks clarity as it concludes that the Project's GHG impacts are significant (notwithstanding the conclusions of the global displacement analysis) and that GHG impacts are capable of mitigation, but lacks a clear conclusion as to whether NWIW's voluntary mitigation plan achieves this outcome.

Given the DSSEIS's global displacement analysis (net negative, regardless of replacement source), the appropriate determination is that the Project's impacts are less than significant. SEPA requires that "[i]n assessing the significance of an impact, a lead agency shall

not limit its consideration of a proposal's impacts only to those aspects within its jurisdiction, including local or state boundaries." WAC 197-11-060(4)(b). The DSSEIS assesses the Project's GHG impacts on an in-state and global level and ultimately concludes that "plausible input values demonstrate that the KMMEF is expected to result in less GHG emissions increases than the alternate cases" and "that the KMMEF would slow the global increase in emissions arising from methanol production and use." The DSSEIS further concludes that, as compared to the reference case (which assumes the Project will not be built), the Project will reduce GHGs from the methanol sector by 200,000- 9.5 million tonnes annually, with a best estimate of a ***6 million tonnes reduction of GHGs annually*** even including an assumption that 40% of KMMEF methanol is used as fuel rather than as an olefin feedstock ***and*** omitting credit for NWIW's commitment to fully mitigate for in-state emissions.

The data in the DSSEIS is conclusive and consistent with the determinations of the original SEIS. When assessed globally, the Project provides clear and substantial GHG benefits that reduce the Project's impacts to a less than significant level. NWIW's voluntary mitigation plan provides a second basis for a less than significant determination.[4] Section 3.7 of the DSSEIS lacks this ultimate conclusion in conflict with RCW 43.21C.031(1) and WAC 197-11-060(4)(b).[5] The Port accordingly requests that Ecology's conclusion on significance be changed to a less than significant determination consistent with the full SEPA record and, in particular, the conclusions of the DSSEIS.

C. The DSSEIS Confuses the Public by Placing Improper Emphasis on Fuel as an End Use

Responsive to substantial public comment, both the DSSEIS and the SEIS analyze fuel as a potential end use of KMMEF methanol. The SEIS included this analysis in Section 3.4.6 and Appendix A of the SEIS, but ultimately concluded that the end use of KMMEF methanol as a fuel was not appropriately a focus of the SEIS because it was not the project proposed by NWIW,[6] the First Amendment to Dock Usage Agreement prohibits this outcome, and any

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[4] *See, e.g.*, WAC 197-11-350 ("In making threshold determinations, an agency may consider mitigation measures that the agency or applicant will implement.").

[5] *See also* WAC 197-11-440(6)(c)(iv) (requiring that the EIS discuss the environmental benefits of mitigation).

[6] By assuming that KMMEF will be used as fuel, rather than the Project's stated purpose, Ecology breaks new ground under SEPA and analyzes a project not proposed by the applicant and potentially misleads the public on the Project and its probable environmental impacts. Confusion about the Project's purpose and probable end use was a regular theme during the recent public hearings. The FSSEIS should be updated and reorganized to clarify that KMMEF methanol would be sold to olefin manufacturers and not used as fuel.

assumptions about KMMEF being used as fuel are unfounded.[7] Choosing an end-use scenario that is contrary to stated Project purpose and inconsistent with market facts, and then calculating GHG emissions from that speculative end-use is inconsistent with SEPA and should be eliminated, or at a minimum, clearly labeled as an outlier anticipatory response to public comment without a factual basis. Additional evidence of the remote likelihood that KMMEF would be used as fuel is presented by the Port's consultant Mr. Berggren. As Mr. Berggren states, economic and regulatory restrictions in China further confirm that it is highly unlikely that KMMEF methanol will be used as a fuel.[8]

DSSEIS Section 3.4.6.2 and Section 3.5.3.1, however, establish a split for end use of the methanol produced by the KMMEF as 60% for olefin production with the balance of 40% being combusted as fuel and apply this split across the DSSEIS's low, medium and high cases.[9] Neither this section of the DSSEIS, nor DSSEIS Appendix B, provides a reasoned basis for this end use split. Ecology's decision to employ an unsupported (and unexplained) assumption that 40% of KMMEF methanol will be used as fuel builds on the already specious nature of KMMEF being used as fuel at all, which again is prohibited under SEPA.[10] It also misleads the public and future decision makers. The Port respectfully requests that the SSEIS be updated to limit its primary analysis to the production of olefins and to clarify the uncertainties and, at minimum, the disputed record underlying the fuel/olefin assumptions.[11]

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[7] *See* SEIS, Section 4.3.7 at 4-10—4-11 (Standard Response 7; summarizing the SEIS's analysis of the potential use of fuel); SEIS, Appendix E, First Amendment to Dock Usage Agreement (June 12, 2019). This amendment provides a covenant that NWIW will not use the dock to sell any quantity of methanol as fuel, provides the Port the right to inspect records and if the prohibition is violated the Port will impose a surcharge of up to 300% of the normal cost to use the dock and under certain situations withdraw the right to use the dock for 1 year.

[8] M. Berggren, Letter to Rick Doenges re KMMEF DSSEIS Comments (Oct. 9. 2020).

[9] *See* DSSEIS, Table 3.5-13 at 84.

[10] SEPA draws a clear distinction between "probable" impacts and "those that merely have a possibility of occurring, but are remote or speculative" and courts consistently hold that an EIS is not required to analyze potential future impacts that are "speculative" rather than "probable." *See City of Des Moines v. Puget Sound Reg'l Council*, 108 Wn. App. 836, 853-55, 988 P.2d 27 (1999); *Gebbers v. Okanogan Cty. Pub. Util. Dist. No. 1*, 144 Wn. App. 371,386, 183 P.3d 324 (2008) (holding that an EIS properly omitted analysis of a "hypothetical and speculative" transmission line rebuild that may occur 10 to 15 years in the future).

[11] *See* SEIS, Section 4.3.7. at 4-10—4-11 (Standard Response 7 summarizing the SEIS's analysis of the potential use of fuel).

D. Additional Clarification is Needed on the Range of Upstream Emission Rates Used in the DSSEIS

The DSSEIS substantially replicates the range of fugitive emission rates assessed in the SEIS but deviates in two ways that require correction or additional support. First, the DSSEIS does not adequately support its decision to use the EPA Shale emissions factor as its medium case, rather than a regionally-specific number. The Port respectfully requests that Ecology reconsider this decision as it overstates the most likely case of Project impacts. Second, the DSSEIS contains a 3% upstream fugitive emission rate. The Port respectfully requests that Ecology cite the technical basis for this assumption to better understand Ecology's decision making or label this assumption a sensitivity included in response to comments.

The DSSEIS's evaluation of KMMEF upstream emissions should properly recognize that regionally-specific GHG emissions rates are the best information available of the Project's probable GHG emissions. The SEIS concluded that, due to geological, operational and regulatory variations between different natural gas basins, a regionally-specific value for fugitive emissions provides the most probable assessment of Project impacts. A regionally-specific emission factor is most appropriate because differences in geologic features can result in differences in extraction methods, resource composition (fractions gas, liquids), weather, infrastructure age, regional air quality regulations, and operator management practices all of which affect fugitive emission rates.[12] This is particularly true here, where Canadian regulations are effective in reducing fugitive release of methane. GHG emissions from Canada also reflect the country's adherence to GHG reporting protocols. Over 99% of KMMEF gas will come from British Columbia/Alberta. The DSSEIS's probable case impacts should be updated to be consistent with this context. The FSSEIS should also point out trends to reduce upstream GHG emissions per MMBtu from both the Canadian and U.S. inventory.

The Port appreciates that, like the SEIS, the DSSEIS assesses potential Project GHG impacts under a range of assumptions on upstream fugitive methane emissions. The SEIS evaluates 13 different upstream leakage rates ranging from 0.32 to 2.3% (the rate forwarded by the Stockholm Environmental Institute).[13] SEIS, Appendix B (replicating a chart found in Appendix A) also provided decision makers with the impact of assigning the full EDF/*Alvarez* value to KMMEF emissions, even though a direct application of *Alvarez* was determined to be unsupported because it assigns all fugitive emissions to natural gas, whereas the wells being analyzed produce natural gas ***and*** oil (which is not a KMMEF feedstock) and so requires a disaggregation before application in a life cycle analysis.[14] The DSSEIS, in contrast, uses a 3%

[12] Brandt, A., Ravikumar, A., Natural Gas Brief, July 2018.

[13] SEIS, Appendix B at 20-22.

upstream emission rate in its high-end scenario, but does not cite a source of this assumption. Disclosure of the technical reports underpinning this decision would aid the Port in its decision making. Additionally, the FSSEIS should confirm that this upstream assumption is included as a sensitivity responsive to comments and is less plausible than other, regionally specific and more technically supported fugitive emission rates.

II. TECHNICAL COMMENTS

The following technical item comments are organized by section of the DSSEIS and provide additional detail and comments to the issues raised above:

Fact Sheet: Under the description of the Project in the fact sheet as well as in Section 2.1 and 2.4, the DSSEIS notes the ability of the Port to use the dock for a layberth. For completeness, this should be corrected to include the number of layberth events allowed per year. The shoreline permit issued by the County includes a limit of 12 and this number was reflected in other permits and reviews.

Section 1: The summary does not include the minimum requirements specified in WAC 197-11-440(4). Notably absent are a summary of the impacts and the mitigation proposed by NWIW.

Section 1.1: The first paragraph included both the stated purpose of the Project but also the assumption from the DSSEIS author's conclusion that the methanol could be used as a fuel. This section should be revised to differentiate between the stated Project purpose and the assumptions used by Ecology in conducting the analysis.

Section 1.3: This section incorrectly notes the environmental record that will be used by Ecology in determining whether or not action needs to be taken on the issued Shoreline Conditional Use Permit. The environmental record includes the 2019 SEIS and the original 2016 EIS per WAC 197-11-600 and WAC 197-11-620.

Section 1.4.1: This section provides a regulatory and legal review of the process including a summary of the Shoreline Conditional Use permit process. It indicates that the Conditional Use Permit was issued for "the proposed project". To provide a complete picture of the process it is important for the FSSEIS reader to recognize that the Conditional Use Permit is not for the entirety of the Project but rather for discrete elements. These elements are dredging (within the Urban Shoreline District only) and limited industrial uses within the Conservancy Shoreline District (portions of the fire water storage pond, portions of the tank containment,

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[14] *See* Appendix B, Section 3.3 at 21 ("Total fugitive emissions reported in the EDF studies correspond to oil and gas production and therefore it is necessary to allocate total fugitive emissions between the crude oil and the natural gas produced by the same well. The allocation depends upon the amount of associated gas produced with crude oil.").

portions of the infiltration pond, security fencing and necessary site grading). It is requested that an explanation of this fact be added along with consideration of the GHG emission resulting from these specific elements of the Project.

Section 1.4.1: A discussion of RCW Chapter 70.235 is included in this section devoted to the Determination of Significance (DS) issued by Ecology for the DSSEIS. It is not clear the relevancy of this specific RCW in the context of the DS. This RCW is not mentioned in the scoping notice nor in the letter provided from Ecology to the County on November 22, 2019. This discussion should be removed from this section or the relevancy clearly stated for the decision makers.

Section 2.1 and 2.5.2: This section notes the connected actions of the natural gas pipeline and the electric transmission line. Readers would benefit from additional information regarding these connected actions in order to fully understand the GHG emissions (or lack thereof) from these actions. This could be accomplished by adding a simple description of these separate projects and/or referencing more directly where this information is located in the SEIS or the original FEIS.

Section 2.2: A brief summary of Project related actions is included at the end of this section. The list does not mention mitigation proposed by or imposed on the Project including the habitat mitigation actions such as habitat improvements and preservation actions. For completeness mitigation should be noted in this section.

Section 3.2: This section is devoted to the "affected environment" for GHG emissions included in the DSSEIS. This section includes a discussion (similar to that in the SEIS) that reflects the global nature of climate change and the fact that it is not meaningful to link a specific climate change effect (e.g., sea level rise) to a specific Project emission source. What this section (and the rest of the DSSEIS) lacks is clear articulation of what this means. The DSSEIS spends a considerable amount of time describing the Project related (both direct and indirect) emissions but nearly ignores the context (except for the state level which has limited relevance to actual climate change impacts from global GHG emissions). The SEIS provides a more detailed discussion of this in Section 3.5.1 as noted below:

> *The life-cycle GHG emissions of the proposed project would be added to the global GHG emissions from past activities, emissions from current activities, and the future emissions that would contribute to the cumulative increase in GHG emissions that result in climate change.*
>
> *Because it is not possible to tie a particular climate change impact to individual emissions, it is not possible to identify or quantify specific direct environmental impacts from the GHG emissions of the proposed project. Therefore, the impact analysis is inherently a cumulative impacts analysis of the indirect effects of the GHG emissions. It is the resulting climate change effects that take place in the future and distant from the*

> *project that are the relevant impacts. In this section, the impacts are based on GHG emissions and described separately by category and on an overall basis. To provide appropriate context and intensity for evaluation of impacts as required under SEPA, the GHG emissions are described in the context of both overall state and global GHG emissions levels*.

We request that a similar discussion be added the FSSEIS so that decision makers clearly understand the contribution (or lack thereof) of this Project to global climate change. WAC 197-11-060(4)(b) ("In assessing the significance of an impact, a lead agency shall not limit its consideration of a proposal's impacts to those aspects within its jurisdiction, including local and state boundaries"); WAC 197-11-794 (assessment of significance requires consideration of "context and intensity"). We further request that the DSSEIS characterize the Project's global GHG emissions in direct comparison to global GHG emissions, which were estimated in 2018 to be 53.5 billion metric tonnes CO_2e, in addition to state level comparison currently included in the document.

Figure 3-1: This figure is not referenced in the text and no context is provided. In addition, it includes emissions from the KMMEF without any explanation and before emissions from the Project are even discussed. This could lead to confusion and question of relevancy to the analysis of emission from the Project. An explanation should be added and relevancy to determination of impacts under SEPA should be added to Section 3.2.1 or this figure should be removed.

Section 3.3.3.2: The last sentence of this section requires clarification. According to the Port's understanding these provisions of the Washington Clean Air Act only require reporting of emissions while the section refers to "reduction or mitigation requirements."

Section 3.3.3.8: Section 3.3, Regulatory Setting, indicates that the section summarizes laws, regulations, etc. that address "GHG" emissions. Section 3.3.3.8 summarizes the Shoreline Management Act. As noted in the first SEIS, there are no provisions within the Cowlitz County Shoreline Master Program or the Shoreline Management Act that specifically address GHG emissions. This discussion of the Shoreline Management Act should either be removed, moved to a separate section outside regulatory provisions related to GHG emissions or language added that acknowledges that it does not specifically address GHG emissions.

Section 3.4.2: This section on upstream emissions contains statements regarding methane and notes that is a far more potent GHG than carbon dioxide. This statement is an oversimplification of methane as a GHG and could lead to an overemphasis on methane emissions as viewed by the public and by decision makers as compared to carbon dioxide. We request that this paragraph be eliminated or additional information added to provide the necessary background. For example, although methane has more warming potential per unit, it is also much shorter lived (which means that the carbon dioxide emitted today will last in the

atmosphere much longer than methane). Also, methane constitutes only a small percentage of overall GHG emissions from the Project, the bulk of which are carbon dioxide. The focus of the DSSEIS's LCA should accordingly be on overall GHG emissions and not a particular gas and that Project operation reduces global GHG emissions as compared to the no action scenario.

Section 3.4.2: Table 3.4-1a does not accurately represent the upstream emission rates considered in the SEIS. Specifically this does not identify the Upper Emissions scenario which utilized the GREET/EDF values. Please correct the table to reflect this fact.

Section 3.4.4.2.2: The Reference Case for imported methanol includes upstream emission errors that likely underestimate of overall GHG emission. Upstream emissions from imported natural gas appear to have two errors. First the upstream emission values appear to be based on the same volume of natural gas for both the KMMEF and for the foreign imports. This is inaccurate because the combined reforming (CR) method uses more natural gas per unit of methanol than the ULE technology proposed for the KMMEF. The second error is use of the same upstream emission rate for all sources of imported natural gas. Upstream emission profiles can vary significantly between geologic basins due to, in part, variation in extraction methods, operations, and regulation. More research should be conducted to provide more accurate assessments of upstream emission rates for the various sources of methanol. For example the number one exporter to China is indicated as Iran (see Table 3.5-9). The International Energy Agency indicates a leak rate for Iran that is approximately 1.4%, which is twice that used in the DSSEIS. The Port accordingly requests that the DSSEIS reflect more accurate upstream emission rates or acknowledge the uncertainty surrounding the assumptions used.

Section 3.4.5.1: The DSSEIS states that "KMMEF is assumed to be a "price-taker" (as is expected in a competitive commodity market), meaning that the facility would take the price offered; it is not expected to impact global supply in a way that could affect the price." We agree that the KMMEF will be a price taker. For clarity, this discussion should focus on the fact that the market is growing and the statement that price takers do not affect supply/demand should be edited to reflect a more accurate statement. The DSSEIS should also be updated to clarify that KMMEF is lower cost than coal alternatives and so is able to remain operational (remain a price taker) when higher cost, coal-derived methanol is priced out. This provides additional support for Ecology's displacement analysis conclusions.

Section 3.5.1.2: The maximum potential to emit scenario is first mentioned in this section (and is referenced elsewhere) for emissions for the KMMEF process. The EIS does not do a sufficient job of explaining this scenario and why it is unlikely that this scenario would occur. While a decision maker may ultimately be able to find this information in the environmental record, we request that information be added to his section addressing this scenario. It also warrants reference to the Southwest Clean Air Agency air permit limit on GHG emissions.

Section 3.5.1.5.2: Figure 3.5-3 should be changed to report fuel use in a similar unit as the remainder of the document so users can make an easier comparison. The most used unit is metric tonnes.

Section 3.5.3.1: Regarding the following bullet point:

- Oil prices are assumed to remain stable at present levels – about $40/barrel. If oil prices increase or decrease, then it is expected that correspondingly less or more naphtha based olefins would be produced, shifting the demand for methanol.

This is unclear whether lower oil prices shift demand for methanol vs. the demand for feedstocks to make methanol. Please add the following clarification to the FSSEIS: "If oil prices increase or decrease, then it is expected that correspondingly less or more naphtha based olefins would be produced, shifting the demand for naphtha as an olefin feedstock."

Figure 3.5-11: The legend for this figure includes a "Naphtha to Olefin" category. It does not appear that Figure 3.5-11 shows emissions that would come from this scenario.

Section 3.6.1: This section discusses sensitivity analysis related to the use of different Global Warning Potential (GWP) methodologies. In this location as well as in other sections of the EIS the emissions are primarily calculated based on the AR4 100-year GWP. The Port agrees that the use of the AR4 100-year GWP is the most appropriate for the Project. However, for clarity for decision makers we request that more justification be provided for use of this GWP. Section 3.4.2 of the SEIS notes that the AR4 100-year GWP was used for consistency with international, United States, and Washington reporting requirements and contains a more detailed discussion of the GWPs. We also request that this section specifically note that the GWPs do not change the emissions from the Project. This section states "Moving from the 100-year AR4 result to the 20-year AR5 result, the difference in average annual emissions between KMMEF and the Alternate Cases increases by 15 percent for the RC, 13 percent for LCC, and 11 percent for HCC." This statement is misleading in that it says emissions increase. In fact the actual emissions do not increase only the comparison of the warming effects related to CO^2e. More clarity is needed.

III. CONCLUSION

Ecology, the Port and the County have engaged in two rounds of exhaustive analysis of the GHG impacts of the KMMEF from well head to end use. After rigorous scrutiny, both analyses concurred that with or without the Project new sources of methanol will come on line to produce olefins and that KMMEF will out-compete significantly more impactful sources of methanol. Whether a decision maker finds Ecology's estimate of 6 million tonnes of net benefit or the SEIS range of 9.6 and 12.6 million metric tonnes CO_2e of annual GHG reductions more persuasive is largely immaterial in assessing significance. Under either set of modeling parameters, this Project has significant GHG ***benefits*** to foreseeable global emissions. The Port

is also unaware of any EIS that has concluded that when a project fully mitigates for in-state impact, its impacts are significant. Consistent with the regular application of SEPA, NWIW's commitment to fully mitigate for in-state GHG emissions reduces their GHG impacts to a less than significant level.

In addition to reducing global GHG emissions as compared to the no action alternative, the proposed KMMEF would also provide extraordinary, long-term benefits to the state and local economies and will generate new jobs in Southwest Washington. Cowlitz County could use this stimulus— it is one of the most economically challenged communities in Western Washington with higher than average unemployment, lower wages and lower labor participation rates. The economic impact of COVID-19 has made the situation even more dire and in April 2020 nearly 15 percent of the county workforce filed for unemployment. The construction of this Project would offer huge benefits for Cowlitz County:

- 1,000 workers— laborers, electricians, welders, carpenters, ironworkers and administrative support— during construction;
- More than $467 million in local goods and service purchases; and
- $289 million in local wages, salaries and benefits.

Ongoing operations will also create many long-term, family-wage jobs as the Project is expected to directly employ 192 full-time workers at the facility and pay $21 million in total compensation. When indirect and induced economic effects are included, a total of 688 jobs a year are attributed to the facility. State and local jurisdictions would receive significant tax revenues. NWIW will pay $58 million in taxes during construction and $30-$40 million in annual taxes during operations. This means significant revenue to pay for roads, schools, fire services, infrastructure and more.

There are few (if any) places in the world where methanol manufacturing would be subjected to a more exacting regulatory review than in Washington. The state's economic, environmental and climate commitments are best reflected in a timely completion of this environmental review and the approval of all outstanding authorizations.

Sincerely,



Mark Wilson
Executive Director

CC:

Senator Dean Takko
Senator John Braun
Representative Jim Walsh
Representative Brian Blake
Representative Richard DeBolt
Representative Ed Orcutt
Ron Melin, Cowlitz County Planning Director
Doug Jensen, Chief Civil Deputy, Cowlitz County Prosecuting Attorney
Heather Bartlett, Deputy Director, Washington Department of Ecology
Reed Schuler, Senior Policy Advisor to Governor Inslee, Climate & Sustainability
Lauren McCloy, Senior Policy Advisor to Governor Inslee, Energy
Taylor Aalvik, Natural Resources Director, Cowlitz Indian Tribe
Julie Carter, Policy Analyst, Columbia River Inter-Tribal Fish Commission
Carl Merkle, Confederated Tribes of the Umatilla Indian Reservation
Marcus Shirzod, Yakama Nation Office of Legal Council

Darlene Johnson

When faced with facts, wise people listen. They evolve. They show an openness to science. The value of science is that it doesn't care about our politics or opinions – it just tells us what works.

Six years into studying the science of the proposed NWIW methanol facility in Kalama, one fact has emerged above all others: The construction and operation of this plant would reduce harmful greenhouse gas emissions globally, at meaningful levels, representing the single largest initiative Washington State could undertake in our fight against climate change.

For those who have been against the project and asked questions throughout this process, those questions have been heard. Thousands of comments were considered in the drafting of these reports, including comments from the leading environmental groups in this country.

Opinions are opinions; facts are facts. We can now say it's a fact NWIW Kalama is good for the environment. Now it's time to set opinions aside and believe in the science. Wise people listen to science not just when it's convenient. Let's get to work and build this.

Thank you!
Jim and Darlene Johnson
Woodland Truck Line, inc
PO BOX 1808
WOODLAND, WA 98674

Say Yes to Life Swims LLC

This proposed project is an environmental disaster in the making! If built, the Kalama project would unleash more gas, and therefore more fracking, than is used by all of the NW's biggest cities--COMBINED. It would more gas, and therefore more fracking, than is used by all of the power plants in Washington State!

The analysis that petrochemical boosters present is both rhetorically deceptive and analytically wrong. Energy modelers looked at the project forward and backward, right-side up and upside down. What they found is that unequivocally and under every set of assumptions, the project would be one of the top polluters in Washington.

It is beyond foolhardy to even consider building such a horrific project. NO!

Guila Muir, Founder
Say Yes to Life Swims LLC

Say Yes to Life Swims LLC

This horrific proposed project would cause a huge amount of climate pollution. It would boost climate emissions "upstream" (from fracking and piping the gas), on-site (as the petrochemical refinery converts gaseous methane into the liquid petrochemical methanol), and "downstream" (from converting the methanol into plastics or vehicle fuel, and then burning that fuel).

There is absolutely no way in which the Kalama methanol project would "reduce" or "remove" carbon emissions. It would add carbon pollution—4.6 million tons of carbon dioxide pollution each year. That's staggering.

Don't let lies about "clean energy" sway you. This project cannot be considered. Thank you.

Evergreen Carbon

Comments attached.

EVERGREEN CARBON

To: Department of Ecology

From: Wolf Lichtenstein, Evergreen Carbon

Re: Comments: Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

Date: October 7, 2020

Dear Dept. of Ecology,

I am offering comments on the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS, specifically on the Northwest Innovation Works (NWIW) Kalama Voluntary Greenhouse Gas Mitigation Program Framework (Appendix D: Mitigation Framework). I have been involved in carbon markets since the mid-2000's as a consultant and contractor. In 2015, Evergreen Carbon was launched to provide meaningful, high value carbon credits to businesses and individuals.

I have firsthand knowledge of a multitude of carbon projects, in industrial, agriculture, forestry, and renewable energy (solar and wind installations). I have worked with a South Korean client, consulting on a long-term "forward" contract, providing carbon credits for the South Korean compliance market. Evergreen Carbon also has several local Washington State based clients who voluntarily purchase carbon credits. I bring expertise in several types of carbon projects; Landfill Gas projects, dairy digesters, agriculture (soil carbon projects), energy efficiency, renewables – wind and solar, N_2O abatement in Nitric Acid production, Ozone Depleting Substances, forestry and carbon capture and storage (CCS). I have been from northern British Columbia to the Andes in Peru (including carbon projects in WA) doing this carbon work.

In my review of the Voluntary Mitigation Plan (VMP), I found that the practicality of implementation could be expanded on. I hope that my comments are helpful to Ecology in providing further context of how a new multi-million-dollar ongoing fund that the VMP will create could be implemented.

Fund Value

The funds provided to the carbon market will have a significant impact. The VMP creates an annual fund based on the California allowance price. Given that the trading price for the August 2020 joint CA-Québec allowance auction is $16.68, it is reasonable to expect an annual fund starting at $17 million (@1 million MT of GHG/year). This is a significant fund that will enable the project to keep its mitigation commitments, but have additional funds that can be invested into new carbon projects and perhaps other projects and programs that support a low carbon future for Washington State. Because the price of carbon credits on the voluntary market has always been less than the CA/Québec auction price, there will always be extra funds available after carbon credits are purchased for direct, immediate mitigation.

EVERGREEN CARBON

Meeting Demand

To meet the carbon credit demand, the investment will have to be on multiple fronts, satisfying both short-term purchases and long-term investment into new carbon projects. New carbon projects are typically faced with a challenge of finding financing to get a new project started. The NWIW fund can invest in new projects, and create agreements to purchase carbon credits when they are available. A floor price can be agreed to, so the project itself will have a guaranteed revenue stream and use the agreement with NWIW to attract other funders or guarantee supporting loans from other sources. Because of an expected tightening of the carbon market supply, funding new projects and entering into future purchase contracts will be an important strategy to meet carbon mitigation commitments.

Starting with a local commitment, the NWIW fund will have a direct local economic stimulus. Currently, Cowlitz country does not have any registered (CAR, VCS or ACR) carbon projects. The NWIW fund will allow for the development of carbon projects on Cowlitz country dairy farms (digester projects) and install a LFG collection and destruction systems on the Cowlitz Country Landfill. NWIW will need a plant to assess the potential for other new carbon projects in Cowlitz County and elsewhere in WA. Looking close to home for new carbon projects and elsewhere in the PNW is a priority that I support. A best outcome would be that dairy farms digesters and other carbon removal projects will be the norm after a time – and the NWIW fund will foster this. When carbon projects become Business As Usual, the carbon project registries will recognize this, and carbon credits will no longer be earned under a BAU scenario. We are a long way from that, yet, the NWIW fund will still be there, and will continue to invest in areas that are not yet BAU. This is many years away, if it can be reached at all.

Cowlitz County and WA can support many types of carbon projects, and the investment from NWIW will support the development of many projects. Sectors we can consider in WA include Landfill Gas Capture and destruction, Livestock (dairy digesters), Forestry (Improved forest management and reforestation), Other Land Use (agriculture-soil carbon), N_2O abatement at our chemical fertilizer production plants, and even direct carbon capture. The fund can be used to explore the potential of WA for permanent underground storage. This NWIW VMP fund will provide key investments in WA, providing the infrastructure for a low carbon future.

Are there Enough Carbon Credits for NWIW to fulfill their mission?

A million or more carbon credits a year is a tall order. The the world-wide voluntary carbon markets can support this added demand. It will be welcomed! There will be sufficient funds annually to make the purchase, with money left over for new and ongoing carbon project development.

Recently a large tranche of carbon credits came on the market from a PNW forest project. The project, owned by the Nature Conservancy of Canada, located in B.C. just over the WA State boarder, has 1.38 recently put 1.4 million carbon credits in the marketplace. Multiple years of this project was verified together creating a large supply of credits from a great forest project. The project preserves biodiversity, with habitat for several threatened species. The whole tranche will likely be sold this year, the price is reasonable and is an example of a single carbon project that has generated sufficient credits to support a year's + mitigation under the VMP. This project would be well within the NWIW yearly budget and the

have significant funds left over for new investments. NWIW will have to make use of U.S. based, and worldwide carbon markets and continue to be on the lookout for good carbon projects. Carbon credits can be purchased and held, then retired when needed. NWIW will have to manage this fund full-time, keeping abreast of carbon credits coming into the marketplace, and finding new carbon project development opportunities to assure a local supply of carbon credits to supplement credits purchased from projects elsewhere in the PNW, the U.S. and world-wide.

Conclusion

GHG mitigation under the VMP will be possible. NWIW will have to be pro-active and be a player in the PNW carbon marketplace, nationally, and internationally. One million+ annual credits is a tall order, but an achievable one. The amount of the NWIW fund for the VMP will be more than sufficient to achieve this annual goal through the voluntary carbon marketplace. The funds invested into local, national and international carbon markets will be welcomed by project developers, fostering strong relationships with well managed carbon projects. This large fund will allow NWIW to be a competitive buyer, providing new energy and economic stimulus into the growing carbon markets. NWIW will have to engage in an ongoing program of due diligence of existing and new carbon projects. Criteria will have to be set up to confirm that the carbon credits purchased are of high quality and providing additional co-benefits (environmental, social, economic, and direct community benefits).

Regards,



Gary (Wolf) Lichtenstein
Consultant/Owner
Evergreen Carbon

Methanol Market Services Asia Pte. Ltd.

Please see attached letter.

Methanol Market Services Asia Pte. Ltd (MMSA)
(Co. Registration No. 200400721K)
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Singapore 068896
Office: +65 6465 2720
Fax: +65 6256 3957

October 9, 2020

Attn: Rich Doenges
SEPA Responsible Official
Washington Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Dear Mr. Doenges,

I am a chemical engineer with 36 years of petrochemical industry experience, the last 24 of which I have worked as an independent analyst of global methanol markets. In 2004, I founded Methanol Market Services Asia (MMSA), a global consulting firm which provides business solutions to most major methanol manufacturers, consumers, traders, distributors, and other associated companies. MMSA was founded and remains headquartered in Singapore. Among its services, MMSA provides detailed analysis of Chinese methanol markets, including methanol demand and trade flows. In the course of my work with MMSA, I have traveled extensively to China to visit clients to understand how methanol is consumed and transacted in China. MMSA has permanent, Mandarin speaking staff in China also with extensive methanol market experience. I am in frequent contact with Chinese methanol market participants and regularly prepare independent reports on Chinese methanol markets.

I was engaged by the Port of Kalama (Port) to objectively review and comment on the State of Washington Department of Ecology's (Ecology's) Draft Second Supplemental Environmental Impact Statement (DSSEIS) prepared for a proposed Kalama Manufacturing and Marine Export Facility (KMMEF) and provide my opinions about the reasonableness of assumptions used in the report regarding behavior of methanol markets in China. Specifically, I was asked to comment on methanol market related assumptions used in the Emissions Sensitivity Model (ESM) developed by the report authors.

I affirm my genuine belief in the opinions expressed in this report. In submitting this report, I acknowledge my independence from the Port and their legal representatives. My engagement with the Port was not conditioned upon the arrival of a certain conclusion.

In summary, I identified several assumptions that would lead to an overstatement of the GHG impact of the KMMEF, and an understatement of the net emissions benefits of KMMEF. Specifically:

- A reference case assumption that 40 percent of the KMMEF would be used for fuels use in China
    - For several reasons, including current gasoline specifications, the current market locations of methanol's use as fuel, and the costs of transporting imported methanol for use in fuel applications, the assumption of 40 percent is too high.
    - Notably, the authors did not use MMSA China data in their analysis, instead

misinterpreting global-level MMSA information in a manner which overstates the potential for, and the impact of, displacing existing fuels use with methanol in China.

- A reference case assumption that KMMEF produced methanol would displace 60 percent of methanol produced by a coal-based methanol production process, 10 percent by a Chinese natural gas-based process, and 30 percent from imported methanol.
    - The choice of 60 percent is too low and is based on a methodology that is not clearly explained in the DSSEIS.

Following are details behind the findings above and suggestions for more appropriate assumptions for ESM reference case inputs.

Use of KMMEF methanol as fuel in China will be negligible

The use of methanol imported from overseas by Chinese parties as "fuel," including, as the DSSEIS posits, use of the methanol made at the KMMEF, is and will be negligible. While there is appreciable use of methanol in China for fuel that MMSA categorizes as "gasoline blending and combustion," "biodiesel," "dimethyl ether," and "methyl tert-butyl ether (MTBE)," these uses (which can all be considered fuel), are almost entirely supplied by domestically produced methanol. In fact, despite the large current size of imports into China, MMSA observes that essentially no overseas methanol is directly blended with gasoline, nor used in industrial boilers, nor used in cooking or heating applications in China. Assuming (as the DSSEIS did) that 40% of KMMEF's annual methanol production (1.4 million metric tons per year) would be used as fuel would require a Chinese methanol fuel demand many magnitudes higher than the existing market for overseas methanol demand into fuels (less than 30 thousand metric tons per year).

There are several reasons which drive and will continue to drive this market behavior in which methanol supply from overseas will not be used in fuel on any large scale. For one, Chinese authorities, in conjunction with state-owned refiners, are discouraging the use of methanol as a transportation fuel, especially in large consuming areas. The majority of gasoline consumed in China is in major urban areas near the coast, and current national gasoline specifications (attached) have strict limitations on methanol use (maximum 0.3 percent by weight). These specifications were developed by refiners who are not convinced of the overall benefits of methanol gasoline blends, including the incremental costs associated with preparing and handling such blends, as well as the lack of broad automotive industry support for methanol. As a result, there is no readily accessible market for methanol in coastal China (where most gasoline is consumed, and near the location where methanol imports from overseas arrive).

Chinese use of methanol in gasoline blends is highly fragmented, limited to inland provinces with high coal resources where gasoline supply had been limited, and transportation fuels are needed. In these regions, locally produced methanol is typically blended with gasoline in blends from 5 to 30 percent (M5 to M30), with M15 being the most common type. Note that, these domestic blenders are under pressure to close operations. Nationally there is clear intention by government officials, including the National Development and Reform Commission (NDRC) and the Ministry of Industry and Information Technology (MIIT) to limit the use of methanol in low-level blends with gasoline, and instead use M100, or pure methanol in transportation uses. These pilot programs are limited in size, restricted to a few

thousand vehicles, are one of several alternative fueled vehicle experiments in China, and there is no guarantee of success in wider development. However, it should be noted that the motivation for this use is driven by having a superior fuel in several ways including GHG and other emissions improvements over conventional fuels. Because methanol and gasoline blends are not encouraged nationally, MMSA forecasts only modest growth in use of methanol in gasoline blends in China, and very modest growth of M100 use from an exceedingly small base of consumption. Note also that MMSA observes that the total amount of methanol used today as M100 is less than 20,000 metric tons per year (one day's output at the KMMEF).

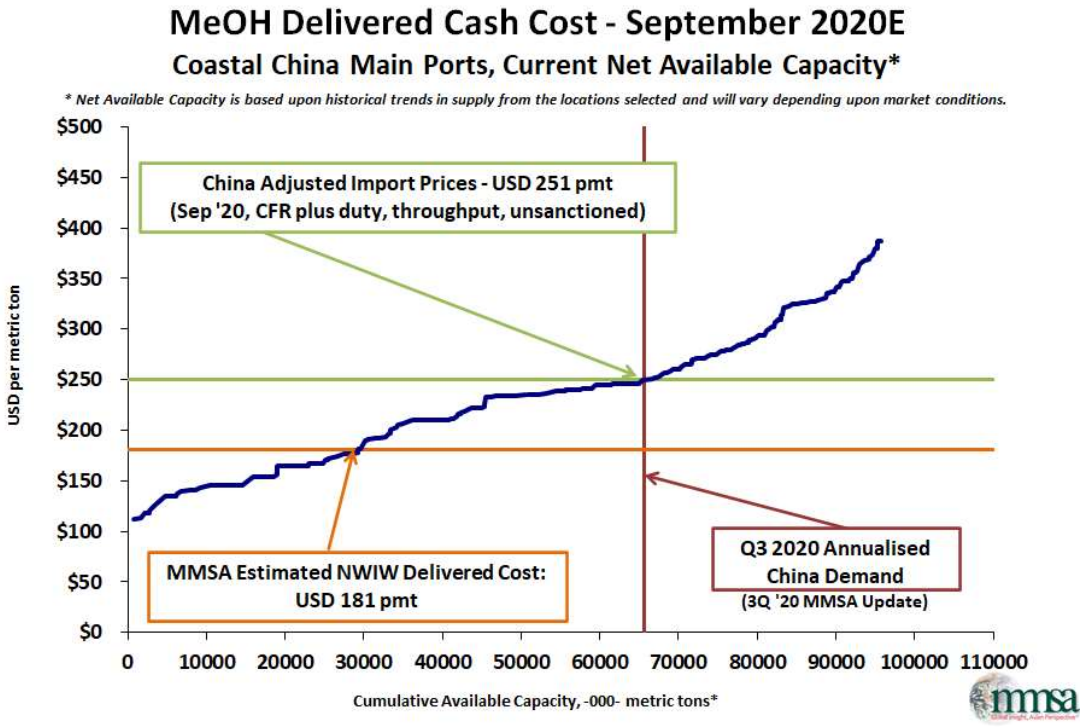
Another factor which prevents overseas methanol from being used in gasoline blending is cost. The cost of shipping imported methanol from coastal ports inland via barge, rail, or truck is high. Costs to deliver methanol to these locations will make overseas methanol uncompetitive for these remote, and relatively small, markets. For instance, assume that methanol is delivered to coastal China at the current import market price of USD 230 per metric ton. The importer would then pay a duty of USD 12.65 per metric ton to import the product, then pay roughly USD 10 per metric ton to store and transfer the methanol to a delivery vessel (which for transport to provinces requiring methanol for gasoline blending, industrial boilers, and/or heating and cooking and other fuel uses would likely be a rail car). Rail costs would of course vary by province, and a typical rail cost would be USD 40 per metric ton. Whoever would sell such methanol would need to at minimum absorb these costs, and the consumer would pay a 13 percent Value Added Tax (VAT) on top of that. Accordingly, such a parcel of methanol delivered inland for use would be USD 292.65 before VAT and USD 330.69. The current domestic market price for methanol in inland provinces after VAT is CNY 1750, or approximately USD 258 per metric ton. There is no premium for imported methanol for inland province consumption. Thus, there is no chance that a sale of methanol product at USD 330.69 could be made in any substantial quantities in inland provinces for any use, let alone fuels uses. Methanol overwhelmingly substitutes for uses in coastal markets, not inland markets, which are where the majority of methanol for fuels uses resides. Thus, it is highly difficult to have imported methanol used in fuels markets in China.

In summary, because there is little overseas use of methanol in fuel applications in China, the DSSEIS reference case (and highest probability assumption) that 40 percent of KMMEF methanol would be used for fuels in China is highly overstated. The DSSEIS should utilize a reference case assumption for its EMS that 98 percent of the KMMEF methanol would displace olefins, and 2 percent would displace fuel. However, as the current ESM only allows assumptions to be inputted in 10 percent increments, I would suggest that the DSSEIS would utilize a reference case assumption for its EMS that 100 percent of the KMMEF methanol would displace olefins, and 0 percent would displace fuel.

KMMEF displacement of methanol used in China

The cost curve of methanol supply to coastal China (below) provides a useful method to determine which facilities would be most cost competitive. The curve (blue line) is shown in the following chart, "MeOH Delivered Cash Cost – September 2020E." The curve is assembled by calculating the costs to produce and deliver methanol to coastal China at a given point in time, factoring feedstock, variable, fixed, and freight costs among others, from all available locations around the world (noting that not every location chooses to supply China at a given point in time). These costs are sorted from lowest to highest, and then plotted against their

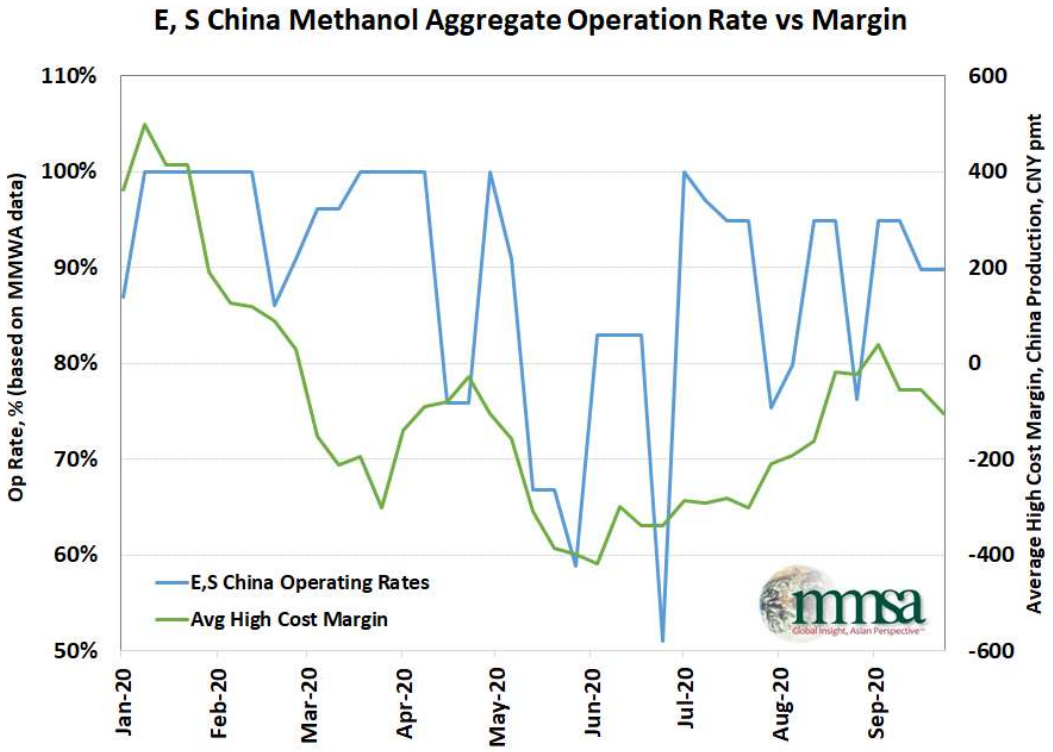
cumulative ability to supply coastal China. This chart is updated monthly by MMSA in its analysis of Chinese methanol markets.



In the chart, the blue line is a useful indicator to predict behavior of suppliers of methanol to coastal China, especially when compared to the horizontal orange and green lines shown. These horizontal lines represent the price at which methanol is sold. Producers whose costs to produce a ton of methanol exceed market prices (currently USD 240 – 250 per metric ton) will be selling at a loss and will very often shut down operations ("shut in") soon thereafter. These are called "high cost producers," and on this curve are almost exclusively coal and coke-oven gas-based supply and reside in the upper right-hand side of the curve. [Details behind each point on the cost curve can be made available by MMSA.] These high cost facilities will stop producing when prices collapse below their cost to supply material to avoid loss of profit. Overseas suppliers, including KMMEF, are in lower left-hand side of curve. These "low cost suppliers" are able to sell methanol at a profit. As they produce, they "push" the high cost methanol producers to the upper right-hand side of the cost curve, relegating them to negative profits and obsolescence. For reference, I have included a horizontal line (orange) where MMSA estimates the cost of delivery of methanol from KMMEF using current natural gas, duty, and freight estimates. KMMEF would be able to transport and sell methanol in coastal China at a more competitive cost than coal-based production (every point on the blue curve to the right of where the orange and blue lines intersect). Were KMMEF operational at designed capacity, and on this curve, it would move 3.6 million metric tons of coal based methanol production to the right of the curve, and expose that same 3.6 million metric tons to a point where they were higher on the curve than current pricing (green line). In this manner, overseas suppliers will force the closing of operations of high cost, coal-based production: by supplying market needs at lower costs.

An example of how Chinese production slows as described by the cost curve is shown in the following chart, "E, S China Methanol Aggregate Operation Rate vs Margin." In the chart, historic operation rates are compared to the cash margin of production (price minus cost to

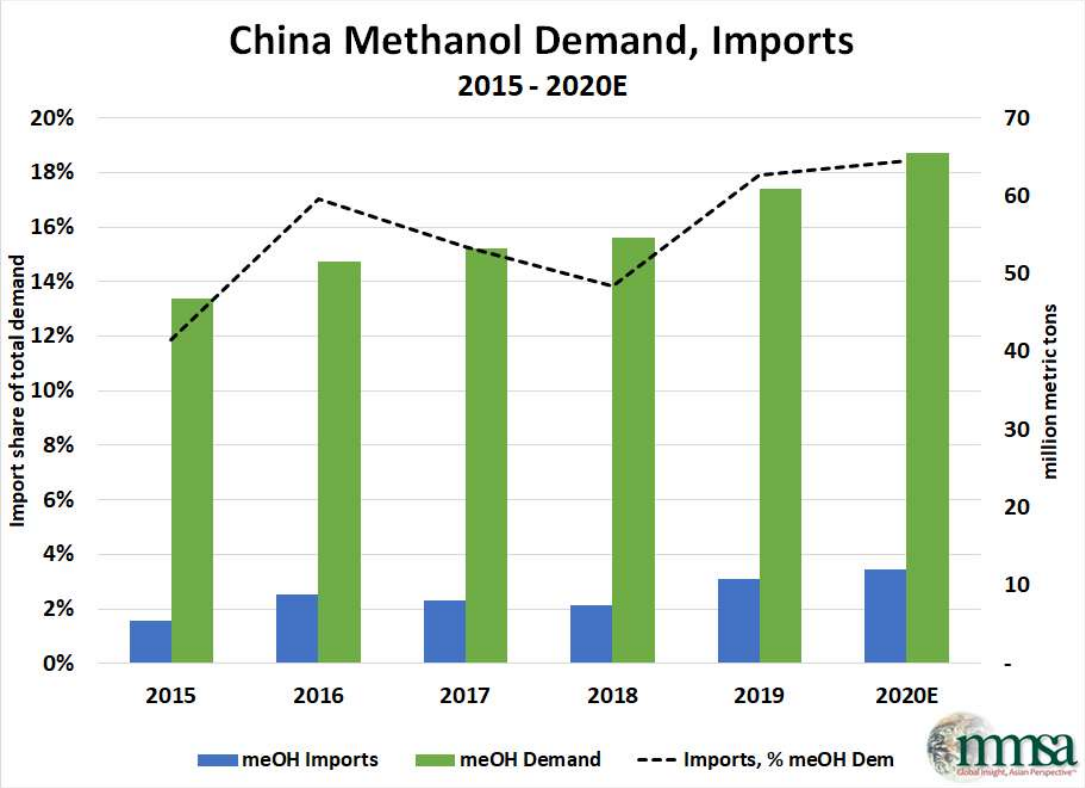
produce) for high cost coal based methanol producers during a recent price turndown in China as the COVID-19 crisis impacted the country's economy, and then subsided. Operation rates are tracked by MMSA weekly and shown as the blue line in the chart. Cash margins are also calculated by MMSA weekly and compared in the green line in the chart. As cash margins became negative the coal to methanol facilities reduced production or shut off, leading to the lowered operating rates (as illustrated where the blue line drops from high levels of late March – early April 2020 to a near-halving of production by late June). As margins improved above zero, operating rates recovered.



Recall that these high cost producers which have shut in reside on the right-hand side of the cost curve. Considering this data, it is very likely that KMMEF, which will be on the left-hand side of the cost curve. will have the effect of displacing high cost coal to methanol supply in China, moving the marginal supply costs down, lowering cash margins for high cost producers, which will then shut down.

Another example showing how the MMSA cost curve describes market behavior in China can be gleaned from China import data. The chart "China Methanol Demand, Imports," compiles historic and forecast MMSA records of Chinese methanol demand and imports. Essentially all the imports into China come from supplies on the lower left-hand side of the cost curve, i.e. low cost overseas supply, like that of KMMEF. These supplies have garnered an increasing share of the methanol needed in China. This behavior underscores the trend in China toward use of methanol supplies like KMMEF.

Imports from low cost overseas imports have increased in 2020 at the cost of high cost production in China and have contributed to the lower operation rates. KMMEF would be one of these low cost methanol suppliers, and will be able to place product into China, not at the expense of the low cost overseas suppliers, but in conjunction with them, at the expense



of the high cost Chinese coal based methanol production.

In conclusion, KMMEF will push high cost capacity to the right of the cost curve. High cost capacity in China is coal based and will be first to shut down. Imports from low cost overseas supply will not suffer; it will displace high cost coal-based capacity in China. Accordingly, the "high coal case (80/20)" used in the EMS is not only more probable than reference case, it is my opinion that the most probable case (and so most appropriately applied in the DSSEIS's reference case) will be 100% displacement of coal derived methanol and a 0% replacement of gas-based methanol production.

Importantly, Chinese entities are planning to expand domestic coal-based production in the future. MMSA tracks the most likely projects (with many more under planning) for Chinese methanol production. These are listed in the following table.

The table is important in considering the impact of the KMMEF and similar facilities on coal-

METHANOL

Average Annual Capacities (-000- METRIC TONS) - New Facilities from 2019

COMPANY	CITY	PROVINCE		2015	2016	2017	2018	2019	2020E	2021E	2022E	2023E	2024E	2025E	
NORTHEAST ASIA															Capacity Add. '19 to '25E
CHINA															
Linquan Chemicals Co.		Anhui	Coal					200	300	300	300	300	300	300	100
Zhongan Lianhe		Anhui	Coal					1133	1700	1700	1700	1700	1700	1700	567
Shanghai Huayi Group	Qinzhou	Guangxi	Coal	----	----	----	----	----	----	860	1,720	1,720	1,720	1,720	1,720
Sinopec		Guizhou	Coal	----	----	----	----	----	----	----	----	1800	1800	1800	1,800
Heilongjiang Baotailong (parent company)		Heilongjiang	Coal					500	600	600	600	600	600	600	100
Hubei Yingde		Hubei	Coal	----	----	----	----	146	500	500	500	500	500	500	354
Yanzhou Coal Mining (Yankuang Group)		Inner Mongolia	Coal					450	900	900	900	900	900	900	450
Connell		Jilin	Coal	----	----	----	----	----	----	200	200	200	200	200	200
Hengli		Liaoning	Coal					417	500	500	500	500	500	500	83
Ningxia Baofeng Energy Co. Ltd (MTO Facility)		Ningxia	Coal						900	1800	1800	1800	1800	1800	1,800
Sinopec		Ningxia	Coal	----	----	----	----	----	----	----	----	----	----	1,800	1,800
Qinghai Kuangye (CTO)		Qinghai	Coal	----	----	----	----	----	----	----	----	1,800	1,800	1,800	1,800
Yanchang Zhongmei (Chinacoal) Yulin Nengyuan (Energy)	Yan'an	Shaanxi	Coal	----	----	----	----	----	----	900	1,800	1,800	1,800	1,800	1,800
Shenhua Group	Yulin	Shaanxi	Coal	----	----	----	----	----	----	----	----	----	1,000	2,000	2,000
Yanzhou Coal Mining (Yankuang Group)		Shaanxi	Coal					400	800	800	800	800	800	800	400
Tongmei Guangfa	Datong	Shanxi	Coal	600	600	600	600	600	600	600	600	2,400	2,400	2,400	1,800
Zhongtai Chemical		Xinjiang	Coal	----	----	----	----	----	----	----	900	1800	1800	1800	1,800
Zhejiang Petrochemical		Zhejiang	Coal	----	----	----	----	----	300	400	400	400	400	400	400

TOTAL - China				600	600	600	600	3,846	7,100	10,060	12,720	19,020	20,020	22,820	18,974

based production in China. Notably:

- Between 2019 and 2025E, MMSA estimates that over 18 million metric tons of new coal based methanol production capacity could issue.
- These are all coal-based facilities and will make methanol at higher costs than landed KMMEF costs.
- They are being built due to the growing use of methanol in China and the lack of low cost, gas-based supplies from overseas.
- Many of these facilities are still in planning and have not been built yet, and may be delayed or cancelled with projects like KMMEF
- In fact, companies like Sinopec have been actively seeking overseas natural gas base methanol supply as they would prefer this more cost-effective source of methanol

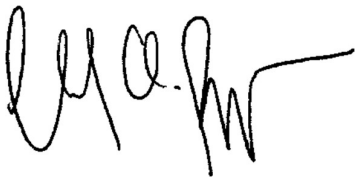
Thus, projects like the KMMEF will not only displace current production of methanol from coal, they will continue to do so in future years.

Based on my findings, the ESM assumptions for the reference and most probable case should be:

- 100 percent of the KMMEF methanol will be used for olefins, and zero percent for fuel
- 100 percent substituting Chinese coal-based methanol and zero Chinese natural gas based and other imports.

When I used the suggested assumptions as the reference case in the ESM provided, I found that the net global GHG emission reduction was significantly higher than reflected in the DSSEIS.

Sincerely,



Mark Berggren
Managing Director
Methanol Market Services Asia Pte. Ltd. (MMSA)

Attachments

Chinese Gasoline specifications

车用汽油(Ⅵ A)技术要求和试验方法 GB 17930—2016

Gasoline for Vehicle(VI A) Specification and Test Method GB 17930-2016

项目		质量指标 Specification			试验方法 Test Method
		89	92	95	
抗爆性：					
研究法辛烷值(RON)	不小于	89	92	95	GB/T 5487
抗爆指数(RON+MON)/2	不小于	84	87	90	GB/T 503、GB/T 5487
铅含量[a]/(g/L)	不大于	0.005			GB/T 8020
馏程：					GB/T 6536
10%蒸发温度/℃	不高于	70			
50%蒸发温度/℃	不高于	110			
90%蒸发温度/℃	不高于	190			
终馏点/℃	不高于	205			
残留量(体积分数)/%	不大于	2			
蒸气压[b]/kPa：					GB/T 8017
11月1日～4月30日		45～85			
5月1日～10月31日		40～65[c]			
胶质含量/(mg/100 mL)：					GB/T 8019
未洗胶质含量(加入清净剂前)	不大于	30			
溶剂洗胶质含量	不大于	5			
诱导期/min	不小于	480			GB/T 8018
硫含量[d]/(mg/kg)	不大于	10			SH/T 0689
硫醇(博士试验)		通过			NB/SH/T 0174
铜片腐蚀 (50 ℃,3 h)/级	不大于	1			GB/T 5096
水溶性酸或碱		无			GB/T 259
机械杂质及水分		无			目测[e]
苯含量[f](体积分数)/%	不大于	0.8			SH/T 0713
芳烃含量[g](体积分数)/%	不大于	35			GB/T 30519
烯烃含量[g](体积分数)/%	不大于	18			GB/T 30519
氧含量[h](质量分数)/%	不大于	2.7			NB/SH/T 0663
甲醇含量[a](质量分数)/% Methanol Content less than	不大于	0.3			NB/SH/T 0663
锰含量[a]/(g/L) Manganese content less than	不大于	0.002			SH/T 0711
铁含量[a]/(g/L) Iron content less than	不大于	0.01			SH/T 0712
密度[i](20 ℃)/(kg/m³)		720～775			GB/T 1884、GB/T 1885

[a] 车用汽油中，不得人为加入甲醇以及含铅、含铁和含锰的添加剂。 Methanol, Iron, lead, and manganese blending is prohibited in gasoline for vehicle.

[b] 也可采用 SH/T 0794 进行测定，在有异议时，以 GB/T 8017 方法为准。换季时，加油站允许有 15 天的置换期。

[c] 广东、海南全年执行此项要求。

[d] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定，在有异议时，以 SH/T 0689 方法为准。

[e] 将试样注入 100 mL 玻璃量筒中观察，应当透明，没有悬浮和沉降的机械杂质和水分。在有异议时，以 GB/T 511 和 GB/T 260 方法为准。

[f] 也可采用 GB/T 28768、GB/T 30519 和 SH/T 0693 进行测定，在有异议时，以 SH/T 0713 方法为准。

[g] 也可采用 GB/T 11132、GB/T 28768 进行测定，在有异议时，以 GB/T 30519 方法为准。

[h] 也可采用 SH/T 0720 进行测定，在有异议时，以 NB/SH/T 0663 方法为准。

[i] 也可采用 SH/T 0604 进行测定，在有异议时，以 GB/T 1884、GB/T 1885 方法为准。

昆仑咨询

ICS 75.160.20
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中华人民共和国国家标准

GB 17930—2016
代替 GB 17930—2013

车 用 汽 油

Gasoline for motor vehicles

2016-12-23 发布　　2016-12-23 实施

中华人民共和国国家质量监督检验检疫总局
中国国家标准化管理委员会　发布

前　言

本标准的全部技术内容为强制性。

本标准按照 GB/T 1.1—2009 给出的规则起草。

本标准代替 GB 17930—2013《车用汽油》。

本标准与 GB 17930—2013 相比，主要技术变化如下：

——将第 1 章“范围”的第二段由“本标准适用于由液体烃类或由液体烃类及改善使用性能的添加剂组成的车用汽油”，修改为：“本标准适用于点燃式发动机使用的、由石油制取或由石油制取的加有改善性能添加剂的车用汽油”（见第 1 章，2013 版的第 1 章）；

——删除了车用汽油（Ⅲ）的技术要求和试验方法（见 2013 版表 1），增加了第Ⅵ阶段车用汽油的技术要求，并依烯烃含量的不同分为ⅥA 阶段和ⅥB 阶段（见表 3、表 4）；

——在蒸气压的要求中增加了“换季时，加油站允许有 15 天的置换期”（见表 1、表 2、表 3、表 4、表 A.1 和表 A.2，2013 版表 2、表 3 和表 A.1）；

——修改了车用汽油（Ⅴ）硫醇硫含量的技术要求（见表 2 和表 A.1，2013 版表 3 和表 A.1）；

——删除广西地区全年执行夏季蒸气压的要求，因为广西地区为车用乙醇汽油的实施区域（见表 2、表 3、表 4、表 A.1 和表 A.2，2013 版表 3 和表 A.1）；

——修改了第 9 章“标准的实施”（见第 9 章，2013 版的第 9 章）；

——增加了表 A.2（见表 A.2）。

本标准由国家能源局提出。

本标准由全国石油产品和润滑剂标准化技术委员会石油燃料和润滑剂分技术委员会（SAC/TC 280/SC 1）归口。

本标准起草单位：中国石油化工股份有限公司石油化工科学研究院、中国石油天然气股份有限公司炼油与化工分公司、中国石油天然气股份有限公司石油化工研究院、中海石油炼化有限责任公司、中国汽车研究中心。

本标准主要起草人：倪蓓、龙军、李文乐、张建荣、张彦、张国相、郭莘、郭红松、刘倩。

本标准所代替标准的历次版本发布情况为：

——GB 17930—1999、GB 17930—2006、GB 17930—2011、GB 17930—2013。

车 用 汽 油

警告：如果不遵守适当的防范措施，本标准所属产品在生产、运输、装卸、贮运和使用等过程中可能存在危险。本标准无意对与本产品有关的所有安全问题提出建议。使用者有责任采用适当的安全和防范措施，并保证符合国家有关法规规定的条件。

1 范围

本标准规定了车用汽油的术语和定义、产品分类、要求和试验方法、取样、标志、包装、运输和贮存、安全及标准的实施。

本标准适用于点燃式发动机使用的、由石油制取或由石油制取的加有改善使用性能添加剂的车用汽油。

2 规范性引用文件

下列文件对于本文件的应用是必不可少的。凡是注日期的引用文件，仅注日期的版本适用于本文件。凡是不注日期的引用文件，其最新版本(包括所有的修改单)适用于本文件。

GB 190 危险货物包装标志

GB/T 259 石油产品水溶性酸及碱测定法

GB/T 260 石油产品水分测定法

GB/T 503 汽油辛烷值的测定 马达法

GB/T 511 石油和石油产品及添加剂机械杂质测定法

GB/T 1792 汽油、煤油、喷气燃料和馏分燃料中硫醇硫的测定 电位滴定法

GB/T 1884 原油和液体石油产品密度实验室测定法(密度计法)

GB/T 1885 石油计量表

GB/T 4756 石油液体手工取样法

GB/T 5096 石油产品铜片腐蚀试验法

GB/T 5487 汽油辛烷值的测定 研究法

GB/T 6536 石油产品常压蒸馏特性测定法

GB/T 8017 石油产品蒸气压的测定 雷德法

GB/T 8018 汽油氧化安定性的测定 诱导期法

GB/T 8019 燃料胶质含量的测定 喷射蒸发法

GB/T 8020 汽油中铅含量的测定 原子吸收光谱法

GB/T 11132 液体石油产品烃类的测定 荧光指示剂吸附法

GB/T 11140 石油产品硫含量的测定 波长色散X射线荧光光谱法

GB/T 28768 车用汽油烃类组成和含氧化合物的测定 多维气相色谱法

GB 30000.7—2013 化学品分类和标签规范 第7部分：易燃液体

GB/T 30519 轻质石油馏分和产品中烃族组成和苯的测定 多维气相色谱法

SH 0164　石油产品包装、贮运及交货验收规则

NB/SH/T 0174　石油产品和烃类溶剂中硫醇和其他硫化物的检验　博士试验法

SH/T 0253　轻质石油产品中总硫含量测定法(电量法)

SH/T 0604　原油和石油产品密度测定法(U形振动管法)

NB/SH/T 0663　汽油中醇类和醚类含量的测定　气相色谱法

SH/T 0689　轻质烃及发动机燃料和其他油品的总硫含量测定法(紫外荧光法)

SH/T 0693　汽油中芳烃含量测定法(气相色谱法)

SH/T 0711　汽油中锰含量测定法(原子吸收光谱法)

SH/T 0712　汽油中铁含量测定法(原子吸收光谱法)

SH/T 0713　车用汽油和航空汽油中苯和甲苯含量测定法(气相色谱法)

SH/T 0720　汽油中含氧化合物测定法(气相色谱及氧选择性火焰离子化检测器法)

NB/SH/T 0741　汽油中烃族组成的测定　多维气相色谱法

SH/T 0794　石油产品蒸气压的测定　微量法

ASTM D7039　汽油、柴油、喷气燃料、煤油、生物柴油、生物调合柴油,以及乙醇汽油中硫含量的测定(单波长色散X射线荧光光谱法)(Standard Test Method for Sulfur in Gasoline, Diesel Fuel, Jet Fuel, Kerosine, Biodiesel, Biodiesel Blends, and Gasoline—Ethanol Blends by Monochromatic Wavelength Dispersive X-ray Fluorescence Spectrometry)

3　术语和定义

下列术语和定义适用于本文件。

3.1

抗爆指数　antiknock index

研究法辛烷值(RON)和马达法辛烷值(MON)之和的二分之一。

4　产品分类

车用汽油(Ⅳ)按研究法辛烷值分为90号、93号和97号3个牌号,车用汽油(Ⅴ)、车用汽油(ⅥA)和车用汽油(ⅥB)按研究法辛烷值分为89号、92号、95号和98号4个牌号。

5　要求和试验方法

5.1　车用汽油中所使用的添加剂应无公认的有害作用,并按推荐的适宜用量使用。车用汽油中不应含有任何可导致车辆无法正常运行的添加物和污染物。车用汽油中不得人为加入甲缩醛、苯胺类、卤素以及含磷、含硅等化合物。

5.2　车用汽油(Ⅳ)的技术要求和试验方法见表1。

5.3　89号、92号和95号车用汽油(Ⅴ)的技术要求和试验方法见表2。企业有条件生产和销售98号车用汽油(Ⅴ)时,其技术要求应符合表A.1。

5.4　89号、92号和95号车用汽油(ⅥA)和车用汽油(ⅥB)的技术要求和试验方法分别见表3和表4。企业有条件生产和销售98号车用汽油(ⅥA)/(ⅥB)时,其技术要求应符合表A.2。

表 1　车用汽油(Ⅳ)的技术要求和试验方法

项目		质量指标			试验方法
		90	93	97	
抗爆性：					
研究法辛烷值(RON)	不小于	90	93	97	GB/T 5487
抗爆指数(RON+MON)/2	不小于	85	88	报告	GB/T 503、GB/T 5487
铅含量[a]/(g/L)	不大于	0.005			GB/T 8020
馏程：					GB/T 6536
10%蒸发温度/℃	不高于	70			
50%蒸发温度/℃	不高于	120			
90%蒸发温度/℃	不高于	190			
终馏点/℃	不高于	205			
残留量(体积分数)/%	不大于	2			
蒸气压[b]/kPa：					GB/T 8017
11 月 1 日～4 月 30 日		42～85			
5 月 1 日～10 月 31 日		40～68			
胶质含量/(mg/100 mL)：					GB/T 8019
未洗胶质含量(加入清净剂前)	不大于	30			
溶剂洗胶质含量	不大于	5			
诱导期/min	不小于	480			GB/T 8018
硫含量[c]/(mg/kg)	不大于	50			SH/T 0689
硫醇(满足下列指标之一,即判断为合格)：					
博士试验		通过			NB/SH/T 0174
硫醇硫含量(质量分数)/%	不大于	0.001			GB/T 1792
铜片腐蚀 (50 ℃,3 h)/级	不大于	1			GB/T 5096
水溶性酸或碱		无			GB/T 259
机械杂质及水分		无			目测[d]
苯含量[e](体积分数)/%	不大于	1.0			SH/T 0713
芳烃含量[f](体积分数)/%	不大于	40			GB/T 11132
烯烃含量[f](体积分数)/%	不大于	28			GB/T 11132
氧含量[g](质量分数)/%	不大于	2.7			NB/SH/T 0663
甲醇含量[a](质量分数)/%	不大于	0.3			NB/SH/T 0663
锰含量[h]/(g/L)	不大于	0.008			SH/T 0711
铁含量[a]/(g/L)	不大于	0.01			SH/T 0712

[a] 车用汽油中,不得人为加入甲醇以及含铅或含铁的添加剂。

[b] 也可采用 SH/T 0794 进行测定,在有异议时,以 GB/T 8017 方法为准。换季时,加油站允许有 15 天的置换期。

[c] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定,在有异议时,以 SH/T 0689 方法为准。

[d] 将试样注入 100 mL 玻璃量筒中观察,应当透明,没有悬浮和沉降的机械杂质和水分。在有异议时,以 GB/T 511 和 GB/T 260 方法为准。

[e] 也可采用 SH/T 0693 进行测定,在有异议时,以 SH/T 0713 方法为准。

[f] 对于 97 号车用汽油,在烯烃、芳烃总含量控制不变的前提下,可允许芳烃的最大值为 42%(体积分数)。也可采用 NB/SH/T 0741 进行测定,在有异议时,以 GB/T 11132 方法为准。

[g] 也可采用 SH/T 0720 进行测定,在有异议时,以 NB/SH/T 0663 方法为准。

[h] 锰含量是指汽油中以甲基环戊二烯三羰基锰形式存在的总锰含量,不得加入其他类型的含锰添加剂。

表 2　车用汽油(Ⅴ)技术要求和试验方法

项目		质量指标			试验方法
		89	92	95	
抗爆性：					
研究法辛烷值(RON)	不小于	89	92	95	GB/T 5487
抗爆指数(RON+MON)/2	不小于	84	87	90	GB/T 503、GB/T 5487
铅含量[a]/(g/L)	不大于	0.005			GB/T 8020
馏程：					GB/T 6536
10%蒸发温度/℃	不高于	70			
50%蒸发温度/℃	不高于	120			
90%蒸发温度/℃	不高于	190			
终馏点/℃	不高于	205			
残留量(体积分数)/%	不大于	2			
蒸气压[b]/kPa：					GB/T 8017
11 月 1 日～4 月 30 日		45～85			
5 月 1 日～10 月 31 日		40～65[c]			
胶质含量/(mg/100 mL)：					GB/T 8019
未洗胶质含量(加入清净剂前)	不大于	30			
溶剂洗胶质含量	不大于	5			
诱导期/min	不小于	480			GB/T 8018
硫含量[d]/(mg/kg)	不大于	10			SH/T 0689
硫醇(博士试验)		通过			NB/SH/T 0174
铜片腐蚀 (50 ℃,3 h)/级	不大于	1			GB/T 5096
水溶性酸或碱		无			GB/T 259
机械杂质及水分		无			目测[e]
苯含量[f](体积分数)/%	不大于	1.0			SH/T 0713
芳烃含量[g](体积分数)/%	不大于	40			GB/T 11132
烯烃含量[g](体积分数)/%	不大于	24			GB/T 11132
氧含量[h](质量分数)/%	不大于	2.7			NB/SH/T 0663
甲醇含量[a](质量分数)/%	不大于	0.3			NB/SH/T 0663
锰含量[a]/(g/L)	不大于	0.002			SH/T 0711
铁含量[a]/(g/L)	不大于	0.01			SH/T 0712
密度[i](20 ℃)/(kg/m^3)		720～775			GB/T 1884、GB/T 1885

[a] 车用汽油中,不得人为加入甲醇以及含铅、含铁和含锰的添加剂。

[b] 也可采用 SH/T 0794 进行测定,在有异议时,以 GB/T 8017 方法为准。换季时,加油站允许有 15 天的置换期。

[c] 广东、海南全年执行此项要求。

[d] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定,在有异议时,以 SH/T 0689 方法为准。

[e] 将试样注入 100 mL 玻璃量筒中观察,应当透明,没有悬浮和沉降的机械杂质和水分。在有异议时,以 GB/T 511 和 GB/T 260 方法为准。

[f] 也可采用 GB/T 28768、GB/T 30519 和 SH/T 0693 进行测定,在有异议时,以 SH/T 0713 方法为准。

[g] 对于 95 号车用汽油,在烯烃、芳烃总含量控制不变的前提下,可允许芳烃的最大值为 42%(体积分数)也可采用 GB/T 28768、GB/T 30519、NB/SH/T 0741 进行测定,在有异议时,以 GB/T 11132 方法为准。

[h] 也可采用 SH/T 0720 进行测定,在有异议时,以 NB/SH/T 0663 方法为准。

[i] 也可采用 SH/T 0604 进行测定,在有异议时,以 GB/T 1884、GB/T 1885 方法为准。

表 3　车用汽油(ⅥA)技术要求和试验方法

项目		质量指标			试验方法
		89	92	95	
抗爆性：					
研究法辛烷值(RON)	不小于	89	92	95	GB/T 5487
抗爆指数(RON+MON)/2	不小于	84	87	90	GB/T 503、GB/T 5487
铅含量[a]/(g/L)	不大于	0.005			GB/T 8020
馏程：					GB/T 6536
10%蒸发温度/℃	不高于	70			
50%蒸发温度/℃	不高于	110			
90%蒸发温度/℃	不高于	190			
终馏点/℃	不高于	205			
残留量(体积分数)/%	不大于	2			
蒸气压[b]/kPa：					GB/T 8017
11 月 1 日～4 月 30 日		45～85			
5 月 1 日～10 月 31 日		40～65[c]			
胶质含量/(mg/100 mL)：					GB/T 8019
未洗胶质含量(加入清净剂前)	不大于	30			
溶剂洗胶质含量	不大于	5			
诱导期/min	不小于	480			GB/T 8018
硫含量[d]/(mg/kg)	不大于	10			SH/T 0689
硫醇(博士试验)		通过			NB/SH/T 0174
铜片腐蚀 (50 ℃,3 h)/级	不大于	1			GB/T 5096
水溶性酸或碱		无			GB/T 259
机械杂质及水分		无			目测[e]
苯含量[f](体积分数)/%	不大于	0.8			SH/T 0713
芳烃含量[g](体积分数)/%	不大于	35			GB/T 30519
烯烃含量[g](体积分数)/%	不大于	18			GB/T 30519
氧含量[h](质量分数)/%	不大于	2.7			NB/SH/T 0663
甲醇含量[a](质量分数)/%	不大于	0.3			NB/SH/T 0663
锰含量[a]/(g/L)	不大于	0.002			SH/T 0711
铁含量[a]/(g/L)	不大于	0.01			SH/T 0712
密度[i](20 ℃)/(kg/m^3)		720～775			GB/T 1884、GB/T 1885

[a] 车用汽油中，不得人为加入甲醇以及含铅、含铁和含锰的添加剂。

[b] 也可采用 SH/T 0794 进行测定，在有异议时，以 GB/T 8017 方法为准。换季时，加油站允许有 15 天的置换期。

[c] 广东、海南全年执行此项要求。

[d] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定，在有异议时，以 SH/T 0689 方法为准。

[e] 将试样注入 100 mL 玻璃量筒中观察，应当透明，没有悬浮和沉降的机械杂质和水分。在有异议时，以 GB/T 511 和 GB/T 260 方法为准。

[f] 也可采用 GB/T 28768、GB/T 30519 和 SH/T 0693 进行测定，在有异议时，以 SH/T 0713 方法为准。

[g] 也可采用 GB/T 11132、GB/T 28768 进行测定，在有异议时，以 GB/T 30519 方法为准。

[h] 也可采用 SH/T 0720 进行测定，在有异议时，以 NB/SH/T 0663 方法为准。

[i] 也可采用 SH/T 0604 进行测定，在有异议时，以 GB/T 1884、GB/T 1885 方法为准。

表 4　车用汽油(ⅥB)技术要求和试验方法

项目		质量指标			试验方法
		89	92	95	
抗爆性：					
研究法辛烷值(RON)	不小于	89	92	95	GB/T 5487
抗爆指数(RON+MON)/2	不小于	84	87	90	GB/T 503、GB/T 5487
铅含量[a]/(g/L)	不大于	0.005			GB/T 8020
馏程：					GB/T 6536
10%蒸发温度/℃	不高于	70			
50%蒸发温度/℃	不高于	110			
90%蒸发温度/℃	不高于	190			
终馏点/℃	不高于	205			
残留量(体积分数)/%	不大于	2			
蒸气压[b]/kPa：					GB/T 8017
11 月 1 日～4 月 30 日		45～85			
5 月 1 日～10 月 31 日		40～65[c]			
胶质含量/(mg/100 mL)：					GB/T 8019
未洗胶质含量(加入清净剂前)	不大于	30			
溶剂洗胶质含量	不大于	5			
诱导期/min	不小于	480			GB/T 8018
硫含量[d]/(mg/kg)	不大于	10			SH/T 0689
硫醇(博士试验)		通过			NB/SH/T 0174
铜片腐蚀 (50 ℃,3 h)/级	不大于	1			GB/T 5096
水溶性酸或碱		无			GB/T 259
机械杂质及水分		无			目测[e]
苯含量[f](体积分数)/%	不大于	0.8			SH/T 0713
芳烃含量[g](体积分数)/%	不大于	35			GB/T 30519
烯烃含量[g](体积分数)/%	不大于	15			GB/T 30519
氧含量[h](质量分数)/%	不大于	2.7			NB/SH/T 0663
甲醇含量[a](质量分数)/%	不大于	0.3			NB/SH/T 0663
锰含量[a]/(g/L)	不大于	0.002			SH/T 0711
铁含量[a]/(g/L)	不大于	0.01			SH/T 0712
密度[i](20 ℃)/(kg/m^3)		720～775			GB/T 1884、GB/T 1885

[a] 车用汽油中，不得人为加入甲醇以及含铅、含铁和含锰的添加剂。

[b] 也可采用 SH/T 0794 进行测定，在有异议时，以 GB/T 8017 方法为准。换季时，加油站允许有 15 天的置换期。

[c] 广东、海南全年执行此项要求。

[d] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定，在有异议时，以 SH/T 0689 方法为准。

[e] 将试样注入 100 mL 玻璃量筒中观察，应当透明，没有悬浮和沉降的机械杂质和水分。在有异议时，以 GB/T 511 和 GB/T 260 方法为准。

[f] 也可采用 GB/T 28768、GB/T 30519、SH/T 0693 进行测定，在有异议时，以 SH/T 0713 方法为准。

[g] 也可采用 GB/T 11132、GB/T 28768 进行测定，在有异议时，以 GB/T 30519 方法为准。

[h] 也可采用 SH/T 0720 进行测定，在有异议时，以 NB/SH/T 0663 方法为准。

[i] 也可采用 SH/T 0604 进行测定，在有异议时，以 GB/T 1884、GB/T 1885 方法为准。

6 取样

取样按 GB/T 4756 进行，取 4 L 作为检验和留样用。若车用汽油中含锰，取样时应避光。

7 标志、包装、运输和贮存

7.1 向用户销售的符合本标准要求的车用汽油所使用的加油机都应明确标示产品的名称、牌号和等级(Ⅳ、Ⅴ、ⅥA 和ⅥB)。如："89 号汽油(Ⅴ)""92 号汽油(Ⅴ)""95 号汽油(Ⅴ)"等，并应标识在消费者可以看见的地方。

7.2 车用汽油属易燃液体，产品的标志、包装、运输和贮存及交货验收按 SH 0164、GB 30000.7—2013 和 GB 190 进行。

8 安全

车用汽油属易燃液体，其危险说明和防范说明见 GB 30000.7—2013 中附录 D。

9 标准的实施

本标准自发布之日起在全国范围内实施，并实行逐步引入的过渡期要求。表 2 和表 A.1 规定的技术要求过渡期至 2016 年 12 月 31 日，自 2017 年 1 月 1 日起，表 1 规定的技术要求废止；表 3 和表 A.2 规定的技术要求过渡期至 2018 年 12 月 31 日，自 2019 年 1 月 1 日起，表 2 和表 A.1 规定的技术要求废止；表 4 规定的技术要求过渡期至 2022 年 12 月 31 日，自 2023 年 1 月 1 日起，表 3 规定的技术要求废止。

考虑到国内某些地区环保的特殊需求，各地方政府可依据其环保治理要求，与相关油品供应部门协商一致后，可提前实施相应阶段的车用汽油技术要求。

附 录 A
（规范性附录）
98 号车用汽油的技术要求和试验方法

98 号车用汽油（Ⅴ）的技术要求和试验方法见表 A.1。98 号车用汽油（ⅥA）/（ⅥB）的技术要求和试验方法见表 A.2。

表 A.1 98 号车用汽油（Ⅴ）技术要求和试验方法

项目		质量指标	试验方法
抗爆性：			
研究法辛烷值（RON）	不小于	98	GB/T 5487
抗爆指数（RON＋MON）/2	不小于	93	GB/T 503、GB/T 5487
铅含量[a]/（g/L）	不大于	0.005	GB/T 8020
馏程：			GB/T 6536
10％蒸发温度/℃	不高于	70	
50％蒸发温度/℃	不高于	120	
90％蒸发温度/℃	不高于	190	
终馏点/℃	不高于	205	
残留量（体积分数）/％	不大于	2	
蒸气压[b]/kPa：			GB/T 8017
11 月 1 日～4 月 30 日		45～85	
5 月 1 日～10 月 31 日		40～65[c]	
胶质含量/（mg/100 mL）：			GB/T 8019
未洗胶质含量（加入清净剂前）	不大于	30	
溶剂洗胶质含量	不大于	5	
诱导期/min	不小于	480	GB/T 8018
硫含量[d]/（mg/kg）	不大于	10	SH/T 0689
硫醇（博士试验）		通过	NB/SH/T 0174
铜片腐蚀（50 ℃，3 h）/级	不大于	1	GB/T 5096
水溶性酸或碱		无	GB/T 259
机械杂质及水分		无	目测[e]
苯含量[f]（体积分数）/％	不大于	1.0	SH/T 0713
芳烃含量[g]（体积分数）/％	不大于	40	GB/T 11132
烯烃含量[g]（体积分数）/％	不大于	24	GB/T 11132
氧含量[h]（质量分数）/％	不大于	2.7	NB/SH/T 0663
甲醇含量[a]（质量分数）/％	不大于	0.3	NB/SH/T 0663

表 A.1（续）

项目		质量指标	试验方法
锰含量[a]/(g/L)	不大于	0.002	SH/T 0711
铁含量[a]/(g/L)	不大于	0.01	SH/T 0712
密度[i](20 ℃)/(kg/m^3)		720～775	GB/T 1884、GB/T 1885

[a] 车用汽油中，不得人为加入甲醇以及含铅、含铁和含锰的添加剂。

[b] 也可采用 SH/T 0794 进行测定，在有异议时，以 GB/T 8017 方法为准。换季时，加油站允许有 15 天的过渡期。

[c] 广东、海南全年执行此项要求。

[d] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定，在有异议时，以 SH/T 0689 方法为准。

[e] 将试样注入 100 mL 玻璃量筒中观察，应当透明，没有悬浮和沉降的机械杂质和水分。在有异议时，以 GB/T 511 和 GB/T 260 方法为准。

[f] 也可采用 GB/T 28768、GB/T 30519、SH/T 0693 进行测定，在有异议时，以 SH/T 0713 方法为准。

[g] 对于 98 号车用汽油，在烯烃、芳烃总含量控制不变的前提下，可允许芳烃的最大值为 42%（体积分数）。也可采用 GB/T 28768、GB/T 30519 和 NB/SH/T 0741 进行测定，在有异议时，以 GB/T 11132 方法为准。

[h] 也可采用 SH/T 0720 进行测定，在有异议时，以 NB/SH/T 0663 方法为准。

[i] 也可采用 SH/T 0604 进行测定，在有异议时，以 GB/T 1884、GB/T 1885 方法为准。

表 A.2　98 号车用汽油（ⅥA）/（ⅥB）技术要求和试验方法

项目		质量指标	试验方法
抗爆性：			
研究法辛烷值(RON)	不小于	98	GB/T 5487
抗爆指数(RON＋MON)/2	不小于	93	GB/T 503、GB/T 5487
铅含量[a]/(g/L)	不大于	0.005	GB/T 8020
馏程：			GB/T 6536
10%蒸发温度/℃	不高于	70	
50%蒸发温度/℃	不高于	110	
90%蒸发温度/℃	不高于	190	
终馏点/℃	不高于	205	
残留量(体积分数)/%	不大于	2	
蒸气压[b]/kPa：			GB/T 8017
11 月 1 日～4 月 30 日		45～85	
5 月 1 日～10 月 31 日		40～65[c]	
胶质含量/(mg/100 mL)：			GB/T 8019
未洗胶质含量(加入清净剂前)	不大于	30	
溶剂洗胶质含量	不大于	5	
诱导期/min	不小于	480	GB/T 8018
硫含量[d]/(mg/kg)	不大于	10	SH/T 0689
硫醇(博士试验)		通过	NB/SH/T 0174

表 A.2（续）

项目		质量指标	试验方法
铜片腐蚀（50 ℃，3 h）/级	不大于	1	GB/T 5096
水溶性酸或碱		无	GB/T 259
机械杂质及水分		无	目测[e]
苯含量[f]（体积分数）/%	不大于	0.8	SH/T 0713
芳烃含量[g]（体积分数）/%	不大于	35	GB/T 30519
烯烃含量[g]（体积分数）/%	不大于	15	GB/T 30519
氧含量[h]（质量分数）/%	不大于	2.7	NB/SH/T 0663
甲醇含量[a]（质量分数）/%	不大于	0.3	NB/SH/T 0663
锰含量[a]/（g/L）	不大于	0.002	SH/T 0711
铁含量[a]/（g/L）	不大于	0.01	SH/T 0712
密度[i]（20 ℃）/（kg/m^3）		720～775	GB/T 1884、GB/T 1885

[a] 车用汽油中，不得人为加入甲醇以及含铅、含铁和含锰的添加剂。

[b] 也可采用 SH/T 0794 进行测定，在有异议时，以 GB/T 8017 方法为准。换季时，加油站允许有 15 天的过渡期。

[c] 广东、海南全年执行此项要求。

[d] 也可采用 GB/T 11140、SH/T 0253、ASTM D7039 进行测定，在有异议时，以 SH/T 0689 方法为准。

[e] 将试样注入 100 mL 玻璃量筒中观察，应当透明，没有悬浮和沉降的机械杂质和水分。在有异议时，以 GB/T 511 和 GB/T 260 方法为准。

[f] 也可采用 GB/T 28768、GB/T 30519 和 SH/T 0693 进行测定，在有异议时，以 SH/T 0713 方法为准。

[g] 也可采用 GB/T 11132、GB/T 28768 进行测定，在有异议时，以 GB/T 30519 方法为准。

[h] 也可采用 SH/T 0720 进行测定，在有异议时，以 NB/SH/T 0663 方法为准。

[i] 也可采用 SH/T 0604 进行测定，在有异议时，以 GB/T 1884、GB/T 1885 方法为准。

NW INNOVATION WORKS
Creating Jobs. Investing in Community. Confronting Climate Change.

380 West Marine Drive, Kalama WA, 98625

October 9, 2020

Attn: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

RE: Comments on the Kalama Manufacturing and Marine Export Facility
Draft Second Supplemental Environmental Impact Statement Ecology Publication 20-06-011

Mr. Doenges,

Northwest Innovation Works ("NWIW") appreciates the opportunity to comment on the Department of Ecology's ("Ecology") Draft Second Supplemental Environmental Impact Statement ("Draft SSEIS") for the Kalama Manufacturing and Marine Export Facility ("KMMEF" or "Project"). NWIW recognizes the effort Ecology has devoted to evaluating the potential greenhouse gas ("GHG")-related impacts associated with construction and operation of the KMMEF and provides these comments to clarify aspects of the Project and highlight the climate benefits that will be realized through the application of the proposed clean technology.

A cornerstone of this Project is NWIW's mission "to produce the world's cleanest methanol in order to make everyday materials a part of the global climate solution." In furtherance of this goal, NWIW has committed to installing advanced, innovative technology to produce methanol for materials manufacturing. The methanol produced using NWIW's proposed clean technology will replace methanol produced overseas using dirtier, less efficient means, resulting in a global *reduction* in GHG emissions. Ecology has acknowledged these efforts in its Draft SSEIS[1] and similarly concluded that "emissions from the [Project] will always be lower than emissions from other substitute methanol pathways."[2] In other words, Ecology's analysis found that "the [Project] would slow the global increase in emissions arising from methanol production and use."[3]

[1] *See* Draft SSEIS at p. 46 ("The KMMEF facility is projected to have a lower direct GHG emission rate than current methanol importers to China. This is due to KMMEF's innovative ULE technology….").
[2] Draft SSEIS at p. 86 (Section 3.5.5-- Net Global Emissions).
[3] *Id*. at p. 105.

The net decrease in global GHG emissions resulting from operation of the innovative KMMEF will be felt globally, which is the meaningful measure for purposes of addressing and mitigating global climate change:

> Greenhouse gases, once emitted from a specific source, quickly mix and disperse in the global atmosphere and have a long atmospheric lifetime. Current research on how greenhouse gases influence global climate change has focused on the cumulative environmental effects from aggregate regional or global sources. But there is limited scientific capability in assessing, detecting, or measuring the relationship between a certain GHG emission source and localized climate impacts in a given region.

Wash. Envtl. Council v. Bellon, 732 F.3d 1131, 1143 (9th Cir. 2013).

The KMMEF will result in a significant global reduction of GHG emissions over the current global course. However, it is important to recognize, in spite of that substantial global benefit, if you draw an emissions "box" around Washington State, the KMMEF will generate new direct and indirect in-state GHG emissions. Importantly, Ecology concluded that the in-state GHG emissions from the Project, while categorized as significant, are capable of mitigation.[4]

To address the in-state emissions, NWIW has proposed a Voluntary Mitigation Program Framework ("VMPF") to mitigate 100% of the direct and indirect in-state GHG emissions generated by this Project. This mitigation is *in addition to* the net global reduction in GHG emissions that will be realized from this Project.

Under the VMPF, NWIW will annually calculate and report direct and indirect GHG emission from the KMMEF to Ecology. NWIW will use GHG calculation methods established in Ecology's GHG Reporting Rule at WAC ch. 173-44. Ecology will then review and verify all GHG emissions calculations submitted by NWIW. Robust regulatory oversight is established to ensure accurate quantification of annual Project direct and indirect emissions.

The VMPF also establishes a robust process for developing and selecting mitigation projects to offset 100% of the in-state GHG emissions from the Project. An independent VMP Board comprised of environmental, business, and community stakeholders will identify and nominate cost-effective GHG mitigation projects, and award and disperse funding for projects or, where necessary, the purchase of carbon credits. To be clear, Ecology and Cowlitz County will review the mitigation opportunities recommended by the VMP Board and, ultimately, verify whether they satisfy the requisite criteria outlined in the VMPF and whether they achieve the annual VMP emissions obligations.

[4] Draft SSEIS at pp. 25, 105-106.

The intent of the VMPF is to establish a solid procedure for identifying worthy mitigation projects with meaningful input from community stakeholders. Indeed, it would be more straightforward to simply commit to purchasing carbon credits to offset annual emissions. However, NWIW would prefer to direct its mitigation investment in a way that prioritizes more immediate in-state or regional improvements, and, over time, serve to develop and grow a robust regional carbon offset marketplace and growing portfolio of emission reduction projects. Identifying effectual mitigation projects that meet the criteria outlined in the VMPF will take time and community and agency engagement. The approach adopted in the VMPF not only makes sense from a practical standpoint, but it is also consistent with the obligations under SEPA related to the level of specificity that is appropriate at the proposal state of a project when the EIS is prepared.[5]

In mitigating its direct and indirect GHG emissions, NWIW is joining other Washington companies in their corporate climate leadership. Microsoft, Amazon and Starbucks have all made significant carbon mitigation pledges and have been identified by Sightline Institute as national leaders.[6] These companies are implementing voluntary mitigation programs similar to NWIW's VMPF, using a combination of emission reduction projects and offset purchases.

The emission profile scale of Microsoft (4.1 million $MTCO_2e$/year[7]) and Amazon (11.2 million $MTCO_2e$/year[8]) suggest that NWIW's commitment to mitigate between 786K and 1.4 million $MTCO_2e$/year[9] is both feasible and achievable. In fact, NWIW's mitigation plan goes one step further in accountability, by including regulatory oversight from Cowlitz County and the Department of Ecology. As described above, under the VMPF, Ecology not only verifies the annual GHG emissions obligation for NWIW, but also has final approval of the VMP Board's recommendations regarding the proposed mitigation projects.

NWIW appreciates the breadth and depth of analysis undertaken to reach Ecology's key conclusions in the Draft SSEIS. In that light, there are only three points NWIW offers as warranting further clarification in the final SSEIS:

1) **The VMPF is an acceptable mechanism for mitigating in-state GHG emissions from the Project.** During preparation of the Draft SSEIS, Ecology carefully reviewed the VMPF and offered revisions to strengthen the reporting requirements, and new criteria to ensure one-

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[5] *See e.g.*, *City of Des Moines v. Puget Sound Reg'l Council*, 97 Wn. App. 920, 928, 988 P.2d 993, 998 (1999) (A "dire prediction that mitigation will never be undertaken because it has not been specifically imposed…is unfounded.").

[6] https://www.sightline.org/2020/09/21/how-cascadian-corporations-stack-up-on-climate/?utm_source= Sightline%20Institute&utm_medium=web-email&utm_campaign=Sightline%20News%20Selections

[7] *Id*.

[8] *Id*.

[9] Draft SSEIS at p. 85.

to-one emissions mitigation, which were incorporated into the VMPF.[10] Ecology also describes the VMPF in detail and includes it as an appendix to the Draft SSEIS.[11] NWIW requests that Ecology confirm in its final SSEIS that the VMPF is an effective and appropriate vehicle for achieving mitigation of in-state GHG emissions from the Project.

2) **With NWIW mitigating 100% of in-state GHG emissions, along with global GHG benefits, the GHG-related impacts from the Project will be reduced to a nonsignificant level.** Since the Project will result in avoided global GHG emissions, as "the [Project] would slow the global increase in emissions arising from methanol production and use,"[12] and NWIW will mitigate 100% of the in-state GHG emissions, the Project as implemented will have minimal GHG-related impacts. This is a foundational component of the Project, and NWIW requests that Ecology confirm in the final SSEIS that mitigation measures are identified that will reduce the identified adverse impacts to a nonsignificant level.

3) **KMMEF methanol is not going to be used as a fuel.** NWIW is developing a cleaner process for producing methanol to be used in materials manufacturing, a critical improvement over the existing methanol feedstock produced overseas using less efficient, dirtier processes. NWIW is committed to this materials pathway limitation, and is in fact prohibited through its Dock Usage Agreement (see Appendix E to the SEIS) from producing methanol that will be used as a fuel source. While Ecology conservatively analyzes the impacts of KMMEF methanol being combusted as a fuel in its Draft SSEIS, NWIW requests that Ecology clarify that this analysis is purely a conservative assumption and modeling conclusion addressing methanol market inputs, and that this scenario is neither consistent with the purpose or intent of this Project nor does it assert or imply that NWIW will pursue or enable such transactions.

Thank you again for the opportunity to review and comment on the Draft SSEIS. NWIW remains available to Ecology staff and your consulting team as necessary to continue the robust and collaborative process undertaken by Ecology through this SSEIS production.

Sincerely,

Kent Caputo
General Counsel

[10] *See* Draft SSEIS at Appendix D, VMPF.
[11] *See* Draft SSEIS at Section 3.7 and Appendix D.
[12] *Id*. at p. 105.

CC: Ron Melin, Cowlitz County
Mark Wilson, Port of Kalama

108331305.1 0054653-00017

Justas Vilgalys

I oppose moving forward with the Kalama Manufacturing and Marine Export Facility. Burning fossil fuels is bad for the environment. Burning fossil fuels is the major contributor to human caused climate change. this in turn is leading to mass extinction of plants and animals. Washington State, and Kalama should not invest in any plants that will be enable burning more fossil fuels. Instead, I urge Kalama to invest in clean, reusable energy.

Leslie McClure

If we are smart, we will be building all new sustainable infrastructure in the next ten years. Going green will bring jobs and save us from climate change.
To start a new fossil fuels project now is ridiculous, wasteful, and damaging.
The claim that natural gas is a bridge fuel is old now plus we now know that methane is as dangerous as C02 for our environment.
Also, Covid has shown us what happens when we go where we don't belong and compromise other animals. As we search for more fossil fuel, we displace more animals and enter places that carry viruses unlike any that we've seen.

Elizabeth Madrigal

My comments are in brackets, [], based on your Preliminary Report Findings.

* The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year. [Why would we allow this when we have so many non-polluting energy options?]
* The Kalama facility would be one of the 10 largest sources of greenhouse gas emissions in the state. Northwest Innovation Works has said that it will mitigate all of the facility's in-state emissions. [I do not "trust" them to keep their word. Forgive me, but corporate promises don't mean much to me since 1993, when the Pacific Wood Treating Company went bankrupt and left a superfund site in Ridgefield, Wash., where I live. After a 20 year citizen-paid clean-up, they are still finding contaminants in the lawns of people within blocks of the site.]
* Worldwide demand for methanol is likely to increase in the decades ahead, leading to higher greenhouse gas emissions with or without the Kalama facility. [Now this is the worst argument "for" I can possibly imagine. Like a kid saying, "Yes, I stole the car because the keys were in the ignition and the doors were unlocked because somebody was going to steal it."]
* It would lead to methanol being burned as a fuel. Northwest Innovation Works has said all of the methanol from the Kalama facility will be used in plastics production, but increasing methanol supply makes it more likely that more methanol will be used as fuel, regardless of the source. [There are alternate fuels that do not pollute. Why is this concept so difficult? Why would we approve something we know pollutes?]
* Extracting and transporting the natural gas used to make the methanol could produce higher emissions than previous estimates. [This is not a surprise. It is more discouraging as it reflects on the truthfulness of the original estimates.]
* Methanol made in Kalama could produce lower greenhouse gas emissions than many competing methanol supplies, from coal or less efficient natural gas sources. [With a new green deal, methanol will be phased out. If we create more manufacturing facilities, that phase out will take 100 years the planet cannot afford.]
* This means that global greenhouse gas emissions would increase with the addition of the Kalama facility, but likely less than they might if that demand was met by other sources. [This is a false choice. We do not need to choose between less evil and more evil when we have alternative sources of energy and fuel that do not pollute.]

randall potts

I strongly object the to the Kalama Manufacturing and Marine Export Facility. This project is on the wrong side of science in two important respects. First, we are literally drowning in plastic and micro-plastic which has infiltrated our food chain, our water, our land, our air and our bodies. Scientists have repeated warned us that the only way to deal with plastic pollution is to stop manufacturing it. Further, it doesn't matter where the plastic is manufactured or disposed of or "recycled," because this is a global problem and the plastic degrades in such a way that it affects all of us. I might add, that ethically, it is unsound to export a product that is known to create health problems in wildlife, the land and marine environment, and even the air while poses a danger to human health.

Secondly, the science tells us that burning natural gas or worse methanol creates more greenhouse gasses that increase the pace of climate change. Again, this is a global problem, so where the gas is burned is not the issue, burning it will endanger us all.

Lastly, I would note that the transportation, manufacturing, storage, and shipping associated with operating a natural gas-to-methanol production plant and storage facilities on approximately 90 acres at the Port of Kalama will have negative environment and health consequences for residents, wildlife and marine life near the plant. This is not a responsible way to treat the people, the land and the water or wildlife of all kinds. These consequence may extend far beyond the immediate area of the plant, carried by air and water. Their are also health and environmental degradation that will occur because of increased shipping.

In conclusion, this is an unnecessary project that has negative consequence for health and the environment throughout the proposed process, from the point production to the point of use. It is a dangerous project that puts profits before people, wildlife and the environment. It is a project that science tells us is dangerous and to suggest otherwise is to choose to ignore the abundant scientific date. Finally, it is an unethical and wasteful project that endangers and disregards the data driven consequences it will have and chooses to instead prop up the obsolete fossil fuel industry. Ultimately, it will be cost more than it is worth and the profits it creates will decline over time and are small compared to the damage it will create and any efforts to clean up that damage. It is a bad project and I implore you not to permit it to move forward.

PETER ISAACSON

MY FAMILY IS WELL AWARE OF THIS WONDERFUL PROJECT... WE STAND BEHIND IT 100%. WE ARE WELL AWARE OF THE BENEFITS AND MINIMAL RISKS. WE WILL MAKE SURE THEY ARE GOOD NEIGHBORS.
PETER ISAACSON & FAMILY
LONGVIEW,WA

Karen Long

1 We should be lessening, not adding to our pollution load.
2 Let China make their own methanol.
3 We should be looking at a reduction in plastics production, not an increase...especially given that we can't even effectively recycle what already exists.
4 Surely there is some industry we could foster in the same location for economic gain which would support a more eco-intelligent process/ product. If Washington does not lead this country towards that goal, then who will?

LEIGH MCKEIRNAN

I HAVE LIVED 1200 FT BELOW THE PIPLEINES IN THE KELSO SLIDE AREAS FOR 45 YEARS. THERE HAVE BEEN SO MNAY SLIDES HERE IN THIS ALLUVIAL VALLEY, BEHIND US AND IN KALAMA, ALONG THE RIVER (CHECK THE RAILROAD RECORDS SINCE THE STATE HAS LOST THEIRS). THERE IS SO MUCH NATURAL BEAUTY AND WILDLIFE AND FISHING, IT WOULD BE CRIMINAL TO RISK ITS DEMISE AND VALUE IN EVERY SENSE WITH METHANOL NEARBY. CHECK OUT THE BEAUTYF OF THE UPPER KALAMA RIVER WHERE WE USED TO PICNIC AT THE UPPER HATCHERY THAT GOT WASHED AWAY AND WATCH THE SALMON SWIM BY..OR WALK ALONG THE PORT AND SEE ALL THE PEOPLE NOW ENJOYING THE BEACHES AND FISHING WHO WOULD BE POISONED BY A METHANE LEAK.

Priscilla Martinez

We need to take better care of what is left of our environment, for our wildlife, and our marine life.

Rena Bailey

Hard to believe that you would read the environmental impact statement on this facility and still plan to go ahead with it. It's not only a bad idea, it's bad for the environment and bad for the people, air, wildlife, water, and all living things for miles around it. I strongly suggest that this project not be approved. Consider something besides profit in your decision. Do the right thing!

Michael Harmon

I do not support the proposed gas-to-methanol project that Northwest Innovation Works, LLC. wishes to pursue in WA state. We need to become less dependent upon fossil fuels, and take a stand to protect our environment for generations to come.

Mike Thomqas

I recognize and appreciate the further detailing of the economic impact of this project. I do not have the expertise to evaluate the furtherance of the project impact and will comment again once competent analysis is made. However...

This project remains as fracking in Canada with accompanying risks.
Transporting from Canada to Kalama with accompanying risks.
Manufacturing by using decreasing supply of mountain catchment river water.
Manufacturing by use of Columbia River power generated electricity.
Transporting product nearly halfway around the world to be redistributed from there and most probably used for power generation.
In sum, this remains as a danger to the climate, inefficient use of limited resources, and a divergence from more climate sustainable power generation such as nuclear and solar. We are getting lost in the weeds with analysis by fulfilling legal requirements - when an alternative is readily preferable for both China, US, as well as the earth.

Sandra Whitmore

No, just no! We cannot let this project move forward. A methanol facility right on the Columbia River? It only takes one accident/spill to irrevocably harm the river. Fracking is a threat to our precious groundwater We should not support the fracking industry in any way.

Please protect our environment for future generations. Don't let short sighted and greedy corporations ruin our beautiful natural resources.

Anne Doane

PLease reject this proposal to build the Kalama Manufacturing and Marine Export Facility, because as the report shows:
The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year. The Kalama facility would be one of the 10 largest sources of greenhouse gas emissions in the state. Since there are other renewable energy sources that can provide us the energy we need, it is illogical and short sited to permit such a project like this.
Respectfully yours,
Anne Doane

Paula Overholtzer

Whoooaaa! This is just WRONG! I see that Northwest Innovation Works (China) has changed the NAME of the Kalama Methanol Plant/Project! I'm sure that this was done so that the project could slip through without notice by those of us who have been fighting this for YEARS! China and the USA are two of the main countries working to destroy this precious Planet Earth. Natural gas is not benign. It is another fossil fuel causing the climate crisis. Methanol spilled in the Pacific Ocean is not okay either. Nor is it okay to burn methanol as fuel in China, nor to make endless plastics from it!! This planet is severely abused by fracking and pipelines! Let's get past our throw-away plastics and reliance on fossil fuels. NO to the KALAMA METHANOL PLANT, under whatever name they have sneakily changed the project to!! Stand up for Planet Earth! Come on, Department of Ecology...you can do what's right!

Joel Hanson

The need for this project, has grown even more now with the current financial uncertainties. Our community needs these jobs more than ever before. The permitting for this project has gone beyond anyone's definition of reasonable. If climate warming is the major concern than it is clear to me that they are taking steps to reduce the impact on a global level. Please do not delay this project any further and approve it immediately.

Russ Ayers

As an investor and citizen I am categorically opposed to any scheme which increases our use of fossil fuels or, worse, which proposes to extract them for sale to other countries in the pursuit of short term profit. At the very least these resources should be viewed as strategically important and ideally as environmentally unsustainable to use. This project combines the worst of both and should be stopped. I am appalled that this project could have been conceived or planned outside of the US Gulf Coast.

Theresa Ayers

This project makes no economic or environmental sense and should be stopped in its tracks. In addition to a failed business and environmental case, the diversion of American fuel resources for the benefit of Asian countries runs contrary to our national interests.

Charles K. Hof

Fracking is the worst method of extraction for oil and gas and is not viable. To create a plant for the use of fracked fuel, and then ship it out of country for a use that may change strikes me as a bad idea and detrimental to the planet. For once it leaves our shores there is no control as to who or how it is used.

Larry Wilhelmsen

Dear Sirs:
How can you be spending all this time on carbon dioxide causing planet warming when the amount of cooling to be expected if the US stopped all fossil fuel burning now might only result in a fractional degree of cooling by 2100. How many real catastrophes might happen in this time frame? Spend money on real and present dangers!
Carbon dioxide emitted is greening the earth and providing additional food that is happening now and well documented. See Matt Ridley and CO2science.org.
The opponents goal is population control which science has proven to be short sighted. It is a power grab for a world wide government.
Bottom line is if producing more Methanol is a net benefit to earth's inhabitants go for it.
Larry Wilhelmsen

Marie Fisher

I oppose this project and request that Ecology deny the permit for NW Innovation Works to build a methanol production plant and storage facility in Kalama, WA.

Mary Duvall

building a methanol plant in the lower Columbia air shed is really a bad idea portending disaster for locals in 2 states as well as contributing to the on going destruction of the planet's climate. You know this. To even entertain such a proposal is unconscionable....The number of deaths globally from continuing the use of fossil fuels will make this pandemic pale by contrast. You know this. I don't have to quote the facts to you; you know them. I don't have to tell you that the The Chinese government-owned company NW Innovation Works corporation's arguments are specious, grasping at straws. You can see that yourselves. We have to change how we do business and how we live...we can and we must. Less plastic; more trees. Less greed; more sanity. Thank you.

Barry Truman

I was under the impression that we were trying to reduce, not increase, the most dangerous polluting substance known to man on our frying planet. Can you really be asking whether we like the concept of more methanol, especially in our state? No, we don't.

Victor Villasenor

Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama!

Washington State should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama, WA.

The project would use more fracked gas than all of Washington's power plants, combined. The company has sought to mislead regulators and the public about the purpose and impact of the refinery, falsely claiming that the project will displace "dirtier" forms of fossil fuels. We know that fracked gas is a potent greenhouse gas pollutant, and we are counting on Ecology to accurately account for the project's upstream emissions as well as the downstream pollution from the likely combustion of NWIW's methanol for fuel.

For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. We are counting on you to stop this dirty and dangerous project.

Erik Christy

Dear Department of Ecology, State of Washington:
As a neighboring North-westerner, I am firmly opposed to:
1. The presence of any Chinese company on US territory. They represent the aggressive exploitative policies of the Chinese government which is hostile to American interests.
2. The environmental hazards of extracting and transporting methane from ANY U.S. site. The fracking itself is destructive, but allowing a hostile entity to use ANY U.S. based pipeline, trucking route or other delivery method through a U.S. port should not, under any circumstances, be permitted. The State of Washington and it's public and private facilities should have more pride than to subjugate themselves to Chinese financial exploitative bribes.
Thank you.

Derek Benedict

Fossil fuels need to stay in the ground, and natural gas is one of them. And this project needs to be denied because it will convert natural gas to methanol, which will then be used to create even more plastic pollution.

We've got to stop project now!

constance atteridge

dear ecology,
are you freaking kidding? with global climate change (methane increasing greenhouse gas warming multiple times more than carbon) and the pollution of plastics in our bodies, drinking water, land, and oceans you want to facilitate the transportation of natural gas in and on the pristine waters and lands of the beautiful northwest? for what? money? are you insane? when will the madness stop? please just stop this!!! allow no facility to be built!!!

Richard Osmun

Too much allowed pollution from this project. I am opposed.

Patrick Conn

It is ludicrous to think that any conclusion other than the IMMEDIATE and COMPLETE DENIAL OF THIS ECOLOGICALLY DISASTROUS POLITICALLY-BOUGHT CORPORATE BOONDOGGLE, oh, excuse me, PROJECT is possible given the results of this second supplementary environmental impact statement. This detailed report confirms and makes clear that the project is simply another delusional megalomaniacal attempt by stupefyingly greedy human beings to make money from Earth's natural resources WITHOUT REGARD FOR THE REGIONAL ECOLOGICAL, ENVIRONMENTAL, and now SOCIAL CONSEQUENCES; an environmental disastrous result of their sociopathic rape of America's natural resources.

This process is supposed to protect the public's interest, not private abusers' and American traitors' interests. Please do so.

Linda Greene

I am opposed to the building of the Kalama Manufacturing and Export Facility. Fracking the gas to be used in the facility at the point of origin is dangerous and pollutes groundwater during the process. Then it is highly dangerous to transport. Creating the huge amount of methanol, the facility would add a tremendous amount of air pollution in the area and global warming throughout the planet. The fact that it is to be used for plastics instead of fuel is not a good argument. We need to decrease the production of plastics, not increase it. The non-recyclable nature of plastics with their lengthy half life is polluting our land mass and killing our marine creatures. The facility should not be built.

Sue Rutherford

Putting 5% more carbon emissions into the air? Aren't we supposed to be reducing the amount? How can putting more into earth's atmosphere mitigate the effects? Say no!
https://www.sightline.org/2020/09/03/new-analysis-proves-kalama-methanol-project-is-a-climate-disaster/

Pamela Tennant

I received a postcard regarding the Draft Second Supplemental....The postcard is addressed to Ethel Ann Riper, I am her daughter. Mom used to own property in the area but sold a couple of years ago. She also passed away on June 16, 2019. The postcard was forwarded to me as her trustee of her estate. Please feel free to remove her from your mailing list. sincerely, Pam Tennant

Mike Reuter

I am the mayor of Kalama but am speaking here as an individual.

This refinery is not feasible without a new pipeline.

The Kalama methanol refinery needs 320 million cubic feet of natural gas per day, the equivalent gas consumption of almost every major city in the N.W. combined. Yet, it does not have a contract for a single therm. With all capacity locked up into fully subscribed/contracted pipelines, how is NWIW going even to get this started? Which industry or utility company has the capacity or ability to give NWIW that much of this valuable resource? The following paragraphs are supporting this information.

SEPA Final Environmental Impact Statement
On page 7-2, section 7.3.2 of Kalama Manufacturing and Marine Export Facility September 2016
At this time, NWIW has not entered into contracts for the supply of natural gas to the proposed project.

The Power & Natural Gas Planning Taskforce July 2015

Westcoast pipeline is now fully contracted as N.E. B.C. producers have sought a market outlet for their growing production. In the last two years, Westcoast has run at its maximum available capacity nearly year-round (limited by maintenance restrictions).

N.W. Natural 2016 Integrated Resource Plan Chapter 1
Executive Summary 1.7
The case shows a resource deficiency of 30,000 Dth/day for the 2019–2020 winter, which grows to 270,000 Dth/day by 2035–2036. This resource deficiency is due to load growth, changes in peak day demand, and changes in the near-term resource stack while being partially offset by an increase in demand-side resources.

Pipelines remain at capacity.

While decontracting might be an issue for other pipelines, the situation is different in the Pacific Northwest. Capacity on Northwest Pipeline, which provides most of N.W. Natural's interstate capacity is fully contracted northbound through the Roosevelt Compressor station and fully contracted southbound through the Chehalis Compressor station.14 It is also anticipated that, as more electricity is generated using natural gas, existing pipelines will become even more constrained.15

The development of any high-pressure transmission pipeline on which the Company could acquire capacity will be primarily driven by one of these large load projects and secondarily by N.W. Natural and other regional loads.

Avista Corp 2016 Natural Gas IRP

Adding additional pressure to existing pipeline resources is the announcement of three proposed methanol plants in the region. The plants use large amounts of natural gas as a feedstock for creating methanol, which is used to make other chemicals and as a fuel. To date, the Port of Kalama is gaining ground in its approval process and is looking like the most probable of the three methanol plants and will take around 300,000 Dth/day in a region already constrained by pipeline deliverability. LDCs will have to compete with power generators, LNG exporters, and other large end-users for limited pipeline capacity. The new mix could alter current pipeline operations and the potential availability of infrastructure to the region.

Pipeline capacity is the link between natural gas and power.

nwnatural.com/AboutNWNatural/TheCompany/PipelineAndNewGasSupply/NeedForANewPipeline

Currently, N.W. Natural relies on a single transmission pipeline for about two-thirds of its natural gas supplies. That pipeline is nearly 60 years old and cannot be expanded easily. It frequently operates at its maximum capacity. The other pipeline serving our service territory is fully contracted out.

Inexpensive natural gas is attracting new manufacturing to the U.S. One enterprise has announced its intention to build two methanol plants at Columbia River ports and a third in Tacoma. Anyone of these would substantially add to regional gas demand; two or three would only be possible with the construction of more pipeline capacity.
Regional projections indicate demand for gas in the I-5 corridor will exceed capacity by 2020. If a significant petrochemical facility or other significantly large gas user starts up, this could occur even earlier.

The Power & Natural Gas Planning Taskforce July 2015

However, a large enough project, roughly over 150,000 Dth/day of demand (Kalama Methanol refinery would be 320,000 Dth/day), would likely need new infrastructure regardless of their preferred gas transportation type simply due to the high utilization of the existing pipeline systems. New load developments between Sumas and the Company's service territory might undermine the reliability of this service, especially if not accompanied by an equivalent capacity expansion of NWP's system and upstream infrastructure to get more gas supplies to Sumas

Mike Reuter

I am the mayor of Kalama, but speaking here as an individual.

Storage redelivery discount and the benefits of gas storage

During the wintertime, there is excess gas capacity on the pipeline that supplies the NW due to not having to heat homes and businesses. That lower-priced gas is bought by utility companies and injected into the underground storage facilities- Jackson Prairie Natural Gas Storage Facility and the Mist Underground Natural Gas Storage Facility. This natural gas is purchased at a substantial discount due to not having competitors to bid for large amounts of natural gas because of the fact that North America is Canada's only customer.

If this methanol refinery goes in,China now having a natural gas export terminal will now be able to compete with American utilities at Trading Point 2 located in Canada for long term gas capacity contracts. The remaining gas will make it challenging to fill the storage tanks, and the gas purchased will be at a much higher rate, thereby causing higher prices for businesses and consumers. The law of supply and demand goes into effect.

Example of just one utility discount:

Cascade's IRP appendix a

The storage redelivery discount saves Cascade ~$750,000 annually compared to year-round max rate capacity.

According to Factsheet: Jackson Prairie Natural Gas Storage Facility:

Benefits of storage- Natural gas held in storage supplements the interstate pipeline system to help meet the region's energy requirements during the coldest days and weeks of winter when consumer demand spikes significantly. Jackson Prairie's storage ensures that natural gas supplies are available during the year to meet the public's needs. In addition, Jackson Prairie helps to stabilize utility customers' energy costs and soften the impacts of price volatility in the wholesale natural gas market. Jackson Prairie allows PSE and other utilities to buy and store significant amounts of natural gas during the lower-priced summer months, and then tap the reserves in winter when customers' natural gas requirements—and wholesale natural gas prices—are highest.

Don Steinke

1. Did NWIW, or the Port of Kalama, or Cowlitz County help write the SSEIS?

Esther Kronenberg

I write in strong opposition to the Kalama Methanol Refinery. The SEIS has failed to consider vital information about the impacts of fracking, pipeline transportation and the air and water pollution associated with these activities.

Further, the reasoning that there would be even worse pollution from other similar plants if this one is not built is ludicrous. The SEIS must consider the REAL impacts of this facility, and cannot speculate as to what may happen.

What WILL happen is that this plant will generate enormous amounts of climate pollution, lock us into fossil fuel production for decades, and emit dangerous levels of air pollutants.

How the "green" Governor can allow this to go forward is confounding. Our State deserves better, our country deserves better, as does the planet. Do not proceed with this destructive project.

Thank you.

Linda Leonard

If built, the Kalama methanol refinery would create a huge increase in greenhouse gas emissions for the state of Washington and would move us far away from achieving our climate goals. Kalama needs to invest in a clean future, not more dirty fossil fuels. I oppose this project and hope our elected officials will do the same.

Anonymous Anonymous

I am the mayor of Kalama, but speaking here as an individual.

This refinery, I believe, is a regional energy security risk.

Having this methanol consuming more than [illegible] of all available gas capacity or 320 Dth/d out of 500 Dth/d from the only pipeline that supplies natural gas on the I-5 corridor from Sumas WA to Washougal WA is too much to give one company. They also want 100 MW of clean hydropower, which is like gold when it comes to GHG reductions. What type of energy is going to gap the distance between fossil fuels and renewables? There is no way that you can close all of the coal-fired power plants without a backup for renewable energy. For every watt of renewable energy, you need a watt of firm backup because sometimes the sun doesn't shine and the wind doesn't blow.

We will be at the mercy of the Chinese if we want to move out of coal and oil. The refinery owners will be able to sell gas capacity and hydro to trade for carbon credits or to lower GHG emissions requirements.

How vital natural gas is to Governor Inslee's legislation.

According to the 2018 Pacific Northwest Gas Market Outlook information brochure:
The forecast step increase in gas for generation (2021-2022) coincides with the retirement of several coal-fired generation units that currently serve the region, including Boardman in Oregon (end of 2020), Centralia Boiler 1 in Washington (end of 2020), and Colstrip Units 1 & 2 in Montana (mid-2022). This forecast demonstrates the expectation that natural gas will play an increasingly important role in maintaining system reliability and affordability as policymakers drive the region toward a cleaner energy future.
"Companies often choose both in parallel. Investments in gas dilutes the shift to renewables", stated Galina Alova of the Smith School of Enterprise and the Environment at the University of Oxford.
If you look at every utility company's IRP future energy requirements, they include large amounts of natural gas capacity to achieve the goals set by Governor Inslee's legislation. It requires power companies to reduce emissions by at least 25% below 1990 levels by 2035.
That's why NWIWs biggest partner Stonepeak Infrastructure Partners are heavily involved in this refinery. Stonepeak Infrastructure Partners focuses on investment in the energy, power and renewables, transportation, utilities, water, and communications sectors. Nothing in its portfolio about plastics and olefins.

Cowlitz County PUD E3 reliability study states:

Resource Adequacy in the Pacific Northwest-Serving Load Reliably under a Changing Resource Mix
Significant greenhouse gas emission reductions leading to a deeply decarbonized grid can be achieved as long as sufficient firm capacity is available during periods of low wind, solar and hydro production to maintain adequate Resource Adequacy

Also, what are the key findings of the E3 reliability study?
The key findings are:
1. It is possible to maintain Resource Adequacy for a deeply decarbonized Northwest electricity grid, as long as sufficient firm capacity is available during periods of low wind, solar and hydro production;
2. It would be extremely costly and impractical to replace all carbon-emitting firm generation capacity with solar, wind, and storage, due to the very large quantities of these resources and the associated transmission construction that would be required;
3. The Northwest is anticipated to need new capacity in the near-term in order to maintain an acceptable level of Resource Adequacy after planned coal retirements; and
4. Current planning practices risk underinvestment in new capacity required to ensure Resource Adequacy at acceptable levels.

We need to electrify all energy requirements and to move out of any long term fossil fuel infrastructure. We also require all available resources to move into a carbon-free future. It is not right for us to use all of the non-renewable resources now. The 100 years of the gas ability myth, even if it is true, is a short time for humankind. Just because we can-doesn't mean we should.

John Flynn

The main purpose of this proposed project is to provide the Chinese government with a source of methanol that they can use as either a source of olefins for the plastic industry or as a fuel for transportation and industry. NWIW has stated that the intent of the methanol they will produce is intended for plastic manufacturing. The truth of the matter is that once the methanol is sold on the open market there is no way to control what it is used for.
The speculative theory that methanol produced by NWIW would result in a net reduction of global green house gas emissions due to global methanol market displacement is ludicrous. Fracking gas, transporting it through pipelines, refining the gas into methanol, transporting the methanol via tanker ship and ultimately burning the methanol all add to the global climate change crisis.
Department of Ecology needs to focus on what they can control within the State of Washington and not buy into the speculative theories that the proposed project would be "good" for the global environment. The fact of the matter is that reliance on fossil fuels is what got us to where we are now in the first place; global warming, ocean warming, sea level rise, shrinking sea ice and ocean acidification.
I encourage the Department of Ecology to adhere to the facts that this project would add a total of 3.6 million metric tonnes of green house gas emissions per year and deny the project on that basis.
Than you for your consideration

Teresa Flynn

This Methanol Refinery will pollute our town and State of Wa. This location is a Migratory Bird route We dont need the fracked gas, The pipeline, and damage to our environment. It also a glutonous use of gas

Linda Leonard

Northwest Innovation Works' cannot be trusted. They have deliberately misled the public and the state of Washington about the environmental, health and safety impacts of this project. They expect us to trust them after they lied about plans to burn the methanol as fuel?

The new SEIS analysis released what NWIW has denied, the refinery would use more methanol to be burned as fuel in China which would cause significantly more greenhouse gas emissions.

The proposed largest fracked gas to methanol refinery in the world would become one of Washington state's most significant sources of climate changing pollution and use more fracked gas than all of Washington's gas-fired power plants combined.

The draft study shows the refinery would cause a staggering 4.6 million tons of climate pollution every year for 40 years. The climate consequences are enormous.

I live in Kalama and oppose this dirty project.

Carol Marier

Please reject the proposed methanol plant in its entirety. The Kalama area is too beautiful to turn it into a top 10 polluter site in WA state.
Bad for health, too many risks! Again, please, NO METHANOL!
Sincerely, Ms. Marier and family

Anonymous Anonymous

I am speaking here as an individual and not as the Mayor of Kalama.

When would this refinery start contributing to SW Washington?

From the Final Economic Impact Analysis of the Proposed Kalama Manufacturing & Marine Export Facility

Methanol plant construction is a major undertaking. KMMEF would be the first methanol plant on the West Coast. As such, much of the equipment and engineering work necessary will come from outside the local region.

Since it is a manufacturing facility in an official high unemployment county, the state exempts some construction components, notably new machinery and equipment, from sales tax.

This refinery is exempt from collecting taxes on the methanol it exports. Washington does not impose sales & use taxes on goods manufactured in the state and exported to other states or countries.

Because Washington recognizes Cowlitz County as a high unemployment county, qualified machinery, equipment, and buildings are also exempt.

As for the land, NWIW will lease, not own the property on which the plant would be erected, so there is no property tax on the land itself.

Washington law requires county assessors to appraise industrial properties at 100 percent of their true and fair market value.

The Kalama methanol refinery's assessed value falls per the Washington Department of Revenue schedules
1st Year Property Tax $ 16,469,425
10th Year Property Tax $ 9,287,676

The businesses at the port pay no state corporate or personal income taxes.

They will get $100 million in sales tax breaks through 2021 and $43 million in local tax breaks. (We need to know if there will be an extension of these tax breaks)

They have applied for $11 million in federal money for their dock and a $15 million low-interest loan for the groundwater well.

John Flynn

The Washington Department of Ecology needs to be reminded that their ultimate responsibility is to the residents and citizens of the State of Washington and not to a wholly owned subsidiary of the Chinese government.
Department of Ecology needs to focus their attention on what they can control within the boundaries of the State of Washington and not lose focus by concerning themselves with speculative theories regarding future global methanol production and markets.
In addition the Department of Ecology needs to be reminded that the state legislature has passed an aggressive goal of reducing green house gas emissions in the state to 1990 levels by 2020. Revised Code of Washington, Chapter 70.235, Limiting GHG Emissions, establishes these goals as well as stipulating that the state would:
1) limit and reduce GHG emissions
2) minimize the potential to export pollution
3) reduce emissions at the lowest cost.
Currently the states GHG emission levels are 7.0 million metric tons higher than the states 2020 target. The state is not meeting their goals. If allowed to become operational the proposed methanol refinery would add an additional 4.6 million metric tons of carbon dioxide pollution per year. That would be equal to around 5 percent of the States total climate emissions and would rank the methanol refinery among the top 10 polluters in the state.
Again, the Department of Ecology needs to focus their attention and efforts on what they can control within the state and not enable a corporation that is a wholly owned subsidiary of a foreign government to use up our resources, namely gas, water and electricity to export their product for the benefit of a foreign government leaving SW Washington with the environmental impacts.
In my opinion this would equate to environmental piracy.
I encourage the Department of Ecology to deny the permit.
Thank you.

Linda Horst

In reviewing the DSSEIS, two things have become very apparent:

1. Anything that is SUPPORTIVE of the Kalama methanol refinery is based upon SPECULATION.

2. Anything that is NOT SUPPORTIVE of the Kalama methanol refinery is based upon FACTS.

The myriad reasons to reject this polluting, dangerous proposal are obvious. I am counting on Ecology to do the right thing for Washington by denying the methanol refinery.

Don Steinke

Ecology used the 100-year time frame for the climate impacts for fugitive methane, but the next 20 years matter most. The CO2 equivalent of fugitive methane for the first 20 years is much higher than the100-year time frame. I believe the EPA admitted they got it wrong and changed their protocols.
That first twenty years matter most because feedback loops are not included in the IPCC models and if we don't reduce emissions ASAP, feedback loops could kick in soon and then we could have abrupt climate change.
Then it is game over.
Don't gamble with your future. Say no to Kalama methanol.

Don Steinke

Say no to Kalama methanol for the following reasons:
If approved, Kalama methanol, would contradict two pieces of legislation that were signed into law last April.
1. HB 2311 establishing the state goal of reducing ghg emissions in our state 45% by 2030, and 95% by 2050
Kalama methanol would increase ghg emissions at least 1 million tons per year according to this SEIS. The law does not allow for mitigation out of state, real or pretended.
Kalama methanol would create an extra burden on existing business to reduce emissions even more to compensate for Kalama methanol.

2. Also SB 5323 Bans certain plastic bags by 2022. The world needs more use of reusable bags, not more plastic bags.
This proposal violates the intent of the legislature. Say no.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

Local employment being 200 permanent jobs and 1000 construction jobs and salaries of $109,000? Depends-

For emissions and safety, it is less than 115 permanent jobs and 560 construction jobs

Kalama SEPA documentation for emissions estimates. Table A.3, pg. 193/241 states there will be less than 100 jobs

In the FEIS App. GI. PDF pg. 45/84. For onsite populations and building categories;

(These numbers look like the actual employment numbers for a methanol refinery of this size)

Control room
Day 8.3
Night 12

Fire Station/administration
Day 16
Night 3

Maintenance
Day 19.5
Night 10.8

Main Security
Day 2
Night 2

Process area
Day 24.3
Night 4.9

Wharf
Day 6
Night 6

Total employment 114.8

In the Draft Supplemental Environmental Impact Statement, November 2018 Table 3.1 Pg. 124/241 Construction jobs 560

However, In the local newspapers, there are going to be 240 permanent and 1000 construction

employed.

President of methanol firm talks permits, jobs at EDC meeting Feb 27, 2014
Northwest Innovation says each plant would eventually employ 240 full-time workers and create more than 2,000 construction jobs. The city of Dalian is planning to build an 8 million metric ton storage tank for the product. The lowest-paid jobs would have salaries in the $40,000 to $50,000 range.

Northwest Innovation Works moving headquarters to Port of Kalama.
Marissa Luck Jan 29, 2015
Northwest Innovation says it expects to employ nearly 1,000 construction workers to build the Kalama plant and 240 permanent workers at full capacity.

And at Port Westward- the sister refinery of the Kalama refinery being proposed by the same company, and based on the same information, there are different numbers.

Crowd Gathers For Methanol Presentation by Deborah Steele Hazen
The Clatskanie Chief of Clatskanie, Oregon

In their interview last week with The Chief, the developers said that approximately 30 to 40 percent of the total 240 employees (120 per phase) would-be managers, chemists, and engineers, most of whom would be moving to the area. The rest would be hired locally. All of the jobs would be "good, family-wage jobs," meeting the state's definition of that term, Godley said.

Methanol company switches land options at Port Westward. Anna Del Savio Friday, May 10, 2019

The option agreement allows NWIW to produce methanol but prohibits the manufacturing of Liquid Natural Gas. The initial project "is expected to generate a minimum of 100 full-time equivalent jobs, but no less than 70 jobs," according to the amended option to lease agreement.

Other methanol refineries numbers prove the lower numbers, not the higher ones.

Natgasoline LLC is a green world-scale methanol production complex in Beaumont, Texas
108 permanent jobs.

Methanex plans up to $1.4 billion methanol plant in Geismar -- it's third there JUL 19, 2019 -
Through the project, Methanex will create 62 new direct jobs,

John Flynn

In April of 2019 Oregon Public Broadcasting released an article that revealed that Northwest Innovation Works had been misleading the public and state regulators for years regarding the planned use of the methanol that they hoped to produce at their proposed fracked gas to methanol refinery. In documents obtained by OPB, titled NWIW Gas to Methanol Investment Overview, dated March, 2018, NWIW used a PowerPoint presentation to potential investors that specifically detailed the intent to burn their methanol for fuel. More than a dozen pages of the presentation discuss using methanol as "clean fuels for industries and transportation." NWIW referred to their product as "liquid sunshine", "clean crude" and "convenient LNG". Of the 26 page presentation only one was devoted to methanol for olefins.

Further clouding this discrepancy is the fact that Wu Lebin, the Chairman of the Chinese Academy of Sciences Holdings Company (CASH) has publicly stated on several occasions that the methanol produced at the Kalama refinery would be used as fuel for both marine and ground transportation as well as power generation and industrial boilers.

In addition to these glaring discrepancies NWIW sponsored a two day workshop in 2017 at Stanford University where there was no mention whatsoever about using the methanol for creating olefins for the plastics industry.

This false narrative has been used by NWIW for years to mislead the public and state regulators regarding the true intentions for the end use of their methanol.

The question remains; who are we to believe, the Chairman of the Academy of Sciences Holdings (CASH) or a paid spokesperson of the wholly owned subsidiary.

I encourage the Department of Ecology to see through this obfuscation and categorically deny any and all permits for this polluting proposal.

Thank you.

Jennifer Vinnard

Too much speculation surrounds this proposed refinery, and adding nearly a Million metric tons of ghg emissions to our atmosphere, purely for China's benefit is not worth the $30-$40 million a year in taxes...the state makes more from cannabis taxes..it's not worth destroying our beautiful state! From the start of this project, NWIW has been downplaying the facts, has been caught lying about the intended use for the methanol, and has preyed upon our need for local jobs, few of which will actually be filled by local residents. This refinery would use more natural gas than several large cities combined, severely reducing and limiting stock for current consumers as well as future construction. The real winners of this refinery would be China, and we'll be left with the environmental and economic impacts, loss of revenue to local businesses, and it just isn't worth it! Don't sell out our wonderful state for China to reap the rewards. We're better than this! We don't need this type of pollution nightmare in Washington, there's thousands of other industries that wouldn't have such negative impacts. Please protect Kalama and Washington, we're counting on you! Thank you, Jennifer

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

I believe that there will never be a second train constructed for methanol production based on some articles.

Crowd Gathers For Methanol Presentation by Deborah Steele Hazen
The Clatskanie Chief of Clatskanie, Oregon

In addition to the two phases planned for Port Westward, the company has announced the third phase to be built in Kalama - another $1 billion investment.

In the 2017 PSE Integrated Resource Plan on pg. 273/384 it shows the gas capacity needed for this refinery would be 180 Dth/d and not the 320 Dth/d required to run two trains at 100%

The footprint is too small for the two train refinery along with the ULE and the ZLD infrastructure. If you look at the refinery layout, these major additions are no-where to be found. It would be interesting to have the model and type of each of these two new additions with the dimensions needed to implement. I would also like to know if there is any additional space needed for the accompanying support structures, like cooling ponds or storage facilities for chemicals or waste.

That means half the taxes and half the employment

Don Steinke

Here's another reason to rejects this proposal.
In 2016, Inslee issued an executive order that requires polluters to reduce their emissions 5% every three years.

In January of 2020, The Washington State Supreme Court reaffirmed Ecology's authority to regulate greenhouse gasses from facilities such as paper mills and methanol refineries, but has now put the urgent need to regulate emissions from indirect sources such as tailpipes, and gas boilers, and other sources in the hands of the Legislature.
But for now, Kalama methanol will need to comply. How will they do that?

Sandra Davis

The Dept of Ecology seems to be relying on speculation that this proposed methanol project in Kalama, Washington would displace existing methanol plants in China currently using coal in their production. This speculation theory could also assume other manufacturers in China would burn 100% of their methanol as fuel instead of producing olefins for plastic, if this project was built. The result would be a huge increase in GHG. There is no evidence either theory will happen. The SSEIS should not rely on speculation.

The natural gas needed for NWIW's project would exceed the limits of Williams' Northwest Pipeline and would require an expansion of an additional line to accommodate the methanol facility. Why has the expanded pipeline not been taken into consideration in this analysis? The expansion of this pipeline will have many negative impacts to the citizens of Washington state as well as the many, many landowners.

If NWIW obtains all of the needed permits, their plan could be to sell the permits. What would prevent this new owner from using 100% of the produced methanol for fuel, thereby increasing GHG substantially.

In reading the Voluntary Mitigation Program proposed by NWIW, the language leaves the reader to feel uncertain what role the Department of Ecology will play in this mitigation. I have never heard of a "voluntary" mitigation proposal for such a large industrial project. As you know, self-reporting does not always work. What recourse will the Department of Ecology have if a voluntary program fails? Why hasn't the Department of Ecology required their own Mandatory Mitigation Plan?

NWIW is proposing to distribute an Emergency Response Plan "before" the first production of methanol. Emergency Response Plans and Hazard Mitigation must be a part of the permit process. Our state and local officials have a right to review and/or change any Plan that would involve their services and impact citizens. This is totally unacceptable. The safety of the public must be foremost in permitting any industrial project which will involve hazardous materials.

Thank you for accepting my public comments.

Don Steinke

The standard operating procedure for a regulated gas monopoly, such as Williams Pipeline, is to created demand for their gas until the system reaches maximum capacity.

In that light, they view the Kalama Methanol plant as an anchor project similar to what a developer does when he gets a Safeway to build first, and then attract other business to surround it. Then

Then they go to the Utilities Commission asking permission to raise rates on existing customers to pay for added capacity needed to prevent shortages during peak load.

The Kalama methanol plant could cause shortages for some existing business depending on their preferential allocation.

That's probably why the Williams Pipeline Company is advertising heavily on FB about gas being a climate solution, which is a lie.

Does your EIS evaluate the possibility of a second pipeline and the associated emissions?

Janet Kirkland

Woodsy Owl says "GIVE A HOOT, DON'T POLLUTE."

I oppose the Kalama Fracked Gas to Methanol Refinery Project and request the permit be denied.

The SSEIS clearly shows this project will be a major greenhouse gas polluter. We already know methanol is a fast acting greenhouse gas with enormously negative climate impacts. It leaks at every stage of production and transport.

The clock is ticking for our planet and we need to invest in renewable energy NOW. We just saw record breaking temperatures in California and another raging fire season is starting early. The CLIMATE CRISIS cannot wait. Let's lead the way in creative investment in renewable energy jobs and infrastructure that will benefit everyone for generations to come.

Linda Horst

As a lifetime resident of this beautiful, evergreen state, I trust that Ecology will honor their mission statement..."to protect, preserve and enhance Washington's environment for current and future generations".

Adherence to Ecology's mission statement, promised to all Washington residents, can only be achieved by rejecting the Kalama methanol refinery.

Anonymous Anonymous

I have worked on the Columbia River for much of my adult life and feel that NWIW and their shipping partners will be positive and responsible members of the business community on the river speaking forcefully for the best safety practices.

Gary Wallace

To consider permitting this facility at this time of extreme climatological change, as evidenced by the massive wildfires (smell and breathe the smoke--it will shorten your life), the extreme weather in both major oceans as demonstrated by the number and frequency of hurricanes and typhoons at levels of strength never recorded, the change of rain patterns that have created droughts in food producing areas world-wide, the rising sea-levels that will destroy almost every major coastal city in the USA and world, the massive DESTRUCTION of our oceans' food-chains due to PLASTIC pollution and micro-plastics now in our food-chain and that likely contributes to the rising negative health-effects on children's development ---therefore, our future---would be tantamount to supporting the mass murder of our planet. Everything this proposal wants to do is contrary to the well-being of the environment that your department is tasked with protecting! Any acceptance of this fossil-fueled project, especially the manufacture of plastics, as originally promoted---although now revealed to be inaccurate and NWIW admits will also likely be used as fuel--doesn't that usage require a different permitting process?--are both unacceptable. The burning of methanol as fuel is very different in the emissions. NWIW is dishonest and willing to lie to get "through" this process. As per the Port of Kalama to present their letter of conditional use and their proposed financial fines to control the NWIW product from Kalama is totally unenforceable and therefore a moot point pertaining to qualifying this project. Your decision must not be a "blindered" acute case to review this project as if it exists within only its own universe without connecting "ALL-OF-THE-DOTS" relative to the current---now, today--environment locally, statewide and globally. Our climate is a chemical soup. It now exists at "the tipping point" of a catalytic conversion. This project will add-to the real consequence of "flipping" the world's livability by causing a conversion into compounds that may not support life as we need to exist---with all other life. Your burden is to protect our lives. Corporations, nor any person or entity, should be allowed to operate when their actions contribute to the deaths of people, climatological instability and the immediate, near-term future of our well-being. DOE must review the UN Climatological Report to be released tomorrow, the 9th of September, to be truly current and scientifically guided and make the only decision of "DENIAL" of this project. It is poison! Regarding the claim made that this refinery will offset other dirty energy plants is based upon what evidence from any other similar project? NWIW, the POK and the Cowlitz County Commissioners, to my knowledge, have not presented any supporting evidence that this has previously been accomplished. Has the plastic pollution and the total negative effects of that portion of this proposal been reviewed and included? As plastic deteriorates and becomes exposed to the elements it may have even greater GHG releases. This is an emission. It should be, or should have been, assessed in this review. I don't see it. Your decision must be: NO!

Bill Kirkland

Please reject the Kalama methanol refinery project. It makes no sense to increase GHG pollution when scientists have been warning us for years about the current climate crisis.

Greed and profit should not win out over responsible stewarding of our precious resources.

Tika Bordelon

please respect the environment and other species that call this area their homes. humans need to learn how to exist with nature rather than try to control it. please stop polluting our fragile earth.

Teresa Flynn

Department Of Ecology State of Wa. Needs to protect the citizens of Washington From this proposal from NWIW of the speculative theories that this would be good for the world and will cut Green House Gas emissions.This has gone on long enough and needs to stop.Put a end to this.

Lauren Sewell

I am gravely concerned about the environmental impacts of the proposed Kalama methanol facility. I do not support the construction of this facility, and I do not believe that the environmental impact statement takes into account the harm this facility will cause on the people of Kalama, its wildlife, its land and its future.

Wesley Allen

As the northwest forests are engulfed in flames during another unprecedented fire season and our communities fill with thick smoke, my hope is that we can all seriously reflect on questions that matter:

Is it in the public's best interest to allow a methanol refinery that will emit 4.6 million tons of climate pollution every year, becoming one of WA's largest greenhouse gas polluters? Should we permit a single corporation to profit by exporting fracked gas to Asia, at the expense of our waterways, fisheries, health, and our children's future? Is it ethical to further entrench our energy systems in the ways of fracked gas, at the expense of clean energy technology and innovation?

Kathleen Martin

The methanol plant would sell our natural resources to a foreign entities. Those resources could be better utilized here, at home. This would also encourage the production of even more plastics, in a world where there are no truly viable options, at this time to recycle, or reuse them. Along with this as something of this scale has not been done until now, no one can ensure how safe it will be to manufacture or ship this, particularly overseas. This will be an eyesore, and has huge potential to damage our river systems. Please do not endanger ours, or our children's future with this project. Protect our planet.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

The refinery would adversely impact iconic salmon of the Northwest due to the nighttime lighting from the refinery. The refinery would be located just downstream of the Kalama River, home to two fish hatcheries. Salmon migrate from spawning areas through rivers, and estuaries to the ocean, often moving at night. Returning adult fish also migrate at night. The higher lighting along this route will interrupt the migration, increase predators that prey on the migrating fish, and ultimately reduce the number of returning salmon.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

The sheer volume of gas required. This methanol refineries demand for natural gas is unfeasible without a massive expansion of gas pipelines and wells, including hundreds, if not thousands of new gas wells.

The remaining gas provided to the NW is just enough to get us by until renewable energy can cover all of our needs. The natural gas needed by residential and business customers lowers every year due to conservation and energy efficiency measures.

The gas companies know this. They know if there is not a large investment now that consumes substantial amounts of gas, then within a couple of years, there will be no need for expanding the pipeline, even with a large natural gas consumer. That's why the gas companies are trying to build a fertilizer plant in Longview, an LNG export facility in Tacoma, a gas to methanol terminal in Kalama, and the Jordon Cove LNG.

It's a lose-lose project. If this refinery somehow makes money for the next 30 years, it will lock the NW into decades of natural gas dependency. If it doesn't last the decades promised, the ratepayers and taxpayers have to pay back the billions of dollars in increased infrastructure costs to supply the refinery. The company would be long gone and leave us paying the bill.

It is very concerning that a project that takes more than 2/3 of all the available capacity available to the entire NW has not had a thorough investigation for present and future energy needs.

EFSEC or the Washington Utilities and Transportation Commission should have reviewed this project. Methanol was never thought of as a large energy transport carrier. The loophole that these facilities are using needs to be closed or this will be one of many that will use this blueprint to export large amounts of Canadian gas without outside oversight.

Linda Leonard

Reading the DSSEIS the Climate Science Special Report developed by the U.S. Global Change Research Program (USGCRP) predicts a similar set of impacts including (Mote et al 2014):

Increased average annual temperatures.
Change in average annual precipitation.
Lower stream flows west of the Cascades.
Increased wildfires, insect outbreaks and diseases leading to widespread tree die-off.

"In Washing state, more acres were burned Monday than were charred in the past 12 fire seasons," Governor Jay Inslee said, "and dry conditions continue to fuel the blazes. In one eastern Washington town flames destroyed more than 80% of homes and public infrastructure." This is a new reality we're living in with a changing climate," he added.

Governor Inslee announced his opposition against the methanol project, sending a strong signal against fossil fuel stating "the impacts of climate change are already coming to bear and scientists are saying that unless we reduce carbon emissions by half over the next decade, we will reach a irreversible tipping point."

Is this the direction the state of Washington wants to go by locking in 40 years of fracked gas to methanol from the Kalama Manufacturing and Marine Export Facility in Kalama?

As a resident of Kalama, I am concerned for the health and safety of the citizens in this community from the risks of this proposed refinery. I am urging the Department of Ecology to reject the proposed methanol refinery from proceeding.

Ruth Dallas

It is past time to stop building fossil fuel plants period. Many professionals will comment on the dangers of this project. I will just ask the committee members this: When will you decide that no number of jobs and no increase in your tax base is worth destroying the well being of your children or mine. When it is too late, when the rising temperatures are irreversible what will you tell your children you did to stand up for their lives. Every plant only adds to the problem but together they doom the planet.

Beppie Shapiro

This Second Supplemental EIS shows more detrimental implications of the project than the original EIS. But the bottom line I hope you'll consider is, this Facility will increase and sustain the use of fossil fuels worldwide (at a danger to the people of Washington). This summer of fires should convince you that we must immediately DECREASE use of fossil fuels, not debate details of how bad this Facility would be.

Mike Reuter

I am speaking as an individual and not as the Mayor of Kalama.

The only reason that the Department of Ecology had to get another supplemental review process done is that the backers of this refinery didn't provide the information needed to help the Department of Ecology to approve or deny the permit.

It shouldn't be the job of the Riverkeepers, Sierra Club, and other environmental groups to do all the work that should have been done by a government agency or a real third party review process.

This supplemental review should have also been paid for by NWIW since they didn't want a thorough examination done the first time by the state or federal agency.

What makes it more frustrating is that when the numbers provided are inaccurate, outdated, and challenged, the financially biased entities cry foul and say that the state keeps moving the goal post.

This refinery needs to be looked at more closely by the state because of the RCWs information listed below.

ENERGY FACILITIES AND RCW's

RCW 80.50.010
Legislative finding—Policy—Intent.
The legislature finds that the present and predicted growth in energy demands in the state of Washington requires the development of a procedure for the selection and utilization of sites for energy facilities (methanol is an energy option) and the identification of a state position with respect to each proposed site. The legislature recognizes that the selection of sites will have a significant impact upon the welfare of the population, the location, and growth of industry, and the use of the natural resources of the state.

It is the policy of the state of Washington to recognize the pressing need for increased energy facilities, (which is not plausible without enough natural gas capacity) and to ensure through available and reasonable methods, that the location and operation of such facilities will produce minimal adverse effects on the environment, ecology of the land and its wildlife, and the ecology of state waters and their aquatic life.

It is the intent to seek courses of action that will balance the increasing demands for energy facility location and operation in conjunction with the broad interests of the public (How does this one facility that consumes ¾ of all the NW pipeline capacity, 100 MW of clean hydropower and 4 million gallons per day of water sent to another country constitute broad interests of the public?)

Such action will be based on these premises:

(3) To provide abundant energy at a reasonable cost.

(This fact alone is not feasible due to the massive consumption of natural gas on an already fully contracted pipeline. Canada is losing billions of dollars each year due to not being able to export its natural gas, which means if Canada can export its gas, the NW will pay these "billions" in higher gas prices. This refinery will open the spigot of our gas supply to the world.).

RCW 80.50.020
(4) "Associated facilities" means storage, transmission, handling, or other related and supporting facilities connecting an energy plant with the existing energy supply
(The refinery will be connected to a natural gas pipeline, which is an energy supply, methanol is a type of alternate energy)
processing, or distribution system, including, but not limited to, communications, controls, mobilizing or maintenance equipment, instrumentation, and other types of ancillary transmission equipment, off-line storage or venting required for efficient operation or safety of the transmission system and overhead, and surface or subsurface lines of physical access for the inspection, maintenance, and safe operations of the transmission facility and new transmission lines constructed to operate at nominal voltages of at least 115,000 volts to connect a thermal power plant or alternative energy facilities to the northwest power grid.

(This facility will need 100 MW of electricity from the grid)

(Methanol is an alternative energy facility since methanol is as an alternative fuel under the Energy Policy Act of 1992.) It is also an energy plant because it will be able to make 100MW of electricity and sell it to the grid from its onsite gas-fired power plant.)

LInda Boyd

I urge you to say "no" the the Kalama plant, which would be another nail in the coffin for human life. The west coast is choking as our life-giving forests go up in smoke. Atmospheric carbon levels are soaring past 415 ppm, arctic ice is melted, and the jet stream is unstable. Forget about your grandchildren, it is now unlikely that people born today will be able to live out their natural lives due to climate chaos. Shame on NW Innovation Works and their deadly plans!
Please, vote 'NO' on the Kalama plant.

Brice Crayne

Dear Ecology colleagues,
I grew up in Kelso, WA fishing the Kalama River as a third generation Cowlitz County resident raising a fourth generation. I oppose the installation of a methanol refinery on Port of Kalama property and request that Department of Ecology reject the methanol refinery and deny the Shorelines Permit for the project.
I'm familiar with the shorelines permitting process through my work as a project manager developing fish habitat in SW WA State. I work for a non-profit (not mentioned by name because I am writing as a citizen) working to recover fish habitat conditions that were damaged by human activities in 16 watersheds including the Kalama River. In fact, we completed a project on Port of Kalama property in 2018 with a sizeable donation from the Port to complete the project. I have also worked at Steelscape, Inc. and support most of the Port activities.
However, there are a few facts that stand in my way of supporting bringing this kind of business to our community. First, Ecology's analysis demonstrated that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.
Next, it appears that NWIW is seeking alternative buyers for the methanol and while initially they didn't propose to burn any of it for fuel, in 2018 and 2019, NWIW informed potential investors that methanol from the planned
refinery COULD be burned as fuel overseas. Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year.
Last, I cannot support any company that supports a "not in my back yard" mentality. Negative impacts will be spread worldwide including the fracking sites in Canada, local pollution at the refinery, leakage of greenhouse gasses during transportation, manufacturing wastes at plastic production plants, and longterm greenhouse gas pollution from burning methanol.
Personally, I can't imagine trying to regulate these activities and coming up with a sound mitigation plan that properly mitigates for all of these impacts. I appreciate the Shorelines process and the opportunity to submit comments.

Teresa Flynn

My husband John & I retired to Kalama, Wa. NWIW is proposing to build a fracked gas to Methanol refinery here.There is no way this project would reduce carbon emissions, in fact it would increase carbon pollution in huge amounts. This is their shell game and we would be the losers. Dept. of Ecology needs to protect the citizens from this Polluting nightmare.

Diane Dick

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.
The greenhouse gas emissions are not fully accounted for in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.
In 3.4.2 Upstream emissions it is stated, "GHG emissions from the local natural gas distribution system are not attributable to the project because KMMEF will have its own dedicated high-pressure connection. As described in the First SEIS, natural gas will be supplied to KMMEF from the existing interstate transmission pipeline via a new 24-inch 3.1-mile lateral interconnection pipeline. Northwest Pipeline LLC is proposing to construct and operate this interconnection pipeline, which is known as the Kalama Lateral Project."
Presently there is no high-pressure gas connection to the KMMEF site in existence. In the no build alternative to KMMEF there will be no Kalama Lateral pipeline. The Kalama Lateral is integral to the operation of the NWIW methanol refinery. Greenhouse gas emissions from the construction and operation of the Kalama Lateral Project should be included in KMMEF upstream and construction emissions.
Thank you,
Diane L. Dick

Marian Gillis

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Currently tankers abound full of oil all over the world. Currently an armada of oil tankers off the coast of San Fransisco, sits and waits to unload fuel that we are not buying.

We have moved on.
Let's work together to create opportunities for our kids and grandkids!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Marian Gillis
15100 6th Ave SW Burien, WA 98166-1926
mariangillis@gmail.com

Pamela Rains

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. This is NOT the time to sweep these threats to our environment under the rug. We need to start taking action on these threats to our environment NOW! I think today's events speak for themselves. We have delayed way too long with dire consequences.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Pamela Rains
22776 SE 43rd Ln Issaquah, WA 98029-6272
raindance427@gmail.com

Anne Hall

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Anne Hall
1226 Lopez Rd Lopez Island, WA 98261-8589
annehall@familyhealing.com

Kevin Clark

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

The draft of this second Supplemental Environmental Impact Statement (SEIS) clearly shows that this project is dirty, dangerous, and unwise. The refinery would use a staggering amount of fracked gas – more than all of Washington's gas-fired power plants combined – making it one of our state's most significant sources of climate pollution. Not only that, it would promote fracking in other US states and ultimately cause more methanol to be burned as fuel in China. Especially as the west coast faces roaring wildfires exacerbated by climate change, we must do better than more fossil fuels.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Kevin Clark
834 San Juan Blvd Bellingham, WA 98229-6831
kevincrestline@aol.com

Lorraine Hartmann

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Lorraine Hartmann
10627 Durland Ave NE Seattle, WA 98125-6943
lorrainehartmann@comcast.net

Teresa Allen

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Teresa Allen
6184 N Fork Rd Deming, WA 98244-9513
allenterri@comcast.net

Barbara Anderson

Building the world's largest fracked gas-to-methanol plant in Washington is morally wrong! It is an environmental injustice and does not support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dangerous and dirty. If built, Washington will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future.

Northwest Innovation Works has demonstrated that they are deceitful and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core.

Governor Inslee stated, we cannot support such fracked gas projects in good conscience. You have a moral responsibility to protect public health and reduce our region's climate pollution. Please deny this project. We must invest in a livable future that is safe for everyone to thrive. Thank you.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

This refinery is a Chinese/Canadian energy export terminal; that's all it has ever been. It has never been about jobs or taxes, its about money and resources. The original backers of this refinery back up this analogy. BP and the Chinese Academy of Science. It falls in line with that saying, "Follow the Money."

Canada needed to monetize its stranded natural gas, and China needs the energy to supply its industrial capacity. Canada has no way to export its natural gas to world markets, and China always needs more cheap resources to power its economy.

If we let China export this vital limited capacity resource, we will lose our competitive advantage. America needs to charge more, not less for the gas than U.S. consumers, so that we are the ones making money and controlling our destinies-not China.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

Everything terrible about this refinery is facts, and everything good is speculations.

The facts:
It will consume large amounts of natural gas for decades, making it impossible to wean ourselves off this fossil fuel.

It will take 100 MW of clean hydro-power, which is like gold when it comes to GHG emission reductions.

It will consume millions of gallons per day from the Columbian Alluveal Aquafer.

It will produce a plume will be visible for miles, which will lower property values in the residential and business community surrounding it.

It will produce toxins that will add to the already large pollution bubble in Kalama. Industries, I-5 vehicle traffic, trains, and ship's cumulative adverse effects will have health impacts on the local population.

It will cause NW consumers and businesses to compete with China for natural gas capacity on the North West pipeline.

It will give Canada the ability to raise its natural gas prices to Washington and Oregon businesses and consumers now that there will be an export terminal to world markets.

It will make it easier for China to compete with American methanol producers located in the Gulf of Mexico if they get the Department of Energy Loan they applied for to help subsidize this refinery.

It will cause a lot of residents to lose their property due to eminent domain by a foreign company.

Speculations:
Jobs and taxes, and environmental considerations are all based on speculations.

Will China buy this "feel good" methanol in the numbers promised?

Will China really shut down already built refineries because this higher-priced methanol just because it will better for the planet?

Will there be a second train built for additional methanol production (Which is how they get to 200 permanent job numbers.) In an uncertain fossil fuel world, how could this refinery promise it will provide taxes and jobs decades into the future?

Will there be 1000 temporary construction jobs needed from this refinery that will be mostly built

elsewhere and just erected here.

Will there be only going to be locals working there? There aren't a lot of out of work refinery workers living in Cowlitz County. The company already said that 30-40% of the better-paying jobs would be brought in from other areas.

Edgar Meyer

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Edgar Meyer
105 Chase Ave Cashmere, WA 98815-1160
emeyer2@frontier.com

Frances Twiggs

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. The adverse effects of climate change are all around us as fires rage here in Washington, Oregon, California, and Colorado.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
The Rev. Frances Twiggs
6 N Cleveland Ave Wenatchee, WA 98801-2649
frankitwiggs@gmail.com

Merry Roy

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We are responsible for acts now that will result in a more polluted future, worsening the effects of climate change for ourselves, our children and our grandchildren.
We are in the midst of a proliferation of fires in the western states, increasing strength of hurricanes, the rise of oceans that already have erased islands and driven Alaskans from their native villages, caused flooding/droughts in vulnerable areas resulting in huge numbers of climate refugees. God created this world and saw that it was good. We must take care of creation and not destroy his gift.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Merry Roy
932 Highland Dr Wenatchee, WA 98801-3408
merry8roy@gmail.com

Dorothy Knudson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We need to remember that creation is for all. We are all a part and our care of it is for ourselves and others. Some things belong to all of us...No matter what those with money and power say. It is up to us all to care for the gift our Creator has provided.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Dorothy Knudson
PO Box 2046 Walla Walla, WA 99362-0948
dpknud@hotmail.com

Kathy Schaeffer

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. KATHY SCHAEFFER
PO Box 873 Montesano, WA 98563-0794
heres_ot@yahoo.com

Marilyn Cornwell

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Fracked gas creates environmental havoc from the time it is taken from the ground to the time it is made into methanol, polluting air, land, rivers and communities all along the way.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
The Rev. Marilyn Cornwell
9010 SE 47th St Mercer Island, WA 98040-4410
mmcornwell@live.com

Alison Christensen

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Alison Christensen
13944 127th Pl NE Kirkland, WA 98034-2241
alisonchris24@gmail.com

Walther Soeldner

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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Sincerely,
Walther Soeldner
13613 S Valley Chapel Rd Valleyford, WA 99036-9767
waltsoe@gmail.com

Shelly Ackerman

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Times are changing and the time is NOW to stop all dangerous and hazardous energy seeking. We have so many better options.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs Shelly Ackerman
3667 Rabbit Run Rd Langley, WA 98260-8640
shellya@whidbey.com

Rick Young

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Not only a moral imperative but a practical one as well, as this summer's tragic fires, hurricanes and windstorms show. It is way past time to act, but we'd better act now to start rapidly reducing fossil fuel production and consumption for the sake of our children and their children.

It is the duty of the state government to protect our citizens before the financial and profit concerns of companies. I would rather pay higher taxes than pay the price of habitat and ecological destruction.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Rick Young
19811 E Riverwalk Ave Liberty Lake, WA 99016-5231
ricardo99@comcast.net

Diane Pasta

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We must invest in a livable future that is safe for all to thrive. Washington needs to take leadership in protecting our environment for future generations. Building the world's largest fracked gas-to-methanol plant is a terrible mistake, and we don't want it anywhere, but especially not in our state!

We Quakers value stewardship and justice which this project would undermine, as indicated in the second Supplemental Environmental Impact Statement. Let's support our state's commitment to reducing climate pollution by rejecting Northwest Innovation Work's proposed methanol refinery in Kalama. Please deny its Shorelines Permit.

During the project's three reviews, it has had clear community opposition. Such fracked gas projects are against the interests of people in the state. It hurts our community's health and living environments.

Attempts to replace even worse polluters should not produce such damage in hopes of something unsure. We can find better alternatives.

Thank you for your voice in protecting the environment and the state's residents.
Peace,
Diane Pasta

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution.

Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Diane Pasta
22525 7th Ave S Des Moines, WA 98198-6837
Diane.pasta1952@gmail.com

Anthony Buch

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Anthony Buch
6221 35th Ave NE Seattle, WA 98115-7314
maritoni_buch@yahoo.com

Susan MacGregor

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Susan MacGregor
16911 NE 95th St Redmond, WA 98052-3748
seesue@gmail.com

Victoria Poling

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We need to invest in a livable future that is safe for all to thrive. The future of Kalama workers and the local economy are important. However, we need to create clean energy jobs, not build a plant that increases dependency on fracked gas.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Victoria Poling
4421 145th Ave SE Bellevue, WA 98006-2475
vpoling@gmail.com

Ron DiGiacomo

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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Sincerely,
Ron DiGiacomo
2307 22nd Ave E Seattle, WA 98112-2604
mrdigiacomo@q.com

Mark Uhart

The Washington Dept. of Ecology (Ecology) decision on the KMMEF shoreline permit is personal to our family. We were both born and raised in California but a military career took me away from the areas we love. My wife is a school teacher of 31 years and never stops learning and sharing information. In 2006, well before the proposed project was made public, we purchased land Southeast of Kalama with a beautiful unobstructed view of the Columbia River. We built a home on our lot and moved in during May 2015. Every day we are blessed with the view, relatively clean air, and neighbors who share our respect for the environment. We enjoy biking, hiking, walking and kayaking along this area of the Columbia River. My undergraduate degree is in Wildlife Biology for the Univ. of Nevada, Reno, and I maintain my knowledge base on environmental and local issues. I also enjoy wildlife and landscape photography and frequent the Port of Kalama Marine Park to photograph ospreys, eagles, and migrating waterfowl. I am an avid researcher and operations/business process analyst, preferring to analyze, synthesize and evaluate information in order to achieve a stated or implied objective. I also have a talent for identifying inconsistencies between different sources of information, such as the EIS, FSEIS and SSEIS for the Kalama methanol project.

My primary concern for getting involved in the review of the KMMEF project is its potential short and long term effects to our environment and climate change. Local construction jobs will come and go but the GHGs from this facility will be with us for over 100 years, and we have less than 20 years to bring global GHGs under control. The fires we are experiencing now will impact our state and local economy far more than the temporary construction jobs and any full-time jobs once the plant is operational. The GHGs emitted due to this plant will only increase ocean acidification and impact our fisheries, shellfish and salmon. (I didn't see any data-based analysis of the effects of ocean acidification and increased ocean and river temperatures in any of the EISs.) We must bring these GHGs, primarily carbon dioxide and methane, under control. This means that every country, to include ours, must reach zero net GHG emissions by 2040, nearly an impossible task considering the increasing human population. The KMMEF will accelerate global GHG emissions and climate change under any scenario.

According to the newly released United in Science climate change report, "The world is set to see its warmest five years on record – in a trend which is likely to continue - and (the world) is not on track to meet agreed targets to keep global temperature increase well below 2 °C or at 1.5 °C above preindustrial levels." The world is on track to increase global temperatures by at least 3.6 degrees Fahrenheit by 2050. The world weekly average of CO2 in the atmosphere was 411.59 ppm on 9/5/20, an increase of 2.77 ppm over last year's weekly average for the same week. Ten years ago it was 387.59 ppm and the pre-industrial base was 280 ppm. The safe level for earth is considered to be 350 ppm, so we are already almost 62 ppm above the global safe level. We can expect average global temperatures to increase 2.7 degrees Fahrenheit over the next 20 years at our current rate of fossil fuel consumption.

The loss of state resources, private property and deaths due to wildfires must be considered in Ecology's decision. Poor air quality due to these extreme conditions, and the economic impact to our healthcare system, must also be taken into consideration. Climate change is partially responsible for extreme weather events and the longer and drier weather conditions. Now our wildfire season

can extend from May to October. For the last five years Western states have experienced increases in very large wildfires, resulting in loss of valuable state timber resources, loss of state and private property, and loss of life. As of this comment there are 15 active wildfires in Washington and over 600,000 acres have burned. What are the economic impacts of these events, locally and statewide? Will Ecology include them in a decision matrix and risk assessment for this project?

Lastly, Ecology's analysis showed that the KMMEF would produce 4.6 million metric tons (MMT) of carbon pollution every year, or 184 MMT over the 40 year life span of the plant. Our earth is at a tipping point and the only responsible course of action is for Ecology to deny the shoreline permit.

Mark Uhart
Kalama, WA

Goldie Silverman

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I am a great-grandmother. I care a great deal about the world Isaac, my great grandson, will inherit. I want it to be clean and safe, but building the world's largest fracked gas-to-methane plant in Washington will not create that kind of world. This project will be dirty and dangerous; meanwhile we are ignoring other sources of power like wind and sun, that are cleaner, safer, and less expensive. Fossil fuels are limited; what will Isaac use when they are all used up?

When/if his world is locked into decades of climate pollution, dirty water, dead forests, I don't want him to look around at a devastated world and think, my great-grandmother let this happen.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms Goldie Silverman
1301 Spring St Apt 21I Seattle, WA 98104-1353
goldie@goldiesilverman.com

Noemie Maxwell Vassilakis

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Every decision we make must center considerations around the health of our environment - which is dangerously degraded and upon which our survival depends

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Noemie Maxwell Vassilakis
12239 Des Moines Memorial Dr S # 6A Burien, WA 98168-2277
noemie_maxwell@yahoo.com

Lorraine Johnson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Please don't sell the future of our inhabitants for the money you might get.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Lorraine Johnson
13716 Lake City Way NE Seattle, WA 98125-2600
lorraine.d.johnson@gmail.com

Dennie Carcelli

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Rev. Dennie Carcelli
15626 8th Ave SW Burien, WA 98166-4301
HerRevness@gmail.com

Derek Benedict

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

It's very hard for me to accept that you want to continue killing our environment and ecology just so that millionaires can make more money at the expense of our planet.

Shame on you!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Derek Benedict
709 212th Pl SW Lynnwood, WA 98036-8606
dsbened@frontier.com

Sandra Schumacher

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

I think fracking is bad for the environment.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Sandra Schumacher
7008 Linden Ave N Seattle, WA 98103-5108
sandreakay135@Yahoo.com

Judith Hance

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. This is more than a moral imperative. It is a matter of survival for our younger generations. This must NOT happen. There is no reason for this project beyond money. do you have offspring, descendants, children, grandchildren, nieces, nephews, children of friends? Do you care about their world? Do what is right, morally and for the future of our offspring and our planet.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Judith Hance
7300 47th Ave NE Seattle, WA 98115-6108
judithhance2@gmail.com

Michael Siptroth

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Only clean, green, renewable energy should be supported; no carbon ever again!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mx. Michael Siptroth
2160 E Trails End Dr Belfair, WA 98528-9546
flybill2@aol.com

Anna Dyer

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I'm dismayed by the way we've allowed corporations to set the agenda when it comes to protecting our health and the environment.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Anna Dyer
3606 36th Ave S Seattle, WA 98144-7107
davis.annak@gmail.com

Tika Bordelon

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Tika Bordelon
1400 Hubbell Pl Seattle, WA 98101-1965
tikab1@gmail.com

Fred Karlson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Fred Karlson
5779 Vista Dr Ferndale, WA 98248-9369
fkarlson@frontier.com

Richard Johnson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Richard Johnson
PO Box 3138 Bellingham, WA 98227-3138
jazzpacnw@yahoo.com

Patricia St August

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. PATRICIA ST AUGUST
1104 Columbine St Wenatchee, WA 98801-3363
aer44952@gmail.com

Sheila Thomas

The smoke from the wildfires in the State have strengthen my concern regarding the methanol plant in Kalama and the impact of climate change. I believe it is imperative the Department take into consideration the long term effect this plant will have on the the environment. Several years ago there was a major fire at the local chemical plant, we live approximately 6 miles south of the plant. We not only had cinders, but ash from that fire in our pasture. I cannot imagine what would happen should a fire, emission leak, other other minor or major event take place and the impact it would have. Please, I urge you to consider all of the negative environmental issues this plant will have on such a beautiful location along the Columbia River.

Nancy Vandenberg

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. I am strongly against this project. for this reason. Any project that will increase greenhouse gases is irresponsible, The current forest fires are just one example of why we need to stop any project that will contribute to global warming and imperil future generations, as well as our immediate future.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Nancy Vandenberg
5021 134th Pl SE Snohomish, WA 98296-5214
nancyvan9604@gmail.com

Jodie Galvan

Opposed to project - would prefer to see continued focus on transition to renewable energy. Also concerned about the impact of additional ships on marine mammals.

Ralph Myer

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

The draft of this 2nd Supplemental Environ-mental Impact Statement (SEIS) clearly shows that this project is dirty, dangerous, and unwise. The refinery would use a staggering amount of fracked gas – more than all of Washington's gas-fired power plants combined – making it one of our state's most significant sources of climate pollution.
Now, as the WA, OR, and CA face roaring wildfires exacerbated by climate change. Our global warming consequences are escalating!
We MUST do better than more fossil fuels

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Ralph Myer
11250 29th Ave SW Seattle, WA 98146-3416
remyer20002000@yahoo.com

Phil and Kathe Yokers

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Phil and Kathe Yokers
5108 NE 72nd Cir Vancouver, WA 98661-1484
pkyo@aol.com

Karen Edwards

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. This project is dangerous, dirty and a further threat to climate change.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Karen Edwards
87 Wolf Creek Rd Winthrop, WA 98862-9767
4tarn2swim@methownet.com

Tess Morgan

I oppose this facility for the unrecoverable risk it poses to The Columbia River. Special interest and lack of respect for treaties and legacy of a "clean" river should have been halted before now. The risks far outweigh any benefits to the international proposal that disregarded local opposition. Please prevent further proposal development and implementation immediately.

Maureen Canny

Please stop the proposed Kalama methanol refinery. Consider the systematic cascade of dire health, environmental and economic consequences with a continued reliance on fossil fuels. Building yet another facility dependent on the dirty extraction of raw materials is unconscionable as the climate crisis unfolds so dramatically. We do not have time to waste with the same old arguments that lock us into fossil fuels. Please see past this nonsense. We have the technology to move to cheaper renewables now. Please consider ALL the negative externalities of the proposed refinery.
Thank you.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

NWIW is a start-up company that is trying to build the world's largest methanol refinery, and the prototype that this refineries technology is based on is no longer in service and hasn't been in years.

The systemic lack of information to regulators and community members has been going on for years because they are going off the cuff and working out the details as they go along.

This Kalama methanol refinery is also a prototype in the sense that no methanol refinery in the world uses both ULE and ZLD technologies together.
The thing that concerns me the most is that if ULE was the most environmentally way of making methanol, how come there hasn't been another refinery that uses this technology in the decades that follow?

The articles below show how this played out in Tacoma, where the first methanol refinery by NWIW was to be built.

The Newstribune
APRIL 05, 2016 06:31 PM , UPDATED APRIL 07, 2016 02:35 PM

Proponents of a $3.4 billion methanol project on the Tacoma Tideflats do not plan to meet with Port of Tacoma commissioners before an April 25 vote on its lease.

Last week commissioners said they wanted Northwest Innovation Works to justify why it wanted an extension of the feasibility period of its lease.

However, company officials told the port that nobody is available to talk with the commission this week, said port spokeswoman Tara Mattina. After this week, there are conflicts in commissioner and port executive calendars.

"To me, it means they've lost interest," said Port of Tacoma Commissioner Don Johnson. He said he likes to take time to consider a vote. "From my perspective, I don't see myself making a decision on the 25th that benefits them."

The port commission approved the lease with Northwest Innovation Works nearly two years ago. The lease includes several phases, one of which is the feasibility period.

Without an extension in the feasibility period, the China-backed company could pay hundreds of thousands more dollars per month than its current $8,000 monthly terms. It would also lose the ability to back out of the lease if the feasibility period expires.

Commissioner Dick Marzano said Tuesday that he is "disappointed" in the company's decision and "skeptical" of anything the company might promise on April 25.

"I'm quite disappointed, to be perfectly frank," Marzano said. "... This has been the focal point for such a long period of time, and rightfully so. It's hard to go any further."

Commissioner Don Meyer said earlier this year that he wanted to give the public ample time to view any changes to the company's lease before a commission vote.

"I've slowly reached the conclusion that we have a faulty lease no matter what happens on the extension period," Meyer said Monday.

Company president Murray "Vee" Godley has presented to the port commission a few times on the project. Meyer said Godley's lack of availability this week has put the company into a difficult position: "His burden, not necessarily ours."

Last week commissioners said there are more questions than answers related to the methanol project, and Northwest Innovations has had nearly two years to answer them.

Commission President Connie Bacon said Monday, "There are so many things (I'd like to hear) that it's hard to pick from. The community has asked a lot of questions, and so far there have not been specific answers. And I hope they come equipped with some answers."

Bacon said if the commission denies an extension of the feasibility period, the company has five days to either terminate or move on to the so-called "construction phase," where it will pay hundreds of thousands of dollars more per month.

Tacoma methanol project canceled
By Kate Martin
APRIL 19, 2016 06:01 AM , UPDATED APRIL 21, 2016 10:00 PM

"As the process continued, it became increasingly clear the community was frustrated by the lack of answers on important questions," the spokeswoman, Jaime Smith, wrote in an email. "Jobs matter, but so does our commitment to safety, clean air and clean water."

"The commissioners' views of the project's backer had soured in recent weeks. Several commissioners had expressed frustration at the lack of information they were getting from Northwest Innovation Works. Commissioner Clare Petrich said the commission had been waiting too long for answers to basic questions."

"You cannot expect them to go on without providing that kind of information forever," she said last month.

Earlier this month, some commissioners said they were skeptical the company could persuade them to vote for the extension, given the lack of information.

"They could give us any kind of schedule they want, but who's to say it would be accomplished or done?" Marzano said. "I don't know what they've done — that's the thing. I haven't heard one thing they have done yet."

How Tacoma's methanol debate went sideways, and what we can learn from it

By Matt Driscoll
APRIL 23, 2016 04:00 AM , UPDATED APRIL 26, 2016 09:47 AM

The methanol conversation reached its nadir because some suspected the public process was stacked against average citizens, the company behind the would-be refinery failed at nearly every opportunity to provide even the most basic information, and people wanted answers to legitimate questions and they just couldn't get them.

"There was a tremendous amount of fear and frustration," Mello observed, in what might be the understatement of the year.

In this vacuum, the conversation went sideways. That's not absolving anyone's behavior, it's seeking to understand what happened beyond simply pointing fingers at the public from positions of power.

"I think the temperature in Tacoma, the outrage, was more intense than I've seen anywhere else. And I actually think some of it was justified," Eric de Place, policy director at the Sightline Institute, offered. "The problem I think is, with a lot of these projects, the existing power structures we have all seem to kind of bake in the outcome, right from the beginning. ... To an ordinary community member, it can seem like they're getting railroaded."

Lucinda Schaures

The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year.l. This is unacceptable for our beautiful Northwest, our nation, and our world. We definitely need to make our environment safer and not detrimental to our children's future. Please don't allow this project to proceed.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

We cannot depend on this ULE technology to be the cutting edge way of reduction of GHG emissions for the next 30-40 years. In 10 years, this refinery might be the most polluting in the world.

Any kind of assumption that this will displace future better-designed methanol refineries is not reasonable.

The next step in "green" methanol is already happening in other parts of the world. Super Low ULE might be a technology that might be only a few years away.

Accelerating Shifts in Power Generation & Transmission
18 September 2020 @ 03:30 AM

It said China has been gasifying coal to produce methanol and then petrochemicals at very low prices but India must use green methanol instead of methanol.

"India imports a majority of its methanol demand, as the domestic production units primarily rely on imported natural gas. Natural gas is reformed to syngas which is further converted to crude methanol in a reactor," CEEW Programme Lead, Tirtha Biswas told ETEnergyWorld.

The green methanol process, on the other hand, combines green hydrogen and CO2 gas stream either from industry emissions, biomass, or direct air capture to produce methanol.

According to CEEW, the use of hydrogen, derived from electrolysis using solar or wind (hybrid) power, is likely to become as competitive as conventional fuels.

The technology would involve an electrolyser producing hydrogen using renewable electricity and CO2 captured from the air to produce syngas, a feedstock for green methanol production.

"An alternative green methanol-based production process, provides opportunities to replace natural gas with water, and utilise CO2 emissions from other industrial processes to produce methanol with zero carbon emissions," the policy brief said.

The green methanol process for manufacturing petrochemicals is likely have lower cost when compared to both natural gas and coal-based production processes by 2030.

With the petrochemicals sector seeing an increase in demand for more products, it is imperative for domestic policies to address the levers that can catalyse a transition towards sustainable manufacturing, according to CEEW.

Solar methanol islands – opportunity or threat?
Emilia Obłuska

18 July 2019

Researchers have come up with what they called 'solar methanol islands'

Such islands drifting in ocean waters would, using solar energy, bind carbon dioxide from water with hydrogen obtained at the station and produce methanol – a slightly more environmentally friendly alternative to commercial fuels, eg gasoline.

Jul 31, 2020
Green Fuel On The Horizon - Achíni Green Crude
James Conca

The products of combustion – CO2 and water – can be recombined using clean non-fossil energy, like wind, to re-cycle CO2 and make the same chemical fuels, like kerosene, gasoline and natural gas. That's a closed carbon cycle, because the waste of the burned fuel becomes a feedstock for the future fuels.

Among the many products that are possible from the combination of carbon dioxide and hydrogen, Achíni's Green Crude using the Fischer Tropsch process can provide heavy paraffins for waxes and lubricants, olefins for making plastics and textiles and all of the other synthetic materials we use, making them green as well and removing them from the carbon cycle, so also carbon-negative

The technology for pollution reductions is already being retrofitted on pre-existing coal-fired power plants in China and Saudi Arabia.

Satellite verification of ultra-low emission reduction effect of coal-fired power plants
Atmospheric Pollution Research
Volume 11, Issue 7, July 2020, Pages 1179-1186

Verification of ultra-low emission (ULE) reduction effect in isolated power plants by satellite.

The reduction of satellite data is consistent with the emission reduction of power plants before and after the ULE. Satellite observations have confirmed the emission reduction effect of ULE technology.

. The SO2 and NO2 satellite images exhibit that there is an obvious concentration gradient between the high-emission zone where the isolated power plant is located and the surrounding area, all of which show the characteristics of approximate large-point source emissions.

Ultra-low NOx burners in methanol plants

Recently, the Kingdom of Saudi Arabia's (KSA) strict environmental regulations have required operators to replace older, previous generations of burners with the latest in ultra-low NOx technology.

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Teresa Flynn

Washington Dept. of Ecology, I am a resident of Kalama. Wa , where NWIW. is proposing to build the largest Fracked gas To Methanol Refinery. This would some much pollution it would increase The Climate Change on Earth. Dont consider any further permitting of this project.. No Kalama Methanol Refinery Thank you

Christina Wolfe

I do not support this project and urge Ecology NOT to allow this project. We need to be investing in industries that reduce climate pollution, NOT increase it.

james lombard

This project is a very bad idea from the start. Science tells us that this is a polluting factory that only contributes to climate change, and chemicals in our river that spawns salmon in the northwest. Please say no to this project.

Debbie Tomasovic

I am fearful for our future, if this plant begins producing all of the pollution it is predicted to produce. Let's not continue to be part of the very problem we are needing to solve. The health and well being of our citizens and planet are at stake. Washington cannot contribute to the goal of keeping global warming "well below 2 degrees Celsius" by allowing major polluters to move forward. A low-carbon future demands investment in lower-emitting production processes.

Debbie Tomasovic

We know better, we can do better. We need to focus on clean energy sources that do not continue to pollute our air and worsen our climate change impacts. Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate 5 million tons of pollution each year.

Debbie Tomasovic

Clean energy sources are part of our solution to climate change. Ecology fails to consider whether cleaner energy technologies may
dramatically displace the need to use methanol for transportation fuels. Conversely, Ecology's analysis fails to consider how dumping high-polluting methanol into the market could negatively impact a transition to cleaner transportation alternatives and vehicle electrification.

stephen shubert

Aren't the current fires enough to discourage building carbon spewing plants? We need to shut down hydrocarbon - all of it - as rapidily as possible. Do not build this plant.

H Thom Pence

If there was any doubt before that the Kalama project was a huge smoke screen for corporate greed rather than environmental safe-guarding, then this latest environmental document should erase that notion. From the disastrous effects of fracking, to the multiple opportunities for increased methane leakage, to the overall increase in Washington State's pollution, to the incredibly dubious assertion that this activity in Washington will miraculously eliminate worse pollution in China, this latest attempt to circumnavigate good science with thinly veiled greed and misplaced optimism is surely it. When projects should be actively pursuing net zero green house gas emissions the Kalama project merely overlooks the real problem of added pollution in favor of crystal ball logic! This is not what the world needs and definitely not what Washington State needs nor wants! The Kalama project is merely another nail in the world's biological coffin that would ONLY serve to enrich energy companies at the expense of life on this planet. I strongly stand against such a thinly veiled attempt to further degrade our biosphere in the name of profiteering!

Roseann Thomsen

Residents of SW Washington are not in favor of this plant. It is dangerous on so many levels: to the air, the water, the people, and the animals in this region. It is a bad idea and will only benefit a few. Why risk the health and welfare of local Washingtonians for the benefit of people who do not live in the area? It is not worth the risk. It wasn't so long ago that we tore down a nuclear plant right across the river. At one point, people thought nuclear power was the answer. We know hindsight is 2020, and especially this year it seems critical to carefully consider every environmental and monetary impact.

My family and I urge that this plant does not get approval.

Thank you for your complete review of all the facts surrounding this issue.

Roseann Thomsen

Joy Greenberg

I am opposed to moving forward with a Methanol plant in Kalama, WA. The risk to our environment, whether short-term or in the long-term is much too great and far outweighs any attempt by NWIW's to try to mitigation the hazard. The environmental risk to our community and our waters far outweighs the position that NWIW's plan will bring in local job opportunities. I stand strongly opposed. Joy Greenberg, Local Resident

Genevieve Shank

Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama!

Washington State should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama, WA.

The project would use more fracked gas than all of Washington's power plants, combined. The company has sought to mislead regulators and the public about the purpose and impact of the refinery, falsely claiming that the project will displace "dirtier" forms of fossil fuels. We know that fracked gas is a potent greenhouse gas pollutant, and we are counting on Ecology to accurately account for the project's upstream emissions as well as the downstream pollution from the likely combustion of NWIW's methanol for fuel.

For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. We are counting on you to stop this dirty and dangerous project.

kirk Leonard

I have lived in Kalama for many years and the people of this town deserve better than a dangerous, dirty refinery for the promise of a few jobs.

We need to invest in a clean future, not get fooled by desperate companies refusing to recognize that fossil fuels are not the answer. We are in a climate crisis, adding more fossil fuels will hinder the transition to cleaner energy technologies.

I am against this refinery because I care about my neighbors and I care about the future.

Please deny the Shorelines Permit needed for this project to continue forward.

Bill Baumann

I am strongly opposed to this project. Please do not approve it. If you have any doubts about climate change, this year's wild fires and accompanying smoke events should give you some idea of what our future will be like, unless we stop burning fossil fuels. Please take this seriously. It is crazy to approve this project at this time.

Nina lebaron

No matter how many environmental reviews are conducted, the science still tells us that the proposed Kalama refinery is a very very bad idea for our planet, our state, and the waters of the Columbia River — the river that gives life to the salmon who, in turn, feed our starving orcas.

Ecology's new analysis reveals that the Kalama refinery would cause significant additional GHG emissions from start (fracking in Canada) to finish (burned as fuel in China) — making it one of Washington State's largest sources of climate-changing pollution. This refinery would use more fracked gas than all of Washington's gas-fired power plants combined!

Anyone who wants to breathe clean air would say NO to this project. And yet, relying on smoke(!) and mirrors, the backers (the Chinese government-owned company NW Innovation Works) are claiming that if we don't do the polluting, then someone else will and they will pollute even more! How about NO polluting by anyone? We Washingtonians will not be duped into paying for this project and becoming climate disaster enablers! The whole West Coast is burning right now due to Climate Change- HELLO? Do you not care that we are living in an Apocalypse right now, the red flags are waving, we can't take it any longer! We must switch to safe, renewable energy sources now, and hope the damage can be reversed.

Nancy Mogielnicki

Re Kalama: In this era of climate emergency I believe it is disastrous to build a plant which relies on transported methane (given information about leaks and role of methane as a greenhouse gas). Whether the methanol will be used for plastics or fuel doesn't matter; both are injurious and we must transition to other materials.

Julie Zanzi

I live in Ridgefield WA and I am vehemently opposed to the Kalama Methanol facility at the Port of Kalama. It is very short-sighted to propose an industry that will forever negatively impact our environment for future generations and in return create a few hundred jobs to provide methanol to China for plastic. Please do not approve the permit to allow this facility to operate. Thank you, Julie Zanzi

Cathryn Chudy

An opinion editorial in the SW WA Columbian Newspaper on 9/9/20 pointed out that: "97% of peer-reviewed climate studies have concluded that human activity has contributed to global warming." ("Reminder of Climate Change Blows Into County" 9/9/20).

The hazardous air we are currently breathing from out of control wildfires sweeping through our state and the West Coast puts all of us at severe risk. The editorial offers this prescription: "a drastic reduction in the burning of fossil fuels" that is the key to keeping us safe and healthy, our community habitable. This editorial speaks to the "broad effects of climate change" which I see as relevant to whether or not this proposal gets permitted, and can be found at:
https://www.columbian.com/news/2020/sep/09/in-our-view-reminder-of-climate-change-blows-into-county/

The toxic air we have been pulling into our lungs this week is one of the reasons why so many of us resist when we are asked to follow the smoky yellow brick road north, to the mythical land of OZ (Kalama, WA) where a proposed methanol refinery and export facility will turn fracked gas to methanol for export to China. Allegedly, (promises the Chinese company behind the curtain, NWIW) their operation will "save" the world from rising greenhouse gas emissions.

We cannot afford to believe everything we hear from the company that lies repeatedly to regulators and the public, inducing the Port of Kalama and Cowlitz County to put an international company's profits over the health, safety and long term viability of the river corridor that we all love. The company lied to the public and regulators about end use being only for plastic production in China, for example. This turned out not to be true, and now fuel is included in end use scenarios for China.

The Department of Ecology required this second SEIS and it is worth noting that as the state regulator you do not have to be influenced by the conflicts of interest reflected in the Port of Kalama and Cowlitz County's blatant push for this proposed fracked gas to methanol refinery and export terminal (both the County and the Port receive money from this company.)

The only way we are going to protect our region from the increased intensity and frequency of these destructive wildfires (and the toxic air/pollution that comes with them) is to keep fossil fuels in the ground. We are NOT going to do this by saying "yes" to increasing levels of greenhouse gases and pretending that a dishonest company long on promises and short on anything else but pursuit of profits will somehow magically "mitigate" these away. The SEIS shows a "voluntary" mitigation framework that has little to no detail on how mitigation, if pursued, will be accomplished. As a state agency representing the public which will experience the pollution impacts for decades to come, that is simply not good enough.

Your Dept. Of Ecology mission to "we the people" who live here in our state is "to protect, preserve, and enhance Washington's environment for current and future generations." Permitting a proposal that does the opposite is not acceptable, and constitutes an unconscionable betrayal of that mission.

This is a bad bargain for Washington and our children's future. Please listen to us and say "NO" to permitting this project.

Diane Dick

2020 09 13

Washington State Department of Ecology
Olympia, Washington

Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.

Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.

Upstream emissions are based on speculative and incorrect information.
To begin, over 99% of the natural gas feedstock source for upstream emissions is assumed to come from British Columbia, specifically the Montney Formation (FSEIS Appendix A, p. 41).

Fort St. John, BC, centered in the formation, is located 964 miles north of Kalama, WA.

The gas transmission pipelines map, Figure 3.4-1, labels the pipeline distance to the BC gas source as 629 miles. Clearly this is incorrect. The distance to a Wyoming gas source is likely similar or shorter.

The assumption the feedstock gas will be sourced in British Columbia is unqualified and speculative. The KMMEF SEPA Final Environmental Statement 7.3.2 states, "At this time, NWIW has not entered into contracts for the supply of natural gas to the proposed project." There has been no report this has changed.

The cascade of errors in upstream emissions continues by using the GHGenius modeling tool for life cycle analysis with questionable results.
As noted on SSEIS p. 40, "In the First SEIS, the GHGenius model was used to estimate upstream emissions for natural gas from BC (S&T Squared 2013). The GREET model was used to provide estimates for the U.S. Rocky Mountain natural gas source (ANL 2017)."

The GHGenius model used in the first GHG analysis is outdated (highly revised edition 5.0 released in April 2018) and apparently does not provide the same output data for transmission emissions as the GREET model. This is apparent in comparing the transmission emissions for the BC gas source and the WY source.

Table A-2 Low Emissions Scenario in Appendix A compares the emissions data from the GHGenius model for BC gas with the GREET data for North American gas. It uses GHGenius data from the first GHG analysis. While the data is like that presented in the first analysis, some

categories have been combined which blurs the source of some of the emissions, particularly those from pipeline transmission. Transmission emissions, fugitive and storage, appear to be almost three times the value given for BC transmission emissions.

The KMMEF SEPA Final Environmental Impact statement provided a description of factors in determining upstream emissions. "Natural gas extraction involves the operation of compressors and separation equipment at the wellhead and gas processing facilities. Figure 3-8 shows the upstream emissions pathways for natural gas. GHG emissions are calculated based on the energy inputs from aggregate data, which are inputs to the GHGenius and GREET models. The models calculate the life-cycle emissions, including the upstream emissions, to produce fuels for gas extraction and processing. The GREET model also calculates energy inputs and emissions from compressors used for natural gas transport and includes provisions for fugitive methane emissions at all stages of the extraction and
transportation processes. These models do not include emissions associated with the preproduction phases of the upstream emissions (natural gas well development) and emissions from this phase are not included in the calculations as no well development is attributable to the proposed project." FSEIS 3-17 [emphasis added]

By omission, this statement implies the GHGenius model may not include all the emission factors included in the GREET model, which could explain the greater emission rate yielded by the GREET model for North American gas.
Emissions from pipeline transmission in the GHGenius model for BC gas are insufficiently calculated, producing an inaccurate emission rate for upstream emissions. As previously noted, the pipeline transmission distance from Kalama to the BC gas source is incorrect. Pipeline distance matters in determining emissions. As stated in Appendix A of the SEIS, KMMEF Supplemental GHG Analysis, 2018, p. 29, Natural Gas Transport- "Natural gas fueled compressor engines compress and move gas along the pipeline network...Natural gas flows through a pipeline at constant pressure and the pressure drops as gas is removed from the pipeline and due to pipe friction. As more gas is moved through the pipeline, additional compression energy would be required to move the gas, which is part of the upstream analysis." [emphasis added] Additional compressors needed on longer pipeline routes require more energy and increase fugitive emissions.

This raises doubt about the reliability of the GHG emission rate produced in the first GHG analysis and used again without correction in this second analysis.

In the first GHG analysis the upstream emission rate of 0.71% calculated 0.2848 tonnes CO2e per tonne methanol for BC gas feedstock and 0.3403 tonnes CO2e for North American gas, and possibly more. The baseline and market mediated rate were determined to be 0.289 tonnes CO2e/tonne methanol.

I believe these numbers are unreliable and low-balled. However, these numbers are brought into the second supplemental EIS uncorrected where they create a cascade of dubious conclusions. The 0.71% emission rate and 0.288 tonnes CO2e/tonne methanol are now considered 2nd SEIS low values. (SEPA 2nd SEIS, Sept 2020, p. 82) An upstream methane emission rate of 0.97 percent and 0.333 tonnes CO2e/tonne methanol, or the middle value, is considered more plausible. SSEIS, p. 80. This is the emission rate the EPA Shale GREET model produced for North American gas, Table A-3 Medium Emissions Scenario SSEIS.

While the plausible upstream emission rate is 0.97 percent, the analysis of alternate pathways for methanol imports to China sets KMMEF upstream emission rate at the low and questionable 0.71 percent. See Table A-7 where the GHG emission from upstream is set at 0.289 tonnes CO2e/T methanol, corresponding to the 0.71 percent emission rate. To further skew this input in KMMEF's favor, this same value is assigned to all other reviewed methanol producers.

The reasoning given is, "A key distinction in how the ESM handles emissions from this pathway compared to China-based natural gas methanol, is that upstream emissions related to natural gas extraction and processing is set equal to that of KMMEF. This assumption was made based on the lack of emissions data from the methanol exporters evaluated in this study and the uncertainty around upstream methane emissions from natural gas extraction and processing (Gan et al. 2020)." SSEIS, p. 62. [emphasis added]

Incongruously this statement follows the statement in the previous paragraph that, "The difference in life cycle GHG emissions is mostly due to upstream natural gas emission rates and the difference between KMMEF's ULE technology and the combined reforming technology used by some of the 29 existing facilities. To a lesser degree the emissions difference is attributed to electricity and transportation emissions. The lifecycle GHG emissions of imported methanol may decrease over time as new facilities come on-line using ULE technology or even newer processes."

Table A-7 compares other global producers to KMMEF using the same implausible upstream emission rate despite acknowledging much of the difference in life cycle emissions is due to upstream emissions. The low upstream emission rate attributed to KMMEF British Columbia gas feedstock compared to other producers seems more unrealistic considering BC gas will be transported and emitting along almost a thousand miles of pipeline compared to methanol producers on the Persian Gulf in Iran sited less than 100 miles from petroleum reserves ranking in the top five globally.

Further analysis based on data with such inaccuracies and unjustified assumptions on upstream gas emissions would seem an exercise in futility.

KMMEFF should be denied permits based on the multiple verifiable analyses the refinery will produce millions of tonnes of greenhouse gases in Washington.

Thank you,
Diane L. Dick
Longview

Gianna Zanzi

To whom it may concern,

Hello. My name is Gianna Zanzi, I'm 21 years old, and I wanted to briefly offer my perspective and opinion on the proposed Kalama Manufacturing and Marine Export Facility. I'm currently writing you from my home, where I'm sitting in the state-deemed hazardous air from the ongoing Oregon wildfires, and missing the clear and blue skies that I once took for granted. Beyond the clear hazard that the Kalama Manufacturing and Marine Export Facility poses on not just the city of Kalama, but everywhere that the menthanol passes as it moves overseas to be made into plastic, I'm worried for what this facility might mean moving forward for future generations. If built, the menthanol manufacturing facility would introduce unimaginable amounts pollution into the air, as well as add more unnecessary contamination to the Columbia River through to the Pacific Ocean as it moves halfway across the world to be turned into plastic. What really is it all for? To add more plastic to the world and fuel to burn, while we're direly looking for solutions to reduce the impact that plastics have had on our environment for the past sixty years? To add more cash into the pockets of people who will never feel the effects of the the pollution that they've caused?

When the decision is made in regards to the proposed Kalama Manufacturing and Marine Export Facility, I ask to please consider the people that it would affect, and the blue skies that we take for granted.

Best,
Gianna Zanzi

Elizabeth von Dassow

I am completely against the Kalama Refining and export facility that is planned due to the ecological (negative) impact. We are suffering already from the effects of climate change in this region, from wildfire smoke and dying orcas (i.e. economy)to altered food growing abilities and uncharacteristically hot summers. We don't need more climate change, which is what this plant will do, and in a very big way. We need solutions. I cannot, in any way, support this project.

Teresa Flynn

I Encourage the Department of Ecology State of Washington To deny the NWIw application. The facts are the project would add a total of 3.6 million metric tonnes of green house gas emissions per year .This is totally unacceptable. We as citizens of Kalama insist you deny the proposed project.

Edward -1-Ned-1- Piper

Ladies & Gentlemen,
I wish to see the Kalama Innovations project proceed to completion. I strongly believe that the management of this project have operated in good faith and with the best interest of ecology and the local economy. Thank you for allowing me to speak.

Leslie Marshall

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We are all part of an interconnected web of life, and so are bound to care for this earth since it is the only home that all living things have. As we see in the news every day, the not-so-slowly changing climate - fueled by steady increases in greenhouse gas emissions - is devastating to the health and well-being of communities all over the earth.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Leslie Marshall
1866 Commodore Ln NW Bainbridge Island, WA 98110-2628
lm98110@gmail.com

Francie Rutherford

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We must not use fracked gas and
we must only use renewable energy. Look what is happening right now, Wild fires are decimating our forests and causing severe
health problems for millions of Americans. The least privileged among us have no options but to stay in an unhealthy
environment.

Fracked gas is not an alternative to fossil fuels. Reject this proposed methanol refinery in Kalama. Do the right thing for us all.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Francie Rutherford
1815 E Mcgraw St Seattle, WA 98112-2137
frutherford68@gmail.com

Stephen Ernst

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

After three seperate reviews of the impact this methanol plant would have on our environment, it should be clear that this project would be dirty, dangerous and unwise. Your department should deny the permit for this project that poses a significant threat to a livable future that is safe for all of us to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Mr. Stephen Ernst
7619 175th St SW Edmonds, WA 98026-5021
Stephenernst@comcast.net

Susan Kane

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

God calls us to care for this incredible earth. We know that we need ALL FOSSIL FUEL PRODUCTS, including LNG, to be kept in the ground and not used.
The web of life depends on it. Building this plant is NOT the way to honor God's creation!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Susan Kane
200 S Kent Pl East Wenatchee, WA 98802-5554
susan_kane1@msn.com

Elise DeGooyer

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

As I am trapped inside by smoke, skies darkened by unprecedented fires, and record-breaking temperatures in our Western states, it's time to step up our efforts against climate change and the deleterious impacts of fossil fuels. We must not only turn back current pollution caused by fossil fuel industries, we must not move forward with new initiatives. Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Elise DeGooyer
4645 S Gazelle St Seattle, WA 98118-5635
degooyer@fanwa.org

Cindy Creager

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

It is time to keep fossil fuels in the ground, and support clean energy. That being said, you have to respond to permit applications.

The information in the report is clear - this project perpetuates the dangers of fossil fuel production and consumption to our planet and people. No mitigation measures could possibly compensate.

Please do what is right, and deny this project.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Cindy Creager
19210 Kenlake Pl NE Kenmore, WA 98028-3243
cindy.ken@frontier.com

Kalama Reuter

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Kalama Reuter
920 NE Fields Ave White Salmon, WA 98672-0440
kalama@embarqmail.com

Lynn DeBroeck

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We must move past forms of energy that are harmful and add to the already devastating effects that climate change is causing. This project is a moral outrage and just because we can do something does not mean we should. The consequences to our future must be taken in to account and this plant would cause further harm to future generations by contributing further to climate change. The risks to the local environment are not worth the profits these investors are looking to make only for themselves.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Dr. Lynn DeBroeck
15932 88th St SE Snohomish, WA 98290-6162
jefforlynn@frontier.com

Carole Onasch

We are experiencing Severe zfires and Drought here in the West and world wide. Does the Planet Need a Methanol Refinery!?!? It would manufacture a component of plastics. Dies the Planet Need more plastics?!?
We are experiencing mass Bio Diversity Loss....Climate Breakdown...,Ecological Devastation! Is the solution to these horrible truths the Kalama Methanol Refinery? No matter how the proponents "Spin" the info..."like the Trump admin", Any Infrastructure...Any at all to do with Fossil Fuels is Devastating to all of life on our Planet. I write this as The West is swirling in Pain from Historic Fires. Portland Air Quality Index is high scale Hazardous....Need more be said?

Staci Mangan

Please do not do this to our beautiful community. We do not want to support China in any way. We want our air and rivers to stay as pristine as possible. We want the world to move away from plastics, not enable the continued use. Our landfills are already full of it. Please help to prevent the shoreline permit as we can not sustain this kind of pollution.

Kerry Fitzgibbons

I am commenting on the impact of Kalama Manufacturing and Marine Export Facility. (1)The source of the product to be handled and shipped is of high damaging to the environment of the area where it is mined by 'Fracking'. (2) The Columbia river is a vital natural resource that is already stressed by ocean going shipping between the coast and the port of Portland. Establishing a petroleum based processing and shipping facility on the Columbia threatens the entire waterway with pollution, predictable spill hazard. The Salmon runs up the Columbia are already in jeopardy due environment intrusions and mismanagement. The Trojan Nuclear Power Plant was removed due to the damage it caused to the river environment by raising the water temperature; this facility will have much the same impact on this valued and at risk waterway. Do not permit this facility to be constructed and operated in this location.

Kathy Turner

I am voicing my profound protest to the the approval for and establishment of the Kalama Methanol Export Facility. I join our governor in his rejection of said proposal. Washington state (or any location for that matter) does not need to host the world's largest methanol production plant, and the numerous dangers it would pose: a) such as those of the pipeline from Canada (leaks and ecological disruption), b) the storage of millions of gallons of flammable liquid at the facility (leaks, explosion and fire-a disaster waiting to happen) and c) the threat of tankers sailing the Columbia (leaking-polluting the waters and shoreline, or colliding with other ships or boaters.

James MacLeod

As a Kalama resident, I am very concerned about KMMEF plans to "mitigate 100 percent of all in-state direct and indirect GHG emissions." The Final Supplemental EIS dated 8/30/2019 was a cruel joke. Buried in Appendix C, the so-called plan called for a loosely-defined committee of stakeholders with no specific authority, funding, timetable or accountability. Now the SSEIS draft dated 8/10/2020 (Appendix D) does little to improve this charade. The "Voluntary Mitigation Program Advisory Board" still has no specific membership, no implementation date, and the accountability still lies with Cowlitz County and DOE -- which they would in any case. There are no more specifics about proposed mitigation actions other than the purchase of carbon credits, which won't do a thing for Kalama residents. Even footnote 41 on page D-2 is specious: "NWIW is undertaking research as to how to configure and account for the VMP, including the consideration of forming an independent nonprofit arm to administer the funds." That independent C-4 might insulate NWIW from financial liability, but does nothing for the rest of us. Why would you want this in your backyard? KMMEF should be shelved unless and until specific mitigation actions are defined with hard dates and authority. Otherwise, Kalama residents will be stuck with whatever GHG emissions are produced.

Rick Rappaport

You are as close to a fact gathering/decisions made on facts organization as we have remaining in this country. And as such you all have an enormous responsibility.

Every "source" of information from company based idecision making has baked into it the need to monetize results. In our world a tree is worth more dead than alive as are whales.

You do not have that kind of requirement. You can weigh all information—you're actually duty bound to do this—against your mission for existence: "Protect, preserve, and enhance the environment for current and future generations.

and determine if you're doing the right thing.
If I want a permit to build something that contravenes your mission for existence you have to deny my application even if I dot all i's, cross all t's and glom on to some part of some definition that colorably makes my application seem reasonable.

That is your duty and I don't envy you taking on that responsibility. Fulfilling that responsibility means deeply disappointing someone or some group or some thing you are personally connected to and/or that moves the needle in your heart.

It's pretty much an impossible task but you have a mission statement for a reason. It exists so you will not lose sight of what is really at stake in your deliberations. Are you meeting the goals you've stated enfranchise your actions?

People come to you—you come to you-carrying "facts" you've gleaned from sources. But what source can truly be trusted? Facebook and google searches will funnel you-individually, person by person- to whatever will keep you engaged on your search device because that's how your "research" is monetized.

Weigh what you're hearing not by the scale of your own biased sources or personal biases but by what makes common sense. Yes it's all so difficult to accomplish this now, in these polarized times, but you have the freedom to act like a human being tied to this Earth, this life and your children's lives.

Then do the right thing.

kathy wesley

I oppose this project for all the environmental reasons being discussed. Jobs are important but not with the environmental degradetion.

John Zanzi

Opposed to Kalama Methanol Plant

I am opposed to the construction of the methanol plant in Kalama. We should not be creating pollution that will impact locals in order to strengthen the Chinese economy. Even if it is true that it will reduce pollution worldwide (which i do not believe) it will certainly increase pollution in the US and SE Washington in particular. No pollution here to help China create unwanted plastic.

Carolyn Atkinson

My name is Carolyn Atkinson and I am a childcare worker at an elementary school in Seattle. My students understand that they are growing up in a world in crisis. I prepared these comments under the smoke of the homes of Oregon's 500,000 American climate refugees.
My students are anxious. I am anxious. I am 25 years old. The most terrifying impacts of climate change are projected to hit us within my lifetime. Before the end of the century, CO2 levels are likely to rise to the point of impairing human cognition. This methanol plant is going to pump millions and millions of something that in these quantities is no longer just a driver of the greenhouse effect but a toxic threat to our brains' own ability to problem solve something better. The SSEIS fails to account for the predicted cognitive impacts of CO2 in the local atmosphere, the effects of which will no longer be negligible before this plant is out of service.

The Kalama plant is justifying itself with the ridiculous logic that somehow, over the next 40 years, this plant will emit less than hypothetical other plants. This is an absurdity. The next 40 years are so unpredictable that a majority of my generation has agreed that we won't even bother to plan for retirement because of the scale of chaos on our horizon.

The instability of the future that breaks the flimsy 40 year logic of this environmental statement is caused by the climate crisis.
The instability is caused by fossil fuel expansion.
The instability is caused by projects exactly like this one.
The instability of this exact project is caused by this exact type of project.. It is indefensible to think that somehow, this time, it's going to be a net good, when this has never been true once in the last 40 years of fossil fuel expansion.

It's a ridiculous proposition to build and a terrible investment. It is a crime against my personal health and safety and the health and safety of my students, their families, and their home nations across the planet to consider accelerating the destruction of our futures.

Protect, preserve and enhance the environment for current and future generations. Deny the Kalama Methanol project and impose rules to prevent the possibility of repeating this deadly mistake in the future.

Bruce Garberding

please stop this refinery in WA state...it is dangerous and unhealthy.

Rory Cowal

Dear Director Watson and Department of Ecology:

Today I am urging you to reject the proposal to build a refinery that would present a great risk to our communities and a huge setback in our efforts to reduce greenhouse gas emissions.

I live just across the Columbia in Portland OR. This has been an extremely difficult week for my family; we are experiencing first-hand how events fueled by climate change upend daily life. We grieve for the homes and lives lost to wildfire and we worry about our own health. By any measure, the quality of life in the Pacific Northwest is determined by the health of the land, the air, and the water. The oxygen we breathe, the food we eat, the natural places we go to boost our wellbeing and spend time with family and friends: none of these things are guaranteed to us or future generations unless we take care of our planet. This proposed methanol refinery guarantees one thing for people in the northwest: decades of pollution at an extraordinary cost and an enormous setback in the region's efforts to combat climate change.

To accomplish the very goals of the Department of Ecology—to protect, preserve, and enhance Washington's environment for current and future generations—the state of Washington must transition off fossil fuels and begin fighting the climate crisis at the scale that scientists say is necessary. For my family, for your family, for the sake of our legacy to the next generation, I am calling on you to reject the methanol refinery, and to deny the Shorelines Permit for the project.

Thank you,
Rory Cowal

Nancy Hansen

Greenhouse gases have to go down, not up. By allowing new facilities to do the same old thing, we will never get to a place to meet goals required to survive. The people at Kalama have told you what their city is like with having to breathe air only due to the processing. Just think of plastics that will be produced with the export of these fuels. No more. We are not handling plastic wastes and their is no prospect of doing this because they do not break down. No company wants the job of dealing with this. Then, go to fracking itself and use of gallons and gallons of water to extract, contamination of groundwater near these wells, the fact new ones have to be started in order to extract more. Not a sustainable way to use our earth's treasures. Everywhere I go people are seeing the nightmare happening around them. Young people are the victims. This has to stop now, and at the source, which is decisions on approval or not. You have total responsibility for this decision. Please do it for all of us, not for corporations that aren't even going to be able continue much longer anyway. We have all put up with too much destruction for far too long. Get the balance back. Thank you.

Brian Duncan

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

It's long past time for Ecology, and all of us, to choose a more sustainable path. The proposed methanol plant must not be permitted and built, and instead, sustainable energy and materials projects must be supported. The current climate change exacerbated fires underscore the urgency of the needed transition to renewable energy, and and away from fossil fuels.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Brian Duncan
7307 21st Ave NW Seattle, WA 98117-5624
beduncan@earthlink.net

Jean M. Avery

As we are acutely aware, Northwest residents have been bombarded by very unhealthy smoke recently. According to Ecology's ratings, the air quality in SW Washington has been hazardous to our health. And according to the website, IQAir.com, Seattle and Portland recorded the worst air pollution in the world!

Located between these two cities is Kalama, where an international company wants to build the world's largest methanol refinery. As proposed, this plant would be operational for 40 years, producing massive greenhouse gas emissions that would adversely impact Washington's air quality, while also undercutting efforts to curb emissions globally.

So, why would we invite more pollution into our region? This year's Covid crisis, plus extreme fires, are a stark reminder of how fragile and corruptible our living space is.

If the Kalama plant is built, we can foresee a full generation of increased pollution that will hover over our heads -- literally and figuratively. Forty years from now, today's toddlers will be middle-aged, with children of their own: still breathing toxic air.

The Kalama refinery would endanger future generations and exacerbate our climate crisis. Sadly, the strong fossil fuel industry is relentless in its quest for MORE. And with climate change deniers leading our federal response, we are relying even more on State regulators to protect our climate. I urge the Dept. of Ecology to deny this project. Thank you.

Jean M. Avery

One way to think about environmentalism is "caring for creation" -- being good stewards of our natural resources.

- We know that Native Americans have special ways of honoring Mother Earth.
- Pope Francis has urged Catholics around the world to care for creation through his Laudato Si proclamation.
- In my community, volunteers honor the earth by harvesting vegetables for a local Food Bank. Other volunteers pick up litter from parks and beaches.

That is a long introduction, because I don't want to say the next part. So, I'll let National Geographic magazine say it for me: "Our failure to address climate change is trashing the planet." That is a quote from the 2020 Earth Day issue, as is this: "Even if we were to start cutting emissions today, the problem of climate change would continue to grow."

It's hard to see how extracting resources from one side of the globe and shipping them 5,000 miles is responsible stewardship -- especially when air quality is degraded by tons of greenhouse emissions over 40 years.

As climate change is catching up with us, we need to reduce our consumption and focus on local and sustainable sourcing. We need to take a longer view.

A huge methanol refinery is neither local, sustainable, or prudent. To protect our State, region, and climate, I urge Ecology to deny this project. Thank you.

Rachel Haxtema

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

As a mother, aunt and friend to small children, I am deeply concerned that we are not investing in a cleaner future for our children and their children. We are seeing the intense and horrific result of climate change mixed with bad policies for our forests and environment and we need to make change now. Fracked gas is not the answer for my family, for our community and for our world. While we are annoyed and experiencing headaches and sore throats from fires this summer, children in other parts of the world are dying from the effects of climate change. As a Christian, I am called to care for my neighbors - here in Tacoma and Washington and my neighbors in the Pacific Islands with rising seas who are becoming refugees, my neighbors in states with fracking poisoning the water and my neighbors all over the world experiencing rising temperatures and intense storms and disasters and so much more.
As a Washingtonian, I'm proud that our state is responding in small ways and trying to make better choices. We need you to take the lead to act now on yet another fossil fuel project that is not good for us locally and not good for our whole world.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Rachel Haxtema
1108 N Washington St Tacoma, WA 98406-5525
rachel.haxtema@gmail.com

Marcy Golde

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Preventing this plant and its pollution is very important to me as a practicing Episcopalian. Marcy Golde

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Marcy Golde
116 Fairview Ave N Unit 428 Seattle, WA 98109-5352
marcy@golde.org

Jennie Kuenz

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Please reconsider your plans and consider the health and well being of your residents before embarking on this decision.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Jennie Kuenz
9145 SW Ivory St Beaverton, OR 97007-8685
jcournia@gmail.com

Lauren Cannon

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

As a parent, educator, and pastor, I cannot possibly stand by as a refinery comes in to the land we love, and the air we breathe. As wildfires burn, we know there is no more time for gas and profits, divorced from the impact they will have on our lives. When Jesus had to speak against the powerful systems of his day, that many assumed to be a given, he risked to make a way that cared for those at the margins. We already know that fracked gas hurts people, and that many coastal communities are already displaced, and are already witnesses to how rising seas from our warming planet, will destroy more lives. Gas will add climate pollution. Instead we are now pushed to proactively build sustainable energy systems. Inherent in this moral imperative is investing in a livable future that especially helps those at the edges to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Rev. Lauren Cannon
4716 S Bond St Seattle, WA 98118-5628
lauren.cannon@keystoneseattle.org

Ron DiGiacomo

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Ron DiGiacomo
2307 22nd Ave E Seattle, WA 98112-2604
mrdigiacomo@q.com

Erin Clarke

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Thinking forward seven generations this plan is not in the best interest of our future and leaves the world worse for our children.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Erin Clarke
2436 31st Ave S Minneapolis, MN 55406-1470
clarke.erin.elizabeth@gmail.com

Pat Siggs

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Pat Siggs
233 14th Ave E Seattle, WA 98112-5259
psandjt@comcast.net

Corbin Johnson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We must care for our planet so that future generations have a chance to live in peace.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Corbin Johnson
4237 S Bozeman St Apt D Seattle, WA 98118-4159
corbin.s.johnson@gmail.com

Derek Benedict

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Mr. Derek Benedict
709 212th Pl SW Lynnwood, WA 98036-8606
dsbened@frontier.com

Suzanne Crawford O'Brien

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. As smoke chokes our cities, and wildfires threaten our homes, communities, and the wild lands that we all love, we have to acknowledge the role of climate change, and the threat it poses to our very way of life.

We must stop investing in fuels that threaten our children's future. We must invest in renewable and sustainable energy.

The time is now.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Professor Suzanne Crawford O'Brien
6920 Heights Ave SW Seattle, WA 98136-1957
suzanne.crawford@plu.edu

Andrea O'Ferrall

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We are already seeing the effects of climate change now. Wildfires in the west. Each year reaching higher average temperatures than the year before. Unlivable temperatures in more parts of the world on more days. Drought leading to mass migrations of people. We are in a crisis. We need to halve our CO2 emissions by 2030 to simply MITIGATE the damage.

We need to be looking to the Green New Deal to make our way of life more equitable for all and clean of fossil fuels. A project like this folly. A few people will be making money off of this while causing harm to the entire planet!

This project is unsafe and unwise. I would love it if NO would mean NO and we wouldn't need to say this repeatedly to these fossil fuel projects. It is taking our time and energy away from focusing on Solutions to the mess we are in.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Andrea O'Ferrall
9807 25th Ave SW Seattle, WA 98106-2637
andreaoferrall@comcast.net

Karen Bray

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

How can we ,with fires raging in Oregon and Washington, even consider a methanol refinery in our state. We know that Climate change is a major contributor and this refinery will greatly contribute to more pollution. Please, please as the Protectors of our environment, reject this permit

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Karen Bray
1307 E Bay Dr NE Olympia, WA 98506-3960
gkbbray@gmail.com

Anna Johnson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Creation has been given to us to take care of, and respecting it and treating it well is a moral imperative. It is part of my faith as showing love to God, and being in right relationship. Misusing creation is a sin. And opening this plant would be misusing it. We also know that further emissions of climate pollution will only harm our earth farther, resulting in more wildfires like we currently have, worse hurricanes for the Gulf, worse winter weather for the midwest (and us!) and so much more. Even beyond the US, the emissions are creating an atmosphere which has caused intensive droughts and famines in East Africa, and so many other places. Opening this plant will only commit us further to this way of life, which is wreaking horrendous harm upon the earth and the people who live on it. Why would you want to open it?

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Anna Johnson
4237 S Bozeman St Seattle, WA 98118-4158
annapatrice.clarke@gmail.com

Kathy Dawson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. This is not possible for the proposed methanol refinery in Kalama.

The recent, still current, west coast wildfires and gulf coast hurricanes are eloquent reminders that we must stop putting carbon dioxide and other climate pollutants into the atmosphere. We must start reducing human impacts now, not after the next climate warming project designed for corporate short term profits, or the one after that.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Kathy Dawson
5806 Greenwood Ave N Seattle, WA 98103-5823
kathy.dawson@gmail.com

John Flynn

We are currently experiencing a wildfire disaster not seen in recent memory. The cataclysmic wildfires in Washington, Oregon and California, with the associated loss of life and property, should be a wake up call that we cannot continue to ignore.
If we continue down the same path of fossil fuel consumption and exploitation then we accept the apocalyptic results as normal. Do we seriously want to accept as our future this vision of apocalypse? These cataclysmic events are what our future holds in a drastically changing climate unless we dramatically change our behavior.
Green and renewable energy is our only future, not the climate changing consumption of fossil fuels. This one project alone would add 4.6 million metric tons of greenhouse gas emissions per year into our already overburdened atmosphere.
Department of Ecology needs to ask themselves what benefit would this project have for the citizens of Washington who they are supposed to protect. What benefit would there be with the production of more plastic to pollute our oceans and landfills? Of what benefit would the burning of methanol for transportation and industry in China have? The answer is NO benefit whatsoever for the citizens of Washington.
The Department of Ecology should accept their responsibility to protect the health and welfare of the citizens of Washington State and as well as our environment and categorically deny this project.
Thank you.

Rejean Idzerda

As I review the Second Supplemental EIS for the Kalama methanol refinery, the wildfire smoke outside my window lies denser than fog. All my doors and windows have been kept shut for days, and the air quality makes it dangerous to venture outside. Unfortunately, intensifying wildfires is only one of the many ways that climate change threatens our health and well-being. I am struck by the jarring incongruity of the urgency of the climate crisis and the nonchalance with which we consider welcoming a massive new fracked gas project in Washington. The proposed Kalama project will use more fracked gas than all other industries in Washington combined and will be one of the largest emitters, producing several million tons of greenhouse gas emissions each year. The project is incompatible with achieving Washington's emission reduction goals. It would be negligent to approve it and ask that you stop it

Scott Starbuck

Director Watson and Dept. of Ecology:

I have fished the Columbia River and her tributaries for 50 years, and I'm concerned about impacts on salmon. I worked the Pacific Ocean as a commercial salmon troller and charter captain, and now I mainly fish the rivers.

In addition to climate impacts, I understand the proposed gas-to-methanol site is unstable as noted in the draft EIS explaining soil at the plant site has a "moderate to high liquefaction susceptibility" in the event of an earthquake.

I saw a July 13, 2015, New Yorker article by Kathryn Schulz noting "In fact, the science is robust, and one of the chief scientists behind it is Chris Goldfinger. Thanks to work done by him and his colleagues, we now know that the odds of the big Cascadia earthquake happening in the next fifty years are roughly one in three." The article continues "In the Pacific Northwest, the area of impact will cover some hundred and forty thousand square miles, including Seattle, Tacoma, Portland, Eugene, Salem (the capital city of Oregon), Olympia (the capital of Washington), and some seven million people. When the next full-margin rupture happens [odds are 'are roughly one in ten'], that region will suffer the worst natural disaster in the history of North America, outside of the 2010 Haiti earthquake, which killed upward of a hundred thousand people."

Therefore, I imagine building the world's largest fracked gas-to-methanol refinery in Kalama is about as smart as building the Fukushima Daiichi Nuclear Power Plant in Ōkuma, Fukushima Prefecture, near the Pacific Ocean about 33 feet above sea level partly to reduce operating costs of seawater pumps. You know the result of that. Charles Perrow wrote in the April 1, 2011 issue of the Bulletin of the Atomic Scientists "Currently our approach to risk is 'probabilistic,' and the probability of a tsunami seriously damaging the Fukushima Daiichi plant was extremely small. But we should also consider a worst-case approach to risk: the 'possibilistic' approach, as Rutgers University sociologist Lee Clarke calls it in his 2005 book Worst Cases: Terror and Catastrophe in the Popular Imagination. In this approach, things that never happened before are possible. Indeed, they happen all the time."

In short, in addition to the obvious climate impacts, a one in three chance of a big earthquake hitting Kalama in the " next fifty years" should be enough risk to say "No."

Sincerely,

Scott T. Starbuck

MCBLAINE BOYLE

Please don't go ahead with this. It is just the kind of project which is more damaging in the long run.

Larry Hamilton

In efforts to keep things simple and brief based on the information I've currently received, I think NW Innovation Works (NWIW) should seek a place outside of our country to build their methanol plant.

It seems like a foregone conclusion that the use of methanol is growing worldwide and the fundamental debate is wether we want to accept a temporary financial uptick for our local governments as a tradeoff for increased greenhouse gasses in the state of Washington.

In my opinion, by the time the NWIW executives realize the impact of their damage to the environment barring any potential catastrophic accidents, they'll have passed on into the afterlife and the children of Kalama and the state of Washington as a whole will have to carry the unhealthy burden.

At this point, given the current events that are occurring right now as I write this (west coast fires), it's also foregone conclusion that the effects of global warming is destroying our environment and killing us. Given that recent example, why would Ecology sign up for yet another pollutant that's going to accelerate the process? I know all of you at the Department of Ecology are sitting in your home right now because you can't go outside on your regular summer day walk, knowing the smoke outside will make you sick.

No matter what occurs here in Kalama with this NWIW methanol plant, the world will easily be supplied with enough methanol for what ever purpose. So let us not skew folks into thinking we're doing the world a favor. This is purely about some key NWIW folks looking for a way to get rich(er) at the expense of our safety, health and wellbeing.

Don't allow NWIW to build a methanol plant in Kalama or the state of Washington. We already know how this story will end and no matter how you spin this, it won't end well for us or the defenseless wildlife!

John Flynn

The mission statement of the Washington Department of Ecology is to "protect, preserve and enhance Washington's environment for current and future generations." It is the responsibility of the Department of Ecology to protect the residents of the state from harmful health and environmental impacts.
The proposal by Northwest Innovation Works to build a fracked gas to methanol refinery on the shore of the Columbia River for shipment to China is in direct juxtaposition to that responsibility. Even the Governor of Washington, Jay Inslee, who was originally a supporter of the project, has come to the realization that this proposed fossil fuel project is not supportable.
I encourage the Department of Ecology to follow the governors lead and deny any and all permits for this unsustainable project.
Thank you.

Nancy Johnson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.
As a retired RN, I find it unconscionable to expand the use of dirty, unhealthy fossil fuels when we should be doing all we can to stop their use. We can and must do better.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Nancy Johnson
9411 216th St SW Edmonds, WA 98020-3936
najohnso@operamail.com

carolyn atkinson

Suicide is on the rise in young people all over the country. Why? We see our government agencies taking a sledgehammer to the possibility of a habitable future for us because of projects like the disastrous proposed Kalama methanol facility. The alternative to a habitable future is genocide on all of us, with fossil fuel exploitation as the means. Historically and presently, beef and fossil fuel development like this Kalama facility have been engines of genocide against indigenous peoples in the Americas. In 2020, the genocide is turning to suicide as well as the devastating effects of these decisions ripple out of control of any one racist, shortsighted organization. Kalama is already burning.

What exactly will Northwest Innovations spend their blood money on in the ashes of the state and country? They are stoking the terrifying flames of disaster with this project. This is a stupid, suicidal, ecocidal, genocidal choice. The science has been clear for 50 years. Keep it in the ground. No new oil, gas, or coal facilities. No new CO2 megapollutor projects. Keep it in the ground.

sue corcoran

We do not need this in this state or in our world anymore. Plastic should go away. Fracking should not be allowed. We have so many environmental problems. Why add to them? For a few jobs? It's not worth it. The impacts to our health is beyond measure. The impact to our planet is sickening. The greenhouse gas emissions are unacceptable. The use of fresh water and the limited resources like natural gas, unacceptable. I guarantee that if you allow this, there will be so many protests and lawsuits it won't be worth it for this company to exist. This won't be easy and lawmakers will be held accountable.

Melissa Moonves

Please don't do this. As a mother & grandmother, I worry about the future. Climate change is real & adding more pollution in our state to help China doesn't make sense for the long term.
Stop fossil fuel use, promote renewable resources & help make a future that habitable on Earth.
Thank you.

Janine Roth

I'm continually AMAZED that a state that brags so often about how green it is seems to think these projects, that benefit foreign companies , at the cost of the health of the citizens of WA are OK. I am against it . WA does not need one more pollution spewing facility on it's soil. Please do not let this be built, just so China can benefit.

Carol Goodall

My husband and I are opposed to the Kalama methanol facility. It might provide some jobs in construction, but those will not be long-lasting. It will just add to pollution and global warming and aggravate our already deteriorating environmental conditions. We should not be shipping methanol to China. We should be trying to cut our use of such products.

C Parks

Northwest Innovation Works says its methanol will be used to produce plastic. Has ecology given any consideration to the damage this plastic pollution will create? Research estimates that across its lifecycle, plastics account for 3.8 percent of global greenhouse gas emissions. To put that in perspective, if plastic use were a country, it'd be the fifth largest emitter of greenhouse gases in the world. On its present trajectory, emissions attributed to plastic would exceed the entire remaining carbon budget for all industrial greenhouse gas emissions under a 2°C scenario.
In the United States alone, extracting and transporting natural gas for plastic production generates an estimated 12.5 to 13.5 million metric tons of carbon dioxide equivalent per year – that's the same as driving nearly 3 million cars for a year. On its present trajectory, emissions attributed to plastic would exceed the entire remaining carbon budget for all industrial greenhouse gas emissions under a 2°C scenario. Plastic refining is among the most greenhouse gas-intensive industries in the manufacturing sector — and the fastest growing.
Finally, global emissions from incineration of plastic waste totaled 16 million metric tons of CO2 equivalent in 2015 representing about 40 percent of plastic demand.
The ongoing pollution upstream and downstream from this plant is outrageous. I ask Ecology to deny the Kalama Methanol Plant Permit.

The Role of Plastics in the Climate Crisis

August 19, 2020 | 1:30 PM

Retrieved 9-13-120 from The Climate Reality Project, https://climaterealityproject.org/blog/role-plastics-climate-crisis?utm_source=advocacy&utm_medium=email&utm_campaign=general&utm_content=realitynow-email-9-0920&mkt_tok=eyJpIjoiWVdabFptRTBNakkyTURGayIsInQiOiI2dXVJSkVTK3o1aHlUblFRcFFGVW1OOE9ENEZQd25ESGdSTVhTdzVrNldXbXd4VSthTkRkM0pVNWZhYld3SnNWZ0IweWNmSEEwNFl1TjFhSUprRk11SjRtc1o0TG9HbXRKVHJQdE9oVzRnUVZncnN2bTRGQXlWT3NDYlVEUlo0TG5XeWhKeFRUOE10MWJSTWFEVTgwMWc9PSJ9

From its extraction and production to its management as a waste product, plastic generates planet-warming emissions at every step of its lifecycle.

KEY TAKEAWAYS:

- If plastic use were a country, it'd be the fifth largest emitter of greenhouse gases in the world.
- Extraction and transport, refining and manufacture, and waste management are the three broad lifecycle stages of plastic — each producing varying amounts of greenhouse gases.
- On its present trajectory, emissions attributed to plastic would exceed the entire remaining carbon budget for all industrial greenhouse gas emissions under a 2°C scenario.

Odds are, you know that the world has a serious plastic waste problem.

To start, there are about 150 million metric tons of plastic in our oceans, with about 10 million tons added each year. Some countries are dealing with an overflow of trash and can no longer shoulder the burden. Then, there's the issue of pervasive microplastics: tiny plastic debris that now contaminates everything from the world's most remote ecosystems to our own bodies.

Understandably, these very visual impacts are front and center in the plastic pollution conversation. **However, though less immediately apparent, we can't afford to overlook the severe impact plastics also have on our climate**.

Research estimates that across its lifecycle, plastics account for 3.8 percent of global greenhouse gas emissions. **To put that in perspective, if plastic use were a country, it'd be the fifth largest emitter of greenhouse gases in the world**.

It manages to have a staggering impact through each emissions-intensive step of its lifecycle — a process that is well-worth breaking down.

EXTRACTION AND TRANSPORT

Over 99 percent of all plastic is made from fossil fuels, most commonly oil and natural gas. Drilling for these fuels, extracting them from the ground, and transporting them to processing facilities are all very emissions-intensive processes.

In fact, in the United States alone, extracting and transporting natural gas for plastic production generates an estimated 12.5 to 13.5 million metric tons of carbon dioxide equivalent per year – that's the same as driving nearly 3 million cars for a year.

But that's not all.

Another major source of emissions at this stage is methane leakage and flaring, which takes place during the extraction of natural gas. This matters because, on a 20-year timescale, methane is roughly 90 times more effective at trapping heat in the atmosphere than carbon dioxide.

Additionally, the clearing of forests and fields for drill sites and pipelines is a double-whammy for our climate. Not only are large areas of plants and trees destroyed, which itself releases carbon, but they're no longer around to absorb carbon dioxide in the future.

REFINING AND MANUFACTURE

According to a recent Center for International Environmental Law (CIEL) report, *Plastic and Climate*, "Plastic refining is among the most greenhouse gas-intensive industries in the manufacturing sector — and the fastest growing."

This is true for two main reasons:

First, cracker plants. These are facilities that use very intense heat to break down ethane and propane into ethylene and propylene, respectively: the building blocks of plastic. Globally in 2015, emissions from cracking to produce ethylene produced 184.3 to 213.0 million metric tons of CO_2, as much as 45 million passenger vehicles driven for one year.

And second, manufacturing is so emissions-intensive because of the amount of energy required to power the plants that turn raw plastic materials into the products we use.

WASTE MANAGEMENT

Once it has been used, the vast majority of plastic is either recycled, landfilled, or incinerated — each method producing different amounts of emissions.

Only about 9 percent of all plastic is ever recycled. Relative to the landfilling and incineration, this process generates medium emissions. However, it does prevent new plastic from being produced, which ultimately does lower its net impact.

Landfilling and litter accounts for 79 percent of all plastic waste. While it emits the least greenhouse gases, it does, of course, cause the overflow of plastic waste seen around the world.

Finally, incineration is the most emissions intensive of the three methods. Global emissions from incineration totaled 16 million metric tons of CO_2 equivalent in 2015 for plastic packaging, representing about 40 percent of plastic demand. And that's before accounting for the open burning of plastic or incineration that occurs without any energy recovery.

A GROWING PROBLEM

We have our work cut out for us fighting plastic pollution.

The combination of fracking causing gas prices to drop and increasingly clear signs that declining fossil fuel use is on the horizon — given the rise of electric cars, for example — is pushing fossil fuel companies to look elsewhere to keep up their profit margins.

Unfortunately, the next major market they're turning to is plastic.

This is deeply troubling because, on its present trajectory, emissions from plastic production and use **would exceed the entire remaining carbon budget for all industrial greenhouse gas emissions under a 2°C scenario.**

2°C of warming is the internationally accepted goal estimated to keep the worst of the climate crisis at bay. And now, our growing use of plastic seriously threatens its feasibility.

JOIN OUR FIGHT

It's clear that a world of endless fossil fuel use does not go hand-in-hand with preserving a stable climate. It is a threat to healthy natural habitats, wildlife, and communities everywhere.

That's why we're taking action, and we hope you'll join us.

Across the country, everyday Americans are joining Climate Reality chapters and working together for practical climate solutions. These friends, neighbors, and colleagues are bringing clean energy to their towns, fighting fracking developments, and so much more. **They're making a real difference for our climate, and you can too.**

If you're ready to take action in and for your community, then we invite you to join a Climate Reality chapter. Click here to learn more and join today!

Linda Bridges

I support this project. It has been proven safe and will provide much needed jobs to this area.I have lived here all my life.The economy in our area has been going steadily downhill. We desperately need family wage jobs.

Gary Akizuki

The Kalama Methanol Plant being proposed by Northwest Innovations Works (NWIW) will be the largest fracked gas refinery in the world. It will spew 4.6 million tons of greenhouse gases each year for 40 years, use millions of gallons of water from a Columbia River aquifer each day, pollute the air with cancer-causing emissions, and pose safety hazards during an earthquake. The refinery would use more fracked gas than all the gas-fired power plants in Washington, combined. This is a staggering amount of pollution that will undermine Washington's greenhouse gas reduction goals at a time when it is critical for us to drastically reduce the use of all fossil fuels.

NWIW is promoting their plant by saying that it will produce less pollution than that of coal, but that is a misleading argument. All high-carbon paths are unacceptable and inconsistent with Washington's clean energy and climate goals. Adding more pollution of any kind will only increase the effects of climate change that we are already experiencing—out of control wildfires, Covid-19, monstrous hurricanes, droughts, heat emergencies and floods. Millions of people's lives are being harmed by this fossil fuel pollution and millions of jobs are being lost. If it wasn't clear before, it is abundantly clear now that we have to take immediate steps to reduce all fossil fuel use if we are going to survive.

I ask that Ecology deny NWIW's permit for this plant.

Martha Bishop

I see the effects of climate change all around. I grew up on Fidalgo Island where crossing a sandbar meant getting squirted multiple times by clams. We would fish for little fish, and find tiny pink shells smaller that my finger nail. The number of clams is diminished and I haven't seen the tiny pink shells in ages. Ocean acidification is most likely contributing to this. That, plus other pollution from extraction industries and fossil fuel use, spells disaster for our land and water. Who are the few who will benefit the most from building this huge methanol plant? Not our world.

Dena Turner

My name is Dena Turner. I live in Portland, Oregon. I am writing to address my concern about how the Kalama Methanol Refinery exacerbates climate change and climate catastrophe.

The entire West coast has been wracked by statistically large and destructive fires. My City, my neighborhood, large parts of the State of Oregon are seeing hazardously unhealthy air from wildfires. I am a prisoner in my house because of wildfire caused smoke. California is seeing among the largest fires ever. Washington State likewise is being hit by destructive wildfires. Many of the fires were caused by unusual and dry winds, winds that are more likely now and in the future because of climate change. Fires in California were caused by a long multi-year drought and thousands of dry lightning strikes. This is abnormal, and again more likely now and in the future because of climate change.

I write this letter because I am extremely concerned that climate change is a risk to future life on planet earth. Science tells us that already one million species are at risk of extinction. We know that the likelihood of droughts, fires, floods, hurricanes, tornadoes, crop failures, famines are all increased with climate change. As I write this Hurricane Sally is impacting Gulf States. There are so many hurricanes this season that the naming system is challenged, soon requiring the use of the Greek alphabet to name hurricanes. This is not normal.

I am concerned that fracked gas is not clean and not natural. Methane is 86 times more potent as a warming gas than carbon dioxide. The methanol refinery would increase Washington State's contribution to global warming by nearly 10%.

I ask you, I beg of you to take a stand against the Kalama methanol refinery. I ask you, I beg of you to consider the future of planet earth. I ask you, I beg of you to consider the one million species of risk of extinction caused by pollutants in their environments and loss of habitat. I ask you, I beg of you to consider respiratory illnesses, particularly in neighborhoods where poor and people of color reside. I ask you to take into consideration that NWIW provides very vague language related to mitigation. This is unacceptable. The future of planet earth cannot be put at risk with increasing fossil fuel use promoted through vague language that risks our future.

Because of my concern, I call on the Washington Department of Ecology to reject the Kalama methanol refinery and to deny the Shorelines Permit for this project. Take a stand for the future of planet earth, my grandchildren, and your grandchildren, that they may have a livable planet.

Thank you for your consideration.

Dena Turner

Teresa Flynn

My husband and I live in Kalama and are against the proposed Methanol Refinery This would be a out of control use of our resources. The pollution left behind would be enormous. The select few that would get rich ,from this never before built design is a pipe dream.Our own governor Jay Inslee has come out against this project. Pleas this has gone on way to long put an end to this proposed Kalama Methanol . Refinery. Teresa Flynn Kalama, Wa.

M Huljev

Please do not let this facility to be built. Providing some jobs is not enough justification for short and lasting negative impact on the environment. Perhaps this is a lesser evil to coal, but it is still an evil option.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

The proposed methanol refinery will be the third attempt to put a speculative fossil fuel facility at that site. The two previous facilities that failed there should be a warning to consumers and regulators not to rely on the sales pitch presented for these types of projects.

The first attempt was a coal-gasification facility in 2006 called the Pacific Mountain Energy Center.

Environmental sales pitch-

"Clean alternative to conventional coal plants. 20 to 25% less CO2."

"Clean, base-load generation to the Pacific Northwest."

"Environmentally friendly alternative to conventional coal-burning power plants and says the region will need the plant's energy."- Energy Plant Soar Costs from Estimate-

"By stripping out soot and other regulated pollutants, Energy Northwest bills the plant as a clean alternative to conventional coal plants -Proposed Kalama Coal Plant to Receive First Public Hearing-

Unlike conventional coal plants that burn coal, Energy Northwest says the facility would produce "a clean-burning, hydrogen-rich synthesis gas from petroleum coke, coal or other solid feedstocks." The technology allows for the reduction or removal of carbon dioxide and pollutants often associated with power plant emissions."- Coal-"a 19th-century answer to a 21st-century problem-

According to Energy Northwest, regulated emissions from the complex are expected to rival, and potentially outperform, those of a natural gas plant. The clean-burning synthesis gas will be produced by gasifying, rather than burning, coal, pet coke (a byproduct of crude oil refining), and potentially other carbon-based feedstocks in a fully enclosed process. Shipping out - Vancouver Business Journal-

Energy Northwest officials say the new power plant, called the Pacific Mountain Energy Center, "will be a valuable tool in advancing nationwide efforts to develop permanent in-ground carbon storage."-Enviros Challenge Proposed Coal Gasification-

The utility is part of the Big Sky Carbon Sequestration Partnership, an effort funded by the U.S. Department of Energy to develop and promote permanent, large-scale carbon dioxide sequestration.- Enviros Challenge Proposed Coal Gasification Power Plant-

Energy Northwest Project Manager Ted Beatty said the new facility would have a beneficial impact on wind power development. "Adding additional full-time power from a facility like Pacific Mountain Energy Center will allow the integration of more wind, solar, and other intermittent power.-Enviros Challenge Proposed Coal Gasification Power Plant-

Spend $10 million to offset the emissions at other plants in the state

Spend $50 million to research possible ways to sequester the carbon dioxide into the ground, such as injecting the gas into a saline aquifer in Cowlitz County. If they couldn't do so, then they might have to consider buying and shutting down a conventional Western coal plant.

A lot of these points are the new norm when it comes to fossil fuel infrastructure, better here than somewhere else.

In November 2007, EFSEC voted unanimously to reject the plant because they had concerns that if they actually would follow through on the promise of carbon sequestration. Kalama project, stating the applicant's statements about carbon sequestration, amounted to "a plan to make a plan."

The state attorney general's office called the plan "deficient" and "vague,"

The second endeavor in 2007 was to put a gas-fired gasification facility called the Kalama Energy Center.

Promises:
The power can be a good backup to wind energy.

The project was listed as a bright spot in Cowlitz County Commissioner George Raiter's 2012 "State of the County" address -TDN- Kalama natural gas power plant plans in jeopardy-

Why it failed:
Veresen announced it was pulling out of the project due to "market conditions,"-TDN- Kalama natural gas power plant plans in jeopardy-

Paoli said. He noted that natural gas prices are volatile, possibly undercutting the viability of the project.- TDN- Kalama natural gas plant power plans in jeopardy-

The two previous projects by energy companies should be a wake-up call to either look at our energy future needs or to make sure we don't get trapped into another speculative fossil fuel endeavor. We need to make sure we have the power to our local public utilities and to supply growth needs in the region and provide reliable backup service to renewable energy generation in the Pacific Northwest.

Don Steinke

House Bill 2311 passed in 2020. It establishes the goal of reducing state wide emissions to 50MMT CO2e by 2030. The latest figure is 97.4 MMT CO2e

To reach that goal, we must reduce emissions about 6.4% per year starting in 2021. That may not compute unless you understand that we would mean 6.4% each year of the remaining balance. Rate = 93.6% of remaining, or annual reductions of 6.4%

Start year Beginning Balance Ending Balance
2021 97.4 91.2
2022 91.2 85.3
2023 85.3 79.9
2024 79.9 74.8
2025 74.8 70.0
2026 70.0 65.5
2027 65.5 61.3
2028 61.3 57.4
2029 57.4 53.7
2030 53.7 50.3

The speculation in the latest SEIS for Kalama Methanol imagines possible reductions overseas, but that doesn't count with HB 2311.
Furthermore, HB2311 does not allow for local carbon offsets, such as are proposed by NWIW. The limit is 50MMT CO2e, period.

SB 5116 requires gas plants to be net zero by 2030, and Trans Alta will shut down in 2025, but which other businesses will be need to compensate for the increases from Kalama Methanol?

G. P.

This is horrible and goes against what we have been proclaiming on both sides of the fence

Seems extremely un-environmental and unAmerican Putting our land , generations of Americans health and well being at risk

Paula Hamilton

Dear Department of Ecology,

I'm writing to oppose the Kalama methanol facility at the Port of Kalama, Washington. Northwest Innovation Works (NWIW), the company behind the project, indicates its reason to build the methanol plant will generate 1000 family-wage jobs. These employees will be needed during construction, however once construction is complete and the facility is operable, NWIW will only require 190-200 permanent jobs, therefore indicating a designed-in layoff.

NWIW also said the plant would contribute between $30 million to $40 million in tax revenue annually. While the analysis show the facility will consume up to 320 million cubic feet of methane per day. The results of that totals up to 4.6 million tons of pollution every year for 40 years.

NWIW has stated the methanol would be used for plastics production in China, but more than likely, methanol will also be used as fuel, regardless of the what they claim. They will say whatever it takes to convince authorities to approve and allow the project to go forward. Just because NWIW "promised" methanol will only be used for plastic products and not fuel would be difficult to police once it's out of their control and the property of China. Once NWIW is operational, their customers will use the methanol for whatever they choose, including fuel.

We don't need another plant polluting our air, harming our wildlife, fish, water, vegetation, and food supply. We're currently combating global warming incident right now with the western states tragically on fire along with our air quality index indicators in the hazardous zones. How much more do we have to suffer for a few more folks to get rich? Can you imagine telling your grandchild 20 years from now, it was safe to play outside and breathe the air?

Please do not approve and allow to build a methanol plant in Kalama, Washington.

Thank you,
Paula Hamilton

Chris Chaplin

Washington should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama.

NWIW misled your agency, and the public, about the purpose and impacts of the refinery. I am counting on Ecology to dismiss NWIW's misleading claims and accurately account for the project's upstream and downstream climate pollution. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe, and keep Washington on track to meet our goals for reducing climate pollution. I am counting on you to do the right thing and stop this dirty, dangerous fossil fuel export project.
Thank you,
Chris Chaplin

Winston Smyth

You may attach up to five 30 MB

Winston Smith

I care deeply about this issue.

liza Michaelson

The Kalama Manufacturing and Marine Export Facility Second Supplemental EIS Is a chilling example of valuing a temporary economic boon over generations of environmental harm. It would be a terrible mistake; and it should NEVER HAPPEN. I don't have any suggestions other than, PLEASE take it off the table. Yes,maybe they will try to take it somewhere else, but we have a duty to the children and the world to say,
"NO NO NO, Not in Washington!" Department of Ecology, PLEASE do the job we trust you to do. Stop this idea now. Thank you.

Kris Freeman

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

This type of energy is unsustainably dirty, and economically unsustainable. The Kalama methonal refinery would also be another industrial stress along the Columiba River. Please deny its Shorelines Permit.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Kris Freeman
833 NW 53rd St Seattle, WA 98107-3644
freeman.ks@gmail.com

Lorraine Heller

The present fires should be a wake-up call that we need to stop causing emissions that effect our greenhouse gas emissions. Climate change is here and if we fail to address it we will be at its mercy. I ask you to reject this methanol refinery plant and decline the Shoreline Permit necessary to build it. It is planned to be located close to a major river, the Columbia, and threatens pollution of it's water. It is slated to be sent to Asia where it will be used to manufacture plastics. This refinery is being built for all the wrong reasons. We must change to manufacturing non-polluting products and switch from fossil fuels if we are to survive on this planet. Sincerely, Lorraine Heller

Callie Mabry

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Callie Mabry
11155 Railroad Creek Rd Chelan, WA 98816
calmabry@gmail.com

Jonah Snyder

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

It is not responsible in the long term to aid further extractive practice - we must live in a way that is sustainable, for the sake of all around us and for all who would breathe the air in the years to come, human and animal alike.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Jonah Snyder
11155 Railroad Creek FS8301 Rd Chelan, WA 98816
jonahmorksnyder@gmail.com

John Flynn

The cataclysmic wildfires we are currently experiencing in Washington, Oregon and California, with the associated loss of life and property, have a direct correlation to climate change. Even those of us without advanced scientific degrees can see the impacts of climate change and global warming and how those impacts affect our daily lives.
Other significant effects of climate change and global warming that are not as glaringly obvious are:
~ global temperature increases
~ rise in sea levels affecting coastal areas and cities
~ increased ocean acidification with its associated negative impacts on the marine ecosystem
~ reduction in annual snowpack
~ reduced runoff from less snowpack with reduced stream and river flows, with associated increases in water temperature, less water for irrigation, summertime hydropower production and negative impacts on fish migration and reproduction
~ more intense and frequent heatwaves, tropical cycles (hurricanes) and heavy precipitation (increased flooding events)
~ negative impacts to biodiversity, drinking water and food supplies.
The proposed fracked gas to methanol refinery would add an additional 4.6 million metric tons of greenhouse gas emissions per year into this equation. We, as a species, are currently at a tipping point where we desperately need to reduce greenhouse gas emissions for our survival, not add more.
I urge the Department of Ecology to deny any and all permits for this proposed project.
Thank you.

This is the wrong direction to be taking.

I am a citizen of Washington State and planet earth. We are at the brink of a climate crisis that is going to be with us for many years to come. As a mother I care deeply about the environment we are leaving our children, their children and the generations following. We continue at this time to proceed with our lust for money and power with no regard to our future.

The science is behind all I say here. Our earth is showing us the myriad problems faced by continued, purposeful ignorance. Hotter climate, rising seas, worsening fires, hurricanes and storms. Higher sea levels pushing more people into refugee status.

Here we are discussing more of the same…fossil fuels are the culprit. With a greater national will and placing our money and brain-power into solving the crisis and improving clean energy alternatives we can change this worsening scenario around.

Stop this methanol plant now. Let's walk into a better future together.
Thank you,
Debbie Stempf
4111 E Prairie Lane Ct
Spokane, WA 99223

Kurt Cobain

Save the evironment!

JOANA KIRCHHOFF

There are many reasons to stop the Kalama Export Facility. As Washington and Oregon burn, often on the proposed pathways for LNG pipelines the dangers of new pipelines and explosive facility is more obvious than ever before. The climate fires and hurricanes will not stop until we stop new facilities and begin to decrease our dependence on fossil fuels.


What are you willing to
NO
methanol
refinery
LNG
NO
methanol
refinery

Jeff Ament

Save the whales!

carolyn atkinson

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

Why are we even considering trusting the health and safety of our state to an organization that has demonstrated such a history of dangerous lies for profit? Cancel the project. With a project of this scale, they would be a massive drain on state regulatory resources just to keep them within the dangerously-permissive pollution regulations that they've admitted to. It's foolhardy. Their greed will kill people like so many other projects before if they are allowed to build this facility.

carolyn atkinson

Kalama is already burning. It will burn again. It is burning because of the destruction to our atmosphere caused by fossil fuel and manufacturing projects like this one. Fossil fuels are flammable. Why on Earth are we even considering building a facility for explosive, toxic products in a wildfire risk area?

Hamboyan Harrison

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

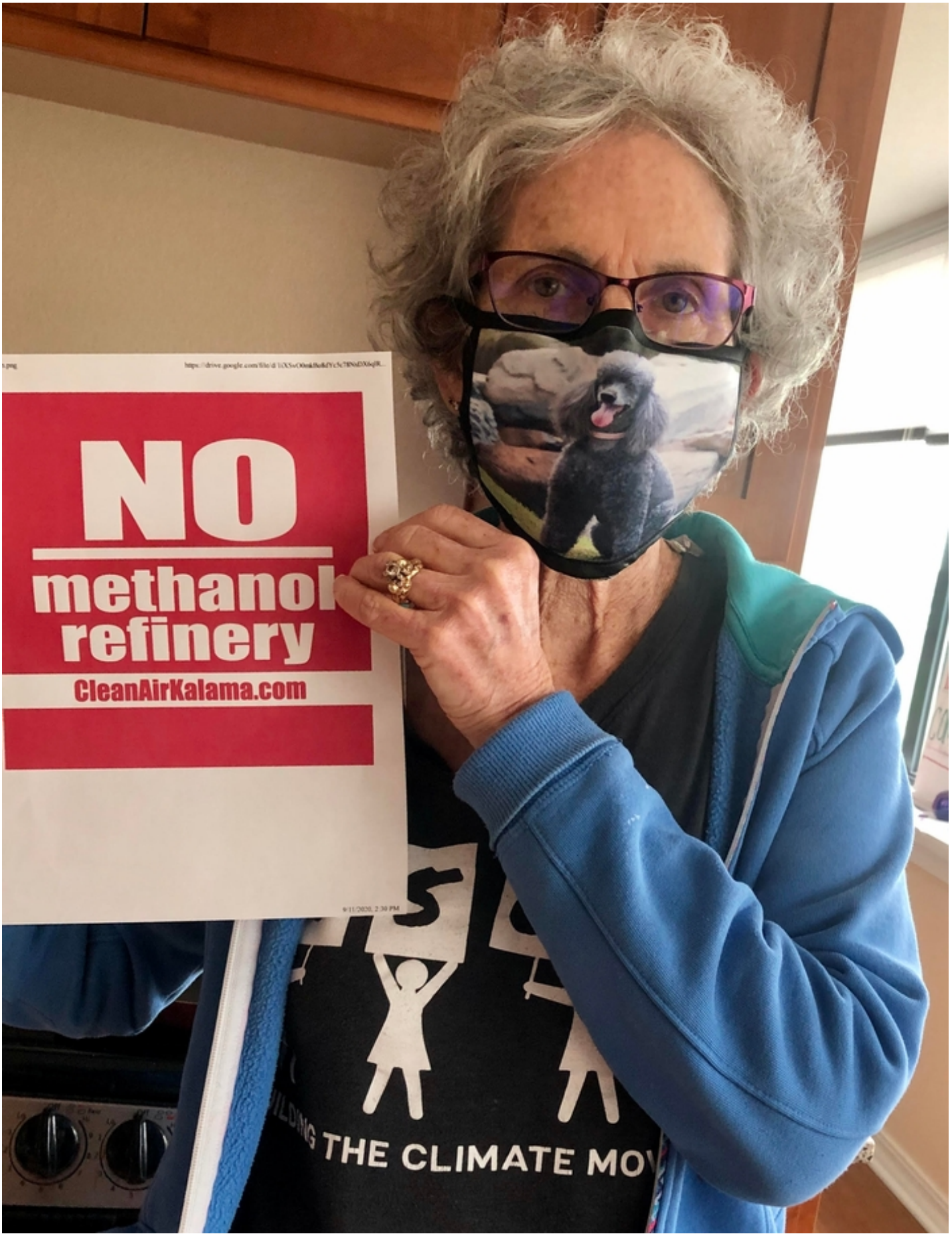
Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Alice Shapiro

We are already in the midst of catastrophic climate change with fires, hurricanes, floods, etc. I have not been able to breathe without pain for several days now due to heavy smoke from enormous Oregon wildfires nearby exacerbated by the use of fossil fuels that are accelerating global warming. Enough is enough!


NO
methanol
refinery
CleanAirKalama.com
THE CLIMATE MO

Craig Heverly

I am 82. I probably wouldn't live to see this project completed nor the destruction it would cause if allowed to go ahead. But I have three young grandchildren who will certainly be victims for most of their lives should you approve this project. They are presently homebound, victimized by hazardous air directly related to burning forests and, indirectly, related to climate change. All the science is saying we must stop pumping carbon into our atmosphere immediately if we are going to meet temperature targets and my grandchildren and all children around the planet are to have anything close to the life, liberty, and pursuit of happiness we have known for centuries. And think of the tax burden it will place down the road when the Chinese market for fracked gas dries up, the company decides to call it quits, declares bankruptcy, and walks away, leaving today's children who might be tax paying adults then to clean up their mess. It makes absolutely no sense -- ecologically, scientifically or ethically -- to approve this carbon belching project. Please do the right thing. Turn it down, once and forever. Thank you for your service and attention.

Diane Dick

2020 09 16 Comment #3

Washington State Department of Ecology
Olympia, Washington

Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.

Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.

In reviewing 3.7 Significant impacts and mitigation, p. 105, there is the statement, "GHG emissions occurring within Washington State from the sources listed above are estimated to be between 786,117 and 1,421,748 MT CO2e per year." This range of in state GHG emissions is patently incorrect.

For on site process emissions alone, current air discharge permit, ADP 16-3204, issued by Southwest Clean Air Agency June 2017, states on p. 3,
"2.1 Emission Limits
No. 1 Combined greenhouse gas emissions from approved emission units shall not exceed 1,076,000 tons of C02e per calendar year. Annual emissions shall be calculated using procedures consistent with the provisions of 40 CFR 98."
In metric units this is equal to 976,131 metric tons of CO2e.

This would be a very minimum NWIW Kalama methanol refinery would emit annually. The technical support document, p. 18, states the facility-wide potential to emit is 1,119,890 tons per year (1,015,947 metric tons). The permit states NWIW agreed to a voluntary limit of less than potential capacity to emit.

The range for in state emissions should begin at no less that 1 million metric tons annually. This alone is a significant increase in Washington state emissions. Adding other in state emissions, including over 250,000 metric tons annually for power purchases, would make KMMEF Kalama methanol refinery one of the top three GHG emitters in the state, excluding TransAlta. Note, this makes data in SSEIS Figure 3-1 also invalid.

When the stated legislative goal in Washington state is to reduce current GHG emissions, there is no rational environmental reasoning to allow shoreline permits for KMMEF Kalama methanol refinery.

Thank you,

Diane L. Dick
Longview

Matt Hohensee

It is short-sighted to approve projects like the Kalama NWIW methanol refinery when it is clear that pollution and fossil fuel consumption are unsustainable. We should be encouraging projects that address the problems they present, rather than increasing them. We will have to move away from this sort of project eventually, and to approve this is just to delay the inevitable. The state of Washington should do everything in its power to encourage that the money spent on projects like this one is invested in clean energy projects instead.

Kimberly Jarvis

Hello!

I write to you as I sit and watch the smoke clogged skies in Portland, OR. It's too toxic to be outside which just a taste of things to come as our planet heats up. Yes, the fires were caused by a freak wind event, but also due to our forests drying up from climate change. Countless people are suffering respiratory distress, people have lost their homes, people have lost their livelihoods and more tragically people have lost their lives. That's the impact on humans, consider the animals dead and dying because of these wildfires, consider the vast amount of habitat destruction. How much can more loss is acceptable?

The Kalama plant is one more step in the wrong direction, feeding our addiction to fossil fuels. There are no good reasons for this plant to go on-line. NONE! Clean, green, renewable, alternative energy sources exist and we should be pumping all of our resources into utilizing them. Pan Pacific Energy's assertion that this is good for the planet because it will stop China from burning coal is pure speculation and bunk. We have no idea how these markets will act in years to come. Do what is good for the planet today with the information that we are certain of, namely that this plant would pump more greenhouse gases into the environment, hastening climate change. Reject this ill-conceived, foolhardy project.

Sincerely,
Kim Jarvis

Rosemary Siipola

201 Elm Street
PO Box 373
Kalama, Washington 98625
16 Sept 2020
Washington State Department of Ecology
Attn: Rich Doenges
NWIW SSEIS
PO Box 47775
Olympia, Washington 98504-7775

Dear Mr. Doenges,

This is a letter for all of the folks in our state who believe in science and fear for the health of our environment. The report from the Department of Ecology on the Northwest Innovation Works, released earlier this month, methanol facility in Kalama offers hope and solutions at a time when we all desperately need it.

Northwest Innovation Works Kalama has consistently claimed that its facility, upon completion, will reduce harmful global greenhouse gas emissions. The first two environmental impact studies, completed for the project, validated that thesis. However, environmental groups took issue with the findings and sued for a more comprehensive study. That study, now released by the Washington Department of Ecology, confirms that Northwest Innovation Works Kalama does, indeed, reduce harmful global greenhouse gas emissions. Three studies now confirm this fact. At this point, the science is clear and solid on this issue.

For every year the plant isn't operating, we lose a chance to reduce millions of tonnes of greenhouse gases from our atmosphere. This project cannot wait. If, as Washingtonians, we truly care about the environment, and believe in science, then the three independent environmental impact studies, conducted over the past six years lead to two conclusions:
1. The State of Washington's robust environmental permitting regulations support this project, upholding its high standards and opening the way for additional, modern, environmentally sound projects to be permitted and built in Washington, revitalizing and transitioning our economy, while promoting our state's standards for environmentally safe and sound industry, and,
2. Taking all of this into account, it's time to put people to work in Cowlitz County in the new, modern, green economy.

As a proud Cowlitz County citizen, and a member of the Lower Columbia College Foundation Board of Directors, I can honestly say that Cowlitz County is ready, willing and able to meet the opportunities and challenges this new economy will bring to our region.

Sincerely,
Rosemary Siipola
Kalama, Washington

carolyn atkinson

I write as a young person terrified about the prospect of living on this Earth in 2070, given its current catastrophic trajectory driven by projects like these.

It is irresponsible and dishonest to pretend that speculation about the hypothetical worse actions of other parties would somehow override the known and certain harms wrought by this project. It is irresponsible and dishonest to let NWIW pitch unreasonably, optimistically low values for its emissions and leakage plans and treat them as the facts of the matter. The percentage of methane emitted as a proportion of gas delivered remains too low in the SEIS (p. 40, 43). In the new SEIS, the "medium" scenario assumes that less than 1% of the delivered natural gas will escape. Recent information continues to show a high rate of wells leaking across B.C. and Alberta. And new reports continue to show that methane leaks are likely vastly underreported in both British Columbia and Alberta.

Furthermore, even the "high" estimate in the SEIS is only 1.46%, far below the potential upper bound of leakage rates possible for under-studied and under-reported methane leaks in Canada. The SEIS should be revised to include a "medium" scenario of 2% leakage, and a "high" scenario of 3% leakage to capture a reasonable range of potential impacts from the upstream portion of the Kalama project's emissions.

The analysis fails to account for the long-term impact of plastics. While most or all of the methanol may end up being burned directly for fuel, some of it may be converted to olefin to make plastic. The SEIS does not assess the end fate of the plastic, which may itself become a fuel in China via waste to energy incineration. Waste to energy incineration is rapidly growing and has tremendous potential carbon pollution and negative public health impacts. Further, emerging research continues to show that plastics pollution is a ubiquitous, long-lasting problem globally and within Washington state.

The reason that this analysis has had to see so many revisions so far is because NWIW has demonstrated a commitment to dishonesty that puts the health and safety of the region, its other industries, the country, and their workers at serious risk of bodily harm. This commitment to undermining the public good and the good of their workers should disqualify this project alone.

"We'd do it cleaner than someone else might" is a lie that has been repeated by those clinging to fossil fuel relevancy for years. It wasn't true for Appalachian coal, and it isn't true for NWIW methanol. We deserve, and we will receive, a better and cleaner future.

There are other ways to expand the economy. We are in need of investment in truly sustainable infrastructure backed by facts other than speculation about worse actors. Northwest Innovation Works should innovate some of those and use accurate facts in their first proposal if they want to win back the trust of the community.

carolyn atkinson

Kalama is currently under orders for residents to restrict water usage. The proposed facility would use millions of gallons of water from an aquifer that is already seeing such stress that it matters who waters a garden. This makes the residents of Kalama and surrounding areas responsible for personally mitigating the negative externalities that the proposed facility would have on their water resources. That's not fair, safe, or democratic for a corporation like NWIW to impose.

Kalama doesn't have the water, and nobody has the air to absorb the negative effects of this project. Are strict 5 minute showers and dead crops across the region supposed to mitigate millions of gallons of water wasted by this facility?

Cancel the Kalama Methanol project.

Kathy Ruhl

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

As I sit here looking at a darkened sky, surrounded by smoke and ash, I ask you to please, keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. These fires, all over the world, were caused by climate change, brought on by pollution. Right now, they are to adding their pollution created by the fires world wide and increasing climate pollution.

Please don't let our thirst for fossil fuels destroy our way of life and, eventually, our planet. Deny NWIWs proposal for this dangerous methanol refinery in Kalama.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

Why would the Chinese government ask American taxpayers to underwrite their refinery?

NW Innovation Works is applying for a loan guarantee from the Department of Energy to cover the entire project. A heavily redacted application asks the taxpayers to underwrite the full cost of the $2 billion refinery. That means the taxpayers could be on the hook for the entire amount should NWIW decide to close up shop after the multiple tax incentives end, or if there is a significant spill or explosion.

NWIW is renting office space at the port. The company doesn't have any assets to attach a lien or impose a hefty fine if there was an incident. The company has less than 20 employees and is a multi-layered limited liability company. It wouldn't take much for them to leave us with broken promises and lost jobs and tax revenue.

The Department of Energy loan that they have applied for exposes taxpayers to unnecessary risk. Two out of the three NW INNOVATIONS Global Advisory Team members had close connections with people at the Department of Energy. I have concerns that they were hired to help facilitate the loan process.

GARY LOCHE is the president of NWIW's global advisory team. He served as the Department of Commerce Secretary, and the Department of Energy's Secretary Steven Chu were both fellow members of Obama's cabinet.

DAVID SANDALOW, another NWIW advisory team member, served in senior positions at the U.S. Department of Energy, including Under Secretary of Energy (acting) and Assistant Secretary for Policy & International Affairs.

The Department of Energy loan application needs to be thoroughly investigated to determine what NWIW's information provided matches the information they have provided to the investors and the state regulators.

The Department of Ecology and taxpayers have the right to ultimately see this entire document and fact check information provided by the applicant.

The inability of high-risk projects to get private backing is a feature of a free market system, so why do we have to take the risk?

Sharon Abreu

I am a 19-year resident of Washington State, and I've been a climate change educator for over 20 years. I am of the strong opinion that the Kalama Manufacturing and Marine Export Facility is a danger to our local waters and marine life in northwest Washington State and a danger to our whole planet due to the greenhouse gas emissions of the fuels processed there. It is time to move away from fossil fuels and create well-organized, well-funded Just Transition programs to replace those jobs.

Howard Shapiro

The Pacific Northwest has been experiencing a debilitating smoke episode for the last week caused by forest fires,exacerbated by global warming, contributed to by fossil fuel extraction, processing and shipping. Northwest Innovation's application for the largest natural fracked gas to methanol plant would further contribute to this devastating problem. Their claim that they will mitigate the problem is impossible to believe since the best mitigation would be to not build this facility.

Their claim that they will be shipping the methane for use in manufacturing plastics can not be believed. There will be no way to control how they use their product once the plant is built.

It seems coincidental that a large shipping company whose ships use methane as fuel, is investing $10 million in this methanol manufacturing venture and they claim that they will not use this methanol as fuel for their ships. Again, if they get their necessary permits and the plant is built there is almost no way that the use of their product can be controlled short if illegal usage.

Since the plastics market for their product has all but dried up, it would seem logical to deduct that the methane produced by the Kalama plant will be used as ship fuel and their claim that it won't be, is false.

Innovation works seems to again be attempting to hoodwink you and you would be within your rights to be highly offended at their supposition that you are that gullible. The fossil fuel pollution and global warming contribution of this plant would seem to be a large contributing factor for not granting your approval for this venture.

Bill Adams

Please reject the proposed methanol refinery in Kalama and deny the Shorelines Permit for the project. Why? Its voracious appetite of 130m cu. ft. of mostly fracked so-called natural gas daily, more than all commercial gas users in our state combined, would mean more fossil fuel extraction to meet that demand. To combat global warming, 97% of the world's scientific community are in full agreement that we need less fossil fuel extraction. Less to speed up the transition to a clean, renewable energy economy so that we're putting less carbon dioxide into the air. Carbon dioxide in the upper atmosphere from burning fossil fuels such as gas is now known to be the chief cause of global warming. This project is a classic case of short-term thinking. Yes, it will produce some jobs and additional tax revenue but it won't bode well for the future when the future has to be clean, renewable energy. Besides, it's a documented fact that there are up to 4 times more family wage jobs in clean, renewable energy than there are in fossil fuel extraction and infrastructure. If NWIW really wants to do something positive for our state and Cowlitz county, they'd be banking on a long-term renewable energy project instead of a refinery powered by a fossil fuel that has to be short-term if we are to effectively combat global warming. As such, please deny the project. Thank you, Bill Adams

Tylor Hankins

First, I live in Kalama, so I'll be the first to admit that I don't want to be staring at this thing in my backyard, or be smoked out by chemicals during a weather inversion.

But I think some of us are missing the bigger picture. All these numbers, charts, and graphs don't mean a thing if China continues to expand their use of petrochemical products that generate greenhouse gasses. Will methanol produced in Kalama displace Chinese use of coal reserves and petroleum products, now and forever in the future? Yeah...??? Right...

Of course Communist China has your best interests in mind. Never forget Tiananmen.

The joke's on us...

Richard Marshall

This methanol proposal is extraordinarily pessimistic. The economic analysis behind the tired fossil fuel argument of "better than the alternative" is both shoddy and speculative. There is no possible progress in this type of analysis, no faith in continued human ingenuity or creativity, no acknowledgement of technical or policy innovations.

From a policy standpoint, it is crazy to believe that societies across the globe will not demand cleaner economic processes and less pollution. Look at our own situation -- earlier this year we had an example of much cleaner air. I heard a number of people comment about how amazing it was to spy Mt Jefferson on a regular basis. And this past week, we literally have had a taste of some of the worst air pollution in the world. People everywhere want cleaner air and are going to demand of their governments less pollution.

From a technology standpoint, we can and will do better. Right now renewable energy is the cheapest form of new energy in most places in the world. What we've done with renewables is an amazing achievement of human ingenuity and hard work applied to process improvement. This methanol proposal on the other hand, is a last gasp effort of a declining industry to take advantage of excess North American fracked gas and dump it on the world markets before stricter emissions policies can be put in place. The only thing clean about this methanol proposal would be the use of our federally subsidized clean renewable electricity to run the plant. That is our energy and we have better uses including heating and cooling our homes and hopefully reducing the emissions from our cars so we can have cleaner air.

Please analyze this proposal for what it is -- an unmitigated fossil fuel export proposal with no hope of captured or sequestered emissions. Please don't rely on pessimistic speculation that lacks analytic rigor, ignores recent technical achievements in renewable energy, and dramatically discounts the basic human desire for clean air and a livable planet. Thank you.

Andrew Harris

W. Andrew Harris, MD
3969A N. Overlook Blvd
Portland, OR 97227

Sept. 17, 2020

To: Washington Department of Ecology
Re: Kalama Methanol Supplemental Environmental Impact Statement

I am writing on behalf of my seven grandchildren who are too young to speak for themselves. Currently they are being subjected to the hazardous, smoke-filled air of the Pacific Northwest, as wildfires rage across our landscape. Climate disruption is impacting their lives by preventing them from safely playing outsideas they can't play outside, and more importantly the as storms, flooding, mudslides and drought that are becoming become increasingly severe limit their future. The planet is overheating, and NW Innovation Works (NWIW) will only make it worse . . . much worse.

If 40 percent of the methanol produced at the proposed Kalama facility is burned, as indicated by NWIW, it will yield 2 million tons of carbon pollution each year. The remainder of the methanol would become plastics in a world already overrun with discarded plastic waste. Methane gas along the supply chain to Kalama Methanol would be released into the atmosphere, increasing the carbon footprint of the project. Each methane molecule has 84 25 times the 20-year global warming potential of a carbon dioxide molecule, meaning that even small amounts of methane emissions have an enormous impact. If Washington State is to achieve its climate goal of keeping global warming "well below 2 degrees Celsius", it must deny the conversion of fracked gas to methanol.

Future energy needs must no longer be met by fossil fuels, including so-called "natural" gas, two-thirds of which in America is derived from fracking. Cleaner energy technologies are readily available, and battery storage capacity is rapidly improving. In the SEIS, NWIW identifies no specific projects or measures that will mitigate the release of methane from wellheads, from transmission pipes, and from the proposed refinery itself.

Washington's Department of Ecology needs to take a proactive position on behalf of our grandchildren and the survival of our planet. It should reject the proposed methanol refinery and deny NWIW a Shorelines Permit.

Thank you.

W. Andrew Harris, MD
andyharrismd@comcast.net
503-871-2011

Emily Herbert

Thoughtful holders of the Common Good for Washington's Environment,
I appeal to your care for the well-being of all earth's creatures. Yes you have mandates for specific regulations. But there is a larger more essential duty in this time of climactic upheaval. As forces of money and self interest pursue yet another extractive polluting industry with far reaching impacts well beyond the boundaries of the project, it is time to stand for the common good. It is time to find your authority to deny any more such insults to the world that wants to continue living.

Nancy Harrison

Dear Director Watson and Department of Ecology,

I oppose this proposal to build a methanol plant in Kalama and urge you to deny the permit to build it. This would be the world's largest fracked gas-to-methanol refinery, and would clearly substantially increase emissions in WA, and would enable increased emissions worldwide.

NWIW misled your agency, and the public, about the purpose and impacts of the refinery. I am counting on Ecology to dismiss NWIW's misleading claims and accurately account for the project's upstream and downstream climate pollution.

For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe, and keep Washington on track to meet our goals for reducing climate pollution. I am counting on you to do the right thing and stop this dirty, dangerous fossil fuel export project.

Thank you,
Nancy Harrison

Lehman Holder

My wife and I are very strongly opposed to this proposed methanol plant, as are large numbers of Kalama, WA, residents. If the plant is built, we believe increased and unacceptable levels of greenhouse gases will be the result. We also oppose the huge amount of water that would be taken from the Columbia River.

Kathleeen Patton

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Smoke signals. Obvious and tragic evidence of climate change is ravaging our state. Why would we want to add fuel to these fires by fracking even more fossil fuel and creating more infrastructure for destruction???? Deny this permit. We must stop creating new avenues for fossil fuels to flow and continue to pollute our air and warm our climate.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Kathleeen Patton
1645 24th Ave Longview, WA 98632-3623
mok.patton@gmail.com

Merna Baker Blagg

Our world, country and state does not need an increase in hazardous pollutants. Healthy and clean air is what we all strive for and KMMEF would extremely increase the air quality to a devastating and toxic level. We are at a critical point in the climate crisis. Please stop denying the crisis and work on sustainable clean and healthy alternatives for embracing growth and economic prosperity. Please, as a concerned Gramma, born in Kelso, living in Vancouver, with 2 sons and their families living in Longview, I implore you to deny the permit for this project to move forward.

Merna Baker Blagg

Karis Cooper

No Way !!!!

Robin Donahue

NO. Please listen to those living in the community. we do not want this hazard in our city.

S Jacky

Thank you for your work to protect Washingtons environment and for acknowledging that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility. Impacts include addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. While the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. Even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. Look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades.

Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated. The urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions.

I urge Ecology to dismiss the speculative basis that this project could displace even more polluting facilities. Instead, base the permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington must deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing

climate pollution.

Frank Marre

Northwest Innovation Works Proposal Kalama gas to methanol production and storage facility
Dear Department of Ecology
I oppose the proposal for human health and ecological reasons. I am a physician and public health specialist. The impact of pollution and global warming is well documented and includes increased respiratory and cardiac illness, more physician visits, hospital admissions and deaths. We are experiencing the impact right now. Thousands of people are stuck indoors, thousands have lost their homes, many have died, businesses are closed and/or lost and huge areas of forest are gone for a generation due to the increased number and severity of forest fires. We don't need more plastic either. There is an island of plastic trash floating in the ocean now and micro plastic can be found in sea food and sea creatures even those inhabiting the remotest areas of the ocean. This is not a time to entertain even more pollution. Once this plant is in place it will be there for years making the global warming recovery even harder. Public and private resources should be directed toward a green economy, not contributing to the problem that seems almost unsurmountable as it is. Thank you for putting a stop to this.

Paul Spindel

The timing of these catastrophic fires and their link to climate change is a perfect example of why we must do better. We must do things differently. We cannot support a gigantic methanol plant and the damage it will cause locally and globally. Whether the methanol will be used for fuel, or the making of plastics, really doesn't matter. It shouldn't be used in the first place. Please deny permits. Thank you.

Anonymous Anonymous

Regarding the Northwest Innovation Works – Kalama Manufacturing and Marine Export Facility SSEIS, I am submitting the following comments:

The SSEIS states that "The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year." as well as indeterminate upstream emissions. And yet the claim is that this project will somehow result in a net global reduction in greenhouse gas emissions. I believe that the justifications for allowing this project to move forward seems flawed and highly speculative. Particularly the notion that the People's Republic of China can be relied upon to reduce their use of coal due to their importation of methanol from Kalama. Also, I believe that the uncertainty regarding the level of upstream greenhouse gas emissions makes it impossible to demonstrate how those emissions could be mitigated.

In conclusion, I see no demonstrative proof that the Kalama facility would reduce worldwide net greenhouse gas emissions and I believe that the risks to the environment and the health and well being of local residents far outweigh any benefits.

Laura Baumgartner

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Rev. Laura Baumgartner
2201 NE 4th St Renton, WA 98056-4073
associatepastor@rfumc.org

Susan Vossler

I oppose the Kalama Manufacturing and Marine Export Facility. The latest EIS did not account for the full environmental impact on all affected communities.

Ellen McCann

Heck yeah we deserve a second EIR. Why wouldn't a project of this magnitude that have a more thorough review after we are witnessing all the devastation of climate change this year...super storms, hurricanes, fires!!! We the people deserve a safe, livable planet.

carolyn atkinson

China is now considering going carbon neutral.

https://www.euractiv.com/section/energy/news/china-considers-going-carbon-neutral-peaking-emissions/

This move demonstrates the volatility of the fossil fuel markets and how foolish and dangerous it would be to bet on an indefinite continuation of ecocidal trends. Now is the perfect time to reject the dangerous and damaging projects of a zombie industry, before anyone has to shop their products around and pretend that they're still needed in the 21st century. Reject the Kalama methanol plant.

Diana Richardson

My name is Diana Richardson. I live in part of the territory stolen from the Chinook and Multnomah Peoples upon which their descendants live today.

"To protect, preserve and enhance the environment for future generations." Mission of Washington Deptartment of Ecology

I write to question your assumptions, your basic assumptions, about what is at stake in the decision to permit or not permit this or any project known to contribute to the havoc being rained down on our communities at this very moment.
With catastrophic climate destabilization undeniably linked to fossil fuels, you who are appointed or elected to make choices regarding the health and welfare of the people you are responsible to must accept your moral responsibility to act in a ways that do NO harm, that only protect the ENTIRE environment--from air and water on which we all depend-- to every animal and human on earth. Anything less is blind obedience to cultural biases to which you are accustomed. I refer to the notion that there have to be losses to life in any or all of its forms, justified by allegiance to a habit of accepting there is some value higher than that of preserving and enhancing life. For that is the only way anyone could even entertain the thought of permitting a project which will unquestionably have devastating effects on our lives now and on the generations to succeed us, if indeed, they will even be able to survive.

Your mission states : to "protect, preserve and enhance the environment for future generations"! You must take into account all of the beings who are affected by your actions.

When you think about the "pros and cons" of permitting this methanol project, a calamity for all the people of Kalama, of Washington, Oregon, and far beyond our homes, do you think about the First Nations' People, the people whose humanity has been denied by the continuing colonization the dominating culture imposes, against government law, against moral law, against spiritual law? Or are these lives ignored in the calculations of decision-makers who see the issues from the point of view of What-do-we-need-and-how-do-we-get-it? The point of view of the conquering nation.

We need to acknowledge the truth we do not want to see. Are you not charged with protecting, preserving and enhancing the environment for future generations?

As a woman familiar with the violence perpetrated upon the women of the communities through which the pipelines are laid, I must tell you this, though you will not want to hear it:
There are always the men who are not part of the communities where they are hired to build infrastructure for the substances illegally and immorally ripped from the entrails of our Mother Earth to be extracted for personal profit at the expense of the people.
Numb or dead to their feelings for the life that beats in every human heart, these men act out the brutal rape and pillage of the Earth upon the innocent, unprotected women they can so easily take for their own sad, brutal despair. Do not turn away from this truth: This is what you accept and authorize if you permit this project.

I implore you to find some human feeling in your own heart...a feeling which recognizes the hurt

and pain, the terror and shame of sexual violence from which we women never do recover if our lives are not taken outright.

What is the true price of agreeing to the realization of this project?

I ask you to get out of your head and into your heart. To respond and to act as a real human being. What would that mean for the community you are sworn to serve? What would that mean for you?

Brian Davern

There are many reasons to oppose this project and deny the permit applied for. Conversely, there are few and weak reasons to approve it. I'll only list some important objections there are to this project and concentrate on the most important reason to reject it... proponents can insert their arguments for it without my assistance -- as I've noted, they are few and weak.

The Port of Kalama (POK) site is far too small for the size of the intended plant size and product volume. No other in operation elsewhere matches its size or uses such a small parcel. This site is directly downstream and very close to the mouth of the Kalama River, host stream to ESA listed salmon and steelhead. The shoreline disruption caused by pier construction, then large ship movement, as well as river contamination from both the product spills and the ships would be a constant threat to rearing, outmigrant and adult fish. Plant operation will create a micro climate due to the injection of heated gas release, condensation and precipitation that will lower visibility, pollute water, shoreline and local landscapes downwind (meaning, to the north in winter, to the south in summer). The removal of 5M gallons of water/day beneath the Columbia streambed, assumes that it's surplus water... it is not. The supply of liquid gas used to produce methanol must course through steep, private residential properties that must shoulder the risk of leak and fire without benefit or consent. The price and supply consequences to regional users of liquid gas again provides no benefit in trade for reduced supply and higher prices. An additional assumption with this application is that the area's industrial past is also its future. The rejuvenation of the city of Kalama and the arrival of McMenamin's hotel and restaurant, is tangible proof that it is not. The proximity of the proposed plant to both the townsite and the residential community (primarily now there for the natural, rural character of living conditions) makes a future of heavy, around the clock, industrial activity much more than objectionable.

Finally, the main and by far the largest objection to this project is the very real specter of a changing climate that we've been warned of, been taught its human contributions and are now living in its effects (as numerous and widespread wildfires in the Northwest ravage the land and the plants and animals, including humans, that have made it their homes).

So there is a choice to consider, one of which is smart: POK can get in front of the climate reality we are living in and invite industry that HELPS moderate climate change... or sadly, make a huge contribution to accelerating the harmful effects a hotter planet imposes on all of earth's inhabitants. I beseech DOE to select smart and reject this proposed plant.

Joel Carlson

Fracked gas or methane is extremely harmful to our environment and must be banned. New construction must be electric only with heat pumps, etc. We must also ban the fracked gas LNG projects in Tacoma and Kalama. It is vital that we get this done now!

Kristen Meston

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

There is no reason to create new polluting facilities rather than working to eliminate them. Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Fred Suter

My name is Fred Suter. I live in Vancouver, WA.

We are being told that the Kalama Methanol Refinery will produce over 4.5 million tons of GHG emissions every year and this will make it one of the largest polluters in the State of Washington.

We have sadly been reminded of just one of the consequences of GHG emissions. We have just experienced the worst wildfires in our history and the wildfire season isn't close to being over.

If you look on a map of the United States, the entire west coast appears to be on fire. We have seen over 40 large fires burn across CA, OR, and WA - destroying over 475,000 acres (so far). Thousands of our neighbors have been forced to evacuate from their houses and thousands have returned to the charred remains of what was once their homes. Dozens of towns have been destroyed.

We are told that hotter summers, dryer weather, and longer wildfire seasons contribute to the conditions that cause these monster wildfires. Hotter summers, dryer weather, and longer wildfire seasons come to us as a result of the impact that manmade GHG emissions have on the climate.

There is a connection between our quality of life as residents of the State of Washington and the construction of this methanol refinery. Yet wildfires are considered an extranality in the economic analysis of this methanol refinery.

The wildfires that are presently burning out of control have already caused billions dollars of damage. The economic analysis presented in the EIS doesn't take any of these costs into account. The economic analysis presented in the EIS grossly under-estimates the actual costs of constructing this refinery. The economic analysis does not allow decision makers the opportunity to evaluate the true costs of this refinery.

I urge you to include the costs of ALL GHG emissions in the EIS. It is clear to me that the construction of the Kalama Methanol Refinery runs counter to every future objective that the State of Washington has stated to combat climate change and preserve our quality of life.

Just say NO to fossil fuel expansion.

Sincerely - Fred Suter

Hi My name is Tina Brakefield. I live in Vancouver and work as both a stay-home mother and run a sustainability blog. I have come here today to talk about the methanol refinery project.

I am deeply concerned and angry that this is even being considered. We are just now starting to see the end of the worst wildfires in the PNW. We are witnessing nearly 90 large wildfires in 10 western states, at least 35 deaths, and millions of acres destroyed. My family and all of the West Coast has been breathing this air that has gone off the charts in the last week with a high of at least 635 AQI.

Now while climate change itself didn't directly cause the fires to start, climate change has significantly increased the risks. According to the USDA projections show that an average annual 1 degree C temperature rise would increase the median burned area per year as much as 600 percent.

And while record breaking wildfires destroy the West Coast, 5 tropical cyclones are simultaneously moving through the Atlantic which has only occurred one other time in recorded history. And tropical storm Sally hit the Florida Alabama border just today, unleashing 30 inches of rain in four hours.

But despite all of this you are seriously considering building the world's largest fracked gas-to-methanol refinery in SW Washington. Ecology's analysis demonstrated that the project would produce 4.6 million tons of carbon pollution each year, or more.. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.

Why are you even considering this? We should stop wasting time and resources in expanding our use of fossil fuels when these resources could be used in developing clean energy options. This choosing the "lesser of the evils" or "displacing" dirtier fuels approach isn't and shouldn't be an option anymore. I call on the Department of Ecology to reject the methanol refinery, and to deny the Shorelines Permit for the project. Thank you.

Cal Van Zee

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

This project will use more fracked natural gas than all of the gas power plants in the state, combined.

This is clearly a project for long term contracts to burn Canadian oil sands and fracked gas with their own devastating impacts on those lands.

And we the taxpayers of Washington state will subsidize those contract holders for a few dirty industry jobs.

We should tax those companies to pay the full cost of gas extraction and carbon released, starting at $20/ton.

Will investors still want to build this project if they have to pay the full costs to us?

Hire those workers as the new green economy by charging coal, gas and oil a true carbon tax. Consumers will switch quickly to sustainable power and the products and services needed will be ready.

Please deny this permit for me and my grandchildren

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Cal Van Zee
6523 1st Ave NW Seattle, WA 98117-4826
calvanzee@yahoo.com

Judith Wood

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We have no business building this kind of destructive infrastructure. Our investments must be in health and wellbeing for people and the planet, not profit.

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Sincerely,
Judith Wood
6523 1st Ave NW Seattle, WA 98117-4826
judith.drake.wood@gmail.com

Deirdre Gabbay

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Twenty years ago would have been the correct time to phase out the burning of fossil fuels to protect our climate from the build up of dangerous greenhouse gasses. It is unconscionable that it was not done - and we are feeling the direct effects of that inaction today - in the wildfires, storms, extreme heat in urban areas, the loss of glaciers and ice caps, and the sea level rise that will soon drown the world's great cities.

If we fail to act again today, when the devastating effects of last year's poor choices are upon us, then what is the point of ever educating another child to study science, of ever teaching another human being to care about the future, or giving any governing body the responsibility to set policy that will affect the future health of the planet?

The answer is: there will be no point to your very existence as a Department of Ecology if you approve construction of this disastrous project.

We the people have given you the authority to say "no" to this fatal industry. You must use it.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Deirdre Gabbay
120 W Smith St Seattle, WA 98119-2319

deirdre@gabbay.org

John Harris

Please do not approve this. In time of global warming and unprecedented fires, we do not need to add more methane into the atmosphere.

Also, we do not want to give the Chinese any foothold in our area. They are not our friends.

Priscilla Martinez

We need to take better care of what is left of our environment, for people, wildlife, and marine life.

Joseph Hiss

Please do not approve the Second Supplemental Draft EIS for SEPA on this project. Any proposed action that locks WA and China into 40 years of fossil fuel mining, transportation, burning, or other industrial use, is unacceptable to me. I base this on the lectures I heard over my career as a local fish and wildlife biologist, along with my work as a volunteer environmental educator, and my extensive reading on the subject of climate change. The charts given at the beginning of your Sept. 17 presentation failed to support the project's reduced fossil fuel consumption because the baseline was improperly chosen. The real question is why Ecology would allow 40 years of fossil fuel pollution when the world cannot handle the pollution it is already getting. Do not approve this document, and, if you can, recommend this project be cancelled.

DEREK DEXHEIMER

The Kalama ethanol plant should not be built. Ecology's own analysis shows the plant would emit a minimum of 4.6 million tons of GHGs annually for 40 years. This level of climate pollution is inconsistent with a livable climate.

In addition, the plant would use fracked gas piped in from other western states, providing a market for this disastrous form of pollution.

Due to its inherently destructive nature, this plant cannot go forward.

kate lunceford

I oppose the construction of Kalama Manufacturing and Marine Export Facility. The mining, transport and use of natural gas is destroying out planet. We must stop using fossil fuels immediately to have any hope of reversing climate change. It the planet billions of years to sequester pollution. We must stop digging it back out!

Richard Schoonover

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Eric Haskins

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Mark Uhart

My name is Mark Uhart and I am a retired US Army career officer. My wife and I live near Kalama in the foothills overlooking the Columbia River. We are against this project. We purchased this property so we could enjoy the unobstructed view of the Columbia River and enjoy recreation and dining in the local area. We walk, hike, bicycle, and have kayaked the Columbia River. One of my hobbies is wildlife, landscape and astrophotography, all of which will be affected by this project.

Most importantly, I am concerned about the future of my children and grandchildren. It's hard for me to comprehend why anyone in this area would support a project that will adversely impact their health, safety, and long-term quality of life. The short-term economic gain will be offset by 40 years of dirty air and water, noise and landscape pollution, depletion of the Columbia River-Kalama River aquifer, and a definite impact on our climate. I grew up in southern California next to oil fields and refineries. I've lived in Texas and observed the stinky and noisy refineries along the coastline. Trust me, we don't want the smell, the noise, the air and water, and landscape pollution of this facility.

I served 21 years as an active duty officer in the Army from battery to Corps Artillery level, and an assignment in special weapons quality assurance. The strategic objective of our adversaries, Russia and China, were always part of our professional development. I was, and still am, very aware of the strategic implications of foreign countries' attempts to get deeply embedded into our financial system in order to influence both economic and military outcomes. One author says it best, "The signs that China is gearing up to contest America's global leadership are unmistakable, and they are ubiquitous." They are doing it with our money and our natural resources. When will the average Washington resident wake up and smell the coffee?

It really bothers us that the US citizens of Northwest Innovation Works (NWIW), the Port of Kalama and the Cowlitz County commissioners, would support a project that is owned by the Chinese government; that will be financed primarily by US Government and Washington taxpayers; that will pollute our air and water; and only add to the devastating effects of anthropogenic (human-caused) climate change. We will bear most of the financial and environmental risks associated with this project while they take in the profits and improve their position toward world financial, economic, Southeast Asia maritime and political dominance. Money talks and the Chinese government are throwing a lot of money into marketing this project in its quest to control much of the world's technology and energy natural resources by 2030.

An assumption that was not stated, but can be inferred from these EISs, is that the international community will choose not to address climate change and regulate GHGs. If every country that wants to improve their energy position and economy, like China and the US, took the same approach purported in this report, then the earth is doomed. The assumption is that if this plant is not built herein Kalama, it will be built elsewhere. The law of supply and demand shows that if there is a shortage of a commodity, and prices increase, people will use it less and seek alternate technologies. We saw this before the fracking boom when gas prices went up. That drove better fuel efficiency and new technology (all electric cars, hybrid vehicles, and now fuel-cell vehicles.) Denying these projects will constrain these fossil fuel supply channels and force countries to develop clean, non-fossil fuel, energy alternatives.

I read the SSEIS and the voluntary mitigation framework presented in Appendix D is laughable. By using the term "in-state", NWIW is not willing to mitigate GHGs outside the state of Washington. This includes the upstream fugitive methane and CO2 from the methanol burned in transport to China, and as a fuel or in olefin production. I will address this further in another comment.

This project is a climate killer and the only responsible decision is for Ecology to deny the shoreline permit.

Mark Uhart
LTC, USA Ret.
Kalama, WA

Cynthia Thornton-Tang

I would like to urge the panel to deny the permit for the refinery.

I am a mother and a grandmother and a lifelong resident of the Pacific Northwest. I am concerned that there will be pollution and environmentally harmful effects at every stage of this project: from extraction, to transport, to storage, to refining, to burning fossil fuel, to plastics which become micro-plastics and have been found everywhere, including in our food. I remind the panel that we are in an earthquake region, plus we have irreplaceable and vulnerable natural assets: our waterways, our air, our land.

This project, if approved, would give short-term financial benefit to Northwest Innovation Works and its investors, with the long-term costs passed on to citizens of this planet, a burden that would be borne most particularly by those who have the least. There will be leakage, there will be accidents, there will be clean up costs, there will be pollution either by methane gas or micro-plastics.

In our current year of trauma with COVID, economic upheaval, and heightened awareness of social and racial inequities, it is clear how morally wrong and economically short-sighted it is to approve fossil fuel projects that allow corporations and investors to reap the profit and walk away from the costs.

We need to make choices now that will give us all a better future.

I urge the panel to reject the permit request.

Thank you,
Cynthia Thornton-Tang

Jennifer Vinnard

Speculations about this proposed methanol plant supposedly displacing coal burning plants is absolutely ludicrous and unfounded! Not one single coal to methanol plant has agreed to reduce or stop production, and with China's high demand, it's foolish to approve the permit with zero indication that even 1 coal to methanol plant would be closed...it's a scam, and people who actually live here are finally realizing that. 4.6 million tons of ghg emissions PER YEAR, which is still not an accurate estimate, highly underestimated, regardless it is NOT the direction we need for our state, our country, our planet. China will reap the rewards while Kalama, Cowlitz County, Washington and the world suffer the consequences! NWIW has been consistent on one thing..lies..ignoring their intentions to use the methanol for fuel, the pollution, the negative impacts on tourism, the amount of fracked gas it'd need daily, on and on the cons go, ultimately there's nothing about this proposed methanol plant that fits our environmental standards and goals, this would set us back for decades! More people oppose this project than support it, and we need Ecology to do what's best for Kalama and Washington, PLEASE deny the permit! We're counting on you :-) Thank you

Rich Doenges, Department of Ecology, 9/15/2020

I was born and raised in Cowlitz County. I moved away for work for about 10 years but returned 16 years ago. Local industry is the life blood of Cowlitz County. Industry and the development of industrial projects in this area has put food on many family tables and sent a number of kids to college as well as providing a living income for many. I believe in smart, clean & well planned industrial projects. I have been following the NW Innovation Works – Port of Kalama project since it was first proposed. I feel this project would be a tremendous benefit to Kalama and Cowlitz County.

I am now a member of the local Kalama community, a Cowlitz District 5 Volunteer Firefighter Lieutenant and a Superintendent for JH Kelly, I support this project. We have lost too many industrial projects or have been faced with unnecessary delays due to environmental banter from individuals and/or groups that do not live or work where these projects are proposed. I believe we can build responsible manufacturing facilities and create local family wage jobs as well as give the local community the opportunity to grow and benefit from additional tax revenue and build a better overall economy for local families. Please hear our voice and do not delay permitting on this project. **Below is a copy of some key benefits that would result from this project moving forward.**

Economy:

- **Jobs:** 1000 jobs during peak construction (2+ years) and nearly 700 direct, indirect and induced jobs will be created during operations. The average estimated salary will be $71,000 annually, roughly $10,000 above Cowlitz County's median family income and $24,000 higher that the median annual wage in the County.
- **Spending:** During construction, nearly $700 million will be spent on local labor, goods, services. This will bring over $620 million in direct economic impact and nearly $500 million in indirect economic impact.
- **Tax Revenue:** NWIW will pay $57.9 million in state and local taxes during construction and $30-40 million annually during operations. $48 million in sales tax receipts will go to the state and county during construction. This will strengthen state and local authorities to build new community facilities, enhance local infrastructure and improve our schools.

Safety:

- **Safety Systems:** To significantly reduce the chance of spills, fires and explosions, all natural gas, chemical processing, and methanol production will be managed through an enclosed process with state of the art safety systems.
- **Emergency Response:** NWIW will work closely with emergency responders and regulatory agencies to develop contingency plans that include dedicated and trained on-site fire brigades and equipment to respond to any potential emergency.
- **Responsible Care ™:** NWIW is committed to the training of its workforce and contractors to the standards and processes of the Responsible Care™ program, a comprehensive safety, health and environmental program, as described and developed by the American Chemistry Council
- **Worst Case Analysis:** The opposition has repeatedly deceived the public about explosions, fires, and a theoretical 6-mile blast zone. Their arguments are based on impossible physics and

frightening youtube videos of incidents that have zero relation to a methanol plant. Here are the facts -- Extensive and conservative modeling conducted by risk assessment experts shows that a worst case incident (fire, explosion, or spill) at the methanol plant would not result in serious injuries or health impacts anywhere offsite

Environment:

- **Air:** By using natural gas as a feedstock and implementing ultra-low-emissions technology (announced in August 2015), carbon emissions will be reduced by up to 90% compared to coal to methanol manufacturing.
- **Air:** The Kalama Facility Final Environmental Impact Statement states that air pollutants generated by the plant will "comply with emission standards". The detailed analysis demonstrates that all emissions of air pollutants from the plant itself would be sufficiently low to protect human health and safety in accordance with Washington state law.
- **Natural Gas Infrastructure:** The Kalama facility will require a 3.1 mile natural gas pipeline extension. The current capacity of natural gas is more than adequate to supply the facility contrary to the opposition's fabrications that suggest new infrastructure will be required.
- **Water:** NW Innovation Works is the first company along the Columbia River to invest in Zero Liquid Discharge technology (announced in October 2016). With this innovative technology, all facility wastewater discharge into the Columbia will be eliminated. 100% of the wastewater will be recycled and reused in the facility. Additionally, usage of ZLD will reduce raw well water usage at the Kalama Facility by over 150 million gallons annually.

Feel free to contact me with any questions.

Thank you,

Mark J. Smith
Superintendent
Direct (360) 577-5578
Cell (360) 703-4021
JH KELLY
msmith@jhkelly.com

"Plan your work, work your plan"

carolyn atkinson

https://www.cbsnews.com/news/new-climate-change-report-human-civilization-at-risk-extinction-by-2050-new-australian-climate/

The SEISS does not account at all for the projected global political instability within this project's lifespan and the impacts of this on the project's proposed market. As facilities like these are identified as drivers of mass human casualty, they will also become terrorist targets as instability increases. Don't build the methanol facility.

Regan Fisher

I am writing to express my strong opposition to the proposed methanol refinery in Kalama.

This project would cause millions of tons of greenhouse gases to be emitted and pose a danger of pollution of the Columbia River. I am especially concerned about damage to the river, as the Columbia is a vital resource and connector of communities within our region. Native American communities rely on it for fishing, and pollution from the refinery could further damage the salmon population, which is such a vital resource in our region.

This refinery would use more fracked gas than all the gas-fired power plants in Washington combined. This stark increase is appalling, especially considering Governor Inslee has strongly positioned himself and the state of Washington as needing to urgently address climate change and move away from reliance on fossil fuels. This project would obviously be a move in the wrong direction.

I am also concerned about the gas pipeline that would be necessary for this project. It brings with it a huge risk of spills along the way, as well as damage to the communities along its path.

The EIS that was completed for this project is incomplete. It does not sufficiently address the environmental impacts of the project. The supplemental EIS was also inadequate. It is clear that there is bias involved in this project (with the stakeholders and backers), and it is unconscionable that the decision makers have not been presented with the accurate evidence of what sort of environmental damage this project would cause.

I request that the Department of Ecology deny the permit for the refinery.

Karen Ashford

Dear Concerned (I hope)
I have lived here in Portland, and now own a home along the Little Kalama River Rd. I have asthma, and will be DIRECTLY impacted if this plant is built. I wonder if you have been updated about the plastic in our food, bodies and oceans that is harming all wildlife, including us? And in our air? Is it true this plant would put into our air 5x more diesel pollution than state guidelines for air toxics? How much pollution will all those tankers put in the air in their constant trips to Kalama and China? AND the daily toll on my lungs...hazardous air pollutants including ammonia, carbon monoxide, nitrogen dioxide. You've heard all about it, but do you care? Is this what Washington State wants? WHY does Cowlitz county have to take on this burden (so far from Seattle metro, very nice) when we have so much more pollution than any other county with our size population. Nice to have a few more jobs, but perhaps China needs to find another source. Of course US corporations (partially owned by China?) want to sell gas, and make money. We aren't even keeping this product in the United States! What is going on here, is THIS what is important for our future-plastics??? What about the environment and our health. JOBS always win out, don't they. Who cares about my lungs.
WE DON'T NEED ANY MORE AIR AND WATER POLLUTION IN WASHINGTON STATE!

Heaven help us, Karen Ashford

Julie Martinson

Washington State must reject this proposal that would build and operate the world's largest fracked gas-to-methanol refinery in Kalama.

I have lived here my whole life as a 4th generation Washingtonian. I grew up camping and exploring the mountains, rivers and ocean. I've been increasingly concerned about the accelerating speed of climate change. I've read a great deal about the overall effects of fracked gas in its whole lifecycle, from drilling, damaging groundwater and polluting aquifers, and causing earthquakes (particularly in Oklahoma). Fracking causes huge releases of methane both at the well sites and throughout its transportation lifecycle, through pipelines or by truck or train. The potential for explosions and spills in the communities it passes through, and is stored in, is too great a risk. This project uses fracked gas, and we need to turn from fossil fuels to creating more truly clean energy to reduce greenhouse gasses which are severely damaging our atmosphere and earth systems.

If this plant were approved, it would necessitate expanding the capacity of pipelines to the refinery, while we are committed to reducing greenhouse gas emissions, instead. This is a Chinese-owned company, which wants US to bear all the suffering from the pollution and dangers, while using OUR resources of water and electricity (and fracked gas) for their methanol, to be shipped back to China. This is like a sad cartoon: 'What's wrong with this picture?'

Washington State has committed to cutting our fossil-fuel emissions, so we must stop this project NOW, to protect our lives and health and the future of our beautiful natural world for all of its precious living creatures.

I'm fighting to protect what is sacred and beautiful. We need to keep our communities safe and healthy. We have to take a stand against fossil fuels now, and reject this project entirely, once and for all.

Mason Evans

My name is Mason Evans

I am the President of JH Kelly – a proud union construction firm headquartered in Longview WA

I value the environment and support actions that reduce global greenhouse gases - particularly the use of transitional feedstocks and new manufacturing technologies

I support the Kalama Methanol Project because:
• It brings much needed jobs to Cowlitz County

• The project incorporates important features that benefit the local environment such as zero liquid discharge, ultra low emissions technology, and a commitment to mitigate for WA air emissions

• Most importantly, the project reduces global greenhouse gases

After reviewing the supplemental EIS, I find it to be comprehensive and utilize a valid methodology to evaluate the project.

For these reasons, I encourage the Department of Ecology to accept the conclusion of the EIS and issue the Shoreline and other necessary permits for the Kalama Methanol Facility.

Thank you

Lori Howell

Washington Department Of Ecology,
I assume you wrote your mission statement,
your core purpose and values.
Let me remind you what you wrote.
PROTECT
PRESERVE
ENHANCE
Washington's
LAND
AIR
WATER
for current and future generations.

Based on YOUR Mission Statement I trust
you will deny NWIW the permit they seek
for their proposed methanol refinery in
Kalama, Washington.

Kevin Walsh

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Julie Glover

I am very upset that Northwest Innovation Works, LLC. proposes to develop and operate a natural gas-to-methanol production plant and storage facilities on approximately 90 acres at the Port of Kalama. THIS IS CRAZY! Methanol will be loaded on to ships at a new dock that will be owned by the Port and transported to Asia. SO WHY ARE WE POLLUTING OUR OWN LAND AND AIR SIMPLY TO BENEFIT CHINA?

The Second Supplemental Environmental Impact Statement focused on fully analyzing greenhouse gas emissions from the proposed Kalama methanol facility, looking at impacts from upstream emissions, such as the greenhouse gases that escape from natural gas wells and pipelines, direct and indirect emissions produced at the facility, and downstream emissions from transporting the methanol to its intended destination in China. IT MAKES NO SENSE TO ME THAT WE WOULD WILLINGLY UNDERGO ALL THIS POLLUTION FOR THE BENEFIT OF A FEW MONEYMAKERS, BUT NOT FOR THE AMERICAN PEOPLE WHOSE HABITAT IS BEING ENDANGERED!

John Flynn

I am a resident of Kalama, WA. I frequently fish the Columbia River both upstream and downstream of Kalama, as well as the Kalama River.
I oppose the proposed construction and operation of a fracked gas to methanol refinery on the shore of the Columbia River primarily on environmental grounds and secondly on aesthetic grounds. The negative impacts this project would have on our environment and health is even more critical today considering the catastrophic wildfires we are currently experiencing in Washington, Oregon and California, with their associated loss of life and property.
This refinery would emit 4.6 million metric tons of greenhouse gas emissions annually into our already polluted atmosphere. In addition this petrochemical refinery would emit 53 tons of toxic and hazardous chemical pollutants into our air per year along with 62 tons of fine particulate matter per year. It is imperative upon us that we reduce greenhouse gas emissions and toxic air pollutants rather than increase them.
The vapor cloud from the cooling towers of this refinery from which millions of gallons of water will be evaporated would reach between one half to three quarters of a mile high and one quarter to one half mile wide. I cannot see myself, in my boat, fishing with family and friends in the shadow of the worlds largest fracked methane gas to methanol refinery.
I sincerely urge the Department of Ecology to deny any and all permits for this refinery project.
Thank you.

Nancy McMahon

The science is in and we have very little time left to transfer our world from fossil fuel dependence to renewable sources of energy. We have begun to make headway in this direction, but this facility would be a giant step backwards.

The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year. The Kalama facility would be one of the 10 largest sources of greenhouse gas emissions in the state. Northwest Innovation Works has said that it will mitigate all of the facility's in-state emissions.

Danny Percich

Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama! Washington should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama. NWIW misled your agency, and the public, about the purpose and impacts of the refinery. We are counting on Ecology to dismiss NWIW's misleading claims and accurately account for the project's upstream and downstream climate pollution.
For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe, and keep Washington on track to meet our goals for reducing climate pollution. We are counting on you to do the right thing and stop this dirty, dangerous fossil fuel export project.

In this moment of a top down attack against science, we need to stand up for science and look hard at how a this refinery will pollute and effect our communities. As a father of 3 and owner of a small farm, we need to protect our future.

Sincerely,
Danny Percich

Don Steinke

Hello, I'm Don Steinke, retired science teacher, 43 years mostly at Fort Vancouver High School.
NEPA was signed by Nixon 50 years ago, because it had been difficult to get all the facts related to a project. NEPA requires you to prepare an EIS that tells us the whole truth, and nothing but the truth. But you didn't do that.
You gave us part of truth and a lot of speculation. I'm not even sure you read your own EIS. Did you write it? Were the remarks about displacement potential your own or did they come from the proponent?
The natural gas industry is the absolute master of deceit and lies. They persuaded us that most plastic is recycled when it is not. They are advertising on TV and FB right now about being the pathway to a clean and sustainable future. When all the emissions are accounted for, gas is nearly as bad as coal and methanol is worse.
Methanol is the opposite of a value-added product. It's a pollution added product. Better to use the fuel at the source than to add the pollution generated by a methanol plant.
The gas industry has known about climate change for decades but are engaged in a "campaign of deception" to help sell their products. They have fooled most of the public and the elected officials. They fooled the green groups as well, until we learned about methane leaks in 2014. And they are trying to fool you with their displacement theory.
Don't believe anything they say!
Get rid of the speculation in the EIS. Protect our children's future and say NO to our destruction.

Teresa Flynn

My family lives in Kalama, Washington.We are against the proposed Methanol Refinery. we have been fighting this for five years. Next time could you just tell them At the beginning of the process that it is not acceptable and be done with it.Thank you Teresa Flynn Kalama, Wa.

Lisa Downey

I strongly oppose the construction of the Kalama Manufacturing and Marine Export Facility. Increasing methanol production does not align with Washington State ethics and priorities. During this season of extreme wildfires due to global warming we need to be creative about protecting all the natural resources we have. Fracking is not good for our wildlife. Methanol is not good for the environment. Shipping it overseas and the added transportation impact on the environment is an added insult. Instead of selling our resources for a quick buck we need to preserve and protect our state's beauty for the younger generations. Please do not approve this project.

Michelle Sheldon

Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama!

Washington should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama.

NWIW misled your agency, and the public, about the purpose and impacts of the refinery. I am counting on Ecology to dismiss NWIW's misleading claims and accurately account for the project's upstream and downstream climate pollution. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

For the community of Kalama, neighboring communities, and for our climate, the risk is simply too big. Please keep our communities safe, and keep Washington on track to meet our goals for reducing climate pollution. I am counting on you to do the right thing and stop this dirty, dangerous fossil fuel export project.

Jean M. Avery

Proponents of the NWIW project say this refinery would be a good for jobs and tax revenue. But, as we choke on hazardous air pollution, why would we invite more pollution into our region -- for 40 years?

According to Sierra Club, this plant would consume more fracked gas than the region's largest cities combined, making it the largest climate polluter in the State by 2025.

So, why should this project be considered at all? -- especially when mitigation seems vague and minimal?

The Second SEIS includes more than 100 pages of charts, graphs, tables, and data. And yet, there are only two pages on "Significant Impacts and Mitigation."

An appendix mentions "voluntary" emission reduction "to the extent possible." There is a vague reference to carbon markets.

So, questions remain:

1. Do the words "voluntary" and "to the extent possible" imply that NWIW does not perceive mitigation as a firm obligation?

2. By carbon markets, does NWIW mean purchasing carbon offsets? This would not reduce actual emissions.

3. Does Ecology have resources to oversee this project? Instead, Ecology could focus on proactive measures for a clean-energy future.

4. Forty years is plenty of time to enact clean-energy programs. When NWIW claims its operation is less polluting than other sources, it assumes other fossil fuel sources.

I believe we are on the cusp of a clean-energy future. It is time to say good-bye to fossil fuel projects. Please deny this project.

(Testimony at 9/17 online hearing)

David robinson

Thank you for accepting my comments on this SSEIS. The Kalama methanol is an abhorrent idea given the cumulative effects of past centuries of fossil fuel use. I'm convinced that the future of humanity rests on the ending of all fossil fuels exploration and infrastructure projects! That fossil fuels will have to be left in the ground. That a war time effort to replace fossil fuels with solar, wind and other infrastructure is necessary immediately to protect humanity from climate crisis! That anybody involved with this and other exploration and infrastructure projects now and into the future will be found in a future court of law to be guilty of genocide against humanity for failure to protect humanity from climate crisis!

I realize that the Department of Ecology is under pressure to cross all the t's and dot all the i's, but it's time to SAY NO to any further thoughts of allowing this and other fossil fuels infrastructure to go forward. There has not been any true cumulative effects analysis for fossil fuels in the past and any future analysis should remain locked up and shelved given the scientific information already available on the effects of the use of fossil fuels on the climate to date! This and similar projects have to cease immediately and regenerative energy projects given the highest level of priority. For the future of humanity, denying this fossil fuel infrastructure will be a step in the right direction. Thank you for accepting my comments today.

Sandra Oliver-Poore

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Marge Schwartz

Methane is toxic and a greenhouse gas. Please protect us from the release of methane.

Melissa Brooks

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. I do not want to add to carbon emissions.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Melissa Brooks
29817 4th Ave SW Federal Way, WA 98023-3513
melissabrooks25@gmail.com

Nicole Schmidt

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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Sincerely,
Mrs. Nicole Schmidt
2615 Seattle, WA 98199
nikkischmidt@comcast.net

Judith Schainen

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We cannot continue this trend of contaminating the waterways and the land with the waste materials of our industries. Once a species is annihilated, there is no coming back in the future

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
ms Judith S. Schainen
10022 36th Ave SW Seattle, WA 98146-3608
schainenjudith@gmail.com

Meagan Prince

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I believe in respecting our state's resources, and this export plan doesn't serve Washington's land or a sustainable future.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Meagan Prince
411 203rd Pl SE Bothell, WA 98012-9212
MEAGANJOY@GMAIL.COM

Joan DeVries

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

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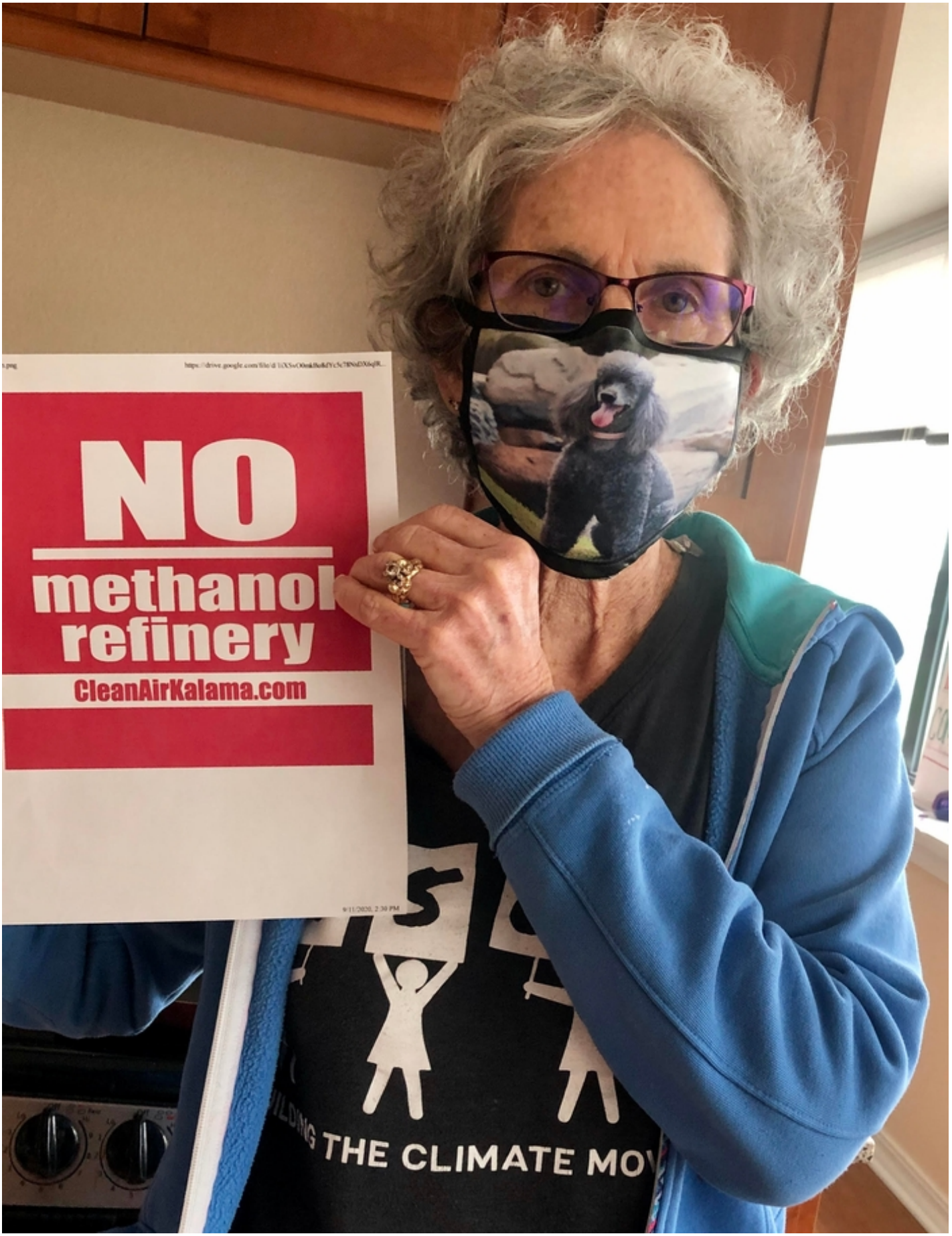
Sincerely,
Joan DeVries
6042 Seaview Ave NW Unit 203 Seattle, WA 98107-2677
joancdv26@aol.com

Jessica WINTER-STOLTZMAN

No new fossil fuels facilities. It's past time to draw the line and stop the destruction of our planet. This summer's devastating fires and abysmal air quality show what future life will be like if we don't turn a corner and change our ways. We have to reduce use of fossil fuels. Do not allow this facility to operate.

JOANA KIRCHHOFF

The Portland Raging Grannies stand in opposition to the Kalama project proposed by NW Innovation works. The history of the project is filled with false reports, shoddy science and a revolving door of investors - making it a less than desirable business for Kalama. The environmental impacts are numerous and I'm sure you will have many comments on those impacts. We want to focus on the instability of the company and the fossil fuel economy at this time. Please add that to your calculations so that Kalama is not left holding the bill for the facility. Kalama does not want a superfund site!!!


NO
methanol
refinery
CleanAirKalama.com
THE CLIMATE MO


Mr Methanol
Jr. Kalam


What are you willing to
NO
methanol
refinery
LNG
NO
methanol
refinery

Jynx Houston

I ABSOLUTELY OPPOSE THE PROPOSED KAMALA METHANOL REFINERY. IT WOULD BE DISASTROUS FOR THE ATMOSPHERE—FOR THE HEALTH OF PEOPLE & THE PLANET.
MOREOVER IT WOULD BE COMPLETELY UNNECESSARY.

Nancy Helget

The Department of Ecology should deny the NWIW permit because GHG emissions attributable to the facility are significant and NWIW's proposed mitigation plan won't reduce GHG emissions in Washington.

The Department of Ecology has meticulously analyzed and identified the GHG emissions NWIW's facility will produce. Ecology finds GHG emissions attributable to the facility would be "significant". However, Ecology also finds the emissions are "capable of being mitigated." SSEIS ¶ 1.5.2.

Ecology's conclusion NWIW can mitigate its significant emissions relies on NWIW's proposed Mitigation Framework, SSEIS Appendix D. Ecology concludes "... the mitigation framework would establish an annual greenhouse gas emission reduction obligation equal to instate emissions as determined by Ecology's GHG reporting rule, to the extent possible." SSEIS ¶ 1.5.2.

I'm not encouraged by the vague "to the extent possible" language. The SSEIS doesn't identify what might or might not be possible. To be effective, any mitigation effort must be possible.

Even if "possible", NWIW's proposed mitigation efforts would do nothing to actually reduce overall GHG emissions. NWIW doesn't propose to actually reduce any of the GHG emissions attributable to its facility. Operation of the facility will cause millions of tons of GHG pollution every year for 40 years.

NWIW's mitigation proposal is to invest in projects that may or may not result in GHG emission reductions from other sources. Basically, NWIW will be allowed to significantly increase GHG emissions in Washington in return for a promise to voluntarily invest in projects elsewhere that are actually trying to reduce GHG emissions. When considering the increase in GHG emissions attributable to the NWIW facility, a plan to possibly offset those emissions won't ever reduce overall GHG emissions.

In contrast, not permitting the NWIW facility will assure NWIW can't pollute to the tune of millions of tons of GHGs for 40 years. If NWIW doesn't build the facility, there will be zero new GHG emissions attributable to the facility. If NWIW doesn't build its facility, other projects can still work to reduce existing GHG emissions, resulting in an overall reduction of GHG emissions.

The Mitigation Framework NWIW proposes is inadequate for other reasons. All NWIW mitigation efforts would be voluntary and the framework doesn't provide any enforcement mechanism. NWIW doesn't propose to enlighten us about the nuts and bolts of its proposal until after the environmental review is completed. SSEIS, Appx D, p. D-2.

While the framework describes involvement of a Board and environmental groups, the framework lacks an explanation of how the board would operate, how the board would be appointed, and/or how the board would compel compliance with its decisions. Any potential enforcement would occur after NWIW doesn't meet its voluntary mitigation goals, and while NWIW's significant GHG emissions continue.

I live in southwest Washington. Although the Mitigation Framework prioritizes using its voluntary investments in Southwest Washington and then Washington, there's no requirement that all or even most investment be in Southwest Washington or Washington projects.

Washington is committed to reducing GHG emissions on a specified schedule with specific benchmarks. The benchmark reductions won't be easy to meet. NWIW's facility would be responsible for "significant" new GHG emissions over its 40 year lifetime. Because the mitigation framework is only a commitment to offset other GHG emissions, and because operation of the facility will never result in any actual reduction of GHG emissions, NWIW's proposed facility would set back the state's efforts to meet the statutory benchmarks.

The effects of climate change in our state, region and country have been starkly evident these past few months. NWIW's Mitigation Framework is deficient. Even accepting that NWIW will meet its voluntary commitment to mitigate as the framework describes, the fact remains that this facility will be responsible for "significant" GHG emissions, not just in one year, but in every year over 40 years the facility remains in operation. The "significant" emissions attributable to the NWIW facility will negatively affect me and all Washington residents.

The Washington permit approval process should protect Washingtonians. The SSEIS reliance on NWIW's deficient mitigation plan doesn't protect us. The Department of Ecology should deny NWIW's permit.

Kristen Daley Mosier

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. If the experience of ten consecutive days living under unhealthy air during a pandemic that literally takes people's breath away--if all that is not motivation enough to pursue clean energy, then the voices of the people are in vain.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Kristen Daley Mosier
123 NW 191st St Shoreline, WA 98177-3014
halvor1895@gmail.com

Nancy Helget

The SSEIS is flawed because its conclusion relies on a speculative assumption. The SSEIS relies on the assumption the NWIW facility will prevent utilization of other more polluting processes, particularly in China. SSEIS 3.5.1.4.

The SSEIS admits its assumption is based on "current" sources of methane. SSEIS 3.5.1.4. An assumption based on current data doesn't account for future development of alternative materials and processes.

Even if the SSEIS assumption has some validity based on today's technological information, there's no way to predict what alternative processes or materials will exist or could be used in the next 10, 20, 30 or 40 years. Yet the NWIW facility, if built, will continue to operate for 40 years, processing and shipping a potentially outdated and polluting product. If methane becomes the most polluting fuel for plastics processing, NWIW could be the facility other entities would be trying to replace. Yet we in Washington would be stuck with it and its significant GHG output.

Additionally, there's no way to reliably predict what some other country or facility might do now or decades into the future. Again, if China or any other country decides not to use methanol, or not to use NWIW methanol, the NWIW facility could continue to operate and continue to be responsible for significant GHG emissions. NWIW views its operation as a financial investment. It won't simply close its facility if other, more environmentally sound materials or processes exist.

The Department of Ecology should not base permit approval on a speculative assumption. The Department of Ecology should deny the NWIW permit.

Lou Ann Bennett

Dear Director Watson and Department of Ecology:
Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama!
Washington should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama. NWIW misled your agency, and the public, about the purpose and impacts of the refinery. I am counting on Ecology to dismiss NWIW's misleading claims and accurately account for the project's upstream and downstream climate pollution.
The Ecology Strategic Plan for 2021-23 supports a NO on this decision. I'm trusting Washington State will continue to be a leader in our Region and Country making tough decisions to uphold the safety, integrity and harmony of our ecology for generations to come. I especially appreciate your mission and experience of protecting low-income and BIPOC residents who are at the highest risk by this project. I'm inspired by Violet and many other young people standing up for zero waste and a future environment in which they can thrive.
I counting on you to make the decision for the greatest of all good considering all beings for seven generations to come.
Sincerely, Lou Ann Bennett
Your Columbia River Neighbor

Dennis Colombo

Regarding the Northwest Innovation Works – Kalama Manufacturing and Marine Export Facility SSEIS, I am submitting the following comments:
The SSEIS states that "The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year." as well as indeterminate upstream emissions. And yet the claim is that this project will somehow result in a net global reduction in greenhouse gas emissions. I believe that the justifications for allowing this project to move forward seems flawed and highly speculative. Particularly the notion that the People's Republic of China can be relied upon to reduce their use of coal due to their importation of methanol from Kalama. Also, I believe that the uncertainty regarding the level of upstream greenhouse gas emissions makes it impossible to demonstrate how those emissions could be mitigated.
In conclusion, I see no demonstrative proof that the Kalama facility would reduce worldwide net greenhouse gas emissions and I believe that the risks to the environment and the health and wellbeing of local residents far outweigh any benefits. Therefore, I urge that this permit be denied.

Dr. Candace Gossen

I have lived in colorado the last 4 years in Medical School and with more than 50,000 wells surrounding the city its air and water quality is in sickening levels. I have even longer worked on environmental sustainability issues in seeing flammable water and the killing of species within polluted water systems. This eventually trickles down to human health. Be wise. Do not put this risk into the nature system that will stay around forever beyond our generation.

John Bowen

This project will contribute to the current climate disaster we are experiencing in the world today. Stop this insanity.

Linda Buckley

Dear Mr. Doenges, I attended the informative presentation yesterday on the second EIS and public hearing. I am a 3 year resident of Vancouver Washington and very concerned about the environmental risks created by the proposed gas to methanol refinery at Kalama. Although new to the PNW, I am active in conservation groups to stay informed on various sides of environmental issues. When we moved to Vancouver WA the big issue was the proposed gas terminal at the Port of Vancouver WA; it was voted down by the majority. I believe Kalama is a similar situation. Demand for methanol is going down and the environmental risks to the regional population-both short and long term-are too great. I don't know that we can trust the proponent company to carry out the promised mitigation and create the number of jobs. Let's create jobs in the green energy sector! Please don't approve the Kalama refinery. Thanks for considering my comments. Linda Buckley, Vancouver WA resident

Jay Pine

There are several points that are very troubling about this project.
The first is that the owners of this proposed plant will take it upon themselves to mitigate future greenhouse gas emissions. The oil and gas industry has an extremely poor track record in that regard! Leaving this chore up to them is like asking the fox to guard the henhouse. Another point is that the methanol will be used to produce plastic manufacturing. The world is choking on plastic waste and the oil industry is using plastic manufacturing as the new frontier for oil profiteering. As the demand for gas and oil dwindles the oil companies are finding new ways to keep us tied to their pipelines. Please do not allow this toxic facility to be constructed in Washington State , our future investments in energy infrastructure should involve wind,solar and renewable energy. Thank you,
Jay Pine

Linda Leonard

Make no mistake about it, Kalama, the state of Washington and the world does not need the proposed methanol refinery to be built.

Northwest Innovation Works' have used the rationale the facility would cause a net reduction in current greenhouse gas emission levels by forcing Chinese-to-coal methanol facilities off line.

Ecology's analysis state that current global greenhouse gas emissions would increase substantially if this project were built, but perhaps not as substantially as if, China's methanol demands were met by other sources.

The gas impact analysis summary reads: What would happen in the markets if KMMEF were not to go into operation? The analysis of methanol supply in China shows that there is existing capacity in China to increase methanol production and meet growing demand. This is expected to be supplied from coal-based methanol, the lowest-cost producer in China. Additional demand will be met with natural gas based imports which are also low cost. NWIW's facility is expected to be one of the lowest cost of these exporting producers.

But absent Kalama Manufacturing and Marine Export Facility, other low cost natural gas based exporters would also supply the growing market in China.

The summary concludes, there are always uncertainty in future markets with respect to prices, policies, the global pandemic recession and relationships between input suppliers and producers.

Rather than engage in this speculation, Ecology should focus on the real world, known pollution that will come from the facility rather than NWIW's dubious displacement argument.

The misguided conclusion that the world's largest fracked gas to methanol refinery would somehow benefit our climate and have no significant adverse impacts on the Columbia River estuary or the public is appalling.

I am calling on the Department of Ecology to reject this project and to deny the Shorelines permit from proceeding.

Karey Kessler

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Karey Kessler
7017 38th Ave NE Seattle, WA 98115-5936
karey.kessler@gmail.com

Lara Osborn

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

We must protect our environment!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Lara Osborn
1802 220th Pl NE Sammamish, WA 98074-4158
laraosborn2@hotmail.com

Amber Martinell

To whom it may concern,

Please do not approve the permits to complete the Kalama Methanol Refinery. We are at an urgent time in history to create earth friendly resources and methanol is not the answer.

We are currently seeing the results of climate change as we watch the entire West coast burn from wildfires. These wildfires are affecting every human being around the world. It's time for us to invest in resources that prolong the human race. We need to look beyond monetary goals and look at sustainable energy.

According to the Scientific American article Study Revised Estimate of Methane Leaks from US fracking fields published In 2013 "significant leaks of heat-trapping methane from natural gas production sites would erase any climate advantage the fuel offers".

Furthermore according to an article posted in Environmental Science dated 7/12/14 entitled Arctic Methane Leaks, Facts, and Our Future we know that "methane is worse than dioxide-it is roughly 30 times more potent as a heat-trapped greenhouse gas."

More recently in September 2, 2020 "Ecology's DSSEIS finds 4.6 million metric tons CO2e pollution added to our atmosphere every 40 years."

And in an July 20, 2020 published article in the New Atlas entitled Global Emissions of heat-trapping methane hit record high, "new analysis has revealed that emissions of this particular potent greenhouse gas has now hit record highs with the surge being driven in large part by the burning of fossil fuels and increased agricultural activity."

I've been reading for years of residents in the mid-West losing their fresh water. Watched videos of their water turning to fire when lit with a lighter. Losing valuable water for livestock. This is not something WA wants.

As a born, raised and returned WA resident, I beg of you to think about the long term affects this will have on our state; including, the salmon population in the Columbia River, the 12 million tons of carbon pollution to the atmosphere every year, an increase of our states total fracked fossil-gas use by 38%, the increase in WA started greenhouse gas emissions.

Say no to Methanol in Washington state. We do not need foreign entities to be building and/or taking of Washington's resources. Reject permits for the proposed Kalama Methanol refinery.

Thank you
Amber Martinell

Linda Tippens

Our state should not be used to benefit another county while polluting our environment. If China needs this chemical, let them build their own plant.
Our governor pretends to be for the environment but our sound is polluted by commercial cruise ships and our air from coal trains. Now this!? Please... Do not allow this plant to be built.

Carleen Wolgamott

Cowlitz County and Washington State can do better at creating new jobs than having a plant built which will be one of Washington State's top ten polluters and also a huge global contributor to plastics pollution. Please read the attached NPR article which I saved as NPR Plastic Pollution Little Recycling. The article's title is:"How Big Oil Misled The Public Into Believing Plastic Would Be Recycled.
Thank you, Carleen Wolgamott

How Big Oil Misled The Public Into Believing Plastic Would Be Recycled

NPR

September 11, 20205:00 AM ET

LAURA SULLIVAN
Twitter

Landfill workers bury all plastic except soda bottles and milk jugs at Rogue Disposal & Recycling in southern Oregon.

Laura Sullivan/NPR

Note: An audio version of this story aired on NPR's Planet Money. Listen to the episode here.

Laura Leebrick, a manager at Rogue Disposal & Recycling in southern Oregon, is standing on the end of its landfill watching an avalanche of plastic trash pour out of a semitrailer: containers, bags, packaging, strawberry containers, yogurt cups.

None of this plastic will be turned into new plastic things. All of it is buried.

"To me that felt like it was a betrayal of the public trust," she said. "I had been lying to people ... unwittingly."

Rogue, like most recycling companies, had been sending plastic trash to China, but when China shut its doors two years ago, Leebrick scoured the U.S. for buyers. She could find only someone who wanted white milk jugs. She sends the soda bottles to the state.

But when Leebrick tried to tell people the truth about burying all the other plastic, she says people didn't want to hear it.

"I remember the first meeting where I actually told a city council that it was costing more to recycle than it was to dispose of the same material as garbage," she says, "and it was like heresy had been spoken in the room: You're lying. This is gold. We take the time to clean it, take the labels off, separate it and put it here. It's gold. This is valuable."

But it's not valuable, and it never has been. And what's more, the makers of plastic — the nation's largest oil and gas companies — have known this all along, even as they spent millions of dollars telling the American public the opposite.

In Partnership

This story is part of a joint investigation with the PBS series *Frontline* that includes the documentary *Plastic Wars*, which aired March 31 on PBS. Watch it online now.

NPR and PBS *Frontline* spent months digging into internal industry documents and interviewing top former officials. We found that the industry sold the public on an idea it knew wouldn't work — that the majority of plastic could be, and would be, recycled — all while making billions of dollars selling the world new plastic.

The industry's awareness that recycling wouldn't keep plastic out of landfills and the environment dates to the program's earliest days, we found. "There is serious doubt that [recycling plastic] can ever be made viable on an economic basis," one industry insider wrote in a 1974 speech.

Yet the industry spent millions telling people to recycle, because, as one former top industry insider

told NPR, selling recycling sold plastic, even if it wasn't true.

"If the public thinks that recycling is working, then they are not going to be as concerned about the environment," Larry Thomas, former president of the Society of the Plastics Industry, known today as the Plastics Industry Association and one of the industry's most powerful trade groups in Washington, D.C., told NPR.

In response, industry representative Steve Russell, until recently the vice president of plastics for the trade group the American Chemistry Council, said the industry has never intentionally misled the public about recycling and is committed to ensuring all plastic is recycled.

"The proof is the dramatic amount of investment that is happening right now," Russell said. "I do

understand the skepticism, because it hasn't happened in the past, but I think the pressure, the public commitments and, most important, the availability of technology is going to give us a different outcome."

Here's the basic problem: All used plastic can be turned into new things, but picking it up, sorting it out and melting it down is expensive. Plastic also degrades each time it is reused, meaning it can't be reused more than once or twice.

On the other hand, new plastic is cheap. It's made from oil and gas, and it's almost always less expensive and of better quality to just start fresh.

All of these problems have existed for decades, no matter what new recycling technology or expensive machinery has been developed. In all that time, less than 10 percent of plastic has ever been recycled.

But the public has known little about these difficulties.

It could be because that's not what they were told.

Starting in the 1990s, the public saw an increasing number of commercials and messaging about recycling plastic.

"The bottle may look empty, yet it's anything but trash," says one ad from 1990 showing a plastic bottle bouncing out of a garbage truck. "It's full of potential. ... We've pioneered the country's largest, most comprehensive plastic recycling program to help plastic fill valuable uses and roles."

These commercials carried a distinct message: Plastic is special, and the consumer should recycle it.

It may have sounded like an environmentalist's message, but the ads were paid for by the plastics industry, made up of companies like Exxon, Chevron, Dow, DuPont and their lobbying and trade organizations in Washington.

Industry companies spent tens of millions of dollars on these ads and ran them for years, promoting the benefits of a product that, for the most part, was buried, was burned or, in some cases, wound up in the ocean.

Documents show industry officials knew this reality about recycling plastic as far back as the 1970s.

Many of the industry's old documents are housed in libraries, such as the one on the grounds of the first DuPont family home in Delaware. Others are with universities, where former industry leaders sent

their records.

At Syracuse University, there are boxes of files from a former industry consultant. And inside one of them is a report written in April 1973 by scientists tasked with forecasting possible issues for top industry executives.

Recycling plastic, it told the executives, was unlikely to happen on a broad scale.

"There is no recovery from obsolete products," it says.

It says pointedly: Plastic degrades with each turnover.

"A degradation of resin properties and performance occurs during the initial fabrication, through aging, and in any reclamation process," the report told

executives.

Recycling plastic is "costly," it says, and sorting it, the report concludes, is "infeasible."

And there are more documents, echoing decades of this knowledge, including one analysis from a top official at the industry's most powerful trade group. "The costs of separating plastics ... are high," he tells colleagues, before noting that the cost of using oil to make plastic is so low that recycling plastic waste "can't yet be justified economically."

Larry Thomas, the former president of the Society of the Plastics Industry, worked side by side with top oil and plastics executives.

He's retired now, on the coast of Florida where he likes to bike, and feels conflicted about the time he

worked with the plastics industry.

"I did what the industry wanted me to do, that's for sure," he says. "But my personal views didn't always jibe with the views I had to take as part of my job."

Thomas took over back in the late 1980s, and back then, plastic was in a crisis. There was too much plastic trash. The public was getting upset.

Garten Services, a recycling facility in Oregon, where paper and metals still have markets but most plastic is thrown away. All plastic must first go through a recycling facility like this one, but only a fraction of the plastic produced actually winds up getting recycled.

Laura Sullivan/NPR

In one document from 1989, Thomas calls executives at Exxon, Chevron, Amoco, Dow, DuPont, Procter & Gamble and others to a private meeting at the Ritz-Carlton in Washington.

"The image of plastics is deteriorating at an

alarming rate," he wrote. "We are approaching a point of no return."

He told the executives they needed to act.

The "viability of the industry and the profitability of your company" are at stake.

Thomas remembers now.

"The feeling was the plastics industry was under fire — we got to do what it takes to take the heat off, because we want to continue to make plastic products," he says.

At this time, Thomas had a co-worker named Lew Freeman. He was a vice president of the lobbying group. He remembers many of the meetings like the one in Washington.

"The basic question on the table was, You guys as

our trade association in the plastics industry aren't doing enough — we need to do more," Freeman says. "I remember this is one of those exchanges that sticks with me 35 years later or however long it's been ... and it was what we need to do is ... advertise our way out of it. That was the idea thrown out."

So began the plastics industry's $50 million-a-year ad campaign promoting the benefits of plastic.

"Presenting the possibilities of plastic!" one iconic ad blared, showing kids in bike helmets and plastic bags floating in the air.

"This advertising was motivated first and foremost by legislation and other initiatives that were being introduced in state legislatures and sometimes in Congress," Freeman says, "to ban or curb the use of plastics because of its performance in the waste

stream."

At the same time, the industry launched a number of feel-good projects, telling the public to recycle plastic. It funded sorting machines, recycling centers, nonprofits, even expensive benches outside grocery stores made out of plastic bags.

Few of these projects actually turned much plastic into new things.

NPR tracked down almost a dozen projects the industry publicized starting in 1989. All of them shuttered or failed by the mid-1990s. Mobil's Massachusetts recycling facility lasted three years, for example. Amoco's project to recycle plastic in New York schools lasted two. Dow and Huntsman's highly publicized plan to recycle plastic in national parks made it to seven out of 419 parks before the

companies cut funding.

None of them was able to get past the economics: Making new plastic out of oil is cheaper and easier than making it out of plastic trash.

Both Freeman and Thomas, the head of the lobbying group, say the executives all knew that.

"There was a lot of discussion about how difficult it was to recycle," Thomas remembers. "They knew that the infrastructure wasn't there to really have recycling amount to a whole lot."

Even as the ads played and the projects got underway, Thomas and Freeman say industry officials wanted to get recycling plastic into people's homes and outside on their curbs with blue bins.

The industry created a special group called the

Council for Solid Waste Solutions and brought a man from DuPont, Ron Liesemer, over to run it.

Liesemer's job was to at least try to make recycling work — because there was some hope, he said, however unlikely, that maybe if they could get recycling started, somehow the economics of it all would work itself out.

"I had no staff, but I had money," Liesemer says. "Millions of dollars."

Liesemer took those millions out to Minnesota and other places to start local plastic recycling programs.

But then he ran into the same problem all the industry documents found. Recycling plastic wasn't making economic sense: There were too many different kinds of plastic, hundreds of them, and

they can't be melted down together. They have to be sorted out.

"Yes, it can be done," Liesemer says, "but who's going to pay for it? Because it goes into too many applications, it goes into too many structures that just would not be practical to recycle."

Liesemer says he started as many programs as he could and hoped for the best.

"They were trying to keep their products on the shelves," Liesemer says. "That's what they were focused on. They weren't thinking what lesson should we learn for the next 20 years. No. Solve today's problem."

And Thomas, who led the trade group, says all of these efforts started to have an effect: The message

that plastic could be recycled was sinking in.

"I can only say that after a while, the atmosphere seemed to change," he says. "I don't know whether it was because people thought recycling had solved the problem or whether they were so in love with plastic products that they were willing to overlook the environmental concerns that were mounting up."

But as the industry pushed those public strategies to get past the crisis, officials were also quietly launching a broader plan.

In the early 1990s, at a small recycling facility near San Diego, a man named Coy Smith was one of the first to see the industry's new initiative.

Back then, Smith ran a recycling business. His customers were watching the ads and wanted to

recycle plastic. So Smith allowed people to put two plastic items in their bins: soda bottles and milk jugs. He lost money on them, he says, but the aluminum, paper and steel from his regular business helped offset the costs.

But then, one day, almost overnight, his customers started putting all kinds of plastic in their bins.

"The symbols start showing up on the containers," he explains.

Smith went out to the piles of plastic and started flipping over the containers. All of them were now stamped with the triangle of arrows — known as the international recycling symbol — with a number in the middle. He knew right away what was happening.

"All of a sudden, the consumer is looking at what's

on their soda bottle and they're looking at what's on their yogurt tub, and they say, 'Oh well, they both have a symbol. Oh well, I guess they both go in,' " he says.

Unwanted used plastic sits outside Garten Services, a recycling facility in Oregon.

Laura Sullivan/NPR

The bins were now full of trash he couldn't sell. He called colleagues at recycling facilities all across the country. They reported having the same problem.

Industry documents from this time show that just a couple of years earlier, starting in 1989, oil and plastics executives began a quiet campaign to lobby almost 40 states to mandate that the symbol appear on all plastic — even if there was no way to economically recycle it. Some environmentalists also supported the symbol, thinking it would help

separate plastic.

Smith said what it did was make all plastic look recyclable.

"The consumers were confused," Smith says. "It totally undermined our credibility, undermined what we knew was the truth in our community, not the truth from a lobbying group out of D.C."

But the lobbying group in D.C. knew the truth in Smith's community too. A report given to top officials at the Society of the Plastics Industry in 1993 told them about the problems.

"The code is being misused," it says bluntly. "Companies are using it as a 'green' marketing tool."

The code is creating "unrealistic expectations"

about how much plastic can actually be recycled, it told them.

Smith and his colleagues launched a national protest, started a working group and fought the industry for years to get the symbol removed or changed. They lost.

"We don't have manpower to compete with this," Smith says. "We just don't. Even though we were all dedicated, it still was like, can we keep fighting a battle like this on and on and on from this massive industry that clearly has no end in sight of what they're able to do and willing to do to keep their image the image they want."

"It's pure manipulation of the consumer," he says.

In response, industry officials told NPR that the code was only ever meant to help recycling facilities

sort plastic and was not intended to create any confusion.

Without question, plastic has been critical to the country's success. It's cheap and durable, and it's a chemical marvel.

It's also hugely profitable. The oil industry makes more than $400 billion a year making plastic, and as demand for oil for cars and trucks declines, the industry is telling shareholders that future profits will increasingly come from plastic.

And if there was a sign of this future, it's a brand-new chemical plant that rises from the flat skyline outside Sweeny, Texas. It's so new that it's still shiny, and inside the facility, the concrete is free from stains.

Chevron Phillips Chemical's new $6 billion plastic manufacturing plant

rises from the skyline in Sweeny, Texas. Company officials say they see a bright future for their products as demand for plastic continues to rise.

Laura Sullivan/NPR

This plant is Chevron Phillips Chemical's $6 billion investment in new plastic.

"We see a very bright future for our products," says Jim Becker, the vice president of sustainability for Chevron Phillips, inside a pristine new warehouse next to the plant.

"These are products the world needs and continues to need," he says. "We're very optimistic about future growth."

With that growth, though, comes ever more plastic trash. But Becker says Chevron Phillips has a plan: It will recycle 100% of the plastic it makes by 2040.

Becker seems earnest. He tells a story about vacationing with his wife and being devastated by

the plastic trash they saw. When asked how Chevron Phillips will recycle 100% of the plastic it makes, he doesn't hesitate.

"Recycling has to get more efficient, more economic," he says. "We've got to do a better job, collecting the waste, sorting it. That's going to be a huge effort."

Fix recycling is the industry's message too, says Steve Russell, the industry's recent spokesman.

"Fixing recycling is an imperative, and we've got to get it right," he says. "I understand there is doubt and cynicism. That's going to exist. But check back in. We're there."

Larry Thomas, Lew Freeman and Ron Liesemer, former industry executives, helped oil companies out of the first plastic crisis by getting people to

believe something the industry knew then wasn't true: That most plastic could be and would be recycled.

Russell says this time will be different.

"It didn't get recycled because the system wasn't up to par," he says. "We hadn't invested in the ability to sort it and there hadn't been market signals that companies were willing to buy it, and both of those things exist today."

But plastic today is harder to sort than ever: There are more kinds of plastic, it's cheaper to make plastic out of oil than plastic trash and there is exponentially more of it than 30 years ago.

And during those 30 years, oil and plastic companies made billions of dollars in profit as the

public consumed ever more quantities of plastic.

Russell doesn't dispute that.

"And during that time, our members have invested in developing the technologies that have brought us where we are today," he says. "We are going to be able to make all of our new plastic out of existing municipal solid waste in plastic."

Recently, an industry advocacy group funded by the nation's largest oil and plastic companies launched its most expensive effort yet to promote recycling and cleanup of plastic waste. There's even a new ad.

New plastic bottles come off the line at a plastic manufacturing facility in Maryland. Plastic production is expected to triple by 2050.

Laura Sullivan/NPR

"We have the people that can change the world," it says to soaring music as people pick up plastic trash

and as bottles get sorted in a recycling center.

Freeman, the former industry official, recently watched the ad.

"Déjà vu all over again," he says as the ad finishes. "This is the same kind of thinking that ran in the '90s. I don't think this kind of advertising is, is helpful at all."

Larry Thomas said the same.

"I don't think anything has changed," Thomas says. "Sounds exactly the same."

These days as Thomas bikes down by the beach, he says he spends a lot of time thinking about the oceans and what will happen to them in 20 or 50 years, long after he is gone.

And as he thinks back to those years he spent in

conference rooms with top executives from oil and plastic companies, what occurs to him now is something he says maybe should have been obvious all along.

He says what he saw was an industry that didn't want recycling to work. Because if the job is to sell as much oil as you possibly can, any amount of recycled plastic is competition.

"You know, they were not interested in putting any real money or effort into recycling because they wanted to sell virgin material," Thomas says. "Nobody that is producing a virgin product wants something to come along that is going to replace it. Produce more virgin material — that's their business."

And they are. Analysts now expect plastic

production to triple by 2050.

Cat Schuknecht contributed to this report.

george shipley

I would like to go on record as opposing the Chinese proposal to build a methane producing and shipping complex near Kalama. The Chinese have no intention of mitigating any violations of air quality or trucking overload to the freeway system. Please vote to quash any further consideration of this methane transfer station.
George Shipley

Ann Littlewood

Northwest Innovations says the purpose of this project is to create methanol to ship to China to make plastic. I believe this article from NPR about recycling plastic is relevant.
https://www.opb.org/article/2020/09/11/how-big-oil-misled-the-public-into-believing-plastic-would-be-recycled/?clid=ec36f95c-48a8-4699-9246-5c7cf195ed81&rpcid=92307526&exid=19072

Cass Martinez

I live in the county across the river from the proposed facility. If The Kalama facility is permitted, it will have the unfortunate effect of making a second or third Northwest Innovation Works facility, as already proposed, more likely on our Oregon side, at Port Westward. Please consider then that a positive decision may cause two to three times more pollution, two to three times more over-withdrawal of river water. Secondly, the contract(s) involved, between the country of China and the small US port district(s), are between two very unequal parties, and the future consequences of such inequality are not being discussed, or even visualized. Our counties, even our states, do not have the wherewithal to contest future NWIW misbehavior and have a chance of prevailing at law.

Blaine Ackley

To whom it may concern,

Please do not approve the permits to complete the Kalama Methanol Refinery. We are at an urgent time in history to create earth friendly resources and methanol is not the answer.

We are currently seeing the results of climate change as we watch the entire West coast burn from wildfires. These wildfires are affecting every human being around the world. It's time for us to invest in resources that prolong the human race. We need to look beyond monetary goals and look at sustainable energy.

According to the Scientific American article Study Revised Estimate of Methane Leaks from US fracking fields published In 2013 "significant leaks of heat-trapping methane from natural gas production sites would erase any climate advantage the fuel offers".

Furthermore according to an article posted in Environmental Science dated 7/12/14 entitled Arctic Methane Leaks, Facts, and Our Future we know that "methane is worse than dioxide-it is roughly 30 times more potent as a heat-trapped greenhouse gas."

More recently in September 2, 2020 "Ecology's DSSEIS finds 4.6 million metric tons CO2e pollution added to our atmosphere every 40 years."

And in an July 20, 2020 published article in the New Atlas entitled Global Emissions of heat-trapping methane hit record high, "new analysis has revealed that emissions of this particular potent greenhouse gas has now hit record highs with the surge being driven in large part by the burning of fossil fuels and increased agricultural activity."

I've been reading for years of residents in the mid-West losing their fresh water. Watched videos of their water turning to fire when lit with a lighter. Losing valuable water for livestock. This is not something WA wants.

I beg of you to think about the long term affects this will have on our state; including, the salmon population in the Columbia River, the 12 million tons of carbon pollution to the atmosphere every year, an increase of our states total fracked fossil-gas use by 38%, the increase in WA started greenhouse gas emissions.

Say no to Methanol in Washington state. We do not need foreign entities to be building and/or taking of Washington's resources. Reject permits for the proposed Kalama Methanol refinery.

Thank you,
Blaine Ackley

Alexa Fay

The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years. Ecology should deny the Shorelines permit for the refinery. The SEIS relies on a flawed, speculative analysis to argue that methanol could "displace" dirtier energy. The SEIS speculates on how methanol may compare with future, unsure, alternate sources of pollution in overseas markets. The SEIS makes a false and erroneous comparison with potential future other sources of methanol or olefin production. Rather than engaging in this speculation, Ecology should focus on the real-world, known pollution that will come from the facility rather than NWIW's dubious "displacement" argument.

Amanda Doimas

I moved to the Pacific NW 20 years ago to get away from a state (AZ) that continues to engage in destructive mining practices and neglect its precious water sources. Please do not allow this to happen here. We have been enduring horrific wildfires without introducing extremely flammable materials near our forests and water. I worry for our rivers and our impending earthquake future. Portland, my home, is not just upriver it is also downriver on the tidal Willamette.

Mike Pence

Hi Community!

Have you seen the destruction of Life and utter loss of billions of dollars of tourism, quality of Life for future generations in the Gulf Of Mexico? Have you?!?!?!?
If not, check out our Cascadia in the near future.
Then make the correct decision!
Thanks a bunch!
Mike

Thomas Gordon

If the proposed Kalama Methanol Refinery is built, a storage tank rupture would release a huge amount of greenhouse gases.

The proposed Kalama Methanol refinery is scheduled to be built with faults and suspected faults nearby, subject to earthquakes.

"In 1978, a major geological fault line was discovered running through the Trojan site, (0.6 mile away from Kalama), creating the specter of an earthquake that could trigger a nuclear disaster." This is from the Oregon Encyclopedia. This fault was one of the major reasons the Trojan nuclear reactor was shut down and then torn down. However, spent nuclear fuel rods are still stored close by, a present danger in the event of an earthquake. The proposed methanol refinery with storage tanks, only 0.6 mile away, could rupture an earthquake also.

The proposed Kalama methanol refinery would be built on fill material that is rated as highly susceptible to liquefaction and thus suffer higher damage from an earthquake. The Kalama area has at least one fault as shown by a 1.8 magnitude earthquake on April 13, 2020, 0.2 km from Kalama. This earthquake was at a depth of 0 km. A strong surface earthquake can cause more damage than one at depth. While this was a relatively weak earthquake, a major fault could be here with the potential for a stronger, damaging earthquake in the future.

A major earthquake could rupture methanol storage tanks with faults relatively close to the surface where the plant would be built. The release of the stored methanol could be catastrophic, especially if ignited by a spark from downed power lines. A huge amount of pollution and green house gases would subsequently be released.

The proposed Kalama methanol refinery, if it exploded, would pose a grave risk to the town of Kalama and add to the pollution and CO2 for our planet. This refinery should not be built.

Rebecca Nimmons

We must move away from fossil fuels and move to green energy, for our very survival is at stake! Climate change is real and we must face it head on or go down in flames. Going down in flames doesn't sound like the best option.

Brenda McCool

Please, for the love of god no fracking in Kalama

Carol Olivier

This is a disastrous environmental project. Fracking is a horribly dirty polluting industry-horrible for the environment. 1. Increases earthquakes (reference Oklahoma) 2. Poisons underground water and wells (reference Pennsylvania) 3. Increases methane in the atmosphere that will exponentially hasten climate change (yes it is happening, do not deny-witness superstorms in this country as well as world, massive unprecedented fires) 4. Our first people's oppose due to all these reasons and 5. Our own puget sound and wildlife are dying-the last thing everything needs is increased shipping, increased risks of spills, noises to kill our orcas, acidification killing fish....there needs to be leadership in supporting existing new technologies distinct from the fossil fuel industry which is killing the earth and any chances of a future for younger generations.

Kathleen Laney

Please do not approve any permit for this facility. Methanol is toxic and dangerous. It takes only a small amount to blind and kill. The accidents-and there's always accidents because these facilities are run by human beings- would be horrific with the potential deaths of both people, animals, birds and wildlife. It is not enough to "trust" the plants' operators to "Mitigate". It cannot replace what it will potentially destroy. We do not need this plant, and the risk it poses is not worth the potential profit. In addition, the greenhouse gases that it puts into the atmosphere-some million tons-is unacceptable. It flies in the face of every credible study on climate change that I have ever read. We need to put less greenhouse gases in the atmosphere, not more. This is accepted science. Please consider what you are putting at risk. Please do not allow this facility to operate.
Thank you
Kathleen Laney

Carole Glickfeld

This is a danger and an insult to the people of Washington State. It has been clearly demonstrated that fracking causes earthquakes. US States that have had fracking and never experienced earthquakes are now getting them by the many dozens. Additionally the consequences of this project pose major health hazards to people who want to breathe clean air and drink clean water. THIS PROJECT SHOULD BE TOTALLY ABANDONED NOW.

Anonymous Anonymous

Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama!

Washington State should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama, WA.

The project would use more fracked gas than all of Washington's power plants, combined. The company has sought to mislead regulators and the public about the purpose and impact of the refinery, falsely claiming that the project will displace "dirtier" forms of fossil fuels. We know that fracked gas is a potent greenhouse gas pollutant, and we are counting on Ecology to accurately account for the project's upstream emissions as well as the downstream pollution from the likely combustion of NWIW's methanol for fuel.

For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. We are counting on you to stop this dirty and dangerous project.

Ken White

As a resident in Kalama, I have concerns over the true environmental impact of this plant. I see very little information on the increase ship and car traffic that would also come with this construction nor do I see it having a true long term benefit by producing product that will continue to polite the environment for years to come. The plant is bad enough, it's products are even worse.

Rose Rohrer

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

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Jody Gibson

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Daniel Brant

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Batya Harlow

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Michele Campbell

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Hans Purdom

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Jessica Mangrum

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Rex Miller

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Caroline Sévilla

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Beverly Rice

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When all the trees and animals are dead and all the air, land and water polluted you will then

realize you and your progeny can't eat money.....

Elli Harron

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In times of an oil glut, decreased exploration and US the leading oil producer; why would we need

increased capacity to make a gasoline additive? We should be moving away from fossil fuels and toward more sustainable (solar, wind & continued hydro) infrastructure.

Berl Nussbaum

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PATRICIA SIMON

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Diane Basile

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sandra garcia

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Richard Hernandez

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margie maddux

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Edward Kaeufer

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Nichole Titchenal

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Liz Parker

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Marilyn Spivey

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john zey

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margaret hazard

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Gale Espinosa

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Cynthia Kreitz

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melodie martin

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Andrew Underwood

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Jennifer Grace

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Andrea burke

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It is quite clear that the mitigation procedures are totally inadequate and vague. Too much is left open to being ignored. This project is harmful to the State Washington and harmful to the world at large. Climate change is happening whether we think it is or not. Science is clear here.

This project will enhance and amplify the climate change already happening. It will cause far more harm overall than any good. It is not a safe project. This State has goals for a safer, more healthy future. This is not it.

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Margaret Woll

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erik johnson

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Hannah Alex-Glasser

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Katherine Kozisek

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Stephanie Colony

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Mark Counts

Are we, the citizens of Cowlitz County to believe that the world's largest methanol plant is in any way a long term benefit to the environment?

Driven by the intrusive monetary agendas tied to those of a hostile foreign country, this proposed industry will only serve to drive yet another large nail into the coffin lid of Earth's steadily worsening ecosystem.

Our ancestors would exhibit shock and outrage, as this situation should for any rational thinking person, at the threat this enterprise represents to future generations. I am disheartened to be living in a world that values greed and ignorance over stewardship and wisdom.

Rod Tharp

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Beth Levin

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To continue to utilize fracked gas reserves in this way will continue to negatively impact our climate, as evidenced by the number and destruction of wild fires this summer. It's far past time to focus our efforts in more sustainable directions. They are known and should be supported. not more of the same...

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Richard Curtis

Washington State and the northwest part of our nation are known for clean air and water. Lately our air quality has been destroyed by smoke from fires that are the result of record temperatures and drought. As our climate continues to change we must not add pollution from a gas to methanol refinery to also foul the clean air essential to our survival.

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Samantha Orszulak

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Sharon Hurley

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Merlin Wilson

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mary kerfoot

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Dominica Lord-Wood

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mia heavyrunner

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April Atwood

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Javier Rivera-Diaz

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Elizabeth Grant

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Robert Williamson

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Maureen Porcelli

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Sandra Gehri-Bergman

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Francesca Ritson

The Kalama methanol producing plant is a bad idea for a vulnerable site to environmental pollution. The premise, that it should be considered to do less environmental harm as the plant will be built somewhere else, is specious and just wrong. There are no good reasons to allow this plant to be built, - only bad reasons:, encouraging fracking, encouraging pollution and health risks, potential for fouling the Columbia, producing a product to produce an environmental pollutant and hazard.

Washington is starting to be a leader on climate change mitigation, this plant would definitely be a step in the wrong direction.

Joan Bowers

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Michele Reynolds

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Dawn Aiken

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Inger Acking

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We need to move away from fossil fuels. This plant will only add pollution and is not necessary. Please do not approve this plant.

Russell Maier

As a physician, I oppose this plant for three reasons:

1) Climate change has a direct effect on the health of the public, and this plant, along with the transportation of its raw materials and product will produce greenhouse gas emissions for the next 40 years. This is inconsistent with the state's efforts to reduce greenhouse gases.

2) The future is not more carbon based fuel. As our state demonstrates, solar, wind, and hydropower can provide the power needed for the future. The SEIS argument relies on a future that reflects the past. Given that renewables are rapidly replacing carbon based fuels it is speculative, not fact based, to argue that one fossil based fuel would 'displace' other fossil based fuels.

3) We live in the same world. Even if methanol fuel is exported, those carbon emissions will contribute to global warming. Do we want to be the state where we export our products to damage others? I think not.

Gordon Wheat

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

As a longtime resident of Washington, as a physician with a public health background and as a citizen of the world, I need to add my comments on the proposed Kalama Manufacturing and Marine Export Facility.

As a member of the Washington Academy of Family Physicians Public Health Committee, I am very concerned about the air and water discharges that would result from this refinery. The Columbia River Aquifer is very sensitive and could be irreparably damaged.

The proposed methanol refinery would lead to millions of tons of greenhouse gas pollution each year, and once built it could not be shut down for the life of the refinery, some 30-40 years. Ecology's own analysis shows that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.

In 2018 and 2019, NWIW informed potential investors that methanol from the planned refinery could be burned as fuel overseas, in sharp contrast to claims NWIW made to local and state regulators that the methanol would only be used to manufacture plastic. Now, Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year.

Washington State needs to take a stand and not make a commitment to the fossil fuel industry to allow the industry to use our land and our shoreline to ship methanol overseas under long term contracts.

The risk to our environment in Washington from potential leaks and discharge from the plant damaging our fragile Columbia River Shoreline is not acceptable. Ecology should deny the Shorelines permit for the refinery.

Why should Washington State take the risks to our environment and the health of our population for a small number of jobs, only to provide fuel for pollution in China and elsewhere. The voters of the state of Washington should say that we are not going to sacrifice our health and our environment to further the destruction of our planet. We are seeing the early effects of climate change now, and the effects will be exponentially worse in 10-20 years, but the plant once built will be irreversible.

Please let the voices of reason from the citizens of this state be heard before finalizing the Second Supplemental EIS.

Sincerely,

Gordon Wheat MD
WAFP Public Health Committee
Washington State Department of Health One Health Taskforce and Workgroup

Laura Finkelstein

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Kara Harms

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Deborah Hagen-Lukens

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Lauri Lindquist

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Diane Sullivan

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Agnieszka Beletsky

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Sergey Ulanov

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Alex Bennett

With all the fires this season, it is obvious we must work towards a greener Washington. I care deeply about our state and it's natural resources. Climate change is a clear and present threat. Please take action to reverse climate change by opposing this facility.

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Breana Driscoll

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Judith Cohen

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Teresia LaFleur

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Rae Newman

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Chris Knutson

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Kirk Leonard

The Kalama methanol refinery would be one of the top polluters in Washington State. The SSEIS analysis estimates the Kalama Manufacturing and Marine Export facility would produce 4.6 million tons of carbon pollution each year. This level of pollution is inconsistent with achieving Washington State's climate goals.

We the people in this state depend on these resources, not to be used for producing plastics or fuel for China.

I oppose this project, please deny the permit.

Jim Haley

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Ursula Trimble

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Sharon Fox

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Celeste Watt

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Janalee Roy

I already fear that my two children--both in their mid-thirties--will not live to see their natural deaths, as they will die from the effects of climate change much sooner than their "4 score and 10." Even I--a 69-year-old woman--will likely die from fires, flooding, unbreathable air, undrinkable water, or further climate-change-caused pandemics rather than from natural causes. ANY further polluting projects are NOT necessary and need to be canceled and replaced with clean energy projects. Get out of the dark ages!!!
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Ken mincin

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Jerry Banks

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Diann Sheldon

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Thank you for your time and attention.

marta cramer

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MaryJo Wilkins

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Kristy Knickrehm

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Jennifer Pletcher

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Carol Boudreau

I live on the Columbia River downstream from Kalama and believe that what happens there will not stay there. I am writing to ask you To DENY the shoreline conditional use permit for NW Innovation Works gas to methanol plant and reject the refinery. Washington does not need another major polluter. The idea that it will actually reduce carbon emissions on a world-wide scale is absurd. Once the methanol leaves Kalama, there really is no way that Washington can control the pollution caused anywhere else by its production, storage, transport and final use. According to Riverkeeper, "NWIW identifies no specific projects or measures that will address the enormous greenhouse gas pollution impact of the proposed refinery." The Dept. of Ecology did not require NWIW to disclose their specific plans for pollution mitigation and thus should not approve this project.

Valerie Mehring

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Jackie Stolfi

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David Arntson

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Sandra Perkins

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Daniela Birch

I oppose the construction of the Kalama Manufacturing and Marine Export Facility. The consensus on the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate.

Abigail Houghton

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debbie thorn

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Brita Mjos

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This, like numerous other issues (climate change, food labeling, gun safety, immigration reform,

prison reform, education reform, short-term lending regulation, healthcare reform, banking regulation, opioid regulation) remains a vexing problem primarily due to corporations' ability to curry favor with elected officials. The corrupting influence of money in our political system is undermining our democratic traditions and discouraging Americans from voting and/or running for office. This ominous development may well end our experiment in representative democracy unless we alter this decades-long trend. For the sake of the republic, we must amend the US Constitution to state that corporations are not people (and do not have constitutional rights) and money is not speech (and thus can be regulated by state and/or federal campaign finance laws). Short of accomplishing this, no other reform of significance will be achieved. The moneyed interests will turn any reform to their benefit, often at the expense of the nation as a whole.

Andrew Jackson

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Dr Demian

Hi:

The previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington was inaccurate and inadequate.

The new Draft Supplemental Environmental Impact Statement has some important improvements, the methane leakage rates continue to be low estimates given the widespread underreporting of leaks.

Despite these marginal improvements, it's dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades.

Further, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the largest sources of climate pollution in Washington.

Ecology should dismiss the speculative basis that this project could displace even more polluting facilities. Instead, it should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project, that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

Washington MUST DENY NWIWs proposal to build and operate this dangerous methanol refinery in Kalama.

Thank you.
Dr. Demian

R McClain

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Nancy Lewis

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Adele Reynolds

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Joan Smith

I oppose the building of a new mega plant at the Kalama Manufacturing and Marine Facility to manufacture fractured methane gases. This type of plant is only leading us in a backward direction and increases the pressures of climate change. Can you find a way to consider a green facility that instead adds positively to the electrical grid with wind, solar or tidal energy? Sustain life on earth with a better choice! Thank you! Joan Smith

Margaret Weant-Leavitt

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John Flynn

We are currently in the midst of a global pandemic, catastrophic wildfires in the western states, global warming, ocean warming, ocean acidification and sea level rise.
On top of all these global and national emergencies we are contemplating permitting a petrochemical refinery in Kalama, WA to add 4.6 million metric tons of greenhouse gas emissions per year to further intensify our climate crisis. In addition to the greenhouse gas emissions this refinery will also add 53 tons of toxic and hazardous chemical pollutants and 62 tons of fine particulate matter annually into our air.
Any short term economic gain construction and operation of this methanol refinery is not worth the long term damage this proposed project would have on our environment and health.
The pros and cons of this proposed project have been debated for years. In the final analysis we should base our decisions on facts, not on speculative analysis and unfounded, unproven assumptions.
Department of Ecology should not lock us into 40 years of greenhouse gas emissions and toxic air pollutants.
Just Say No!

Jamie Caya

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Dorothy Jones

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David Stetler

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Teri Wikowsky

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Patti Harter

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Susan Renhard

I oppose construction of the Kalama Manufacturing and Marine Export facility. Consensus of the world's scientists is that to prevent the world's climate from becoming worse we need to reduce greenhouse gas emissions to zero in less than ten years. We need to begin immediately for the sake of future generations. Building a new facility that will contribute huge amounts of greenhouse gasses to the atmosphere and will only further destabilize our climate and prove disastrous for our children and grandchildren.

Larry Lawton

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Susan Hanson

Stop the Kalama Project. No Methanol Refinery near the beautiful Columbia River!


NO
methanol
refinery
CleanAirKalama.com

Carol Smith

As a Washington born resident I am very aware of the losses to our environment and changes to our flora and fauna over my almost 70 years. Now I am concerned by all projects such as the Methanlol Facility proposed for Kalama that adversely affect our world. I appreciate your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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michelle gonzaqles

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CARMEN Minor

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Robin Lorentzen

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HEINKE CLARK

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Miguel de Campos

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Maria Aragon

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Mark Grzegorzewski

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Tamara Saarinen

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Charles Breslin

As a former resident of NE Pennsylvania, I've seen first hand the land destruction, and desecration of drinking water that comes with fracking for natural gas, we do want this in the PNW, we value nature, we value renewables, we value the climate, and we value our neighbors. This would be a devastating blow to the region and to climate change prevention overall and I personally will not stand for it.

Eleanor Dubois

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Dixie Edwards

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Jill wollman

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MaryAnn Schwab

As a matter of law, all of our rivers belong to the U.S. Government and the aboriginal treaty rights are sacrosanct.

This was established in the 1950s litigation concerning the Pelton and Round Butte dams on the Deschutes.

WATER -- THE GIVER OF LIFE
"We each have a duty to the land in which we live.
We have all come from the earth. On death we return back to the ground.
And in the cycle of life, everything that is born always is connected with water,
Water is the giver of life." -- Pierson Mitchell, Washat Religious Leader

As Oregonians and Washingtonians we must continue to honor and respect the Treaty of 1855. We must work to protect the iconic salmon migrations.

Nova Berkshires

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wanda unger

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Julieann Palumbo

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MARILYN BOYD

I am adamantly opposed to the Kalama Methanol facility!

We are in a CLIMATE EMERGENCY! Adding fuel to the fire by approving a methane burning plant in Kalama, is beyond reckless and dangerous...it is deadly.
My family suffers from asthma, which is exacerbated by air pollution and unseen gasses. We have already had too many trips to the ER.

Ecology's analysis demonstrated that this methane project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.
Why should we allow a Chinese government owned company to further damage our own fragile air and water resources? The infrastructure to support this facility is not limited to Kalama. It's negative impacts from fracking and transport would further damage many vulnerable communities across the region and current guidelines are poor for leak monitoring, detection and reporting.

Please keep our health and children's future in mind as you weigh your decision.
I reiterate...I am adamantly opposed to the Kalama Methanol facility!

"Let us be the ancestors our descendants will thank" ~ Winona LaDuke

With Utmost Sincerity,

Marilyn Boyd
10535 Victory Lane NE
Seattle WA 98125

marilyn.a.boyd@gmail.com

Jennifer Mazuca

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Arvia Morris

Thank you for your work looking into the previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington and acknowledging that it was inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement
confirms that the Methanol refinery would produce enormous amounts of green house gas (GHG) pollution. Washington state has recently adopted GHG pollution goals and we can not build projects and use our precious Columbia River water front and water to continue to pollute our environment to the detriment of Washingtonians.

The new study does have important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise.
We need to stop using all fossil fuels in transportation and move to electrification of transportation.
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Damon Mills

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Jeff Ramsden

The fragile ecosystem we all share does not need more threats and potential destruction. Would love for my kids and my kids' kids to have some semblance of the earth that we grew up with. Please stop this madness of valuing money over the well-being of future generations.

Jeanne Crevier

I oppose the construction of the Kalama Manufacturing and Marine Export Facility. What problem is this proposal intended to solve? Is this the best you could do?

The consensus on the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate.

Ruth Hooper

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Lynette Rynders

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Lyn Meyerding

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Denee Scribner

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Bridgett Heinly

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Ariannah de Avalon

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Kathy Sugarman

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Clary Douwes

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Bruce Shilling

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Carla Morin

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Ashley Lindell

I am a family medicine physician, mother of two children and long-time resident of Washington State. I am deeply concerned about Northwest Innovation Works' proposal to develop and operate a natural gas to methanol production plant and refinery in Kalama Washington. It is well established that fracking causes water pollution and habitat loss and increases earthquake risks. Natural gas pipelines carry inherent risks for leaks and spills. The operation of the facility itself would pollute the Columbia River and decrease air quality. And, perhaps most importantly, this project would lead to greenhouse gas emissions at multiple steps from escape of gases at natural gas wells to the burning of methanol abroad. As demonstrated by the devastating fire season here in the West, climate change is a public health emergency. I call on the Department of Ecology to do the right thing and reject NW Innovation Works' proposal and deny the Shoreline Permit. We owe it to our children to focus on truly sustainable options of energy production. This is not one of them.

Michael Pinc

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carolyn massey

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Carlo Voli

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Joseph Stenger

To the Department of Ecology,

I appreciate the opportunity to submit comments regarding the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS. As a grandparent, a family doctor, and a very concerned citizen, I am firmly opposed to this project.

The arguments put forth in the EIS in favor of this project justify the environmental impact by presuming that the products of this project would prevent more severe fossil fuel pollution. In fact, this project would accelerate generation of fracked gas, causing much more climate-damaging pollution than at present. Despite the presumptive calculations in the EIS, there is no possible plausible justification for building a large plant to process fracked gas with the excuse that this will improve our environment. The arguments do not meet the believability standard. The climate is worsening rapidly due to fossil fuel extraction and burning- we cannot afford more of the same! Reassurance that the methanol will be used in plastic production rather than energy production is not credible. Once the plant was built, the managing corporation would act based on maximizing profit, regardless of their currently stated intentions.

Fracking has had calamitous effects on the regions of production. The practice has been damaging to the water and air, as well as associated with earthquakes. While the Department of Ecology focuses on effects in WA, the proposed project would contribute to further fracking efforts and significant environmental damage in those regions. A project built here that creates more damage there is still a terrible project.

We are living in a era of rapidly worsening climate instability. We have just lived through the worse air on record in the region due to unprecedented wildfires. Our forests are drier than they've ever been. We are seeing another catastrophic hurricane season. We are seeing fires in the Arctic, for God's sake! The polar regions are deteriorating more rapidly than scientists have predicted. We are in a crisis- we cannot afford to have more climate-destroying pollutants released into our air. Our air is a commodity owned by all of us. That cannot be further damaged to provide more profits to corporations.

We absolutely urgently need to be reducing use of fossil fuels like fracked gas and rapidly shifting to fully renewable production of energy. We also cannot afford further production of methane for plastic production. Every country, including the United States and China, must quickly reduce the extraction of these dangerous substances. Elegant but specious arguments about how this project with actually reduce GHGs are not tenable.

I live in Portland OR, 37 miles away. I care deeply about the health of our region. I will join many others in active opposition to construction of this plant if it were approved. I plead with you to uphold your obligation to protect the ecology of our region and to preserve some shred of a healthy environment for all of our children and grandchildren. You hold the power- do not let this monstrosity be approved.

Thank you for reading my comments. Please take them to heart and act appropriately.

Mark Bradley

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Paul Desjardins

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RANDY FAIRBANKS

Please stop this project. It will contribute to global warming.

Diane Weinstein

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Brian Bogart

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Robert Haslag

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Virginia Casillas

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Pamela Kane

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Vicki Elledge

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Julia Winchell

I can't believe that, in the wake of the horrible wildfires that just destroyed so many acres of forest in the Pacific NW, this methanol plant would seem like a good idea to anyone. Please deny this project from moving forward.

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Amy Aspell

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Marilyn Shepherd

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Jessica Fischer

No Methanol Plant! I live in and love the beautiful city of Kalama. My family loves this beautiful area and we fish for salmon on the pristine Kalama River. We don't want this destruction of our river and salmon habitat. The river will be impacted. Tacoma didn't allow this project and we do not want it here either. This will bring our property values down and will be an eyesore at the port. Only China benefits from this. We just get the pollution. 200 jobs will not be local. They're saying maybe 20% of the jobs may be local. They have already applied for visas for the rest.

Barbara Sim

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William Viertel

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Linda Ferland

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Jean Schwinberg

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priscilla martinez

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Shaun Hubbard

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Randal Friedman

Aside from all the substantive impacts to Washington State's climate change program that others describe in depth and I agree with, this project would disrupt an emerging effort in Clark County to support development incorporating high levels of sustainability. This effort started with the proposed new HP 3D printing campus in East Vancouver.

A large group of stakeholders came together to not oppose this massive development, rather asking this development serve as the showcase for Clark County and SW Washington. They suggest clean technology is how we get beyond fossil-fuels. This new direction can create jobs directly, and indirectly through all the green services it would support.

The future of Clark County and SW Washington must be a sustainable path bringing new prosperity and leadership. This project would negate positive collaboration in ifs infancy.

The Department of Ecology must deny this project not just for all then significant impacts others have described, but also because it is the opposite direction Washington State must travel to meet its climate obligations. It's time for a new chapter in Clark County.

Mark or Uhart

I was disappointed the Second Supplemental Environmental Impact Statement (SSEIS) prepared for the proposed Kalama methanol plant didn't provide updated information on the potential effects the 4.6 million metric tons (MMT) per year would have on climate change and the survivability of Pacific NW shellfish, salmon and steelhead. The SSEIS references the U.S. Geological Survey (USGS) National Climate Change Viewer (NCCV) and states it "contains historical and future climate projections at county levels for the US. The viewer indicates that, in Cowlitz County, minimum temperatures are likely to rise and that both increases and decreases in precipitation may occur, depending on other variables."

What it didn't say, but was in the Final Supplemental EIS (FSEIS), was that the "Cowlitz County minimum temperatures are likely to rise by 3.8 to 4.3 degrees F and maximum temperatures by 4 to 5.4 F degrees by 2040." (See FSEIS Section 3.2.2 ◆ Greenhouse gases and climate change.) I checked the NCCV for Cowlitz County and the mean yearly temperature is expected to increase 5 degrees F by 2040. Juvenile salmonids released into the Columbia River, and adult salmon in the ocean, will not survive if water temperatures get much warmer, and it will with an increase of 5 degrees in ambient temperature.

Section 3.2 of the SSEIS also downplayed the effects of GHGs on climate change by stating, "Thus, equivalent GHG emissions originating from the proposed project would have the same effect as those from any other location (and vice versa). It is not meaningful to link a specific climate change directly to a specific emissions source." That's like saying they don't believe in climate change, because one huge hurricane hitting the Gulf Coast, or uncontrollable forest fires over a uniquely hot and dry summer in Western states in 2020, or a heavy snowstorm in Colorado in early September, don't in themselves prove climate change will impact Washington. We've heard this argument from the anthropogenic climate change deniers many times, but the IPCC (which was referenced in the same section), makes it clear that these GHGs will accelerate climate change. The above statement is also like saying it is not meaningful to link an infectious disease like COVID-19 to death rates on the other side of the world. The actions we take in the US, with respect to GHG emissions, will effect climatological changes in China, and vice versa. Air within the lower troposphere knows no boundaries.

In the FSEIS, "Table 2-1. Permits and Authorizations Required for the Proposed Project," with NOAA as the Agency and NEPA as the Permit/Authorization, it stated that there was a finding by NOAA of "No Significant Impact" in their assessment issued 10/24/2016. This is not a true statement.

The Portland office of the National Marine Fisheries Service (NMFS), subordinate to NOAA, rendered a biological opinion pursuant to section 7(a) (2) of the Endangered Species Act (ESA) on the effects of the proposal by the U.S. Army COE of Engineers (COE) in order to issue permits to the Port of Kalama for the construction of the KMMEF and lateral pipeline. It also included an essential fish habitat (EFH) consultation for the proposed methanol plant. The biological opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation listed 28 Endangered Species Act (ESA) threatened or endangered species within the

Action Area.

NOTE: "Action area" means all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 C.F.R. § 402.02) The Action Area includes the interrelated and interdependent activities related to methanol transport, and includes not only the KMMEF and lateral pipeline, but also extends downstream through the Columbia River navigation channel and into the Pacific Ocean where effects from ship traffic will occur.)

The NMFS non-concurred with the COE's 10/9/15 biological assessment (BA) report by stating, "In that letter, the COE concluded that the proposed action is not likely to adversely affect (NLAA) LCR Chinook salmon, UWR Chinook salmon, UCR spring-run Chinook salmon, SR spring/summer-run Chinook salmon, SR fall-run Chinook salmon, Columbia River chum salmon, LCR coho salmon, SR sockeye salmon, LCR steelhead (O. mykiss), UWR steelhead, MCR steelhead, UCR steelhead, SRB steelhead, and southern distinct population of eulachon. The COE also concluded that the proposed action is NLAA Snake River (SR) sockeye salmon (O. nerka), southern distinct population of eulachon and southern distinct population of green sturgeon (Acipenser medirostris), (hereafter referred to as green sturgeon). However, the NMFS non-concurred with DOE's BA report and stated, "Due to the short- and long-term indirect impacts caused by the proposed project, NMFS does not concur with the COE's determination that the proposed action is NLAA for most species. ... We also concur that the proposed action will adversely affect critical habitat for any of these species (emphasis added.)"

It should be noted that although NMFS participated in pre-application meetings with NWIW, the Port of Kalama, many state departments, and other governing stakeholders, the COE was not part of these meetings/discussions until 3/16/16, at which time the Corps informed NMFS that the DOE would be a cooperating agency on the project. Many meetings with these stakeholders followed between 10/21/15 and 9/27/17, collaborating on mitigation efforts, water quality and dredging, dredge disposal, outfall design and temperature discharge, ballast water and chemical constituents in the outfall discharge, and other concerns. This author cannot find any discussion among these stakeholders on mitigating GHGs, or the project's long-term effect on climate change. This is anomalous considering NMFS's non-concurrence with the DOE BA, whereas NMFS determined that the project was "likely to adversely affect" 19 of the 24 ESA-listed threatened or endangered species and their habitat.

It appears that many of the KMMEF construction-related effects can be mitigated through "Reasonable and Prudent Measures" and by following the proposed "Conservation Recommendations." But good governance requires methods of compliance and without surveillance and inspections during the two year construction period, by a non-biased environmental engineer, and oversight by Ecology, what assurance is there that these prudent measures and recommendations will be followed?

The greater concern is the long-term effects of 40-years of GHG emissions, which was the NMFS's primary reason for non-concurrence with the COE's BA. Ecology must take note that this facility will be responsible for a whopping 185 MMTs of unmitigated GHGs. The only acceptable mitigation would be to sequester 100% of the GHGs for which this facility will be responsible, from natural gas extraction to the burning of the methanol as a fuel, not just the in-state GHGs as proposed in the VMF. Ecology's decision will impact Washington and our iconic fisheries for not

just the next 40 years, but for as long as humans exist on earth.

Linda Ferland

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Susanne Groenendaal

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Patrice Wallace

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Ji-Young Kim

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Roberta Czarnecki

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Sue Schnaidt

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Susan Haywood

Transporting LNG to Kalama is a risky busiiness. Particularly during wildfire season, as the volatility of the gas means that it leaks in both tank cars and pipelines. We do not need to fuel the fires that are already exacerbated by climate change. We should not frack landscapes, flare off methane, and pollute air, soil, and water, in order to produce this volatile gas. Fossil fuels are no longer viable. They are currently a glut on the market.

Fracking is the dirtiest, most harmful oil production in the world. It is in our best interest as humans to stop production and transportation of LNG and methane/methanol. The methanol facility should not be built in Kalama; we need to preserve wilderness and habitat, not build a polluting operation that is going to turn the area's livable community into a dangerous and unhealthy environment.

We are at a crucial time in history. Short-term profits that cause pollution and degradation of the environment are also causing long-term health effects. Short-term profits don't cover the long-term human costs.

Deny permits to move forward with this project. It is not in the best interest of the community. It is not in the best interest of the entire world.

Alison Eckels

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Collum Liska

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Margie Heller

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Debbie Sequichie-Kerchee

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Liz Erpelding-Garratt

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John Lippiello

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Guila Muir

This project is one of the worst ideas around right now. Totally for profit for a few, the proposed Kalama facility would have a devastating impact on the climate. It would emit more than a million tons per year of climate pollution as part of the manufacturing process alone. Shipping the methanol to Asia would generate hundreds of thousands of additional tons per year of climate pollution. Additionally the methane emitted by fracking and pipeline transport to supply the facility would make the greenhouse gas impacts skyrocket even higher.

Please do the right thing and close the idea of this project down right now.

April Eversole

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SETH ROLLAND

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Rocky reuter

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Shirlee Tan

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Holly Graham

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Carole Hiatt

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Mrs Risser

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Donna Snow

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Megan Zaback

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Amy Fisher

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Deborah Homenko

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Val Alexander

I strongly object to the proposal to build such a huge gas project at Kalama. As a resident just a few mile upstream from this proposed plant, and as a Native American, whose family is indigenous to this area, I am concerned about the surrounding habitats, water quality of the Columbia River, which is the life blood of our tribe, and the huge contamination resulting from the transport, fracking, and use of this product. Please do not allow this to happen.

Rev Burg

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Sierra Sanchez

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linda petrulias

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Theresa Schumacher

This proposed methanol plant would be a tragic mistake not only for Kalama and the State of Washington, but for the entire Pacific Northwest. It would become a huge polluter, not only alongside the banks of the Columbia, emitting massive amounts of air pollution, but also in terms of using fracked natural gas to supply its ginormous energy needs. The gas would need to be piped in from hundreds of miles away with every small methane leak resulting in pollution times worse than regular CO emissions.

NWIW originally claimed that the methanol produced from this plant would not be used for making fuel, but they were apparently lying when they said that, just as they are lying when they claim that this would be a great project, providing local jobs while also being "good" for the environment. The first SEIS was fraught with inconsistencies and incomplete information, just as this second one is. I urge you to please be a champion for the ecology of Washington, as well as the Pacific Northwest, and once and for all reject this toxic project! As the recent fires have shown us, there is nothing more basic to life than clean air and water...when that is suddenly gone, all people and living things suffer. Protecting the ecology of this region is the main responsibility here, not enabling dishonest companies to make money while polluting our precious natural resources. Thanks so much for taking the time to hear all of us out on this important topic.
Theresa Schumacher

Patricia Warming

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Don Steinke

Please update your calculations to include the emissions suggested by this report from Bloomberg:
Gas companies are abandoning their wells, leaving them to leak methane forever.
Just one orphaned site in California could have emitted 30 tons of methane and there are millions more like it.

https://www.bloomberg.com/news/features/2020-09-17/abandoned-gas-wells-are-left-to-spew-methane-for-eternity?utm_source=url_link&fbclid=IwAR2IZicvXTRm0jluzdnPfdE4m1iQ8b6ZXU4cArXgPekpcImnX9CNsHHER0M

Shemayim Elohim

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james hipp

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Adam Levine

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Sandra Russell

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Cheryldene Phillips

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Tracy Ceravolo

According to a report in Bloomberg, millions of abandoned gas wells around the country are actively leaking methane! Where is the money to monitor this? Are there federal regulations about it? Gas companies declare bankruptcy, and tax payers are left to pay for plugging these wells which can cost hundreds of thousands of dollars per well! And plugging it with concrete is not a permanent solution because the concrete degrades with the extreme pressure of the Earth. So for every well dug, you are dooming future generations to deal with our mess of leaking methane?!

How does this factor into your EIS?

George Ruiz

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Connie Dean

This is in opposition to the NWIW methanol refinery for Kalama, WA.
There are several reasons that many cities have turned down the Methanol refinery.
It will take a huge amount of electric power and water to run the refinery. And they want to push too large amounts through an existing pipeline that is not large enough.
There will also be tons of methanol on ships crossing the Columbia River and oceans on the way to China. There is the potential of leakage, which is likely to kill the fish and pollute our waters.
Kalama would have a huge plume from the refinery obstructing many peoples views. They built their homes where they are for the beautiful views of the Columbia River.
The refinery creates many opportunities for pipeline eruptions, ship leaks, leakage from their own tanks, pollution from the plume. Even the DOH admits that "methanol is a toxin" and is dangerous.
If the refinery goes in, it will ruin this lovely town. More people and animals will get cancers and other diseases. Our soil and air and water will become polluted. The quality of life in Kalama will change for the worse.
Notice that at this pre refinery time, the eagles have returned. That's because our air quality is good, but they will once again leave if the refinery comes in.
We all want good paying jobs for Kalama, but we want safe and healthy jobs. I know that better and safer use can be made of the land that is set aside for the refinery.
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Blake Wu

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Barbara Wight

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Maryellen Redish

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JOEL EISENFELD

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Shannon Markley

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Lanie Cox

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Sean Edmison

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Boni Biery

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading. It relies upon speculative and unenforceable assumptions. One can simply look to the impacts of the COVID pandemic to see evidence of the incredible uncertainty and volatility within energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades.

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Kathryn Lewandowsky

Are you nuts? Some scientists feel that we have less than 10 years to reduce our greenhouse gas levels. I think they are wrong. We need to immediately reduce our greenhouse gases. We're killing our home and everything in it so no this plant is not a good idea! Put your heads together and figure out something different to do!

Tabitha Thomasson

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Karl Mortimer

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Patricia Twyman

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Joanne Watchie

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IRINA THOMPSON

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Barbara Lavery

I oppose the construction of the Kalama Manufacturing and Marine Export Facility. The consensus on the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate.

Nancy McMahon

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Anonymous Anonymous

We are down stream from this disaster in the making. Please reconsider, in an age when we are phasing our our dependence on non-renewable fuels this proposal is a financial disaster as well as a ecological and humanitarian disaster. I am sure the state will provide taxpayers dollars to encourage the site to be built...so you make citizens pay for their own poisoning. Interesting your disregard for that fact. As we continue to downgrade the importance of these products the plant will within 10 years be losing money...so there is no economic benefits just a black hole for taxpayers to pour money into

Alycia Staats

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Steve Shapiro

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Tonya Pilcher

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Kathleen Williams

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Dora Weyer

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Katherine Nelson

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Eric Jensen

I'm concerned that the review of the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS will be based upon murky understanding of the pollutants involved. For starters, the process of delivering "natural gas" from the fields of the Great Plains of North America to the Asian plastics manufacturers would be unacceptably polluting and damaging. I've lived in Oklahoma and the fracking there has contaminated scarce ground water and is widely believed to cause an unprecedented sudden spike in earthquakes since fracking began in Oklahoma. Fracking requires a great deal of water and destroys usable water tables by injecting chemical-infused water into the subsoil. Also, natural gas wells are notoriously leaky when they operate. Afterwards, abandoned natural gas wells fume (leak) natural gas leaks forever. And the pipes carrying natural gas can leak. News stories regularly describe how our decrepit railroads and human error can cause fires and explosions such as happened in the town of Las-Megantic in Canada and Mosher, Oregon, recently). Also, the process of refining that gas into methanol creates more pollution. And for what? So the world can be burdened with more plastic products that are most often single use (for example, packing materials, styrofoam and plastic bags). The US is far worse than giant polluters such as China in lax regulations of fossil fuel refining and use. Our decisions should be made with realistic understanding of the relationship between climate change and pollution. The review process for the Kalama Manufacturing and Marine Export Facility should rely on evidence-based information, not the gas industry's short term incentives such as temporary construction jobs. The false choice between jobs and plastics production should not be considered a valid choice. The evaluation of the proposed Kalama methanol facility should result in principled decisions about what the natural gas industry should be allowed - and not be allowed - to do with our precious and delicate environment. Thank you, Eric Jensen

JOSEPH BARRECA

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Donald Wilson

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Jilda Nettleton

I am sadly writing to oppose the construction of the Kalama Manufacturing and Marine Export Facility. As much as I understand the need to have manufacturing facilities across Washington state, we also have to address climate change. The consensus on the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. Part of the reason we have to take such drastic action now, is because for so long corporate interests along with the Republican party pushed an agenda of climate change denial. So now we all must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate.

Kathy Phillippe

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john van eenwyk

Juliet and I thank you for your work to protect Washingtons environment, particularly by acknowledging that the previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington has been inaccurate and inadequate.

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Phillip Norman

Deluded actions for self-interest of a few greedy investors can not prevail against common sense and the actual self interest of all of life on Earth. We, the people, the animals , the trees, all that has evolved in nature, have the moral high ground against frackers, however much stolen money they parlay as noble "business." Nobility is in raising the prosperity of creatures far into the future, not foreclosing that future. A methanol refinery fed by fracking, ruins embodied nature, forever. Fracking is pure evil and is not wanted. Producing artificial demand for fracking, is more evil than the fracking.

Danell Norby

Governor Jay Inslee endorses bold action on climate change in Washington, but permitting of the Kalama facility would signal the opposite.

I am an individual who lives in Portland and works in Vancouver, WA. The recent wildfires have only increased my frustration that our local, state and federal governments are not taking substantial action to reduce our reliance on and support for fossil fuels. The displacement of thousands of families, skies clouded with toxic smoke--it is terrifying to think of this situation becoming more and more common as climate change contributes to the drying out of our corner of the country, increasing the danger and destruction brought by wildfires.

I urge the Dept. of Ecology to NOT issue a permit for the Kalama Manufacturing and Marine Export Facility. To do so would only be to perpetuate our current status quo of fossil fuel reliance, instead of seeking the cleaner energy alternatives we will need to avoid the worst impacts of a climate disaster.

I understand that the economic implications for Cowlitz County are significant if this project does not move forward. However, the Kalama facility would be one of the 10 largest sources of greenhouse gas emissions in Washington. I urge you to weigh the local economic benefit against the statewide, regional and global environmental ramifications outlined in the SEIS report, as well as the harm inflicted by disasters and other consequences of climate change on current and future generations.

Sharon Sollenberger

I am opposed to the development and operation of a natural gas to methanol production facility at the port of Kalama. The production of millions of tons of C02 is not acceptable when we need to be reducing our emissions by 9% for the next 30 years to reduce the impact on climate change. Other cities in the U.S. in California and on the east coast are developing policies to ensure new construction of all electric. In addition there have been incidences of gas companies abandoning wells, leaving them to leak methane. Please consider other cleaner options for producing energy and making products that Washington state and other states and countries need. It is a matter of priorities and doing whatever we can to mitigate global warming is of the utmost urgency.

Dennis Underwood

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Carol Whitehurst

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Allison Ostrer

Clean energy projects are welcome in Washington. A methanol factory is NOT!

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Phyllis Dolph

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Michael Smith

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Raleigh Koritz

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Christina gasman

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Jennifer Owen

I am very concerned about the environmental impacts of this project. The people of Washington and Oregon want clean safe energy, not the continuation of fossil fuel and its pollution of our world. We have options and as we look to the future we owe it to ourselves and our children to explore them.

L Bechtel

I am totally opposed to the Northwest Innovations proposed Methanol plant.

Fracking of gas for this project destroys the environment, contributes to earthquakes, and pollution on its own. Greenhouse gas emissions needs to be reduced. With this plant we are adding to.

Now China wants to built a plant that can destroy our city with one explosion. Add to that the fact that they have been deceptive all the way through. First it was to mitagate their pollution. Then the assurance was to develop plastic and not use for automotive fuel, and now that has changed too. Either way our dependence on plastics and fossil fuel needs to be reduced not added to!

Let's talk about the Salmon runs that our area is so dependent on, the impact will be great. Noise and light pollution alone will have a major impact on their ability to hide from predators. What about a spill, it's only a matter of time.

The impact on wildlife, on humans and on our air is not worth the dollars and few jobs it may bring. Do not destroy our way of life, our waters, and our Northwest for the profit of China!

Lee Stafford

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Nancy Boxer

Just thought I would add a viewpoint from Pennsylvania, which has become one of the largest fracking states, and as a result has seen our greenhouse gas emissions grow enormously. Wellheads, pipelines and facilities all leak natural gas and methane, and since it is often difficult and expensive to find the leaks, they go unfixed for years. Pipelines run through neighborhoods and near elementary schools and hospitals and many people develop environmental sickness. Does Washington seriously want to meet the carbon goals set under Governor Inslee? Allowing the Kalama facility to go through would most likely result in MORE, not less, greenhouse gas emissions. Thanks for allowing me to comment. Nancy Boxer, Managing Director, Association for Climate Health.

Marie Marrs

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Evelyn Bittner

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It's my understanding that the proposed facility would use a staggering amount of fracked gas and quickly become one of Washingtons most significant sources of climate pollution.
Under every possible scenario, the pollution impacts of this project would be enormous. We need, now more than ever, to be focusing on clean energy. I vehemently oppose any facility that

perpetuates the use of fossil fuels.

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Vivienne Bembridge

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Sharon Rickman

I am urging you to reject the proposed methanol refinery in Kalama. Building a new fossil fuel infrastructure refining fracked gas is wrong and will negatively impact all of us and future generations.

I lived in western PA and witnessed first-hand the harms of fracking to air and water quality. The oil and gas industry built fracking wells on our local small farms –targeting a vulnerable community with empty promises. When the farmer's entire ecosystem was poisoned from hundreds of trucks hauling in water and hauling out toxic waste, pumping toxic chemicals deep into the ground, and building open-air evaporation ponds, the oil and gas industry's response was "Prove to us that the air and water was not contaminated before we came here."

This SEIS statement does not address cumulative upstream impacts of all phases of fracking including emissions to truck in vast amounts of water, truck out toxic waste water, operation of compressor stations, storing poisonous water in open air ponds, and the cumulative health impacts from the toxic fracking chemicals/process to people, animals, and land.

We need new, sustainable, clean energy jobs in WA. Building a new fossil fuel infrastructure to refine fracked-gas will not provide that. Please do the right thing and reject this proposal, and all permits to stop this dangerous project.

Phillip Norman

Export of methanol is just another scheme to profit from thieving destruction of land owned by no one. The profit is mainly to a few greedy people, leveraging stolen wealth, not to average persons innocently buying related investment funds. It is all just greed in action. It is not about supply of energy demands. It is about push of spoils converted for greater returns in Asia. It is about enabling jobs that the greedy exported elsewhere. It is not at all about local jobs or the good of ordinary people anywhere.

Joanne Mayhew

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Aimee Wyatt

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Don Gargas

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Trisha Pahmeier

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Tia Pearson

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Leilani L.Wallace

For the sake of our climate and environment I strongly oppose the proposed Kalama Manufacturing and Marine Export Facility at the Port of Kalama.

Patricia Harp

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Lynn Lichtenberg

I oppose the construction of the Kalama Manufacturing and Marine Export Facility. The consensus of the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emissions to net zero in less than a decade. As scientists at Ecology well know, we must begin removing carbon soon to stabilize our climate. We can do this! All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate. This facility must not be built.

Shana SUNDSTROM

I am adamantly opposed to the proposed Kalama methanol refinery. First, the amount of CO2 emitted by this project is staggering and unacceptable in a time of severe human-caused climate change. If elected officials do not accept that human-caused climate change is real, then such irrational and ideological folks have no business being in office. I find the idea of allowing a project like this to move forward morally repugnant, although I recognize that that is not a legitimate reason for WA to reject the refinery. Burning gas may be an improvement over coal but is a far cry from electric energy and inflicts human and environmental harms in multiple dimensions. Furthermore, virtually every EIS statement ever has underestimate the harms caused by fossil fuel projects. In part, this is because so many harms are externalized. Is the taxpayer burden from the increased health care required to treat the significant rise in asthma and other related health burdens as a result of both the direct activities of the refinery and the secondary impact of burning the gas taken into account? No. Is the long-term vulnerability of WA and the US to food, energy, and water security as a direct result of climate change accounted for? Many harms are underestimated, represent guesswork, or are simply not included. Finally, for the proponents of this project to argue that 'if we don't build it, China will', is terrible logic. Shall we also exterminate all the minke whales in order to make profit that would otherwise be harvested by Japan under the guise of 'scientific' activities? Arguing that we should do something harmful because if we don't, someone else will and they might cause even more harm, is a disgusting and immoral stance. We need to do what's right, even if no one else is. And in fact, even China is taking aggressive strides to wean themselves from fossil fuels. Please reject this refinery. It has no business in Washington, or anywhere else in this country.

Melodie Scholz

I am writing in opposition of the methanol plant. I have lived in kalama my whole life ,as well as my parents and grandparents. My main concern is the environmental Impact. Just the fact that this is the largest methanol plant ever built and that they picked a tiny little town like Kalama makes me assume that the bigger cities had reason for concern as to why they passed on the deal. The Port of Kalama is in my opinion ,being very naive in their thinking. These big foreign companies are not being honest about their intentions. I honestly believe it should be illegal to allow the port to make this decision for all of us. One example of how our waters and air are already polluted in kalama would be 4 leukemia cases within a mile radius of the port of kalama , one of them was my 14 year old son. One widely known effect of benzene (which is omitted currently from kalama chemical plant) is the development of blood cancers. I fear that adding a huge plant that will release even more benzene into the air will contribute to so many health problems for not only Kalama but Cowlitz County and the other residents that reside near the Columbia River. There are so many scary unknowns. Thank you for your time.
Melodie Scholz , kalama resident

Linda Shirley

I oppose, most strongly, the permitting and Building of the Kalama facility. The last thing this country needs is a way to create and support more climate destruction.

Jeff Hebrank

Please help our state address the issue of climate change by not allowing a natural gas to methanol plant. The Supplemental Environmental Impact Statement for the Kalama Manufacturing and Marine Export Facility must address the fact that building new plants will not allow our economy to de-carbonize fast enough to prevent future climate catastrophe. Fracking the gas, transporting it (with leaks), shipping the methanol overseas, and then making more plastic with it, is all bad for our environment, every step of the way.

Addressing climate change is the biggest challenge humanity has ever faced and it will require action from every country. In order to transition away from fossil fuels our country will require a mobilization unlike anything seen since World War II. Building additional plants to process fossil fuels is a step in the completely wrong direction.

Thank you,
Jeff Hebrank

Susan Goldberg

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marie lyndemere

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Jon Mathison

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Nina Mettler

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MARRENE JENKINS

Most of you have heard the phrase " an ounce of prevention is worth a pound of cure". Now, have you lived it? Have you lived DAILY with toxic clouds of industrial waste? In the summer and when the weather is warm in fall and spring,it's more oppressive because the warm holds the AIR POLLUTION closer to the earth, Maybe you can relate to this in light of our recent forest fires which brought toxic smoke into our environment on the winds of a natural phenomenon. Over recent years, industrial, vehicle, and even tobacco products, which grossly affected air and water pollution have been greatly reduced. Those are the results of applying the ounce of prevention through the work of the EPA and state departments of ecology.

The ideal began in the 1950s but became fact finding groups in 1970. Back then the mission was easy to identify, but the "cure" solutions were met with strong resistance. The EPA and depts. of ecology per each state were thick skinned,relentless in pursuit of restoring clean air and water. I imagine many of your own parents,grandparents, and other relatives were a part of this activity. Today clean air and water is much more sophisticated because going from the local affect to "Green House Gases" requires monitors. monitoring, scientists to read and interpret these readings and practical applications for years/generations to come. This all came about because it was due time.

The Washington Dept.of Ecology has identified the negative enormity of the proposed project,from the day it would be completed on the shores of Kalama and for years after the day it closes. Just look at Hanford. I know this is so bad when YOU identify gas leakage starting at the wells.leakage when transported by pipes or trains, leakage when manufactured in the refinery including transferring to ships, leakage transporting to China, toxic byproducts when manufacturing into plastics and transporting back to U.S. in some form of a finished product.

Please DO NOT issue a permit for KMMEF

The complexity of this is weird! From a business perspective it lacks credibility unless your intention is to reek havoc on the U.S. The statement it would be better to have it done here, because we have higher standards to control (pollution) and if we don't do it someone else will do it anyways is rather vacuous. Please no permit since .....

Linda Carroll

As an environmentally motivated voter, I thank you for your work to protect Washingtons environment and acknowledgment that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. As a native and current Washingtonian, I have been proud of our states environmental effortsputting a permanent end to this enormously polluting project will keep me

proud.

Monica M

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Karen Curry

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Zoe Spiropoulou

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Monica Bonualas

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MICHELLE HOFF

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Jessica Pate

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Kathleen Martin

Please don't do this to our town, our rivers or our environment! This plant will not create the jobs promised. It, as every plant ever built before will leak at some point, and the people here will have to deal with that, will have to live with that. This town is trying to build for tourist, how many would want to come visit, only to see huge plumes of exhaust, realize our fish population no longer exist, or that the eagles we now see have left us? There is no "safe" way to transport the fuel in, or out along the rivers. There are always leaks, along every pipeline, with all ships eventually. A few, very few, jobs for locals is not worth poisoning our rivers or land. We should not be hurting ourselves and our environment so that a foreign country can make more of something, plastics, that the world already has too much of. Just say NO!

Joan Agro

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Carolyn Cooper

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James Tandoo

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alisha leviten

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Elizabeth Metcalf

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Lynette Jensen

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Ana Sirota

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Cheryl Speer

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Lorraine Monprode

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Niki Vogt

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Carla Behrens

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Lorraine Flaherty

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Dennis Mace

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Linda Chapman

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Luana Hulsey

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Michelle Hamilton

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Amy Weisbrot

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Karin Schminke

Please stop this methanol refinery.

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Minh Nguyen

I'm against Kalama Methanol Project. This is a disaster waiting to happen and will set the precedent for generations to come. Climate change is real and we need to work together to combat this crisis instead of contributing to it. This project will not only negatively impact WA, but the whole Pacific Northwest. This project is a morally reckless approach to the climate crisis at hand. It would also cause a huge amount of climate pollution, please believe in the Science and vote against this project.

Aimee Thompson

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Lois Schultz

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Kathryn Beck

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Megan Hill

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Leslie Martin

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Col Pederson

I am AGAINST this on so many levels- fracking is a PROVEN disrupter of the environment. 1-let's start with CLEAN WATER, which is a resource that is becoming in shorter supply. 2-And the release of toxic chemicals into water and air. 3-AND for which planned use is to make PLASTIC which is already harming sealife and environment!! 4- and the quakes which often follow. The risks have been under-reported/minimized to promote industry. *SAY NO to this project!!

https://www.forbes.com/sites/judystone/2017/02/23/fracking-is-dangerous-to-your-health-heres-why/#6330dc365945

Brie Gyncild

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Stacey Hargrove

I completely oppose the methanol plant being built in Kalama, WA. Keep moving on up the river. Don't stop here in our town!

Madelyn Hart

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Marsha Barton

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Danielle Jokela

Comments regarding the proposed methanol plant in Kalama:

The proposed methanol plant in Kalama would be an ecological disaster for our entire planet. It would cause millions of tons of greenhouse gas pollution, use millions of gallons of water from an aquifer connected to the Columbia River each day, pollute the air with cancer-causing emissions, and pose safety hazards during an earthquake. The refinery would use more fracked gas than all the gas-fired power plants in Washington, combined, meaning the refinery would induce new fracked gas pipeline expansions throughout the region, or require even more dangerous oil and gas trains to bring this dangerous material through the Columbia River Gorge.

As Americans, we need to be looking forward to the future. Fossil fuels are the energy of the past, they will not continue to sustain our nation or our planet. The rest of the world has begun to awaken to the realities of climate change. China, India, the EU, are all realizing the economic disaster, not to mention the human toll that climate change will cause. Those markets may look flush now, but they are all moving towards a truly clean energy future. China, for example, has enacted some of the most stringent emissions standards in the world, and they continue to tighten those standards each year. 50% of all new construction in China must meet a strict and well defined "green standard", and they have developed policies that incentivize local municipalities adoption of greater use of renewable energy sources.

Building the world's largest methanol plant on the shores of the Columbia River would be continuing to deny and ignore the real impacts of global climate change. It endangers the health and safety of millions of people who live, work and play in this rich watershed. It claims to create jobs, but those jobs are not the kind of jobs that will sustain the community in Kalama, or in Washington long term as the world is moving away from use of fossil fuels making the need for such a plant obsolete. The total ecological impact of such a project is enormous: damage to land and ground water caused by fracking, degradation of air quality caused by emissions from fracked gas and the process of turning that gas into other products, vast amounts of carbon dumped into our atmosphere driving global temperatures to increase, plastics that survive on this planet centuries longer than the humans who use them.

Anonymous Anonymous

The Portland Raging Grannies join many other organizations in opposing the Kalama Facility. We are concerned about environmental impacts, both immediate and future. Please re-evaluate the project with a source to destination view.


NO
methanol
refinery
SAVE THE
COLUMBIA
RIVER
NO
methanol
refinery
Portland
RAGING
GRANNIES
No Fracking
No Kalamity

Rick Pietrusiak

I have read and agree with the statement below ... this project should not go forward. Thank you. Thank you again for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Janette Favro

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Michelle McRae

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susan Betourne

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Kristina Fury

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Gail Atkins

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Katherine Chesick

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We have this year stunning evidence of the occurrence of climate change, with massive wildfires yielding hazardous air up and down the west coast, numerous hurricanes and storms in the southeast, heat waves. Why are we even considering construction of a refinery that feeds into this climate disaster?

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Katherine Chesick
1039 NE 127th St Seattle, WA 98125-4005
kchesick@earthlink.net

Sherril Gerell

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Sally Jo Gilbert de Vargas

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. The world's largest fracked-gas-to-methanol refinery has been proposed for construction in Kalama, WA, along the Columbia River. When operational, this plant would turn fracked gas into the raw materials for cheap plastic which would then be shipped to Asia to be made into myriad myriads of plastic products. While operating, if it is built, it will contribute by itself fully 5% of Washington State's total carbon emissions, at a time when we are trying to reduce our greenhouse gas emissions. Haven't we seen enough evidence of climate change to take this situation seriously? Haven't we destroyed enough of Mother Earth's gifts to us? Haven't we done enough damage to our home in the service of "the Almighty Dollar?"

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Sally Jo Gilbert de Vargas
2645 NW 60th St Seattle, WA 98107-3258
sallyjogilbert@gmail.com

Court Olson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

The paragraphs after this one were drafted by Earth Ministries --a strong and trusted voice in the religious and environmentally conscious world. I wrote this one myself. We have a moral imperative to reduce global greenhouse gas emissions rapidly to avert a centuries long and life threatening change in climate. We must cut those emissions, not grow them which is what the Methanol Refinery in Kalama would do. Even proposing it is shameful. It is a sign of the selfish greed of Northwest Innovations Works. We can't let this happen. I've researched this subject extensively and these are my words. Thanks for listening.

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Sincerely,
Court Olson
15817 SE 26th St Bellevue, WA 98008-5445
court.olson@yahoo.com

John Waddington

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Lynn Fitz-Hugh

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Sandra Holt

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Take the food away from the sumo wrestlers that are in control.

Sarah Farbstein

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Patricia Baley

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Virginia Van Zee

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Virginia Van Zee
6523 1st Ave NW Seattle, WA 98117-4826
virginia.vanzee@gmail.com

Nancy Horman

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.
I am surprised this project is even being considered in Washington State. We are believers in a clean climate. We are proud of our beautiful surroundings. I am 94 years, a retired primary school teacher. I have children, grandchildren, and great grandchildren living in this State. I want this project stopped for them, their future. And sending polluting gas to other countries only spreads the pollution world-wide.
I do feel for the people of Cowlitz County - loss of logging and other jobs. But why not try in find investments in solar and other conservation jobs? Washingtonians are creative people. Open up chances.
Please consider the futures of the children.
Thank you,
Nancy Horman
Seattle, Washington

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7116 Greenwood Ave N Apt 401 Seattle, WA 98103-5065
nhorman@comcast.net

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NO NO A 1000x NO

Christina Scheuer

The permit for the Kalama methanol plant should be denied. This project works directly against our climate goals. It will lead to increased pollution and greenhouse gas emissions, and it will have negative impacts on the Kalama community. We need to transition to clean energy and stop supporting dirty, dangerous fossil fuels.

Susan Towle

With our planet literally at grave risk, it is unconscionable to build this methanol plant. All the research and data points to the enormous ill effects this project will create if approved. Do not do this! Do the right thing!!

Janet Ceballos

Please stop the building of this methanol plant. The ecological impact in our state and the financial state of the local community is in danger. Not to diminish the emotional injury if the cemetery is impacted. Please stop the building of this plant. We don't want to be locked into fossil fuels for eternity.

Mckenna Morrigan

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Dani Schulman

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Annalisa Ochiltre

As a state and a nation we need to be investing in green energy, not something like this that will so substantially increase greenhouse gas emissions in washington state. I am deeply apposed to this project going forward.

m'lou christ

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

And more analysis shows there will still be way too much pollution to warrant approving this project!!

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Katharine Harkins

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Paul Schutt

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

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Keren Berry

Please do NOT allow this project to be constructed. The environmental impacts far outweigh the benefits.

Joleen Strunk

Please do not allow this plant to be built here in our quaint little city of Kalama. There are so many reasons why this is bad for the residents here. It will be a disgusting eye sore. I can't imagine the property values not decreasing due to this. Potential health hazards, noise pollution, and who knows what else. This is the problem. The residents do not know enough about this corporation who is trying to barge its way into a perfectly nice place to live. I am afraid it will not be a nice place to live if this company comes here. I did not buy a home here to be surrounded by such a monstrosity. These companies are not trust worthy. They have no conscious or morals. They have no concern beyond money. This is very sad that Kalama may allow such an injustice. The only benefit to the people of Kalama and surrounding areas are potential jobs and we have no idea if they will be or be worth a damn.

Mona McNeil

I am totally opposed to the Kalama Methanol terminal.
I have lived in Vancouver for 32 years and am a retired Clinical Psychologist. My late Husband, Randy Kleinhesselink, was a Social Psychology professor at WSU and WSUV For 43years.
The estimates of environmental impact relies on predicting future behavior of individuals and nations globally.
I can tell you that even predicting future behavior of one individual is very problematic. Just think of people you know or family and community members who have behaved in very unexpected ways. When you add in more individuals, creating groups with different histories, different sensitivities, different belief systems, different systems of government... The complexity increases and predictions become more difficult.
Add in external factors, like natural disasters, wars, pandemics... Predictions become less accurate.
The EIS is trying to make predictions for the next 40 years!
If it were a trivial matter, predict away and see what happens. But this is an earth-altering project and overly optimistic predictions lead to disastrous consequences.
Your LEAST harmful estimate is that this project will release a minimum of 4.6Million Tons of CO2 each Year for 40 years!
Forget what other hypothetical decisions by other countries might do over 40 years!
Another issue is that NWIW will lead to Chinese output of either plastic or fuel.
We need to keep moving toward Clean energy and good jobs in that pursuit
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Mitigations according to the Fox News report include REDUCING production of plastic waste by 25-40%.
The Fox News article concluded that plastic pollution in our world's oceans could have a $2.5 Trillion impact, disrupting "almost all marine ecosystems".
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Thank You, Mona McNeil, Ph.D.

Jackson Ogden

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Luan Pinson

The methanol produced by this project would be shipped overseas to be used/burned as fuel or to make plastics. Both of which we don't need more of polluting our environment.

The State of Washington is trying to move towards a clean energy economy and this project would greatly undercut that attempt.

NWIW lied to local and state regulators and they claimed the millions of tons of methanol produced each year would not be combusted as fuel. They then told investors about the potential for the use of the methanol for fuel.

We should be moving away from fracked gas, not embracing it. This project would use more fracked gas than all of Washington's gas-fired power plants, combined.

We have been lied to and this is a dirty, dangerous climate changing pollution producing project.

Ann Lewis

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Angela Wood

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Kurt Fox

I am submitting my opinion on The Second Supplemental EIS for Kalama Manufacturing and Export Facility. I am against this. We should not start any new fracking projects. They damage water quality, increase risk of earth quakes, and increase green house gas emissions.

Kerstin Rogers

The creation of a Kalama methanol facility is an unacceptable action in our state during this time of climate change crisis. We are living in the midst of catastrophic wildfires and storms that are increasing in frequency and severity and dangerous climate change effects are happening at a surprisingly quick pace. We would be extremely foolish to allow this plant to move forward as it would increase overall Greenhouse Gas emissions, both in Washington and likely in Asia, when you consider all the upstream and downstream factors. That is an irresponsible decision!
We should also stop contributing to the production of plastics that are poisoning our bodies with chemicals that mimic estrogen, causing diseases like breast cancer, and that end up in our oceans or in landfills for 1,000 years until they biodegrade. We must change course and use alternative fuels and products in the years to come. I demand that as a citizen of Washington State.

Sincerely,

Kerstin Rogers

Nathan Fritz

Please do not let money motivate a decision to forward a project that will further contribute to the destruction of our beautiful state. The emissions will only contaminate our air, water & land! Please do not do this just to make more $$$$!

Mona McNeil

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Craig Heverly

It seems the argument being put out by this study goes something like this: "If we don't pour our gas on this fire, someone else will and they will pour more than us. So, isn't it better that we pour ours first?"

The point is, no one should be pouring gas on the fire. The fire is already out of control and the only way to quench the blaze is to stop fueling it. And fracked gas and methane are frightening fuels.

With the planet blazing like Hell, what insanity to even toy with building this monstrosity! Please, think again. Put a stop to it once and for all.

Charlie Weir

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Eliza Kronenberger

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Pete Weymiller

According to a consensus of global experts in science, economics, and national security climate change is the greatest threat to our health, natural resources, national security and future economy.

Extracting, transporting and burning fossil fuels not only pollute the land, air and water they are the biggest contributor to climate change.

Fossil fuels already endanger our health, natural resources and economy. I have just breathed seven days of some of the most polluted air on earth that was caused by the forest fires generated by climate change.
Our precious fresh water resources are threatened by fracking for natural gas. And the risk of major explosions from natural gas has already been exposed.

With nearly 200 new residents to the NW each day we need to promote sustainable energy resources that we have already developed, ones that have made dangerous fossil fuels like natural gas obsolete.

Elizabeth Gronert

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Robin Moore

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Rachael Bratsch

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Pete Weymiller

According to a consensus of global experts in science, economics, and national security climate change is the greatest threat to our health, natural resources, national security and future economy.

Extracting, transporting and burning fossil fuels not only pollute the land, air and water they are the biggest contributor to climate change.

Fossil fuels already endanger our health, natural resources and economy. I have just breathed seven days of some of the most polluted air on earth that was caused by the forest fires generated by climate change.

Our precious fresh water resources are threatened by fracking for natural gas. And the risk of major explosions from natural gas has already been exposed.

With nearly 200 new residents to the NW each day we need to promote sustainable energy resources that we have already developed, ones that have made dangerous fossil fuels like natural gas obsolete.

Sally Hurst

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Aslaug Haraldsdottir

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Virginia Voorhees

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Sheryl Scarborough

Kalama is a small community. A blip on the radar when compared with other population dense areas. We are only three exits off the i5. A McMenimins recently installed along our gorgeous river front walkway has turned us into a desired 'let's get out of the city' destination. We have a small, river front ampetheater for summer concerts in the park. We have families with 5 generations of residents. The proposed Methanol plant will change everything about our community for the worse and it's not even for our benefit or for the benefit of America. I drive an electric vehicle and care about Global warming and our planet. The last thing I need in my backyard is something to make more plastic. Please consider the residents and future generations of this little town and decide against the permit for this plant.

David Cordero

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Mary Slowik Siciliano

Dear Members of the Department of Ecology,
Please deny the NW Innovation Works most recent permit application. We need clean air. We need safe air. The last few weeks here in Vancouver, Washington, have been proof of that. We have horrific evidence now of the effects of greenhouse gases in our state, and also in Oregon, and in California. We also have evidence that smoke and fire do not recognize state lines.
Methane is a gas that also does not recognize state lines. Methane leaked from pipelines and fracked gas wells, and methane, converted into methanol in Kalama and then burned once more as methane in China (which NWIW now admits will be the case) is still methane. And the methanol produced more efficiently and with more care in the Kalama plant will not be color-coded so it will be recognized as "safe" methane. Methane is methane and is a more damaging greenhouse gas than carbon dioxide. There is no safe way it can be burned anywhere and in any amount in our current environment.
Please deny the Kalama permit once and for all.

p perro

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Daniel Roberts

Sometimes the alure of perfection eclipses the possible. The dream of a giant leap threatens an incremental step.
KMMEEF's Draft SSEIS demonstrates that its proposed methanol plant is an important incremental step.
The Draft SSEIS, using foreseeable variables and thoughtful and exhaustive analyses, demonstrates many things, among them:
1. KMMEF's proposed methanol production will reduce net GHG comopared to using current alternatives to fill the demand.
2. Worldwide demand for methanol is projected to increase over the next several decades.
3. Whether methanol is used as fuel of olefin production, KMMEF's methanol production is better for the environment than existing sources.
As a health care professional, I have previously looked carefully at the health effects of methanol manufacturing, reviewing the medical literature of the past several decades. Because the toxic effects of methanol have been well documented and the physiology well understood, appropriate safeguards limiting exposure have long been in place. As long as these are maintained, the process is safe both for employees and for the community.
Furthermore, the science confirms that methanol poses much less risk to the environment than petroleum products because it is water miscible, disperses rapidly, and is much less toxic to life forms other than primates.
As an environmentally sensitive retired physician, it is apparent to me that KMMEF has made a compelling case that its planned facility will result in less global GHG emissions and deserves ecology's approval.

Cheryn Zimmer

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Senator John Braun

Please see the attached letter from Senator John Braun

Washington State Senate

Olympia Address:
403 Legislative Building
PO Box 40420
Olympia, WA 98504-0420

Senator John Braun
20th Legislative District

Phone: (360) 786-7638
Toll-Free: 1-800-562-6000
John.Braun@leg.wa.gov

September 8, 2020

Rich Doenges
NWIW SSEIS
Washington Dept of Ecology
PO Box 47775
Olympia, WA 98504-7775

Mr. Doenges,

I am writing today in support of the methanol facility in Kalama, proposed by Northwest Innovation Works. The draft Second Supplemental EIS report released by Ecology has again upheld the assertion of a global greenhouse gas net benefit. I believe the process should be completed and permits for the project approved without further delay.

Cowlitz County is a rural county that has seen high unemployment for decades. The economic impact of this project would be in the form of the creation of many new family wage jobs along with tax revenue for critical community resources.

The benefits from both the environmental and the economic outcomes make this project one that should be a priority for Washington State. The science behind the environmental impact study has answered the question of environmental benefits, and given the events of this year, the economic benefits are of vital importance to Cowlitz County.

I would ask that you consider the prompt approval of this project and allow the process to go forward without further delay.

Regards,

Senator John Braun
20th Legislative District

R G

I am extremely concerned about our air and our planet. We need to stop building and operating new facilities that contribute to increased greenhouse gases being emitted. I have a child and find it unacceptable that she is growing up to live in a world that is being ravaged by climate change due to increased GHG. DO NOT approve this facility to be built!

David Hupp

I testify in opposition to the proposed Northwest Innovation Works (NWIW) Kalama Manufacturing and Marine Export Facility in any form. NWIW proposes a similar facility in Oregon and I oppose that as well.

I have lived in the Pacific Northwest for more than half a century, am certain of and share its strong values about the environment and democratic government. I feel these values are being threatened by the fracked gas industry in general. The Kalama Manufacturing and Marine Export Facility proposal is the latest of those threats to Washington, Oregon and our unique national treasure, the Columbia Gorge. Those threats include, but are much more than, the inevitable leaks, spills, fires and explosions. They include massive emissions of greenhouse gasses that will completely compromise the states' ability to meet their official carbon emission reduction goals and create a sustainable energy future.

The NWIW and its investors and allies represent substantial corporate wealth and possess the ability to hire skilled public relations. They will say anything to get this project approved and I don't believe anything they say. The corporate owners are not from the Pacific Northwest, do not understand our culture and environment, nor do they have our community interests at heart. The current SEIS (Draft Second Supplemental Environmental Impact Statement, Publication 20-06-011 dated September 2020) is so full of distracting analysis and turgid language as to be useless as a document for citizens. Its conclusions are highly flawed. In some respects the SEIS reads like a NWIW puff piece. In my work life I read many EISs and wrote a couple, so I know the game. I do not understand why the Washington Department of Ecology seems to be doing NWIW's work for them.

THE CARBON LOAD
The SEIS states the NWIW annual carbon emissions would be 4.6 million metric tons (mmt). The goal set in Washington law, updated in 2020, specifies "The state shall reduce ... overall emissions of greenhouse gases in the state to 1990 levels, or ninety million five hundred thousand metric tons" (http://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Session Laws/House/2311-S2.SL.pdf?q=20200919150040).

Kalama's emissions are nearly 10% of the state's total emissions goal. The emissions also exceed the combined total emissions of 8 NW cities and the fracked gas used would be more than the combined total consumption of all the state's fracked-gas fueled power plants.

Washington is justly proud of their emissions goal and efforts to reach it, as expressed on both the governor's web site:
"The governor has: powered a new path to Washington's clean energy future by requesting and signing an unprecedented suite of clean energy legislation into law, ushering in aggressive timelines for decarbonizing Washington's economy and transforming the state's energy landscape."

and the Department of Ecology's:
"Washington is a national leader in cutting greenhouse gas emissions to prevent climate change. Gov. Jay Inslee and the Washington Legislature have adopted a variety

of regulations, programs,&#65533;and initiatives designed to reduce greenhouse gas emissions. ... Ecology stands proud to protect, preserve, and enhance Washington's environment for current and future generations."

It appears that Kalama's emissions are as significant as any other pollution source in the state. Yet in examining the various versions of the SEIS I cannot even find a reference to the state's goals. Ecology must insist that the SEPA analysis comprehensively and honestly address the issue of how Kalama's total carbon emissions relate to the state's climate goals.

Whatever, NWIW promises vaguely to mitigate these emissions. There is no reason to trust NWIW's mitigation promises.

Your state's Shoreline Management Act, as shown on your website, says "The SMA establishes the concept of preferred shoreline uses. These uses are consistent with controlling pollution, preventing damage to the natural environment, or are unique to or dependent upon use of Washington's shorelines." Ecology must reject this boondoggle on the basis of unacceptable and unmitigatable carbon pollution.

BIGGER PLANS DRIVEN BY PROFIT

Because the Kalama proposal is but one of three, and because the fracked gas industry is desperate to export its surpluses, I suspect that NWIW has future plans that are as yet unstated in such documents as the SEIS, including plans for expanding Kalama to export liquified fracked gas (LNG). There is some evidence as well that the fracked gas volume required by Kalama will require a new transmission pipeline. In addition, the Trump Administration is allowing the shipment of LNG by rail. If such shipments occur, my state of Oregon is as threatened as the state of Washington.

Ecology must use its power to dig out all NWIW planning documents and emails showing future intent about anything beyond the refinery and a 3.1-mile feeder pipe, e.g., a new transmission pipeline and/or LNG export facility/expansion. We need the total picture of this corporation's intent to cut through the spin and promises.

EMISSION DISPLACEMENT

NWIW claims that part of its "mitigation" of carbon emissions is that their consumption of fracked gas will be more efficient than use of fracked gas elsewhere, and will displace the use of "dirtier" fuels in China (the SEIS says that the first "project objective" is "NWIW and the Port are pursuing the proposed project with the stated goal of reducing greenhouse gas (GHG) emissions globally by producing methanol from natural gas rather than coal"). These speculations about future energy decisions in foreign energy markets are so much hot air and Ecology must ignore them in their decision making.

JOBS AND TAX REVENUES

Ecology must ignore the jobs and local tax revenue claims made by NWIW. These are made-up numbers and not relevant to the department's responsibility to protect the state's air, water, and shorelines.

"PLASTICS MY BOY"

This advice may have had traction in 1967, but it advocates harm now. The idea that the Kalama

facility exports are intended to help produce plastics in China is to propose a crime against nature. Plastics in all forms are polluting every system on earth. It is time to stop this madness and send NWIW packing.

David Hupp
Hood River OR
September 19,2020
davidhupp@charter.net

Marian Wineman

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Rhett Gambol

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Uwe Dotzauer

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Kathryn Jacobs

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Arden Green

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Hilarie Ericson

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Hilary Benson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. As a mother of two children, I insist that the future health our of planet be of utmost concern to those in the position to make choices for Washingtonians. Please consider the health and wellbeing of our residents today and in the years to come.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Hilary Benson
7440 NE Coyote Farm Ln Bainbridge Island, WA 98110-3537
hilarybenson@gmail.com

Elsie Lamb

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

I'm not re-writing / adding to this petition -- it speaks well for itself and for me. I am another citizen/household that remains deeply concerned about fossil fuel production, including it's critical role in exacerbating climate change -- the single greatest threat to the planet. I've had personal experience with oil/gas wells and their operations, and know too well the damage that comes from them on many fronts. I have also worked for a major international oil company in the legal department, and I know of the games that are played before, during, and after development of a project.

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Jane Walker

As we watch the effects of a changing climate impact us directly in the Pacific Northwest, as a State and an individual, we should all feel obligated to mitigate for this. And one of the ways is to not allow for production of a product like methanol, a known contributor both in itself and, indirectly through fracking. I hope that my comment against the building of the Kalama Methanol Manufacturing and Export facility will help us meet our goal of limiting the effects this facility will have on exacerbating climate change.

Carl Thor

Please deny the permits for building a massive gas-to-methanol plant at the Port of Kalama, WA. As a life-long recycler, I was chagrined to read recently of how the fossil fuel industry misled (read "lied to") the world in promoting the idea that plastics are recyclable when, in fact, they knew full well that most plastics recycling would never be economically viable.
(https://www.npr.org/2020/09/11/897692090/how-big-oil-misled-the-public-into-believing-plastic-would-be-recycled)

Now, thanks to this decades long deception, the world is choking in plastic waste and our oceans are irretrievably polluted with plastics. It's the same old story of corporate industry fabricating "truth" to suit their own purposes and promote their own profits as long as possible, without regard to public and planetary health.

Why, then, should we be expected to believe what the fossil fuel industry says in promoting the Kalama methanol plant? Most of the exported methanol would be used to manufacture more plastics. And the facility would be responsible for generating large amounts of greenhouse gases (CO_2 and leaked methane). These two facts alone are reason enough to prevent the project from going forward.

Thank you for your time.

Emerson Pirot

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Emma Klein

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Laura Zerr

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Dolly Sutherland

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virginia alexander

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Lindsay Ward

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Marcia Pearson

You must not allow this enterprise to be iniated. The disastrous effects are clear: dangerous pollution, draining of precious aquifers, the largest facility for fracking, the destructive consequences on health and safety for land, water, environment, and all human life, but also the precedent you would be setting, opening up possibilities of similar facilities as this. There is no choice you should be making but to protect the resources that are in danger. I am appalled that you are seriously considering it. It's clear to everyone that approval of this proven hazard could only be done for the short-term benefit of making money, with the empty rhetoric of providing jobs. We are not fooled by this. Hard as it may be for you, your duty, our duty as citizens who must live and breath and care for what you are ready to throw away, our precious environment, our future as a world,it is your duty to not make the mistakes that will cost us all in the future. Do the right thing, deny this facility from being built. Please. If you stand up tall now, when will you?

Linda Orgel

I heard that the Grays Harbor Audubon comment letter did not upload so I am trying again.

GRAYS HARBOR AUDUBON
PO Box 470 Montesano, Washington 98563

September 20, 2020

Rich Doenges, Director
Department of Ecology
Southwest Region
PO Box 47775
Olympia, Washington 98504-775

In Re: Kalama Manufacturing and Marine Export Draft Second Supplemental EIS

Dear Director Doenges,

The Grays Harbor Audubon Society is opposed to the NWIW methanol refinery proposed to be built on the Columbia River. At a time when we must reduce carbon pollution and the impacts of climate change, considered a major threat to our security, introducing the proposed refinery would cause millions of tons of greenhouse gas pollution. This level of pollution is inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C. The fact that this is a permanent installation being constructed means that methanol will continue to be exported to (probably) China for many decades to come, a strong source of greenhouse gases out of control of any U.S. regulations.

The SEIS argues that methanol could "displace" dirtier energy when in actuality it will add to the amount of dirtier energy. Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate 5 million tons of pollution each year.

Over 62 bird species comprising thousands of birds were identified in the area of the Columbia River near the proposed refinery by Washington Audubon members in September 2019. Birds are seriously affected by everything, from changes in the timing of their food (insects) items to massive die-offs from huge regional fires during migration. Greenhouse gases causing global warming is upsetting many of the intricate timing regimes of natural systems, including flowering, insect emergence, wildlife food sources, migration and others not yet recognized. Life as we know it depends on lowering greenhouse gases, not allowing them to persist well into the future.

In addition, the proposed facility would negatively impact public health and negatively.

1. Fracking pollutes water systems and causes physical harm from earthquakes and the devastation of surrounding habitat.
2. The pipeline required to transport fracked gas has a high-risk potential for leakage and spills, releasing harmful chemicals into ground and surface water.
3. On-site operation of the facility would pollute the Columbia River and its tributaries with harmful runoff and contribute to reduced air quality leading to increase instance of asthma and other respiratory illness.
4. Methanol emits a wide range of hazardous air pollutants including ammonia, carbon monoxide, nitrogen dioxide.
5. Methanol is highly flammable and extremely toxic if ingested or inhaled.
6. Spills into large natural bodies of water, such as rivers and oceans, cannot be contained.
7. Increase in tanker traffic would harm endangered salmon and increase risk of ship strikes that harm or kill whales near the mouth of the Columbia River.
8. Pipelines will need to be built to supply the refinery, endangering communities along the route.

9. Accumulations of methanol vapors in confined spaces may explode if ignited, and containers filled with methanol may rupture violently if exposed to fire or excessive heat for a prolonged duration.
10. The proposed plant would be built on soil with moderate to high risk of liquefaction in a known earthquake zone.

Washington cannot contribute to the goal of keeping global warming "well below 2 degrees Celsius" by allowing major polluters to move forward. A low-carbon future demands investment in lower-emitting production processes. Ecology should not assume that future energy needs must be met by fossil fuels. All fossil fuel pathways would be massive polluters. None of them will solve our climate crisis.

Ecology also fails to consider whether cleaner energy technologies may dramatically displace the need to use methanol for transportation fuels. Industry studies show that more investment in fossil fuel industries yield much less job growth than greener energies. There is a greater job return in moving to a green economy. All of these high-carbon paths are unacceptable and inconsistent with Washington's clean energy and climate goals, and will not bring the jobs promised.

Thank you for your careful consideration of these concerns. The risk is too great.



Janet Strong, President
Grays Harbor Audubon Society
on behalf of the
Board of Directors:
Jude Armstrong
Cecilia Boulais
Arnie Martin
Robin Moore
Mary O'Neil
Linda Orgel

Steven Wright

The proposed Kalama methanol plant presents a clear danger to life. Methane escapement from the well heads, transmission lines, and proposed plant should not be ignored. Green house gasses from the plant will negatively effect our environment and will imperil my life, sons, and grandchildren. This methanol plant proposal would be a toxic polluter and it should never be started.

Lynn Carpenter

I oppose the construction of the Kalama Manufacturing and Marine Export Facility. The consensus on the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate.

John Walling

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Chris Covert-Bowlds

As a family doctor and father, I know our health must be protected. The more I learn about this project, the more it becomes clear that it is not worth the health risks. It seems much more based on making money at the expense of health risks. Profits over people, once again. With the climate crisis becoming ever more obvious, we must transition off fossil fuels as quickly as possible, and this project just supports fossil fuel use. Please put people over profits this time; stop this project.

Chris Covert-Bowlds, MD
Family doctor
Kaiser Permanente of Washington
9800 4th Avenue NE
Seattle, WA 98115
c.covertbowlds@gmail.com
206-883-8989

Kimberly Aicone

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Stephanie Trasoff

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Rebecca S

I am vehemently opposed to the Northwest Innovation Works, LLC project at the Port of Kalama! It is an assault on people's health and safety in the pursuit of corporate fossil fuel profits. Bad for the environment/bad for people living along the Columbia river and surrounds. No more fracking! We need clean energy now!

Bernice Simpson

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Samuel Brody

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Lynette bech

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Stefanie Weaver

The air quality in Kalama during the summer is so bad already that I cannot imagine any responsible governmental entity voting to making it worse. It's almost like the folks who support this don't live in Kalama.

While I don't want to diminish the importance of family wage job creation in Kalama, we might as well resurrect the nuclear reactor if we are going to invest in high externality energy. The external health care costs due to air pollution (and potentially now increased water pollution) as well as hazard and emergency clean-up are borne by the taxpayers of Kalama and Cowlitz County rather than the private companies who would bring this kind of operation to Kalama. As an energy source, this technology is already almost dead and Kalama and Cowlitz County taxpayers would inevitably have to pay the costs of decommissioning the facility when the investors declare themselves suddenly insolvent after they clean out their company accounts. It's only a matter of time.

Paula Rusterholz

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Debbie Ramos

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Priscilla Wright

I am strongly opposed to the approval of the Kalama methanol plant for many reasons. The consequences of building this facility are far-reaching. To believe that greenhouse gasses would be reduced worldwide in the long run because of the export of methanol to China is ridiculous. The amount of methane that the facility would require for years is enormous. We are concerned about the future of our climate, our children's and grandchildren's health, our beautiful Columbia River, and the way of life we hold dear.

Edward Belcher

Fracking the gas, leaking it for transport, then producing methanol which is then shipped overseas to be used to make plastic is dirty, unhealthy and harmful at every step of the process. Permits for this project must be denied.

Allan Wise

Many times big picture comments are ignored in favor of detailed analysis. The proposed methanol facility takes away from quality of life in our community. This is important.

There is no way and I mean NO WAY that the facility as designed and used will reduce carbon gases on our planet. If we are to believe the Chinese government, and make no mistake this project is the Chinese government, will act in Kalama's best interest is a fantasy. The resources of air and water should not be for the taking by foreign interests.

The quality of my air will be lessoned by this project. I live about 3 or 4 miles downriver of the site on a hill. I expect pollution at my home. There is a finite amount of water resource in our area. The project will use a tremendous amount of this water. This is not acceptable.

I want my state, its ecology dept, , and my community to be on the right side of planet preservation. I strongly appose this project.

Karin Engstrom

I moved to Washington State in 1993 from my home in Southern California. I was a founding member of the Forest Preservation Society concerned with Land Management Planning on Forest Service lands. My involvement included researching environmental documents, setting up or attending and documenting meetings at locations of proposed studies, photographing and monitoring those locations over time, writing administrative appeals, and putting together a monthly newsletter for the membership.

I raised my family in a foothill community of the Angeles National Forest (now burning at a rapid rate) and organized restoration projects after fires. My family built and restored hiking trails and spent many weekends backpacking in those mountains with a Boy Scout Troop.

Once my six children graduated from high school, I moved into the mountains to run a campground for three years, where we took families on hikes and other outdoor activities, teaching the history and ecology of the area. After that, I was fortunate to live in the Sheep Mountain Wilderness on homesteaded land for three years.

These experiences gave me great insight to what global change really was. I saw changes on a day to day basis. I lived with nature close up. I saw the consequences of my presence there.

Upon moving to Seattle, I continued my interest with Land Management Planning, Washington history and the incredible Hanford project. I completed a Masters in Whole Systems Design centering around the relationships of my high school, its environment and community. I taught a student run Outdoor Education class, bringing students into different parts of Washington for outdoor experiences.

Whole Systems Design is basically a study of the consequences of our actions. Here are my reasons why this Methanol plant should not be built.
1. There is no such thing as mitigation with global change.
2. After last week's air quality from the fires along the West Coast (I thought it looked like nuclear winter), why would the state take the chance that any type of "accident" from this plant or the ships and trains that transport this stuff would not permanently damage the proposed location?
3. The extraction of so many gallons of water for production causes an imbalance in the ecology of the area.
4. The water in the river is not clean. Hanford has been leaking nuclear waste from the beginning. They did studies that showed this. Now, tanks are leaking and nuclear waste is brought up the river to be deposited in Hanford's landfill from Bremerton. They store medical nuclear waste. It will always be a Superfund site.
5. The EPA website shows 69 Superfund sites in the state of Washington. Do we need the potential for another?
6. The Chinese want this plant, but they are transferring many of their energy sources to wind and solar to divest themselves from the fossil fuels they must import. What guarantee is there that this plant and its cleanup won't be abandoned?
7. Why aren't the Chinese building this plant in China, bringing the fracked gas directly from Canada? My assumption is they do not want the environmental consequences on their land and

water.
8. We have enough plastic that the Chinese propose to manufacture from this methanol. It is raining down on us – killing animals, including us, that ingest minute particles with our drinking water.
9. Our Governor ran to be the Climate Change Presidential Candidate. This is counter to his statements during the Primary. How in the world could he approve this project?

This Pandemic has given us the opportunity to stand back and really look at what we are doing to this planet. When we were all housebound, the air was cleaner, the noise pollution was down so that we could actually hear the birds, and my vegetable plants grew and produced more than I could possibly use.

At some point in time, the Department of Ecology and our state government, including its Governor, must do what we did in the Pandemic. We must stop. These projects add to the many forms of pollution that create Super Fund Sites. This is your opportunity to act in behalf of our environment and all living things.

Jo Boswell

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12-12-18

To: Environmental Review Board for the Kalama Methanol Plant

Subject: This plant will cause an increase in CO2 emissions and increase climate change.

Request: Turn this project down.

According to their own environmental impact statement this methanol plant will emit 2.9 million tons of CO2 per year, making it the largest stationary source of climate pollution in our state except for Centralia's TransAlta Power Plant which will shut down in 2025.

The International Panel Environment Climate Change, IPECC, has issued a warning that we have "only 12 years to lower world CO2 emissions before climate change is irreversible." Climate change has already caused increased wild fires, severe storms, flooding and drought, costing U.S. taxpayers billions of dollars annually. As our climate warms these catastrophes will only get worse. To contain warming to 1.5 degrees Celsius or (2.7 degrees Fahrenheit), manmade CO2 emissions would need be reduced to about 45% by 2030, from 2010 levels and reach net zero by 2050." This will be difficult to do, but we must do it starting right here in our state by giving a resounding "No" to the proposed Methanol plant in Kalama. Future generations are counting on us to listen to the climate scientists and reduce our CO2 emissions. Instead of building more fossil fuel plants such as this, we must, lead the way toward becoming the 1st state to rely on 100% green energy as quickly as possible. After all, we are the Evergreen state. Let's live up to our name.

Virginia Nugent

2600 NE 142nd St.

Vancouver, WA 98686

360-573-1672

J Chu

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Mary Guenther

I am just writing to support the work done on this draft and in opposition to the Kalama Manufacturing Export Facility. I don't have the technical credentials to comment other than to encourage your work and voice my deep appreciation for your attempts to stop it.

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deb Kalahan

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My name is Virginia Nugent

2600 NE 142nd St. Vancouver WA 98686

I am an 82-year-old grandmother. I have 2 children and 5 grandchildren and I have grave concerns about climate change and the effect it will have on their future.

Ecology's analysis states the Kalama methanal plant will produce millions of tons of carbon pollution each year, for 40 years. You have heard testimony from many citizens why this project must be denied. I'm going to cut to the chase and talk about the most important and urgent reason this project must be denied and that is Climate Change. It is disheartening that once again the public has to fight against another fossil fuel project in our beautiful Evergreen state. This is nonsense and has to stop. Governor Inslee has a good energy policy, but we must take it a step further. We must adopt a ban on all future fossil projects. Scientist have told us that we have only 10 years to take aggressive action to prevent climate change from spiraling out of control. If we don't stop pouring CO2 into our atmosphere, we will be creating an apocalyptic future for our children and grandchildren and eventually threaten the very survival of human life on this planet. This alone is reason enough to deny this project. Future generations are counting on you to do the right thing.

Virginia Nugent

Graden Quist

Please do not build the Kalama methanol facility, not in Washington and not anywhere. It is critical that we keep our skies cleaner without burning a C02 gas emission. This is so we can help to preserve all life on Earth and benefit future generations of all living things without the harmful emissions that create a global warming or temperature anomaly effect. Thank you from me and all those future generations that will benefit from not building this site.

Renee Grant

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Carolyn Eden

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Chris Covert-Bowlds

As a family doctor, I must stand up for health, so I would request you to deny the shorelines permit because of significant health impacts that cannot be mitigated.

Steven Woolpert

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Sandra Ciske

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Teresa Flynn

This proposed Methanol Refinery by NWIW does not meet the State of Washingtons goals for reducing climate pollution. No Kalama Methanol Refinery! Thank you Teresa Flynn Kalama, WA.

Barb Kilgore

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Wendi Ross

I am a longtime rural resident of Kalama and I am opposed to the proposed methanol plant.
There is so little Columbia riverbank left here. Kalama has worked hard to secure anchors for our growing tourism base here in our quaint town. This will not add to our town, only distract from it.
The ruining of our beautiful environment to let China into our lives and country should never happen.
Please don't let this happen!

Susan Gottfried

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Karen Reid

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John Wood

Comments on the Polluting Kalama Methanol Refinery
9-16-2020

Ladies and Gentlemen:

I stand with all the speakers whose goal is to convince you to deny the Shorelines Permit for the Kalama Methanol Refinery. In addition to their tribal, economic, environmental, legal, spiritual, resource, and endangered species reasoning is plain old common sense. Taken as a single incident, this methanol plant presents a profound affront to the welfare of all people. When considered in the context of the history of hydrocarbon combustion pollution and the resulting calamity of the accelerating climate crisis, it would be shake-my-head stupid to approve it.

So nowadays we all know that the scientific community is united in its understanding that fracking, the combustion of fracked gas itself, the combustion of the methanol, and other products made from it are contributing to global climate change, rapid rising of sea level, melting of the polar ice caps and mountain glaciers, huge firestorms, super-sized weather events, plastics pollution, and so on. Taken together, these may constitute the largest existential threat ever faced by humanity worldwide.

And we all know that adopting renewable power sources like solar, wind, hydro, and conservation, and increasing our efforts to increase their scale globally might help avert some of the intensity of the worst things that are knocking at our doors right now.

We also understand that all the newly revised arguments for building the plant (as opposed to the disproven falsifications used in the first application for the permit) are based on economic projections and scenarios that do not place the enormous costs listed above on the balance sheet! Who actually has a line item saying "dollar cost of global pollution and climate change"? Anyone can make a "cogent" and "convincing" case for anything they like as long as they do not have to account for the costs, and in this case the costs are too great, to too many, to bear, and they ought to be convincing in their own right, but here are all these volunteers fighting off an aggressive investment consortium when it means to make another penny.

To do our jobs as good citizens who desire a better future we must implore you to resist the seduction of whatever the other side promises and simply follow common sense (and science) and deny the permit to build another fracked gas to methanol plant. Especially here where 48 states are downwind of the plume of pollution. Other speakers will give you the legal rationale you will need to deny the permit.

Thanks for your time. Please be well and do no harm.

John Wood
Hood River

Let's see if I have this right. Applicant says to Washington State that plastic demand is so strong that if they don't build this 40 year project with fracked gas here in Kalama then China will build one using coal. At the same time applicant sends out written prospectus type information to potential investors telling them that applicant is not going to produce plastic from the methanol; it's not profitable enough.

They're instead going to produce fuel.

Applicant next says its crystal ball shows a 40 year sustained demand for its fracked gas plastic at a time when there is as we speak a crush of world opinion and capital moving to produce plastic and plastic substitutes from sustainable resources and not fossil fuels. And applicant claims global emissions would actually be reduced if they're granted this shoreline permit saving the world from a coal fired methanol plant in China.

Instead of comparing only the two worst case possible outcomes, fracked gas emissions or coal emissions, how about considering better options over the next 40 years? I mean isn't that your mission statement: "Protect, preserve and enhance the environment for current and FUTURE (emphasis added) generations"? For the life of me I do not understand why you would put yourself into this assumption riddled box where applicant would gladly escort you.

You've basically got the worst greenhouse gas emitter on the planet, the totalitarian government of China, fooling no one as Northwest Innovations, trying to lock this community and the world into 40 years of outrageously high annual greenhouse gas emissions at a time when it can be deadly just to walk outside in Kalama and breath the air because of climate impacts. And this is a company that has already straight faced lied to you about what they're gonna do if you grant them this permit. They're gonna burn it, not make plastic. And if they talk out of the other side of their mouth and say "oh yeah, we'll make plastic, just give us the damn permit", guess what? That plastic market is much less profitable than fuel and expert reports are already circulating that China will just incinerate any excess plastic not recycle it, putting even more greenhouse gas emissions into the air than currently calculated.

Northwest Innovations can not be trusted. Its word is worse than worthless, it's downright dangerous.

Pix Basso

Please do not allow a foreign company to invade our pristine Kalama and create an unhealthy environment for man, land, wildlife and air.
Ask yourself would you want your children or grandchildren live in an area where a catastrophic event could and most likely will occur at any given time. This is an earthquake zone. We have a major river system, a major interstate highway system that will all come to a stand still for months if this plant explodes. And for what risk? Money in the Chinese pockets because we have already given them tax breaker so the tax payers won't see anything. Stop the madness.

Karen Fedorov

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Steve Cross

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John O'Rourke

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John S

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Traci Fairbanks

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Karlyn Gedrose

Our Grandchildren's Lives Matter

Governor Inslee's 100% CLEAN ENERGY FOR AMERICA Plan is the first major policy announcement in his Climate Mission agenda a bold 10-year mobilization to DEFEAT CLIMATE CHANGE. To allow the World's Largest Fracked-Gas-to-Methanol Refinery to be built in Kalama (or anywhere) defies Inslee's plan for America to be among the first global leaders to achieve net zero pollution by mid-century.

If built, the plant would use a massive amount of natural gas, more than all of the gas-fired power plants in Washington combined. This huge new demand for gas will lead to new gas well drilling and fracking, and new regional pipelines that lock in future fossil fuel use for DECADES. We don't have decades. It's a fact: Fossil fuels produce large quantities of carbon dioxide when burned. Carbon emissions trap heat in the atmosphere, which then leads to global warming. Many of the extreme weather events we are currently experiencing - like wildfires and hurricanes - will only become stronger and more frequent in a warmer world. With heat comes drought and more air pollution, both of which are particularly harmful to children.

Governor Inslee strongly agrees with the Intergovernmental Panel on Climate Change (IPCC): To avoid the worst impacts of climate change, the global community must cut climate pollution in half by 2030. Washington's legislature has set a target to reduce emissions at least 25% below 1990 levels by 2035, and the Department of Ecology has recommended a more ambitious target of 40% below 1990 levels by 2035.

Washington Department of Ecology's own website states "We're proud to protect, preserve, and enhance Washington's environment for current and future generations."

Deptartment of Ecology, your decision impacts so much more than the community of Kalama! YOU have a responsibility to aid in the phasing out of fossil fuel reliance in favor of clean energy. Please support Governor Inslee's plan and SHUT DOWN NWIW's Chinese-backed methanol refinery NOW before it's too late. Your WRONG decision could enable the world to pass a disastrous turning point that cannot be undone.

Emily Wagnitz

As a lifelong citizen of Washington State, a mother, and a Christian, I strongly oppose the proposed fracked gas to methanol plant in Kalama, WA.

In this summer of unprecedented wildfire damage on the West Coast, and storm damage on the East Coast, the immediate reality of the Climate Crisis could not be more obvious.

And yet, even as industry and government have finally, belatedly, begun to publicly admit to the reality of climate change and massive environmental degradation, they continue to function as if old environmental policies and economic paradigms still made sense. Significantly expanding fossil fuel and plastics production anywhere in 2020 is not just short-sighted. It is insane.

Scientific data overwhelmingly and urgently informs us that the global community must begin a massive, immediate shift away from fossil fuels and plastics if our children and future generations are to have any hope of environmental, political, and economic stability.

In my 40 years of living in Washington State - largely on the west side - I have never in my life experienced anything approaching the horrendous air-quality that my family and I have endured during three of the five past summers at my family's home in Ferndale. As a child growing up in the 1980's and 90's my summers were spent almost entirely outdoors, enjoying the clean air and natural beauty of Washington. Days and even weeks of enforced sequestration indoors due to late summer wildfire smoke are part of life for my five-year old son. He has come to believe that this is a normal part of summer. Science suggests it likely will become just that.

I understand that this project will likely create some jobs, and will make a few lucky rich people even richer. I imagine that the folks who stand to gain the most from this project will have the means to jet off every August and September to some spot where the air is cleaner than it will be here. But they will have an increasingly hard time finding hospitable climes in the future, as sea-levels rise and heat-waves, floods, and storms increase in intensity.

Middle class Americans like my family will have to shelter in place and endure, as the planet, the foundation of our economy, begins to crumble under the weight of what we have built on it.

God help the global poor, who are increasingly subject to flooding and drought, and who will be displaced in ever-increasing numbers, and looking for shelter in the first world.

If this project does not go through, I will be sorry for work and wealth lost. But we cannot continue to do business as usual. Business as usual is literally killing us.

There are no jobs on a dead planet.

I pray that those of you with the power to make the final decision on this project will examine your consciences, find your courage, and do what is right here. Thank you.

Elizabeth Peck

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Jon Singleton

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Robert Bamford

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Janet Kirkland

I am writing this comment as a practicing clinical psychologist. I oppose the Kalama methanol refinery and urge the Department of Ecology to reject the proposed project permit.

The organization, Psychologists for Social Responsibility, wrote a letter to the President of the United States urging an end to fracking given the risks it poses to human and environmental health. They also wrote to the US Congress urging climate action now to prevent severe mental health risks resulting from climate change, including increased anxiety, depression, and post traumatic stress. Heatwaves, air and water pollution, and loss of wildlife habitat create significant mental and emotional distress for people of all ages. In my clinical practice, I see the negative effects of climate change on the mental health of my patients. Our recent devastating wildfires, made much worse by climate change, negativity impacted the mental health of many local residents.

The Kalama refinery project would be a major polluter in the state of Washington and beyond. We are running out of time to take appropriate action to preserve a sustainable environment.

Greg Willett

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Joann Derie

To whom it may concern,

I strongly oppose the proposed Kalama Methanol Refinery. It may be that this refinery would release less pollution than others but that is not the point. This has to stop. We need to focus our businesses and resources on renewable energy. If we make a stand, others will follow, and we can work together to decrease pollution.

Washington State is making efforts to move to energy renewable resources. This plant would not do that. According to Ecology's draft study, it would cause 4.6 million tons of climate pollution for forty years.

Also consider the specific areas affected. The wells where the gas is fracked leak methane which is worse than carbon dioxide. The river traffic of all the added ships on the Columbia will affect the water quality and fish runs which are already endangered. Then there is the chance of an accident at the plant which would endanger all life - people, animals, and vegetation- in the area.

Our state, world and locale cannot afford this refinery. Please put support behind businesses that mitigate fossil fuel pollution in order to work toward a future for us all.

Thank you
Joann Derie

William Phipps

for the love of god/ess
we have got
to stop
all things gas related !!!!
methane is so toxic and so polluting and hangs around for so long...
the lag time of CO2 and methane is decades !!!
that means that what we have already put there will stay there in atmosphere for decades.
we have got to stop putting more ghgasses into atmosphere .
AND STOOP NOW !!!
No more fracked gas.
No more coal mining...NONE.
NO MORE OFFSHORE OIL MINING.
no LNG export facilities.
No more methanol plants.
shut down all coal plants NOW..
we are destroying our planet right in front of our eyes!!!
for the sake of future generations of all life on earth,
we must stop spewing GHG into atmosphere.
NOW...NO MORE...
total switch to renewable energy,
electric cars, busses, tricks.
battery storage.
micro grids,
solar and wind turbines on a MASSIVE SCALE ...NOW.
FOR THE LOVE OF GOD/ESS ...
NO METHANOL PLANT IN WASHINGTON!!!
NO METHANOL PLANT ANYWHERE.!!!

Lawrence Johnson

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Karen Dahmer

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Janet Lenart

I am a Registered Nurse concerned with the public health. The proposed project would be harmful to public health. Fracking pollutes water systems. High rates of leakage and spills occur in the pipeline that transports fracked gas, resulting in harmful chemicals entering the groundwater. The facility would pollute the Columbia River. Despite best laid plans to prevent such problems, human error happens as we have seen in various similar projects.

In addition, the project is counter to the WA climate goals. It would produce 4.6 million tons of carbon pollution annually. Please deny the Shoreline permit for the refinery.
Janet Lenart

Debbie Rehn

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Dottie Villesvik

In reading the environmental impact statement I am opposed to the construction of the Kalama Manufacturing and Marine Export Facility. The consensus of the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate."

Kristen Klooster

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Emily Glanz

I love the environment, please protect it

Myra Toth

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Lori Erbs

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STACIE CHARLEBOIS

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Evan Beattie

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Marleen Neus

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Lois Roepcke

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Courtney Brace

We are absolutely against the proposed methanol plant in Kalama. The benefit does not outweigh the (many) risks and the benefit of local jobs may be minimal at best.

Laura Johanson

No, no, a thousand times no. Backward thinking, major environmental and social affects at the fracking source, more ghg, more disproportionate affects on low-income people here, more plastic and more ghg at its destination. This is not in line with Washington values and exactly the wrong thing to be doing anywhere in the world, let alone here.

Don Steinke

I'm Don Steinke, retired physics teacher. We are being given false choices. Choose this project or choose whatever the market decides.

Our colleagues around the world will fight those other projects. They stopped 15 LNG export terminals in British Columbia, stopped the two pipelines on the east coast and twice defeated one in Coos Bay. They're counting on us to do our part and stop this one.

Our climate system cannot afford either one of the choices. We are close to the point at which global warming will not stop until temperatures have risen 5 degrees Celsius, which would be the end of civilization as we know it.
Toyota proposed the Prius in 1988, and it was a good idea at the time, but even a Prius factory built in Kalama today would not be compliant with policy in China. China told the automakers "go all-electric or go home".
China leads the world in wind, solar, and battery electric buses. They have 400,000 battery electric buses and we have about 400.

China signed the Paris Climate Accords. Even if all the speculation in the EIS actually happened, this project would not comply with that agreement.
You should not approve a project unless you know all the facts.
Don't guess at the methane leaks in the pipeline. Measure them. The home-base for the Pipeline Air-Plane is at the Pearson Airport in Vancouver. Attach methane sniffers to them.

Five days ago, Bloomberg reported that Gas companies are abandoning their wells, leaving them to leak methane forever.
Just one of them in California could have emitted 30 tons of methane and there are millions more like it. Include those facts in your EIS.

Dolores Kueffler

To whom it may concern:
I am extremely concerned about climate change and the way that the burning of fossil fuels is changing our environment. This summer's extreme weather conditions have been a dire warning. The plan to build this Kalama manufacturing and marine export facility is another example of us ignoring science. Methane increases global warming and methane leaks are a major problem of all these type of facilities.

I recently made the decision to close my fused glass business largely because of my ethical dilemma of how much fossil fuels it takes to make and design glass. It's one thing on a personal level that I have control over.

I believe this plant goes against the goals of Washington State to reduce greenhouse gases rather than adding to them.

I oppose the permitting of this plant because it will be a huge source of greenhouse gas emissions. The argument that those countries using this fuel would use dirtier sources doesn't hold water. We don't know what they'll do. What we do know is that this methanol plant, if built, will spew millions of tons of emissions a year. It would also have negative impacts upstream in extraction and transportation. It's a step in the wrong direction for our state and world in a time of global crisis.

Art Hanson

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I strongly urge you to keep communities safe and keep Washington on track to meet goals for reducing climate pollution.

However, you MUST do MUCH more. We MUST keep ALL climate-changing fossil fuels IN THE

GROUND! We MUST achieve 100% clean, renewable energy by 2030.

John Flynn

Department of Ecology
In 2008 the Washington State legislature established limits for reducing greenhouse gas emissions in Washington State. Those requirements can be found in Revised Code of Washington RCW 70.235.020. In its 2019 update Ecology recommended the following updated statewide reduction goals for GHG emissions:
1) By 2020, reduce overall emissions of greenhouse gases in the state to 1990 levels.
2) By 2035, reduce overall emissions of greenhouse gases in the state to 25 percent below 1990 levels.
3) By 2050, the state will do its part to reach global climate stabilization levels by reducing overall emissions to 50 percent below 1990 levels.
The Department of Ecology issued its "Washington State Greenhouse Gas Emissions Inventory:1990-2015 Report to the Legislature" in December 2018, Publication 18-02-043. The key findings of this report to the legislature were:
1) Washingtons 2015 total greenhouse gas emissions were 97.4 Million Metric Tons.
2) Washingtons 2015 total greenhouse gas emissions were 7.4 Million Metric Tons higher than the 1990 baseline of 90.0 Million Metric Tons.
3) Washingtons greenhouse gas emissions increased by about 6.1 percent from 2012 to 2015.
Today, Department of Ecology is considering whether to grant or deny a permit for the construction and operation of a fracked gas to methanol refinery in Kalama, WA, by a foreign owned company, that would add 4.6 Million Metric Tons of greenhouse gases per year to this matrix. We know that in 2015 we were 7.4 MMT over the 1990 baseline of 90MMT. By adding an additional 4.6 MMT that would equate to 12.0 MMT more than the 1990 baseline.
In order to meet the legislative mandate of reducing greenhouse gas emissions the Department of Ecology has no alternative but to deny the permits for this refinery.
Thank you.

JoAnne Baker

NO TO THE METHONOL PLANT IN KALAMA WASHINGTON!!!
Yes we need family wage jobs, but not at the expense of our environment. Our natural resources are being depleted to send methonol to China to make plastic. OUR WORLD IS DROWING IN PLASTIC AND WE DON'T NEED ANY MORE! We need to expend our interest in recycling the plastic we all ready have.

Kristin Edmark

Comment: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020
RE: Upstream emissions from fracking
Date: September 19, 2020

Respectfully submitted by: Kristin Edmark, MPH RD
7611 NE 296th Way
Battle Ground, WA 98604 kristinedmark@hotmail.com; (360) 666-1285

To: Washington State Department of Ecology c/o Rich Doeges

Thank you for the opportunity to comment. Thank you for requiring the SEIS be redone. Thank you for the changes made.

Please add emissions from the fracking process to the upstream emissions. My main reason for being strongly opposed to the Kalama methanol refinery is that is encourages enormous fossil fuel extraction and fracking during a climate crisis. Thank you for including methane pipe leakage in your analysis. It is also necessary to include realistic emission figures dealing with the fracking/ extraction process itself. According to "High Country News" Colorado is facing large expenses attempting to cap "orphaned" wells.(http://hcn.org Jan 16,2018 "Orphaned" oil and gas wells are on the rise) Large oil and gas companies usually sell their rights to smaller companies when wells become less profitable. Often these smaller companies walk away rather than attempting to cap wells as is required. Bloomberg has also reported on the growing problem of uncapped wells which continue to emit methane. (http://www.bloomberg.com/new/features/2020-09-17/abandoned-wells-are-left-to-spew-methane-for-eternity?) The entire process of extraction including uncapped wells is a consequence of the Kalama methanol refinery creating a demand for the product.

As you know, the demand created by the methanol refinery will likely necessitate an additional north-south pipeline which will make it easier for additional large fossil fuel projects like that proposed at Port Westward, Oregon to be built.

Our world has run out of time to prevent enough change in our atmosphere to prevent continued climate disasters. The science is clear. I was struck by the globe exhibit as OMSI in Portland, OR showing world sources of greenhouse gasses. The exhibit points to northern USA/Canada as a major world emitter. It is just wrong and shameful for us to be doing this to the world. It is wrong for us to ignore/omit the upstream consequence of drilling/fracking created by the demand for gas by the Kalama methanol refinery.

Please include the full consequence of the drilling process including abandoned wells in the upstream emission Please deny the shoreline substantial development and conditional use permit on the basis of unacceptable greenhouse gas emissions.

Mary Anne deVry

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. All major religions state that mankind is to take care of creation. In the Judeo-Christian-Muslim faiths the first responsibility given to humans is to take care of creation.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Mary Anne deVry
6549 California Ave SW Apt 4 Seattle, WA 98136-1858
maryannedevry@gmail.com

David DiGiandomenico

I would like to see this project progress and begin construction. It would allow for a safe reusable and sustainable energy source to be used to further our society. This project would also provide many jobs in the construction of the project.

Thank you for your time

Ethan Pfahl

I would like to see this project progress and begin construction. It would allow for a safe reusable and sustainable energy source to be used to further our society. This project would also provide many new jobs, for the maintenance and the construction.

Thank you for your time

Megan Richie

I oppose this facility and ask that their permits be denied. This is a risk our community cannot afford. The cost is too high. They would be using an obscene amount of natural gas to produce the plastics our world does not need at a cost our community cannot afford. Costs would go up locally for electricity and natural gas. In the event of a spill Our residential and wildlife habitat would be put at risk of being destroyed with little to no recovery. The costs are too high and I ask that this facility be denied.

ahnetta fields

I bought this house in February and I paid a lot of money for it because i wanted a view of the river. If this passes I want the names of the people that passed it and the names of the owners because I will sue for the devaluation of my property because it will block the view of the river that I paid for

Emily Moon

I strongly oppose Northwest Innovation Works' proposed Kalama methanol facility. As the draft SSEIS shows, the plant would be one of the most significant pollution generators in Washington. The Second EIS's additional analysis lends proof that the more this facility, its upstream/onsite/downstream emissions and the volatile world market/future condition are studied, the worse this project is deemed to be. All of the suggested world market benefits, mitigation means and their potential effects are speculative. This industry, the market, and environmental science are changing constantly, but one thing is certain: adding another source of pollution to Washington (a state that prides itself on its environmental values and stewardship) and only furthering demand for pollution-generating products is an unconscionable idea.

I urge the Department of Ecology to deny all permits for this project and to work tirelessly to safeguard our critically sensitive environment.

Thank you,
Emily Moon

Olivia Hill

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

jeff wilson

This is not a perfect project. There is no perfect project. The process to provide employment opportunities has been overshadowed by poor handling of the review process by Ecology. This process has contaminated future project inquiries due to the handling by Ecology. This project has complied with the requirements....approve this project.

Clint Bryson

I am writing to comment in favor of approving the needed permits for the proposed Northwest Innovation Works Kalama Methanol facility. This project provides an opportunity for tremendous investment in the area while being a part of addressing greenhouse gas emissions globally.I believe it's important that we recognize pollution of any type does not recognize borders. That's why building a project such as this in Washington State where we have strong environmental and safety requirements makes sense. The level of review has been outstanding and each time the result has shown that this project will have a net positive effect on global emissions. That is why I urge you to approve the needed permits that will allow this project to move forward and help Washington State to be a leader in using technology and innovation to improve the way industry functions. Thank you for the important work that you do for all of us.
Respectfully, Clint Bryson

Gunnar Leidel

I would just like to say that I lived in Centralia for four years and the lack of work that's there in the the amount of work that will come for passing of this facility being built will change lives and make things better there thank you

Kelly Lindmark

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Claire Butler

After enduring days of the worst air quality measurements in the world due to west coast wildfires, I cannot imagine a more ill-timed proposal for further deterioration of our shared air quality. Dept of Ecology needs to examine its priorities, at a time of particularly poor timing in the midst of a pandemic that compromises lung function. The trajectory has been increased compromise of air quality on the West Coast. Do not add to this health risk, please.

Megan Cover

Burning methanol as fuel would generate millions of tons of pollution each year. In 2018 and 2019, NWIW informed potential investors that methanol from the planned refinery could be burned as fuel overseas, in sharp contrast to claims NWIW made to local and state regulators that the methanol would only be used to manufacture plastic. Now, Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate 5 million tons of pollution each year. I am a teenager, and I do not want to be left living on an earth that is uninhabitable! WE NEED URGENT ACTION NOW. Please do not allow this to happen.

To Whom It May Concern,

My name is Mark Wells.

I’m a Business Agent for UA Local 26 Plumbers and Pipefitters of Western Washington.

I support the construction of the Methanol Plant mostly because of the large number of family wage jobs it will create, both during the construction phase and many more permanent jobs to operate and maintain the plant after it’s built.

It will also generate much needed tax revenue.

Science has shown numerous times that this plant is a green project. Much greener than outsourcing this work to another country and ignoring the pollution because of the lack of regulations. Built in WA, it will meet all guidelines, create products we badly need in a much safer way without the pollution.

The permit for this project needs to be issued asap. Any other decision would be simply hypocritical.

Regards,

Mark Wells

carolyn atkinson

My name is Carolyn Atkinson and I work at an elementary school in Seattle. I am a young person who struggles with climate-related terror.

My students understand that they are growing up in a world in crisis. I prepared these comments under the smoke of the homes of Oregon's 500,000 American climate refugees.
My students are anxious. Can you imagine the despair and powerlessness of being 10 years old and knowing that we have only 10 years left to course correct? The most terrifying impacts of climate change are projected to hit us well within my lifetime. Before the end of the century, CO2 levels are likely to rise to the point of impairing human cognition. This concern is absent from the EIS.

The Kalama plant is justifying itself with the ridiculous logic that somehow, over the next 40 years, this plant will emit less than hypothetical other plants. This is an absurdity. 2020 shows that significant but long foreseeable economic, ecological, and human system collapses are here. The next 40 years will be so unpredictable that most of my generation has agreed that we won't bother to plan for retirement because of the scale of chaos on our horizon. The EIS is ridiculously optimistic. Assuming "Business as usual" indefinitely is absurdity.

The ecological and political instability that breaks the 40 year speculation of this environmental statement is caused by the climate crisis.
The instability is caused by fossil fuel expansion.
The instability is caused by projects EXACTLY like this one
It is exacerbated by the commitment to dishonesty of all fossil companies INCLUDING Northwest Innovations, which has wasted DOE time with "data" so optimistic and inaccurate that this whole environmental impact process had to be repeated. We don't want to work with careless firms when the stakes are this high. The EIS should accurately account for historical failures of this industry to clean up after itself and prevent leaks.

It is time for those with the responsibility to do the right thing to quit saying "well, just a little bit more". The planet doesn't have a little bit more to give!

Protect, preserve and enhance the environment for current and future generations. I am one of the children of the generation that you were supposed to fix this mess for. We are grown now, and we are angry that the mess is still here for us to clean up. Don't make it bigger. Reject the statement based on incomplete and dishonest data. It is not worth it for temporary construction jobs when there's so much other construction to FIX this mess that needs to be done.

RICHARD STERN

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Sydney Brahmavar

The idea that a methanol plant is being considered in the "progressive" state of Washington is abhorrent. At a time when we need to be forward thinking and stop destroying our planet with disastrous greenhouses gases, the environmental impacts of this decision clearly are not being considered. No new fossil fuel infrastructure in our state, stop destroying our state and planet by building fossil fuel infrastructure. As a state we need to reduce our emissions and LEAD in green tech and infrastructure, no invest in a dying industry that we know is destroying our planet and exacerbating the fires in our state.

Cynthia Jones

Good morning, and thank you for the opportunity to comment. I am calling on the Department of Ecology to reject the methanol refinery.

My name is Cynthia Jones. While I grew up in Colorado, I have lived in Edmonds, Washington for the last 30 years. I recently drove from Edmonds to visit family in Colorado, through smoke the entire way. I spent a week in Colorado in smoke, and returned home to another week in heavy smoke. Simultaneously hurricanes were battering the southeast. It is clear to me that climate change is real, it is now, and we must take rapid action to address it.

One of the main causes of climate change is the burning of fossil fuels. If we wish to address climate change, we cannot continue to burn fossil fuels, including methanol.

The proposed methanol refinery would create millions of tons of greenhouse gas pollution each year, and would lock us in to doing so for the next 40 years.

We cannot be distracted thinking mitigation will solve the problem. Nor can we believe that the only way to proceed is to continue to pollution-emitting plants. While we need to think globally, we need to act locally. I am not comfortable with increasing pollution in my state with the hope of decreasing pollution across the globe.

I treasure clean air and the opportunity to spend time in the great outdoors. I urge you to join me in working to protect our climate by facilitating the move away from fossil fuels. The Kalama Methanol plant will increase the burning of fossil fuels, increase the level of pollution in our state, and make it close to impossible to achieve Washington state climate goals. I urge the Department of Ecology to reject the methanol refinery.

Thank you.
Cynthia Jones

Rebekah Gaxiola

Director Watson and Department of Ecology,

Please reject the proposal to build and operate the gas-to-methanol refinery in Kalama. The negative ecological impacts of this refinery are far-reaching and it's irresponsible to move forward with this project. Please do the right thing for the community of Kalama and the other victims of this kind of development.

Joel Caldwell

My name is Joel Caldwell of Toledo washington. I am writing to ask Ecology to please deny the project. 6 months ago my wife and I had our first child. Now the entire west coast seems to be burning in relations to the amount of carbon we have put in the atmosphere. Now is the time to scale back emissions and switch to Renewable energy, not build the world's largest fracked gas-to-methanol refinery.
For future generations we must scale back emissions and halt climate change. please deny NWIW's refinery in Kalama!

Thank you,

Joel Caldwell

Lori Sarancik

I am a resident of Longview, WA, and I appreciate the opportunity to leave my comments on this project. First of all, I live inside the city limits of Longview, and, as such, would not be able to visually see the new facility. It would not impact my everyday travels whatsoever because I live and work in Longview. I suppose any particulate that is air-born would have the possibility of impacting me without me being aware of it. Because I am not a scientist, nor have I seen a study of this phenomenon, I cannot comment on the health impacts of the air after this facility is in operation. I would be interested to see how the Longview/Kelso area would be impacted by this. Also, my home and property would likely not change in value were the facility built and operating. Having said these things, I cannot speak from the point of view of having this facility built in my very own field of vision. So, I think those opinions of folks living near the location of the facility should be considered and studied with great detail. My interest in building the facility is economic. I have a teenage son who is working toward entering a workforce, and I interact with a lot of his friends who are in this stage of life as well. I believe that the number of jobs to build the facility and the number of jobs that will be available once it is operational are a very important point. These positions would provide opportunities for our youth that is maturing, so they would not have to leave town to find jobs with a good wage. Also, I have heard that the facility is sponsoring Workforce training. This is so important in our area where so many of the kids live at the poverty level and may not have an opportunity to study in college post high school. The facility could be a game-changer for our youth living below the poverty level. I believe we have a high percentage of youth in both the Longview and Kelso School Districts who participate in the free lunch program. These statistics are available from DSHS. Along with the number of new job positions available to our youth, this workforce training program is a huge need that the facility would help fill in our community. Finally, I believe the tax revenues from the business operation could be a big benefit to building and repairing our county infrastructure, recreational facilities, and community programs. We should look carefully at these things. So, to conclude, I am, as a resident of Longview, looking at a lot of economic and workforce benefits from this facility and it is attractive. If we carefully study and consider the health and financial impacts of the residents of Kalama and those living near to the facility, and we find they will have every opportunity to be free from physical and financial harm, then I believe it is a good project. Again, thank you for the opportunity to comment.

Debra Lee Keim

I do not support extending a permit for the Kalama Manufacturing and Marine Export Facility. With all the extreme climate events we are experiencing now and predicted for our future, I find it devastatingly short sighted to proceed with this facility which will become one of the worse greenhouse gas emitters and consumer of fracked natural gas in our state. Department of Ecology do not issue this permit! This area of the Columbia Has plenty of sunshine and wind. We need to encourage renewable energy projects which will provide economic benefits and green jobs, not methanol producing greenhouse gas emitters.

Ruth Pettis

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Karlyn Gedrose

Five years ago, my husband, Greg and I purchased what we considered to be our "dream property" in Prescott, Oregon along the Columbia river. We were married on the beach in front of our home last summer.�You can see Steelscape and the proposed site of the methanol refinery in the background of our wedding pictures - that's how close we are!

Greg and I found out about the refinery plan a few years ago. We would NEVER have purchased here had we known. NOT ONCE have Prescott residents ever been directly contacted to let us know what's going on. Living just 1/2 mile, we are probably more vulnerable to health and safety risks than anyone in Kalama! There have never been any direct mailers or signs to let us know we are living in the blast zone. THIS SHOULD HAVE BEEN MANDATORY INFORMATION COMMUNICATED AT THE VERY BEGINNING STAGES. Consequently, we were denied the opportunity to engage in the initial public hearings and comment periods.

NW Innovation Works did not effectively communicate to residents when a similar plan was in place for the Port of Tacoma. When they learned about it, residents there pleaded their case and won - no methanol plant is being built there and it should not be built in Kalama either!

This is untested, "new" technology proposed by a company that has no experience building methanol plants! It would be bad enough to allow a knowledgeable company with many years of experience - at least they might have learned a few safety tips over the years...but to allow a brand new FOREIGN-BASED company to come in using us as guinea pigs? Really? How can you possibly even consider building this hazardous facility when so many lives are at risk? ��������

Methanol is HIGHLY TOXIC TO HUMANS AND ANIMALS. It is most dangerous when ingested but inhalation of high concentrations of vapor and absorption through the skin are just as bad for producing toxic effects. The risk for cancer and other illnesses to those of us living in Prescott will surely increase.

We understand the desire for more jobs brought into the local Kalama area, but for Prescott residents, we gain NOTHING. A recent study found property values decreased up to 11% after an industrial plant opened.�Another study indicates that air pollution has a significant negative loss on home prices within a 2 mile radius of a refinery. By law we now have to disclose our knowledge if we want to sell. Would you buy a home in the blast zone directly facing a dangerous, noisy, toxic, eyesore like this?

Prescott is home to young children and the elderly, the most vulnerable to health risks resulting from air pollution. Prescott Beach is a popular county park providing exceptional fishing, windsurfing and recreational opportunities. The methanol refinery with it's 245' flare stack, vapor plumes reaching 2 1/2 miles high, new dock for tankers and 72 million gallons of on-site methanol storage would degrade the quality of Prescott Beach. Prescott citizens do not support sacrificing the health, livability, and economic future of our community to a dangerous fossil fuel export project. We ask you to advocate for our community and do everything in your power to deny the permit.

Department of Ecology, how are you going to live with yourself if you approve this, knowing the potential risks, and then there is an earthquake or some other catastrophic accident? NW Innovation Works can implement all the safety precautions they want in constructing and running this monster, but they CANNOT PREVENT HUMAN ERROR, the cause of many refinery "accidents."

Gerard Hawkins, CEO of GBK Enterprises summarizes in his presentation entitled "Methanol Plant Experiences In The Last Twenty Years" states: "If it can go wrong, it will... Apparent safe systems can fail."

Please reject the permit for building the world's largest methanol plant in our front yard.

Thank you.

Corey Gedrose

I hope we can all agree we desire to live and raise our families in a safe, healthy environment. Our family home in Prescott is one of the closest to the proposed refinery, just 1/2 mile directly across the river. We will no longer feel safe in our home if it is built. NWIW is a new start up - they've never built or run a methanol plant. Their proposed technology has never been used. We are their guinea pigs in a risky, dangerous experiment they want to build literally on shaky ground, sandy dredged spoils, in spite of our close proximity to the Cascadia fault line, due for a potentially catastrophic earthquake at any time. The DEIS explains that soil at the plant site has a "moderate to high liquefaction susceptibility" which basically means the ground under the plant could drop up to 2 feet.

As if earthquake, fire and mass shooting lock down drills aren't enough to frighten our children, we will now have to introduce chemical plant explosion drills into our homes and schools. Can you imagine the ear-piercing tsunami-like blaring warning sirens and having to quickly shelter in place after donning air masks and sealing all the doors and windows after an accident releases toxic, flammable chemicals into the air? According to an independent analysis conducted by the Northwest Citizen Science Initiative, the entire downtown and all 3 Kalama schools are within the glass-shattering "blast zone". I don't know if our home would still be standing after such an explosion.

It is unbelievable to me that people in positions of local leadership and authority think this methanol plant is a good thing. We all should have the right to breathe clean, healthy air and feel safe in our community. We cannot let the quality of our life and environment be determined by those who care more about profits than the people in their very own neighborhood. Please protect our health and safety and say no to the world's largest methanol refinery in our backyard.

George Vaughan

Having kept myself informed by reading updates and the latest Dept. of Ecology report, my opinion continues to oppose the building of the Kalama Methanol Plant. My main objections are: 1. it is counter-productive to our efforts at reducing Greenhouse Gases; 2. it will require the building of infrastructure that combines with #1.; 3. the greater part of employment is short-term; 4. it has the potential to be hazardous to the Kalama and Columbia River environment; 5. any mitigation proposed by the company is nebulous; 6. basing any decrease in future Greenhouse Gases on the actions of a foreign country is wishful thinking; 7. do we really want to increase the world-wide production of plastics? In my mind, those points would seriously object to this project being completed.

Sharon Kalister

Re: Kalama Manufacturing and Marine Export Facility Second Supplemental EIS.
Climate change is real and it's here now ... showing the impacts in the PNW with unprecedented 60 mph winds this month that spread wildfires across areas that have not historically been impacted. I've lived in this area since 1964 and have never seen anything like it. The Arctic is melting and we are seeing more numerous and stronger hurricanes in the SE US. The idea that we would even be considering allowing new fossil fuel infrastructure is the epitome of stupidity, ignorance, and denial. "No" is the correct and only response to this project.

Jim Byrne

I do not want a methanol plant anywhere in the Pacific Northwest. Last week SW Washington suffered the worst air quality in the world and tropical storms ravaged the south east. Some claim climate change is a hoax, but I believe it is real; and the forest fires and hurricanes are manifestations of climate change.

I have been a WDFW fish biologist for 28 years and have monitored climate change locally. It is accelerating annually, with this summer being a clear (or smokey) indicator that the time for action has ended. It is time for action. Methane gas is 20 times more dangerous for the climate than CO2. This project is fraught with methane gas leak potential, from the initial fracking process in Canada, through the transit process to Kalama. It is not even a WA or US company that benefits, but a Chinees company whose previous positions are contradictory.

This is not good for the Pacific northwest. Do not permit this plant. Thank you.

Jim Byrne

Deborah Kramer

I am against the Kalama Methanol Plant. Keep dirty emissions and fuel out of our beautiful state. Global warming is a serious threat. Protect Washington state and future generations from this dirty project. Thank you.

Greg Hoffman

"We are facing a man made disaster of global scale, our greatest threat in thousands of year: climate change," said David Attenborough at the UN Climate Change Summit. "If we don't take action, the collapse of our civilizations and the extinction of much of the natural world is on the horizon. Leaders of the World, you must lead. The continuation of civilizations and the natural world upon which we depend is in your hands. Time is running out."

WHAT OTHER APOCALYPTIC WARNING DO WE NEED TO HEAR? COULD THERE BE A MORE PERILOUS MESSAGE?

The proposed methanol refinery in Kalama would pollute as much as 1.2 million cars and use millions of gallons of water from the Columbia River each day, polluting the air with cancer causing toxins.

Department of Ecology and other local decision-makes, YOU MUST BE LEADERS IN OUR FIGHT AGAINST CLIMATE CHANGE. Like it or not, the continuation of civilizations and the natural world upon which we depend is partially in your hands.

This is not a dress rehearsal. Wield your influence and be the North West climate change champions we need you to be and put an end to the methanol refinery NOW!

Jean Avery

The Kalama refinery would have a huge environmental "footprint"-- if that term can be used to refer to pipelines and ocean routes.

-- The map on page 41 shows pipeline routes that would supply fracked gas to Kalama: 600 miles from British Columbia, plus 800 miles from Wyoming -- totaling 1400 miles of pipeline. Even if NWIW mitigated for upstream emission leakage, would this be sufficient to mitigate for other damages -- such as to lands occupied by Indigenous tribes or private landowners?

-- On page 48 is a color map of the world, with a red line showing the marine route from Kalama to China. As proposed, large tankers would transit 5,000 nautical miles from Kalama to China. Product would be unloaded, and the tankers would return empty to Kalama. This 10,000-mile round trip would be completed approximately once a week. (The SSEIS estimates 36 to 72 shipments per year; see page C-4).

Although the SSEIS includes plans to mitigate emissions within Washington, it is less clear

(a) if there will be any mitigation outside of the state and

(b) if there will be mitigation for non-emissions, such as marine fuel.

In conclusion:

1, The enormous reach of this project -- across the continent and across the globe -- would be hugely impactful, even beyond the stated GHG emissions.

2. The SSEIS fails to provide a complete, multi-dimensional plan for mitigation.

3. The scope of this project seems far beyond the regulatory purview of one state's Dept. of Ecology.

The Climate Clock is ticking. Please deny this project.

(Presented as oral testimony on Tuesday morning, 9/22/2020, with this revision: Neil's slide confirms zero mitigation out of state.)

Dave Hale

My comment on the KMMEF DSSEIS:

Washington State Department of Ecology, Olympia, WA,

Thank you for the opportunity to comment on this important decision making process.
My name is Dave Hale. I live in Silver Creek, WA and I'm a retired biologist. In my career I have primarily worked on wildlife and fisheries habitat. A portion of that work was involved in research on salmon smolt downstream passage through the Bonneville Project dams on the Columbia and the lower Snake River dams.
I would like to address the issue of our GHGs in the state of Washington and the contribution that the Kalama methanol refinery would have on those emissions.
Having reviewed the DSSEIS it is clear that Ecology has done a fairly good job of analyzing the life cycle of contributions of the project and also of the current alternative processes. I realize the difficulty of attempting to determine by projection, from sources of information with varying and sometimes conflicting data, the contributions of GHGs resulting from the development, extraction and transport of natural gas. This is also very difficult when analyzing the downstream use contributions, especially in a foreign county where we have sometimes questionable information and no control over how the product of this project will be used.
It is clear that the argument, used by NWIW, of displacement of more carbon intense processes over in China is highly speculative and dependent on a number of factors that rely on social, economic and developmental uncertainties. Looking at the results of the DSSEIS in this area, it's clear to me that the displacement theory would be OK if it actually resulted in offsetting dirtier forms of plastic and/or fuel production and use. Sadly, the analysis seems to rely on increasing use of fossil fuels and lacks the comparison of alternative methods of energy production (renewables). I believe that Ecology has, as part of the analysis, the need to compare and contrast the results when a greater proportion of the transport and electric energy may come from solar, wind and other low carbon power generation. China is rapidly developing electric car technology and has been using a greater portion of their solar panel production in country. I realize that renewable power production increases are also in the realm of speculation as well. Therefore, I will consider that KMMEF methanol could, under higher oil prices and greater restrictions on coal processes in Asia, displace some dirtier methanol processes like naphtha and coal. That's speculative; China is investing in new coal power plants and not just within China.
That leaves us with the Kalama NWIW site which will potentially produce, on average, approximately 1M T CO_2e GHGs per year for 40 years, locally, and 5M T CO_2e GHGs, for 40 years, globally. That represents a net increase in carbon produced in state (and globally) as a result of a proposed business. This doesn't fit with our current goals to reduce our carbon footprint or to protect our air and water. Further, mitigation is questionable with no definite plans to localize carbon sequestering or prevent additive effects of air pollution of the lower Columbia River airshed. With consideration of the additional risks to our important Columbia River ecosystem, human health impacts that can't be mitigated, and use of resources (natural gas, water, and electricity from a grid that relies on fossil fuels for make-up power when hydro is insufficient), Washington State can expect to bear the brunt of the negatives of this project with little benefits. My work in natural resource conservation was aimed at repair, enhancement and protection; not posing new risks.

Please deny the Shorelines Permit for KMMEF.

Thank you,

Dave Hale, Silver Creek, WA98585

Dennis C

The absurd notion that this refinery would actually reduce global GHG emissions hinges on the highly speculative prediction that it would displace less clean burning methanol production facilities and assumes that the methanol market will continue to expand indefinitely. It also fails to consider that renewable energy sources might displace fossil fuel sources. I urge you to please deny this permit.

Jimmy Peterson

I would like to see this project begin construction. It would allow for a new source safe reusable and sustainable energy source to be used to further our society. This project would open a large number of jobs in the construction of the project.

Thank you for your time

Mariana Sanchez

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Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Nichole Snyder

The Kalama Manufacturing plant would be a climate disaster. After our state just spent a week and a half being covered in wildfire smoke that left our air unhealthy to breathe are we really considering opening a plant that is meant to convert natural gas to methanol for the sake of creating more plastic? The average human is consuming 5 ounces of plastic A WEEK. This is the equivalent of a debit card. Are we seriously sticking to creating toxic plastic to further destroy our planet and bodies? As the climate crisis is accelerating at a rate even scientists can't believe are we really creating a plant that enables us to create more plastic? How much longer are we going to prioritize immediate profit over life? On top of that the proper studies haven't even been done to see what damage this plant will do in terms of emissions and local impact. It should not be ignored the emissions that will be created after the methanol created in the plant is shipped to Asia to use in creation of plastic. On top of everything else this plant is set to be built right on our own Columbia river. We have all seen that corporations would rather pay a fine after a disaster rather than preventing disasters because they are never held responsible. Will we further danger our wildlife and food environments? This methanol plant would create a higher risk of earthquakes in our region. Are we willing to put lives in danger for profit? We should be moving AWAY from fossil fuels. Not accelerating the climate disaster even more. This facility would pose a great danger to our local area and the planet. This planned facility should be stopped at all costs. Stop this nonsense. Stop killing animals and people for the sake of immediate profits. Will you be able to look your children in the eyes and tell them you did everything you could to give them their peers a safe environment to thrive in?

Brenda Michaels

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Timothy Baer

Hello,

I appreciate the opportunity to share my thoughts and position on this issue, even while I despair of the efficacy of the action.

Please deny this application for construction. I love my life in rural King County, WA. I believe that most of us want to see our planet continue to support thriving humanity, and that we can see the inherent contradiction with building this facility.

When we base our decisions on what the other guy (China) might do, we're on shaky ground. Clean up your own backyard, and then ask the neighbors if they will join you. Do not pretend that you are waiting for the other guy to act first, or that it's hopeless because he never will.

While humans may have an inherent bias toward negative stories, we can choose to tell each other positive stories, and work toward the reality we long for. After all, we are the ones creating all of this, together. Which side will you support? One argument seems to favor the status quo, the other is more visionary. One is powerless; the other works toward a better future.

I've heard that there are three types of falsehood: fibs, lies and (the most egregious) statistics. By your own admission the current studies are (at best) very speculative. You can just as easily create a study opposing as supporting this plant. Add upstream and downstream emissions, for example. There are many other factors to consider.

Fundamentally, the current conclusions are clearly based on untrue assumptions. e.g.: "We cannot quickly change the way we've always done things in the past." Really? Is that your experience of the worldwide response to the current pandemic? We actually CAN make wide, sweeping changes. Worldwide. We CAN stop using so much plastics and methanol, for example.

What's missing is willpower. And leadership. WA Department of Ecology can do better; can live up to its mandate. Please show the type of leadership that the overwhelming majority of humans around the world are pleading for their leaders to take. Do it for humanity (if the non-human world doesn't figure into the equation.)

It troubles me to see the disenfranchised being used as pawns in a media war waged on all of us (By the fossil-fuel industry!) to support this abomination of a plan. The plight of families who have lost their livelihood is not lost on me. Change is inevitable, though, and narrow self-interest will not serve the self in the long run.

Deny the permit!

Thank you,

--Tim Baer

My name is Meccah Boynton-Brown. I am a resident of southwest Washington, and I have very big concerns about the impacts and health consequences on the people and land in Kalama, the surrounding cities and counties, the state, our waterways, and the air with the proposed methanol refinery and any future dirty energy corporations. It is not a secret that energy companies mislead the public. They are responsible for the inevitable damage and destruction to our precious land and they disregard the cost and detriment to humanity.

About ten years ago, my husband was on the Deepwater Horizon oil rig when it exploded into the Gulf of Mexico. I want to believe that everyone in this country knows about this tragic environmental and ecological disaster, but surprisingly they do not. As a reminder, it was an industrial disaster that began on April 20, 2010, and considered to be the largest marine oil spill in the history of the petroleum industry. It leaked for almost 90 days and is still believed to be leaching oil from the fractured surface on the ocean floor today. The fishing and tourism industry was devastated, 11 men lost their lives that day, several have life-long injuries, including my husband who is still suffering from the **"accident"** today. I say accident with quotation marks because it was preventable. BP, Transocean, and Haliburton were responsible for their gross negligence and willful misconduct. Nobody was charged for the deaths of those on board that night, and the companies involved may have had to pay fines and restitutions, but they don't heal the damage that was created. They continue to profit in the billions, despite their record for irresponsibility.

Almost 2 years ago, my parents lost their home and every treasured possession in the Paradise, California fires due to the admitted negligence of PG&E. 85 people died in that fire, over 11,000 residential properties were burned, and in total, about 19,000 structures were lost, devastating a community and creating a toxic environmental problem for several generations. A cancer-causing chemical, benzene, has tainted the town's water, leaving it undrinkable. My understanding is that only a couple dozen homes have been rebuilt, and the residents still have to transport clean, bottled water to their homes. I was in Paradise a few months ago, and there are still churches and road-side stations to pick up water. The local water company declares that there are areas that you can utilize the water, but they are apologetic that the water doesn't have their "normal fresh flavor" and they know there is a "musty odor". They dodge responsibility by adding a statement…The following water system information is prepared and updated by PID and is subject to revision. PID does not guarantee the accuracy of this information nor its fitness for a particular use. Would you drink the water? How many are now relocated, homeless, and facing health issues? PG&E filed for voluntary bankruptcy protection in anticipation for the impact of billions of dollars in liability claims for one of California's deadliest wildfires. PG&E now has more than $50 billion in liabilities, and we know that will not make the people and the land whole again. This too, was preventable.

For years I have sat in on legal hearings, government meetings, even going to Washington D.C. to watch my husband testify to the Senate about the problems with the energy industries and the impact. It doesn't take a genius to know that greed is the prominent factor. Fossil fuel companies will spew deceptive narratives, including promises to ensure responsible emissions and economic contributions that they really can't calculate. They promise jobs, which decline year to year, and tax revenues that are usually far from accurate. There are daily implications of pollution and damage, but I am also concerned for the large-scale, preventable incidents of human miscalculations that permanently scar our lungs and landscape. I, like many that are speaking in reference to the proposal in Kalama, could speak for hours and debate the facts and impacts. We have legitimate concerns and heart-felt interests that do not line our pockets.

The energy created by outdated technologies of oil, gas, and coal industries need to be eliminated. The proposed methanol refinery in Kalama, or anywhere in the Pacific Northwest is unwelcome. We need renewable resources that will sustain our future and the generations to come. I am asking the Department of Ecology to **deny** the Kalama Manufacturing and Marine Export Facility.

Patricia Auer

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anna waendelin

I submit my opposition to the Kalama Methanol Refinery. We in the West are keenly aware of the effects of global warming and we do not need another 12 million tons of carbon pollution, as this refinery is projected to emit. What is needed is to promote and support green and sustainable energy and...fast!

Alice Shapiro

There are many reasons to oppose the Kalama methanol plant. You know that methanol is a potent greenhouse gas. We are in the midst of a climate crisis and extreme drought in Washington as well as Oregon, where I live, as do my two young granddaughters. We have recently experienced hazardous air quality due to the smoke of numerous, monstrous wildfires, some of which are still burning. These fires were driven by a combination of dryness of the forests, presence of "kindling" from smaller, replanted trees (large, old growth trees are not as susceptible to burning) and high wind conditions. The drought and ignitable forests are exacerbated by the practices of improper forest management and logging as well as an increase in greenhouse gases from the use of fossil fuels. I am a retired community college biology and ecology professor and I understand from a scientific level the catastrophic dangers we face (and have already faced)from the continued use of fossil fuel. This plant is extremely ill-advised and will magnify the health crises we are experiencing. From a personal level, I am a grandmother and great-grandmother who wants a viable future for my family and for all people and other species with whom we share this planet. Two of my granddaughters live in Portland, as I do, and suffered greatly from the dense smoke and fear of fire, both physically and emotionally. I am including a picture of each of my Portland grandkids to personalize what is at stake. There are countless other children who are at stake. Consider the future and the health of our planet. We don't have many chances left to tip the scales to unstoppable planetary disaster. My grandchildren want to have a happy, healthy childhood as they and all children deserve.





My name is Catherine Spofford. I live in Portland Oregon and have two young granddaughters whose future I am concerned about. The proposed methanol refinery would be the largest fracked gas to methanol refinery in the world and would impact not only the community of Kalama but all the Northwest. We have just seen some of the worst forest fires in the history of both Washington and Oregon. Scientist agree that climate change, resulting in higher temperatures, changes in precipitation patterns and cycles of drought across the west, contributed to these disastrous fires. The proposed refinery would become a significant source of greenhouse emissions each year, further contributing to the climate crisis and undermining Washington's greenhouse gas reduction goals. The refinery would consume more gas than any sector of Washington's economy necessitating a new fracked gas pipeline that may go down the entire length of the state. As we know gas pipelines leak methanol, which is 80 times more polluting than CO2, and have a history of dangerous explosions. This pipeline would go through communities, farmlands and forests and would increase the risk of pollution, explosion, and fire. I want a future where my granddaughters and other children are not afraid of losing their homes to fires and not forced to stay indoors because the air is too unhealthy to breath. This project will only exacerbate the climate crisis. I urge the Washington Department of Ecology to protect our environment and the future of our children and grandchildren and reject the methanol refinery and deny the Shoreline permit.

Kristyn MacPhail

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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David Berger

Thanks for you opportunity to comment. Please deny the shorelines permit for the Kalama manufacturing and export facility. The environmental consequences of increased green house gases, potential fracking impacts, possible increased plastic production, and and localized toxic air pollution are dire.
I live in the gorge, and recently saw a train cause a fire on the Oregon train tracks. These likely fires coupled with highly volatile trains containing fracked gas are terrifying.
In addition, I have seen large amounts of micro-plastics on what used to be pristine ocean beaches. The potential for this facility to cause an increase of toxic plastic in the food chain is another reason to deny this permit.
Thanks again for the chance to comment.
David Berger

Jef Gunn

I am from the region. My father and his family grew up on Mount Saint Helens near Spirit Lake, and later in Kelso and Longview. I was born in Seattle, and now live in Portland. I travel through Kalama frequently. We are blue collar working stock. My dad's dad was a welder. My maternal grandad was a miner in Northern Manitoba and British Columbia. I've been a carpenter all my life. I get it that the project would bring jobs to the area. I understand that important need.

However, there's more going on here in this project than jobs. There is also the need to protect home, to take care of home for our communities all across the geography of this proposed project. The conditions we enjoy on this planet–temperate atmosphere, oxygen, water, vegetation, animals–are not common. This planet is unique and rare! This Great Northwest region is uniquely special. Not just because it's home, but because it's beautiful and abundant. I am a carpenter, not a scientist, so I'm not going to pretend fluency with the technical data. I see as well as you do the staggering projected atmospheric and aquatic pollution that is bound to happen as a result of a project of this scale dealing with fracked gas and methanol. I say it's bound to happen because I'm a carpenter. Whatever is built will eventually fail. Period. These projects fail all the time. Catastrophically. And the SSEIS has already called out multiple issues that have not been adequately addressed.

It will not fail only in Kalama, but along the fracked gas pipeline, all the way back its source in Canada. I have a stake in this there, too as my mother's family are in BC and Alberta. And it will fail all along the shipping route to China and into cars there or plastics there. Even without failure, massive pollution will follow the trail. Enough is enough.

I know, and you know too, that fossil fuels have, in just two centuries, created wealth for some, ease of life for many through many important inventions, and at the same time destroyed life on this planet. Death and deadly weather are part of the legacy of fossil fuels. They simply go hand in hand. That's not going away unless we change course now. NOW.

The world has been hearing the warnings since the early 50s, for my whole lifespan. We have to learn. There are new technologies already in existence to lead us into a clean sustainable future. These new technologies also will create jobs. Let's put our efforts and money into these new sustainable technologies that will usher in a new era of clean prosperity for all. Lots of work making the way for a dependable future.

Jef Gunn

Shannon Milhaupt

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Jesse Chapman

Washington DOE should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama.

NWIW misled your agency, and the public, about the purpose and impacts of this refinery. I am counting on Ecology to dismiss NWIW's misleading claims for reduction in emissions and accurately account for the project's upstream and downstream pollution. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change. The devastating fires still burning throughout the west highlight how critical it is to actively reduce our fossil fuel production and use.

The risk to the people and climate of Washington is simply too great. Please keep Washington on track to meet our goals for reducing climate pollution. I am counting on you to do the right thing and stop this unnecessary fossil fuel export project.

Sincerely,
Jesse Chapman

Tess Roberts

If you call yourselves an innovations company, then try doing something innovative, creative, or new. plastic from petroleum is so yesterday. Fucking do something better with your money and resources. Something that you will be able to proudly tell your kids about in 50 years. Build the world's largest compostable plastic plant, the world's first carbon sinking plastic plant, the world's only algae based plastic plant. Something cool that this country will be proud of, and the world will look up to. Y'all are morons if you don't take your billions of dollars and do something that is so outdated. It's fucking 2020.

Thi Doan

I am 100% opposed to this Kalama Manufacturing and Marine Export Facility due to the massive negative impact on the climate, and not to mention the local environmental damage and pollution.

Anonymous Anonymous

My name is Vikki and I am a new resident of Kalama and Cowlitz county. I am asking the Department of Ecology to reject this project.
I am greatly disheartened to see that state and county officials clearly have no interest in protecting the residents of this county, nor in providing safe, long-term jobs in innovative and growing industries.

NW Innovation Works is a dubious company that is primarily backed by the Chinese Government and, according to documents obtained by OPB, has been telling different stories to different interest groups. While it has been telling Washington officials that this plant would mainly produce plastics, it has been telling Chinese investors that it will play a large role in feeding China's insatiable fuel appetite. Company stakeholders are lying to U.S. officials and fully intend to use this plant primarily for burning fuel, making this environmental assessment invalid.

Another issue is that the current pipelines that transport methane gas from Whatcom County lack the capacity to supply the plant. This means that an entirely new pipeline would need to be built along the length of I5, requiring the use of Eminent Domain to remove citizens from their homes and significantly increasing the risk of methane leaks. According to a study done by the Environmental Defense Fund, a methane leak rate of even 3% would result in significant climactic damage. There are no reliable studies that show that any methanol company has been successful in limiting these leaks and even the current DEQ study has estimated a leakage rate of at least 3% or about 9 million cubic feet of methane per day.

Furthermore, this project is a dud and will not lead to long-term job growth or stimulus. Countless economists and studies have shown that there is a glut of fossil fuels on the market and so many of them are struggling to be profitable that they must rely on tax-payer subsidies. NW Innovation is no different and has already applied for a $2 Billion loan guarantee from the U.S. Department of Energy. By the time this plant comes online, it will be losing money, leaving U.S. Taxpayers with the bill. Fracking and gas is on its way out, we should not be part of a dying and destructive industry.

Finally, Methanol is a highly toxic, flammable, and volatile compound. It is not only capable of causing an explosion that would destroy the town of Kalama, but loose Methanol can also cause toxic gas vapor clouds that can travel with the wind. Causing nausea, vomiting, ocular injury, and muscle spasms. As massive wildfires become more common in this state, do we really want to add methanol fuel to the fire?

Neil Smith

I am a climate analyst and risk management expert for the DoD. This is not a valid environmental assessment and focuses our resources on furthering greenhouse gas investment rather than the development of renewable energy sources and ecologically sound production. A plastic factory, a methanol processing plant, etc cannot be justified by offset and or efficiency.

Dorethea Simone

I am a Retired Registered Nurse and a Grandmother and am writing this on this First day of Autumn, the strangest Fall in years. We have signs and symptoms of Climate Changes on display all across the USA from fires to floods and record breaking temperatures. Remember that earlier studies from Ecology did not include impacts from Greenhouse Gases on our environment. Remember that the polluters have a record of taking the money and then leaving clean up to tax payers. We can not trust polluters to police themselves or to even be truthful. I will give a few quotes from the Action Proposal from the American Nurses Association from 2012 because the Resolution they passed was ignored and now we have a big mess. Part of this proposal stated: " Collaborate with others for a national Moratorium on new permits for unconventional oil and natural gas extraction (Fracking) throughout the country until human and ecological safety can be ensured and "Collaborating with others on energy policies that incentivize energy conservation and the development and use of safer, healthier alternative and renewable energy sources such as wind and solar." The Nurses recommendations are 4 pages long and I can send a copy to you if desired. Methanol is poison so we do not need more of it in our environment.

David Radtke

My name is David Radtke. I am a union member of IBEW local 48. I am a journeyman electrician, rural resident and have lived in the greater Portland area my whole life. We work on many solar, wind and hydro projects in Washington and Oregon. I understand the need for renewable energy and a greener future. This project will help reduce the global greenhouse gas emissions. North West Innovation Works will implement Zero Liquid Discharge technology to protect the Columbia River, which we all care a great deal about. This facility will meet or exceed requirements for clean operation in the state of Washington. It will create 1000 family wage construction jobs during construction, 200 full time jobs, 500 indirect local jobs, much needed tax revenue and do so in an environmentally responsible way. It is time to move forward with this project and I am hopeful that it will be a model for future construction in America.

Thank you.

Markus Boos

My name is Markus Boos, and I am a pediatrician and scientist in Washington. I appreciate the opportunity to address the Department of Ecology and provide my thoughts on Northwest Innovation Works' proposed fracked gas-to-methanol refinery.

Simply put, I cannot speak strongly enough AGAINST the building of this refinery, and implore Washington state to deny the permit for its construction. Based on the Department of Ecology's analyses, this project would produce millions of tons of carbon pollution yearly. Not only does this run contrary to our state's climate goals, but the facility will also pollute water systems including the Columbia River, while devastating surrounding ecosystems.

As a physician, I would like to address the health effects that would result from construction of this refinery. What the Environmental Impact Statement does not directly address are the indirect costs that will occur secondary to this refinery's adverse effects on human health locally.

In 2018, the Intergovernmental Panel on Climate Change released a detailed report summarizing the devastating effects of human-driven climate change secondary to the combustion of fossil fuels and the release of greenhouse gases. These consequences include both economic and health impacts from natural disasters, sea level rise and the effects of extreme heat on changing ecosystems that will be unable to support human life. To mitigate these catastrophic impacts, the IPCC demands that we reach and sustain net zero greenhouse gas emissions as quickly as possible. Fundamentally, the permitting and building of this refinery runs contrary to that goal and no amount of greenwashed messaging about "carbon emission savings" associated with this project can contradict this fact.

We are experiencing the health effects of unabated greenhouse gas release today, and these will only worsen exponentially with time. Deaths from heat stroke, natural disasters including hurricanes, floods and wildfires, and heat-sensitive infections such as Vibrio are already increasing in our backyards, and worldwide. As a pediatrician, I also recognize the local, longitudinal health effects of pollution and climate change secondary to greenhouse gas emissions from refineries such as the one in question, which include a greater incidence and severity of atopic dermatitis, asthma and other respiratory illnesses secondary to polluted air (which is compounded by climate change-driven mega wildfires that we are currently experiencing).

I also witness first hand the persistent, detrimental mental health effects on those who experience natural disasters or scarcity as a result of these emissions and subsequent climate change. We know that, unfortunately, all of these consequences disproportionately affect children and the elderly, leading to a worsened quality of life and increased healthcare costs over an individual's lifetime. These enormous costs will ultimately fall on our woefully unprepared healthcare system and they MUST be considered in any impact assessment.

I implore the state to deny the permit for the construction of Northwest Innovation Works' proposed fracked gas-to-methanol refinery. Our health, our lives and our children's future depend on making decisions that transition us away from fossil fuels and towards a renewable energy future.

Thank you.

Caleb Warden

Having spent my whole life here in the PNW, I know just how valuable our beautiful lands are. From the mountains, to the deserts, to the oceans, to the forests, we certainly have an abundance of natural beauty worth fighting to the death to protect from outside threats. In a time when petroleum product consumption is on the decline in favor of more environmentally-friendly means of power and manufacturing, opening a new fracking plant on the gorgeous Pacific Coast is simply an unwise investment. It doesn't take an expert to see that plastic waste is a big problem for the environment in the form of litter and microplastics in our water, soil, food, and even our bodies. Clearly building more plastic infrastructure is not what we need; we're already producing so much plastic that we can't control it all. Then you compound the problem of plastic waste with fracking, a process that not only perpetuates the system of environmental damage by providing fuel for combustion engines and pumping our ground full of toxic chemicals, but also has been shown to increase the risk of earthquake. In an area overdue for a very devastating earthquake, this seems like a rather irresponsible decision. Further, what is the plant's plan to ensure there are no spills in the event of a severe earthquake? Heck, even when there aren't any earthquakes, spills are common in the petroleum industry. Can NIW promise the people of the PNW and anyone who comes to enjoy our lovely beaches that there will be no spills? All considered, this could spell an irreversible environmental disaster that only pays out for a decade or two at most. What reasonable person could consider that an acceptable compromise or a wise investment?

Ruth Kendall

My name is Ruth Kendall. I am a member of the Longview City Council. I think that the NWIW is an important opportunity that will provide a much needed economic boost to our community.

I am also a retired chemical engineer. I had the good fortune to spend my career working in an industrial facility in Longview. As a process engineer I was proud to contribute toward modernizing our process to make it more efficient, cleaner, safer, and more environmentally friendly. I had a first hand view on how advancing technology made this possible. NWIW's proposed state of the art project will be an important investment in the future of our community.

I am also very concerned about our environment. We live in a beautiful area that we need to protect. I am glad to live in the state of Washington that has stringent environmental laws designed to ensure we do this. NWIW has demonstrated its commitment to meeting and exceeding these expectations.

I feel strongly that the NWIW project would be good for our community. It will provide much needed jobs. The project will continue a tradition of industry for area while protecting our environment. I urge you to allow this facility to be built.

Sarah Blake

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Meredith Long

I am writing to the Department of Ecology to ask that you deny the permit for the Kalama Manufacturing and Marine Export facility to be sited in Kalama, WA.

This facility, like others which refine methanol, will require large amounts of energy to operate. Some estimates are that almost one third of the natural gas that would arrive for refining would be necessary just to operate the plant. Burning that much natural gas just to run the plant would contribute to global warming significantly. Additionally, the plant would use vast amounts of water, some 2,500 gallons per minute. Partly due to wetter winters with less snow pack, we already have a hotter and drier climate in the Pacific Northwest than has been true in the past. We don't need a plant that uses our valuable water resources. The plant would produce volatile organic compounds, heavy metals and other air pollutants. Our air needs to be cleaner, not dirtier, so that all of us, especially those with lung and breathing problems, can breathe better.

The Chinese can say anything they want about mitigation but their plans are so vague that there will be no way for our government to verify that they are not meeting their obligations to mitigate the pollution this refinery will bring.

The fires this year should wake up anyone who does not believe climate change is already happening. We cannot afford the continuous use of fossile fuels that this plant would use to be the source of power and manufacturing for plastics.

I want my grandchildren and great grandchildren to have a clean environment. I strongly urge you to deny this project for good!

Thank you.

Beth Levin

I oppose the refinery. The factory will kill jobs in tourism and agriculture because it will increase pollution which increases climate change. Climate change and global warming cause pandemics and increased wildfires here on the west coast. Burning methane will increase CO2 emissions.

Liam Doucet

My name is Liam Doucet, I am 18 years old and here on behalf of myself & my family who live in the city Portland, Oregon. That said I do hold a volunteer position at Historic Pearson Air Field in the city of Vancouver Washington.

I am here because I strongly oppose the plan to build a Methanol Refinery next to the Columbia River, and on top of the land Indigenous Nations call home & rightfully so. The threat that the facility will pose to the Northwest & its people is catastrophic. A vibrant ecosystem of animals & people both along the Columbia & even way up North as far as the Salish Sea, rely on the Columbia river to bring Salmon which is now at risk of extinction because of the Lower Snake River Dams. A Methanol Refinery built will end up sealing a deadly fate for all the Salmon either before or when a leak happens. And yes I do mean WHEN not IF. Looking at the history of Methanol plants (and frankly all chemical plants in this country) negligence & abuse seems to be a common factor when a disaster happens. Unfortunately not every single worker at this facility will be competent enough to make sure all systems work properly. If I learned anything from what happened 36 years ago in the city Bhopal India it's that failing safety systems is a classic blunder that happens with almost all American owned refineries. At least 16,000 civilians were claimed dead the night an American chemical refinery operated by American workers released toxic vapor into the skies of India when it's neglected failsafe broke. The people of the nations native to Kalama would be the very first ones to be hit by any spill or vapor release, which will severely injure & kill thousands of them, and eventually even kill or seriously injure a large American population only 30 minutes from the proposed refinery. Which my family and I are part of. And despite the country I was born in supporting the finest military in the world, I doubt they are willing to hand out any kind of modern treatment or protective gear to those who would be affected. To whoever is responsible for the creation of this refinery there is no doubt that you won't do provide for people affect. You decided to build the largest refinery on the Earth next to these people, and didn't even ask them. Which says a lot about how you don't recognize them as a people, let alone actual Nations with beautiful ways of life that have to be preserved.

The suggestion that I can offer to you is to look at how much the study is missing key scientific information which shows how much of a danger to the environment that the refinery will pose. Including the energy required just to keep the refinery in operation & the emissions that will release. Especially the emissions released gas fracking. No new jobs will come out of the refinery instead positions will open to already existing employees. Any new jobs that will be created will last for only two years per hired group of employees. This refinery is not "progress" toward a better America, if anything it is slowing progress to the America we need. A clean, non wasteful, & non destructive America that doesn't rely on harmful plastics & dangerous fuels, and respects the land it was built on.

Thank you for listening to my testimony, and I hope you decide against building this refinery on this beautiful land belonging to wonderful human beings. To those approving this refinery I encourage you to take account of every single emission released, contamination of land, & disaster that will be related to the refinery whether direct or indirect. You'd be surprised how much crucial information has been left out of this study. Attempting to replace chemical refineries in the People's Republic of China with other chemical refineries here in the United States of America does not solve climate

change, it only increase & changes the source of it.

Emily Wing

I STRONGLY oppose the development of a natural gas-to-menthol production plant. Our planet is on the very brink of environmental collapse, as we have felt keenly these past few weeks in Seattle. It is long past time to move on from harmful and polluting energies and invest in the future of green energy. The climate crisis will not only decimate our economy, our national security, but our very lives. It is no longer a "children's and grandchildren's" problem. It is all of our problem. Right now. No plant, do the right thing, for all of us.

Daniel Gassenberg

My name is Dan Gassenberg. I live in Richland Wa. I am a 25 year member of the Boilermakers union local 242.
I am 100 percent in support of the proposed Methanol project in Kalama Wa. The construction of this project will provide many good paying jobs for the hard working men and women who help build America. We have been looking forward to getting to work in Kalama. The economic situation in Wa state needs a rebound due to the Covid-19 pandemic of 2020. Unemployment is at an all time high. People need good jobs.
I ask the Department of Ecology to approve this permit. Thank you.

Julie Goebel

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Nick Engelfried

Dear Washington Department of Ecology,

After attending today's webinar on the Kalama methanol facility, I believe the logic used in the EIS to calculate the global lifecycle carbon footprint of this project to be fundamentally flawed. We cannot assume that building this plant will automatically cause China or some other country to build one fewer methanol plant of their own. Furthermore, the assumption that the volume of methanol this plant would produce will necessarily be made elsewhere if the project is not built also does not pass scrutiny. The assumption seems to be that the world will consume the same amount of methanol, regardless of how many different countries are dumping their product on the international market over the next few decades. This defies reason and basic economics.

I urge you to consider why it is that Chinese companies would buy imported methanol from the U.S. in the first place? Clearly, they would only do so if it is a cheaper option than purchasing methanol made closer to home. If U.S.-imported methanol is unavailable, using the product will become more expensive and less attractive, changing the economic calculus of whether it makes for companies to engage in activity that emits greenhouse gases. A product that is readily available on the international market is much more likely to be consumed than one which few countries are producing, and this applies to methanol. By adding to the number of new facilities dumping methanol on the market, we can expect Washington will contribute to more global methanol consumption and increased carbon emissions.

Furthermore, I question whether it is at all possible to calculate how the Kalama methanol facility will impact the decisions of governments and major corporations decades from now, during a time when the world is undergoing a transition to clean energy. Energy markets are changing so fast that assumptions made today may not hold true five years from now, let alone ten, thirty, or forty years into the future. Major oil companies like Shell and BP are planning for a post-oil future. Entire nations, including Asian countries like South Korea, are undertaking efforts to transform their economies in order to move beyond fossil fuels. It is certainly possible, and arguably likely, that China's economy will undergo a similar transformation sometime in the next few decades as renewable energy becomes cheaper and the costs from burning fossil fuels become ever clearer. Just recently, the Chinese government indicated it is considering significantly increasing its renewable energy targets for the next five years.

As countries are hit by more and more extreme weather events and other "natural" disasters linked to climate change, it can be expected that they will ramp up investments in green technology to a degree that would seem unimaginable today. Given the likelihood of this scenario, we cannot assume the demand for methanol produced at the Kalama facility will exist ten years from now or that it will be met by another project if this facility is not built. More likely, the plant will become a stranded asset making a product for a market that no longer exists.

What does seem convincing in the EIS are the numbers showing that here in Washington, carbon emissions will go up if the Kalama facility is built. While we cannot say with any degree of certainty how our actions will or will not affect market players in China, we can reduce our own carbon emissions and set a positive example for the rest of the world. In calculating the carbon

footprint of the Kalama project, I urge DOE to focus on this reality rather than making speculative assumptions that "prove" producing more fossil fuels will somehow result in fewer carbon emissions.

Thank you for considering this comment,

Nick Engelfried
1205 N. State Street
Bellingham, WA 98225

jason Leonard

Hello,

I am a Woodland WA resident. I work for a construction contractor in the pipefitting industry and have done so for 25 yrs. I have to weigh the pros and cons of building such a plant on the Columbia River. Pros- Possible short term employment for myself during the construction. A few long term jobs for locals. A huge amount of revenue for corporations and a foriegn country. Cons- Environmental hazards to the surrounding river, air, and to our climate. I think I'll strongly opt for the second. It's time to stand up against climate change deniers and greedy executives. Is money REALLY more important than life as we know it? Think about it.

Kristine Plisga

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Gail Haubrich

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Claire Richards

My name is Claire Richards and I live in Spokane Washington. I am a nurse scientist, a professor of nursing, and a member of Washington Physician's for Social Responsibility. I'm also a mother of a four-year-old. My son was born in Seattle and we always imagined that he would grow up in the Pacific Northwest and that we would make this our home. But my son has only known one summer that was free of wildfire smoke. This last year in Spokane, the smoke reached unprecedented levels of hazardous air quality. We did not go outside for a week. Even with three high quality filters indoors, we could still smell smoke inside. Even staying inside, I felt so crummy that I worried that I was sick with COVID-19. Many people don't even have filters at all or were forced to work outside and this is a major issue of equity. Many other low and middle incomes in the world are unfairly suffering even worse impacts than we are. What kind of world did I bring my son into in which we need to live in a bunker for him to be safe? Why don't the lives of children all over the world matter, too? The recurrent wildfire smoke has caused me significant anxiety, restlessness, and despair about the future. All I can conclude is that children and those who love them are simply expendable to our state's institutions and leaders, if they can only continue to extract and process fossil fuels—what is causing the world to become unlivable.

The Lancet Countdown concluded that "The life of every child born today will be profoundly affected by climate change with populations around the world increasingly facing extremes of weather, food and water insecurity, changing patterns of infectious disease, and a less certain future. Without accelerated intervention, this new era will come to define the health of people at every stage of their lives."

When we look at what science says about climate impacts, we know that wildfires will increase on the west coast as a result of climate change and the burning of fossil fuels. What is mindboggling to think is to think is that the PNW is considered a climate oasis, even though with continued greenhouse emissions these wildfires are only just the tip of the melting iceberg.

It is a fairy tale to describe a staggering increase in greenhouse gas emissions as a decrease in emissions or a flattening of the curve only because it is being compared to a steep and unrelenting curve of emissions. We cannot allow massive new fracked gas projects to move forward based on speculation about markets abroad or even the promise that the product will be used to produce plastic. The company should have determined mitigation now and should be mitigating all impacts of the Kalama facility, not just those in Washington state. In the future, this is very likely to become an abandoned asset- at which point who is going to be responsible for paying to clean it up? I'm guessing the next generation. It's dreadfully misleading to suggest that this would help our economy. There is tremendous opportunity from green energy instead.

I'm calling on the Department of Ecology to reject the methanol refinery, and to deny the Shorelines Permit for the project.

The 2019 report of The *Lancet* Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate

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See Editorial page 1780

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Executive Summary

The *Lancet* Countdown is an international, multidisciplinary collaboration, dedicated to monitoring the evolving health profile of climate change, and providing an independent assessment of the delivery of commitments made by governments worldwide under the Paris Agreement.

The 2019 report presents an annual update of 41 indicators across five key domains: climate change impacts, exposures, and vulnerability; adaptation, planning, and resilience for health; mitigation actions and health co-benefits; economics and finance; and public and political engagement. The report represents the findings and consensus of 35 leading academic institutions and UN agencies from every continent. Each year, the methods and data that underpin the *Lancet* Countdown's indicators are further developed and improved, with updates described at each stage of this report. The collaboration draws on the world-class expertise of climate scientists; ecologists; mathematicians; engineers; energy, food, and transport experts; economists; social and political scientists; public health professionals; and doctors, to generate the quality and diversity of data required.

The science of climate change describes a range of possible futures, which are largely dependent on the degree of action or inaction in the face of a warming world. The policies implemented will have far-reaching effects in determining these eventualities, with the indicators tracked here monitoring both the present-day effects of climate change, as well as the worldwide response. Understanding these decisions as a choice between one of two pathways—one that continues with the business as usual response and one that redirects to a future that remains ''well below 2°C''—helps to bring the importance of recognising the effects of climate change and the necessary response to the forefront.

Evidence provided by the Intergovernmental Panel on Climate Change, the International Energy Agency, and the US National Aeronautics and Space Administration clarifies the degree and magnitude of climate change experienced today and contextualises these two pathways.

The impacts of climate change on human health

The world has observed a 1°C temperature rise above pre-industrial levels, with feedback cycles and polar amplification resulting in a rise as high as 3°C in north western Canada.[1,2] Eight of the ten hottest years on record have occurred in the past decade.[3] Such rapid change is primarily driven by the combustion of fossil fuels, consumed at a rate of 171 000 kg of coal, 116 000 000 L of gas, and 186 000 L of oil per s.[4–6] Progress in mitigating this threat is intermittent at best, with carbon dioxide emissions continuing to rise in 2018.[7] Importantly, many of the indicators contained in this report suggest the world is following this "business as usual" pathway.

The carbon intensity of the energy system has remained unchanged since 1990 (indicator 3.1.1), and from 2016 to 2018, total primary energy supply from coal increased by 1·7%, reversing a previously recorded downward trend (indicator 3.1.2). Correspondingly, the health-care sector is responsible for about 4·6% of global emissions, a value which is steadily rising across most major economies (indicator 3.6). Global fossil fuel consumption subsidies increased by 50% over the past 3 years, reaching a peak of almost US$430 billion in 2018 (indicator 4.4.1).

A child born today will experience a world that is more than four degrees warmer than the pre-industrial average, with climate change impacting human health from infancy and adolescence to adulthood and old age. Across the world, children are among the worst affected by climate change. Downward trends in global yield potential for all major crops tracked since 1960 threaten food production and food security, with infants often the worst affected by the potentially permanent effects of undernutrition (indicator 1.5.1). Children are among the most susceptible to diarrhoeal disease and experience the most severe effects of dengue fever. Trends in climate suitability for disease transmission are particularly concerning, with nine of the ten most suitable years for the transmission of dengue fever on record occurring since 2000 (indicator 1.4.1). Similarly, since an early 1980s baseline, the number of days suitable for *Vibrio* (a pathogen responsible for part of the burden of diarrhoeal disease) has doubled, and global suitability

for coastal *Vibrio cholerae* has increased by 9·9% (indicator 1.4.1).

Through adolescence and beyond, air pollution—principally driven by fossil fuels, and exacerbated by climate change—damages the heart, lungs, and every other vital organ. These effects accumulate over time, and into adulthood, with global deaths attributable to ambient fine particulate matter ($PM_{2·5}$) remaining at 2·9 million in 2016 (indicator 3.3.2) and total global air pollution deaths reaching 7 million.[8]

Later in life, families and livelihoods are put at risk from increases in the frequency and severity of extreme weather conditions, with women among the most vulnerable across a range of social and cultural contexts. Globally, 77% of countries experienced an increase in daily population exposure to wildfires from 2001–14 to 2015–18 (indicator 1.2.1). India and China sustained the largest increases, with an increase of over 21 million exposures in India and 17 million exposures in China over this time period. In low-income countries, almost all economic losses from extreme weather events are uninsured, placing a particularly high burden on individuals and households (indicator 4.1). Temperature rise and heatwaves are increasingly limiting the labour capacity of various populations. In 2018, 133·6 billion potential work hours were lost globally, 45 billion more than the 2000 baseline, and southern areas of the USA lost 15–20% of potential daylight work hours during the hottest month of 2018 (indicator 1.1.4).

Populations aged 65 years and older are particularly vulnerable to the health effects of climate change, and especially to extremes of heat. From 1990 to 2018, populations in every region have become more vulnerable to heat and heatwaves, with Europe and the Eastern Mediterranean remaining the most vulnerable (indicator 1.1.1). In 2018, these vulnerable populations experienced 220 million heatwave exposures globally, breaking the previous record of 209 million set in 2015 (indicator 1.1.3). Already faced with the challenge of an ageing population, Japan had 32 million heatwave exposures affecting people aged 65 years and older in 2018, the equivalent of almost every person in this age group experiencing a heatwave. Finally, although difficult to quantify, the downstream risks of climate change, such as migration, poverty exacerbation, violent conflict, and mental illness, affect people of all ages and all nationalities.

A business as usual trajectory will result in a fundamentally altered world, with the indicators described providing a glimpse of the implications of this pathway. The life of every child born today will be profoundly affected by climate change. Without accelerated intervention, this new era will come to define the health of people at every stage of their lives.

Responding to climate change for health

The Paris Agreement has set a target of "holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1·5°C." In a world that matches this ambition, a child born today would see the phase-out of all coal in the UK and Canada by their sixth and 11th birthday; they would see France ban the sale of petrol and diesel cars by their 21st birthday; and they would be 31 years old by the time the world reaches net-zero in 2050, with the UK's recent commitment to reach this goal one of many to come. The changes seen in this alternate pathway could result in cleaner air, safer cities, and more nutritious food, coupled with renewed investment in health systems and vital infrastructure. This second path—which limits the global average temperature rise to "well below 2°C"—is possible, and would transform the health of a child born today for the better, right the way through their life.

Considering the evidence available in the 2019 indicators, such a transition could be beginning to unfold. Despite a small increase in coal use in 2018, in key countries such as China, it continued to decrease as a share of electricity generation (indicator 3.1.2). Correspondingly, renewables accounted for 45% of global growth in power generation capacity that year, and low-carbon electricity reached a high of 32% of global electricity in 2016 (indicator 3.1.3). Global per capita use of electric vehicles increased by 20·6% between 2015 and 2016, and now represents 1·8% of China's total transportation fuel use (indicator 3.4). Improvements in air pollution seen in Europe from 2015 to 2016, could result in a reduction of Years of Life Lost (YLL) worth €5·2 billion annually, if this reduction remained constant across a lifetime (indicator 4.2). In several cases, the economic savings from a healthier and more productive workforce, with fewer health-care expenses, will cover the initial investment costs of these interventions. Similarly, cities and health systems are becoming more resilient to the effects of climate change; about 50% of countries and 69% of cities surveyed reported efforts to conduct national health adaptation plans or climate change risk assessments (indicators 2.1.1, 2.1.2, and 2.1.3). These plans are now being implemented, with the number of countries providing climate services to the health sector increasing from 55 in 2018 to 70 in 2019 (indicator 2.2) and 109 countries reporting medium to high implementation of a national health emergency framework (indicator 2.3.1). Growing demand is coupled with a steady increase in health adaptation spending, which represents 5% (£13 billion) of total adaptation funding in 2018 and has increased by 11·8% over the past 12 months (indicator 2.4). This increase is in part funded by growing revenues from carbon pricing mechanisms, with a 30% increase to US$43 billion in funds raised between 2017 and 2018 (indicator 4.4.3).

However, current progress is inadequate, and despite the beginnings of the transition described, the indicators published in the *Lancet* Countdown's 2019 report are suggestive of a world struggling to cope with warming that is occurring faster than governments are able, or willing to

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respond. Opportunities are being missed, with the Green Climate Fund yet to receive projects specifically focused on improving climate-related public health, despite the fact that in other forums, leaders of small island developing states are recognising the links between health and climate change (indicator 5.3). In response, the generation that will be most affected by climate change has led a wave of school strikes across the world.

Bold new approaches to policy making, research, and business are needed in order to change course. An unprecedented challenge demands an unprecedented response, and it will take the work of the 7·5 billion people currently alive to ensure that the health of a child born today is not defined by a changing climate.

Introduction

Human wellbeing, and the stability of local communities, health systems, and governments, all depend on how they interface with the changing global climate.[9,10] Across the world, an average temperature increase of 1°C from a pre-industrial baseline[1,2] has already resulted in extreme climatic and environmental changes, with severe storms and floods, prolonged heatwaves and droughts, new and emerging infectious diseases,[11–13] and compounding threats to food security. Left unabated, climate change will define the health profile of current and future generations, will challenge already overwhelmed health systems, and undermine progress towards the UN Sustainable Development Goals (SDGs) and universal health coverage (UHC).[14,15]

The Intergovernmental Panel on Climate Change (IPCC)'s 2018 Special Report on Global Warming of 1·5°C emphasises the scale of the response required: global annual emissions must halve by 2030 and reach net-zero by 2050 to limit warming to 1·5°C, while recognising that no amount of climate change is considered safe.[2] Placing health at the centre of this transition will yield enormous dividends for the public and the economy, with cleaner air, safer cities, and healthier diets. Analysis focused on one of these pathways—cleaner air through more sustainable transport and power generation systems—suggests that the economic gains from the health benefits of meeting the Paris Agreement substantially outweigh the cost of any intervention by a ratio of 1·45 to 2·45, resulting in trillions of dollars of savings worldwide.[16] When the health benefits of any increase in physical activity that results from modal shift are taken into account, the economic gains increase significantly.[17] These analyses complement an assessment from outside the health sector, which estimates that a robust response to climate change could yield more than US$26 trillion and 65 million new low-carbon jobs by 2030, compared with a business as usual scenario.[18]

Monitoring this transition from threat to opportunity and demonstrating the benefits of realising the Paris Agreement is precisely why the *Lancet* Countdown on health and climate change was formed. As an international, independent research collaboration, the partnership brings together 35 academic institutions and UN agencies from every continent. The indicators and report presented here represent the work and consensus of climate scientists; geographers; engineers; energy, food and transport experts; economists; social and political scientists; public health professionals; and doctors.

The 41 indicators of the 2019 report span five domains: climate change impacts, exposures, and vulnerability; adaptation planning and resilience for health; mitigation actions and their health co-benefits; economics and finance; and public and political engagement (panel 1).

Strengthening a global monitoring system for health and climate change

This collaboration builds on three decades of work around the world, which has sought to understand and assess the scientific pathways that link climate change to public health.[13] In 2016, The *Lancet* Countdown launched a global consultation process, actively seeking input from experts and policy makers on which aspects of these pathways could and should be tracked as part of a global monitoring process. A large number of indicators were initially considered, and then narrowed down into the five indicator domains and published, along with a request for further input.[19] The final set of indicators were selected on the basis of the presence of credible scientific links to climate change and to public health; the presence of reliable and regularly updated data, available across temporal and geographic scales; and the importance of this information to policy makers.[20]

Overcoming the data and capacity limitations inherent in this field, and remaining adaptable to a rapidly evolving scientific landscape has required a commitment to an open and iterative approach. This has meant that the analysis provided in each subsequent annual report replaces analyses from previous years, with methods and datasets being continuously improved and updated. In every case, a full description of these changes is provided in the appendix, which is intended as an essential companion to the main report, rather than a more traditional addendum.

The 2019 report presents 12 months of work refining the metrics and analysis. In addition to updating each indicator with the information collated over the course of 1 year, three key developments have occurred.

Firstly, methodologies and datasets have been strengthened for indicators that capture heat and heatwaves; labour capacity loss; the lethality of weather-related disasters; terrestrial food security and undernutrition; health adaptation planning and vulnerability assessments; air pollution mortality in cities; household fuel use for cooking; and qualitative validation of engagement from the media and national governments in health and climate change.

Secondly, the geographical and temporal coverage has been expanded for indicators that capture marine food

Panel 1: The *Lancet* Countdown indicators

Climate change impacts, exposures, and vulnerability
- 1.1: health and heat
  - 1.1.1: vulnerability to extremes of heat
  - 1.1.2: health and exposure to warming
  - 1.1.3: exposure of vulnerable populations to heatwaves
  - 1.1.4: change in labour capacity
- 1.2: health and extreme weather events
  - 1.2.1: wildfires
  - 1.2.2: flood and drought
  - 1.2.3: lethality of weather-related disasters
- 1.3: global health trends in climate-sensitive diseases
- 1.4: climate-sensitive infectious diseases
  - 1.4.1: climate suitability for infectious disease transmission
  - 1.4.2: vulnerability to mosquito-borne diseases
- 1.5: food security and undernutrition
  - 1.5.1: terrestrial food security and undernutrition
  - 1.5.2: marine food security and undernutrition

Adaptation, planning, and resilience for health
- 2.1: adaptation planning and assessment
  - 2.1.1: national adaptation plans for health
  - 2.1.2: national assessments of climate change impacts, vulnerability, and adaptation for health
  - 2.1.3: city-level climate change risk assessments
- 2.2: climate information services for health
- 2.3: adaptation delivery and implementation
  - 2.3.1: detection, preparedness, and response to health emergencies
  - 2.3.2: air conditioning—benefits and harms
- 2.4: spending on adaptation for health and health-related activities

Mitigation actions and health co-benefits
- 3.1: energy system and health
  - 3.1.1: carbon intensity of the energy system
  - 3.1.2: coal phase-out
  - 3.1.3: low-carbon emission electricity
- 3.2: access and use of clean energy
- 3.3: air pollution, energy, and transport
  - 3.3.1: exposure to air pollution in cities
  - 3.3.2: premature mortality from ambient air pollution by sector
- 3.4: sustainable and healthy transport
- 3.5: food, agriculture, and health
- 3.6: mitigation in the health-care sector

Economics and finance
- 4.1: economic losses due to climate-related extreme events
- 4.2: economic costs of air pollution
- 4.3: investing in a low-carbon economy
  - 4.3.1: investment in new coal capacity
  - 4.3.2: investments in low-carbon energy and energy efficiency
  - 4.3.3: employment in low-carbon and high-carbon industries
  - 4.3.4: funds divested from fossil fuels
- 4.4: pricing greenhouse-gas emissions from fossil fuels
  - 4.4.1: fossil fuel subsidies
  - 4.4.2: coverage and strength of carbon pricing
  - 4.4.3: use of carbon pricing revenues

Public and political engagement
- 5.1: media coverage of health and climate change
- 5.2: individual engagement in health and climate change
- 5.3: engagement in health and climate change in the UN General Assembly
- 5.4: engagement in health and climate change in the corporate sector

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See Online for appendix

security; national adaptation planning for health; health vulnerability assessments; climate information services for health; the carbon intensity of the energy system; access to clean energy; and Chinese media engagement in health and climate change.

Finally, new indicators were constructed that capture exposure to wildfires; the transmission suitability for *V cholerae*; the benefits and harms of air conditioning; emissions from livestock and crop production; global health-care system emissions; economic cost of air pollution; and individual online engagement in health and climate change.

Ongoing research aims to establish indicators for concepts that are inherently difficult to quantify, such as the mental health effects of climate change. Three indicators included in previous years—covering migration, global health adaptation funding, and academic engagement in health and climate change—are not presented in the 2019 report, as further work is being done to improve their methods and to ensure that they are able to be sustainably reproduced in the future. These indicators will be re-introduced in subsequent years.

For the second consecutive year, these changes represent substantial updates to most of the indicators, and knowledge is increasing at a pace that will only accelerate as funding and capacity from the Wellcome Trust and the *Lancet* Countdown's partners grows. Going forward, the collaboration will seek to further strengthen its scientific processes, continuously review its indicators, and produce internally coherent frameworks to guide the development of new indicators. To this end, The *Lancet* Countdown remains open to new input and participation from experts and academic institutions willing to build on the analysis published in this report.

Health and climate change in 2018

The 2019 report discusses the worsening health effects of climate change. Over 220 million additional exposures to heatwaves (with each exposure defined as one person aged 65 years or older exposed to one heatwave) occurred in 2018, compared with a 1986–2005 climatological baseline, higher than ever previously tracked (indicator 1.1.3). This occurred at a time when demographic vulnerability to these extremes continued to increase across every region (indicator 1.1.1), and the warming experienced by human populations reached four times that of the global average temperature rise (indicator 1.1.2). Around the world, resultant losses in labour capacity were reported, with several southern states in the USA losing as much as 15–20% of daylight capacity (for workers in construction and agriculture; indicator 1.1.4). The effects of this warming extended to other extremes, with 152 countries experiencing a marked increase in the daily population exposures to wildfires compared with baseline (indicator 1.2.1). Regarding infectious diseases, 2018 was ranked second on record as having the most suitable conditions for the transmission of diarrhoeal disease and wound infections from *Vibrio* bacteria, and 9 of the past 10 most suitable years for the transmission of dengue fever have occurred since 2000 (indicator 1.4.1). The distribution of exposure and effect is not equal, with several indicators reporting greater changes in low-income settings than in high-income settings—for example, in parts of Africa, South-East Asia, and the Western Pacific (indicator 4.1).

Despite these worsening effects, the carbon intensity of the global energy system has remained flat since 1990 (indicator 3.1.1) and use of clean fuels for household services is stagnating (indicator 3.2). Perhaps of greatest concern is that total primary energy supply from coal increased by 1·7% from 2016 to 2018, reversing a previously observed downward trend (indicator 3.1.2), and carbon dioxide (CO_2) emissions from the energy sector, far from falling, rose by 2·6% from 2016 to 2018 (indicator 3.1.1). Global fossil fuel subsidies rose to US$427 billion in 2018—a 33% rise from 2017 (indicator 4.4.1)—and emissions associated with health care now represent 4·6% of global emissions, rising across most major economies (indicator 3.6). Fossil fuel use continues to contribute to ambient air pollution, which resulted in 2·9 million premature deaths globally in 2016 (indicator 3.3.2).

Although these emerging health impacts and the lack of a coordinated global response portray a bleak picture, they also mask important promising trends. Several encouraging trends continue, such as reductions in investment in new coal capacity and a fall in coal as a share of total electricity generation (indicators 4.3.1 and 3.1.2). Renewable energy accounted for 45% of total growth in 2018 (indicator 3.1.3), and low-carbon electricity represented an impressive 32% share of total global electricity generation in 2016 (indicator 3.1.3). The reduction in air pollution recorded in Europe from 2015 to 2016, if maintained across a lifetime, could result in an annual reduction in YLL valued at €5·2 billion (indicator 4.2). These changes are reinforced by new commitments from the UK[21] and France[22] to reach net zero by 2050, with other countries soon expected to follow.

Notably, the world is beginning to adapt, with 50% of countries and 69% of cities surveyed reporting the completion or undertaking of a climate change risk assessment or adaptation plan (indicators 2.1.2 and 2.1.3). Increasingly, these plans are being implemented, with 70 countries providing meteorological services targeted towards the health sector in 2019 and 109 countries achieving medium to high implementation of a national health emergency framework (indicators 2.2 and 2.3.1).

In the health sector, the UK's Royal College of General Practitioners and Faculty of Public Health divested their fossil fuel investments in 2018, joining many universities, non-governmental organisations, and pension funds from across the world (indicator 4.3.4). Alongside this, new analysis suggests a growing and more sophisticated recognition of the health benefits of the response to climate change in the media (indicator 5.1).

Many of the trends identified in the 2019 *Lancet* Countdown report are deeply concerning. Greenhouse-gas emissions continue to rise. Nevertheless, the continued expansion of renewable energy, increased investment in health system adaptation, improvements in sustainable transport, and growth in public engagement suggests ongoing reasons for cautious optimism. At a time when the UN Framework Convention on Climate Change is preparing to review commitments under the Paris Agreement in 2020, accelerated ambition and action is required in order to meet the world commitment to remaining "well below 2°C".[23]

Section 1: climate change impacts, exposures, and vulnerabilities

Climate change and human health are interconnected in a myriad of complex ways.[13] Building on the *Lancet* Countdown's previous work, section 1 of the 2019 report continues to track quantitative metrics along pathways of population vulnerability, exposure, and health outcomes that are indicative of the cost to human health of climate change, and thus of the urgent need to reduce greenhouse-gas emissions. The impacts tracked here in turn motivate and guide climate change adaptation (section 2) and mitigation (section 3) interventions.

Changes in warming and weather events are not evenly distributed across the globe, and some populations, including children, the elderly, and outdoor workers, are more vulnerable than others. Efforts to track the unequal effects of climate change are reflected through indicators that focus on particularly vulnerable populations, and low-income and middle-income countries experiencing the worst of these effects.

Although it is certainly true that the effects of climate change vary by geographical location and that these effects will not always be negative, any so-called positive effects

are often short-term in nature, and quickly outweighed by other exposures. One such example is seen in Australia, where any benefit that might have been gained from CO_2 fertilisation is both small and largely outweighed by greater climate variation, with crop yields now stalling as harvests are increasingly affected by more frequent drought.[24] Even disregarding the negative effects of temperature change, any CO_2 fertilisation benefits are likely to be short-term, as rising CO_2 concentrations will negatively affect grain quality.[25–28]

For 2019, a new metric tracking exposure to wildfires has been added (indicator 1.2.1), as has an expansion of climate suitability of infectious diseases (indicator 1.4.1), to now include *V cholerae* transmission risk. These indicators portray a world which is rapidly warming, where environmental and social systems are already being exposed to the effects of climate change, which are subsequently affecting human health.

Indicator 1.1: health and heat

The most immediate and direct impact of a changing global climate on human health is seen in the steady increase in global average temperature, and the increased frequency, intensity, and duration of extremes of heat. The pathophysiological consequences of heat exposure in humans are well documented and understood, and include heat stress and heat stroke, acute kidney injury, exacerbation of congestive heart failure,[29] and increased risk of interpersonal,[30] and collective violence.[31] In particular, during periods of extreme heat, young children have a greater risk of electrolyte imbalance, fever, respiratory disease, and kidney disease.[32] Four indicators that are related to heat are discussed here, tracking the vulnerabilities, exposures, and labour implications of a warming world.

Indicator 1.1.1: vulnerability to extremes of heat—headline finding: vulnerability to extremes of heat continues to rise among older populations in every region of the world, with the Western Pacific, South-East Asia and African regions all seeing an increase in vulnerability of more than 10% since 1990

Certain populations are more vulnerable to the health effects of heat than others. Older populations are particularly vulnerable, especially those with pre-existing medical conditions (such as diabetes and cardiovascular, respiratory, and renal disease).[33] Outdoor workers, while younger and healthier overall, are also vulnerable due to heightened exposure to heat and sunlight. This indicator presents a heat vulnerability index which ranges from 0 to 100 and includes the proportion of the population older than age 65 years, prevalence of chronic diseases, and proportion of the population living in urban areas, with the data and methods unchanged from previous years (appendix p 1).

Populations older than age 65 years, in all regions of the world, are becoming increasingly vulnerable. However, the highest increase in vulnerability from 1990 to 2017 has been seen in the Western Pacific (33·1% to 36·6%) and African (28·4% to 31·2%) regions. Overall, Europe remains the most vulnerable region to heat exposure (followed closely by the Eastern Mediterranean region), due to its ageing population, high rates of urbanisation, and high prevalence of cardiovascular and respiratory diseases, and diabetes.

Indicator 1.1.2: health and exposure to warming—headline finding: human populations are concentrated in the areas most exposed to warming, experiencing a mean summer temperature change that is four times higher than the global average

This indicator compares the population-weighted summer temperature change from a 1986–2005 baseline with the global average summer temperature change over the same period, using weather data from the European Centre for Medium-Range Weather Forecasts,[34] ERA-Interim project and population data from the NASA Socioeconomic Data and Applications Center (SEDAC) Gridded Population of the World (GPWv4).[35] Full details, along with an explanation of improvements for the 2019 report, which uses higher resolution climate and population data (0·5°C grid instead of 0·75°C grid) are provided (appendix p 3).

The population-weighted temperatures continue to grow at a substantially faster pace than the global average, increasing the human health risk. The global average population-weighted temperature has risen by 0·8°C from the 1986–2005 baseline to 2018, compared with a global average temperature rise of 0·2°C over the course of the same time period.

Indicator 1.1.3: exposure of vulnerable populations to heatwaves—headline finding: in 2018, an increase of 220 million heatwave exposures affecting older populations was observed, breaking the previous record set in 2015. Japan alone experienced 32 million heatwave exposures, the equivalent of almost every person aged 65 years and older enduring effects of a heatwave in 2018

Heatwaves across the northern hemisphere made headlines in 2018, reaching new highs for a number of countries.[36] The definition of a heatwave, the demographic data,[35] and methods used here remain unchanged from previous reports (appendix pp 4).[37] Each heatwave exposure event is defined as one heatwave experienced by one person older than age 65 years. This indicator was also improved with a higher resolution (0·5°C grid instead of 0·75°C grid).

The change in heatwave exposure events relative to the 1986–2005 average are presented (figure 1). The increase in heatwave exposure events (220 million, which is 11 million more than the 2015 record) was due to a series of heatwaves across India (45 million additional exposures); across central and northern Europe (31 million additional exposures in the EU); and across northeast Asia, where heatwaves affected Japan, the Korean peninsula, and Northern China. 32 million exposures affected people

older than age 65 years in Japan alone, the equivalent of almost every person in this age group experiencing effects of a heatwave in 2018.[38]

Indicator 1.1.4: change in labour capacity—headline finding: higher temperatures continue to affect people's ability to work. In 2018, 45 billion additional potential work hours were lost due to rising temperatures, compared with in the year 2000

General work productivity and ability to work are affected by temperature and humidity, which are both captured in the Wet Bulb Globe Temperature (WBGT) measurement. Labour productivity loss estimates for every degree increase of WBGT beyond 24°C range from 0·8% to 5%.[39]

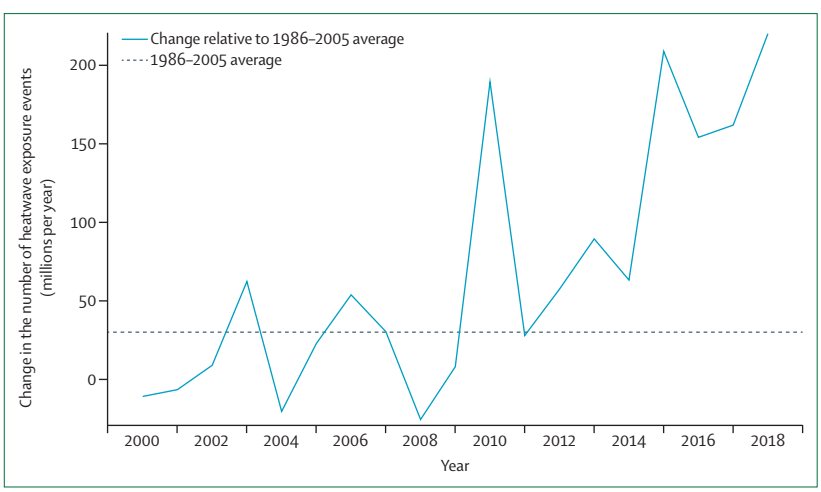


Figure 1: **Change in the number of heatwave exposure events in people aged 65 years and older, compared with the historical 1986–2005 average number of events**

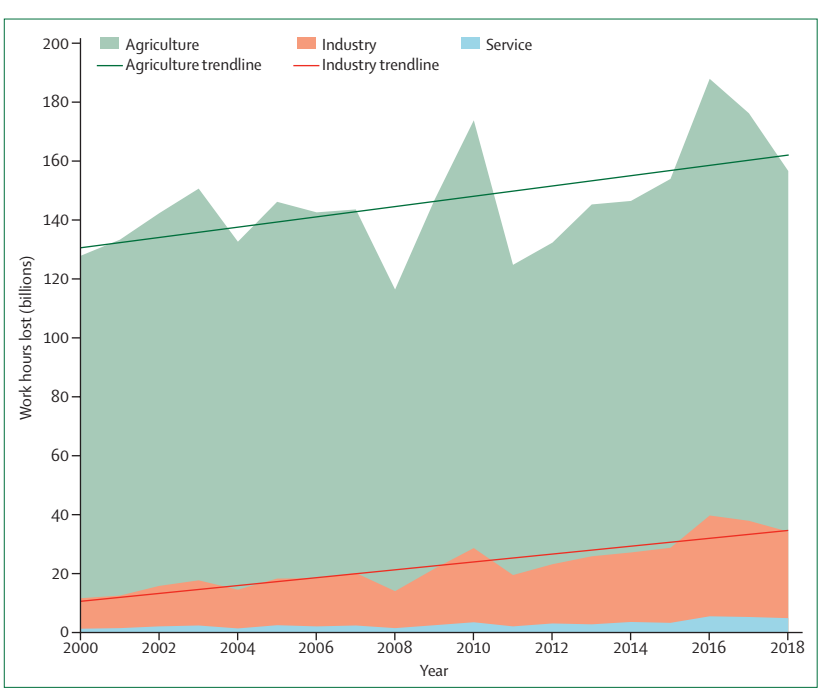


Figure 2: **Potential global work hours lost per sector due to heat, 2000–18**

Reduced labour productivity is often the first symptom of the health effects of heat, and, if not addressed, could lead to more severe health effects, such as heat exhaustion and heat stroke.

This indicator emphasises the important impact of climate change on labour capacity in vulnerable populations.[40] It assigns work-fraction loss functions to different activity sectors (service, manufacturing, and agriculture), linking WBGT with the power (metabolic rate) typically expended by a worker within each of these three sectors. This is then coupled with the proportion of the population working within each of these three sectors to calculate potential work hours lost (WHL) by country. This indicator has been improved to include the effect of sunlight on the potential WHL by calculating the increase in WBGT using solar radiation data available from the ERA database (appendix pp 5–6).[35,41,42]

The global atmospheric temperature and humidity in 2018 were slightly more favourable for work than in 2017, but the upward trend of potential WHL since 2000 remains clear (figure 2). In 2018, 133·6 billion potential work hours were lost; 45 billion hours more than in 2000.

Additionally, a map is presented of the equivalent potential annual full-time work lost in the sun and the shade (figure 3). Of note, for 300 Watts (W) work in the shade (typical for manufacturing), over 10% potential daily work hours were lost in densely populated regions such as south Asia. For 400 W work in the sun (typical for agriculture and construction), even workers in the southern parts of the USA (below a latitude of 34°N, with Alabama, Georgia, Florida, Louisiana, Mississippi, and Texas particularly affected), lost 15–20% of potential daylight work hours in the hottest month of 2018.

Indicator 1.2: health and extreme weather events

Indicator 1.2.1: wildfires—headline finding: 152 of 196 countries saw an increase in annual daily population exposure to wildfires in 2015–18, compared with in 2001–04, with India alone experiencing an increase of 21 million annual daily exposures. This increase not only poses a threat to public health, but also results in major economic and social burdens in both high-income and low-income countries

The health effects of wildfires range from direct thermal injuries and death, to the exacerbation of acute and chronic respiratory symptoms due to exposure to wildfire smoke.[43] Additionally, the global economic burden per person affected by wildfires is more than twice that of earthquakes and 48 times higher than that of floods, although the global number of events and number of people affected by floods are much higher than for wildfires.[44] Furthermore, climatic changes, including increasing temperature and earlier snowmelt, contribute to hotter, drier conditions, which increase the risk of wildfires. Yet, wildfires remain an important component of many ecosystems, although they can be ecologically harmful through human ignition or when forest management practices do not fully account for periodic, natural burning.

This new indicator represents the change in the average annual number of days people were exposed to wildfire in each country. It was developed using the Collection 6 active fire product from the Moderate Resolution Imaging Spectroradiometer aboard the NASA Terra and Aqua satellites.[45] Fire point locations were matched to a political border shapefile from the Global Burden of Disease (GBD), and consequently joined with population count per square kilometre, taken from NASA SEDAC GPWv4.[35] The result is an annual sum of people experiencing a fire event per day. The mean number of person-days exposed to wildfire was recorded for years 2001–04 (the earliest years for which data with adequate coverage and resolution is available) and compared with the mean from 2015–18.

Overall, this indicator reports a mean increase of 464 032 person-days exposed to wildfire per year over the period studied; however, the increase in person-days recorded in some countries is far greater than

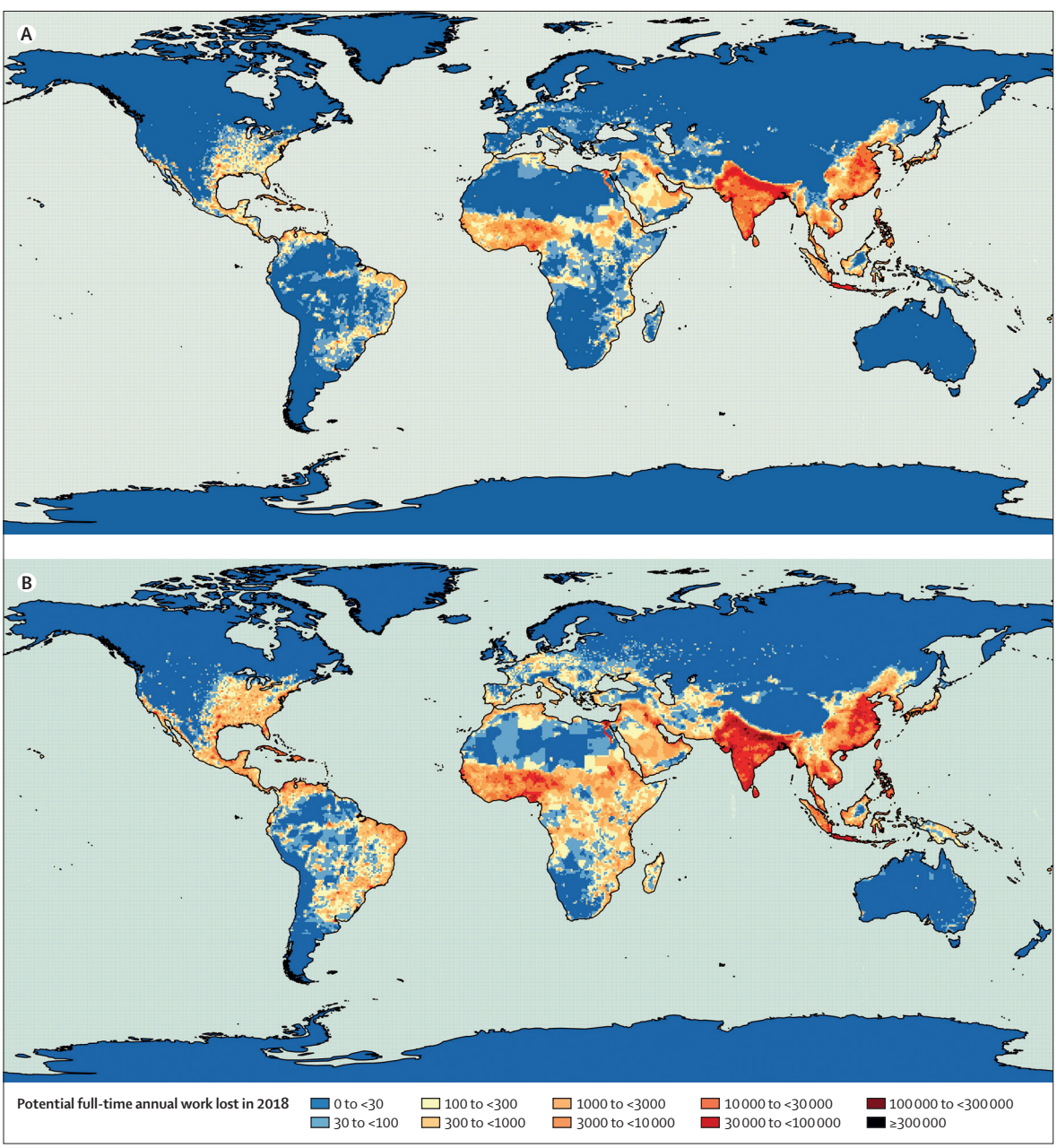


Figure 3: **Potential full-time annual work lost in the shade (A) or in the sun (B) based on the percentage of people working in agriculture (400 W), industry (300 W), and services (200 W)**
W=Watts.

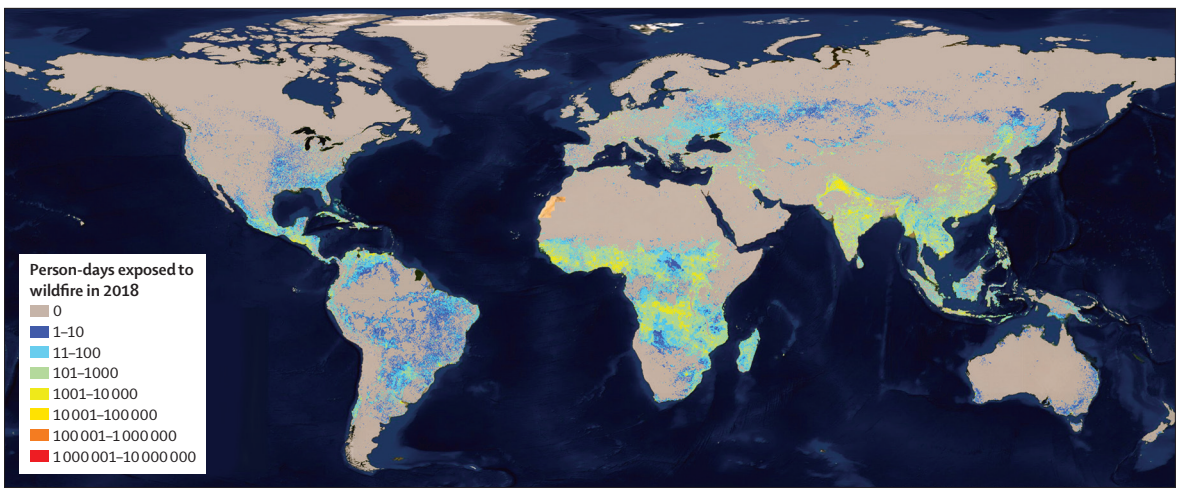


Figure 4: **Map showing the average annual number of days people were exposed to wildfires in 2018**

the mean global increase (appendix pp 7–8). India, China, the Democratic Republic of Congo, Iraq, and Mexico sustained the largest increase in the number of person-days affected by wildfires, with a maximum increase of nearly 21 807 000 person-days in India followed by 17 003 000 person-days in China (figure 4). Countries including Spain, Russia, and Uzbekistan saw substantial reductions in the number of people affected.

Crucially, this indicator will evolve over time to cover the health risks of wildfire smoke,[43] which can travel far distances and affect areas that are not directly exposed to fires.[46]

Indicator 1.2.2: flood and drought—headline finding: extremes of precipitation, resulting in flood and drought, have impacted human health and wellbeing, with South American and South-East Asian populations experiencing long-term increases in both of these natural disasters

This indicator tracks exposure to extremes of precipitation, using weather and population data presented in previous reports (appendix pp 8–9).[20,37] Analysis across time and space reveals regional trends for drought and extreme heavy rain that are more significant than global trends, reflecting the varying nature of climate change depending on the geographical region.

Floods are particularly problematic for health, resulting in direct injuries and death, the spread of vector-borne and water-borne diseases, and mental health sequelae.[47] The average number of extreme rainfall events in the 2000–18 period reveals that South America and South-East Asia are experiencing the largest increases.

Prolonged drought remains one of the most dangerous environmental determinants of premature mortality, affecting hygiene and sanitation, as well as resulting in reduced crop yields, food insecurity, and malnutrition.[47] The change in the number of severe droughts in 2018 demonstrates areas of significantly increased exposure in all six WHO regions, with areas of Brazil experiencing a full 12 months of drought throughout 2018.

Indicator 1.2.3: lethality of weather-related disasters—headline finding: a statistically significant long-term upward trend has been observed in the number of flood-related and storm-related disasters in Africa, Asia, and the Americas, since 1990. At the same time, Africa has experienced a statistically significant increase in the number of people affected by these types of disasters

This indicator tracks the number of occurrences of weather-related disasters, the number of people affected, and the lethality of these events. These are formulated as a function of the hazard (magnitude and frequency) and the vulnerability and exposure of populations at risk, using data from the Centre for Research on the Epidemiology of Disasters.[48] For the 2019 report, disasters have been separated into two categories: flood-related and storm-related disasters; and heatwave, extreme temperature, and drought-related disasters. Details of these methods and data are summarised (appendix pp 10–13).

For heatwaves, extreme temperature, and drought-related disasters, no statistically significant global trend was identified. One explanation for this could be the geographically local nature of such events. However, in the case of floods and storms, a statistically significant trend in occurrence was identified individually across Africa, Asia, and the Americas. A statistically significant increase in the number of people affected by floods and storms in Africa was also noted, although no statistically significant increase in the lethality of these events was identified.

The relative stability of the lethality and number of people affected by these disasters could possibly be linked to improved disaster preparedness (including improved early warning systems) as well as increased investments in health-care services, and is discussed further in section 2.[49–51] Importantly, work from the 2015 *Lancet* Commission shows that a business as usual trajectory is

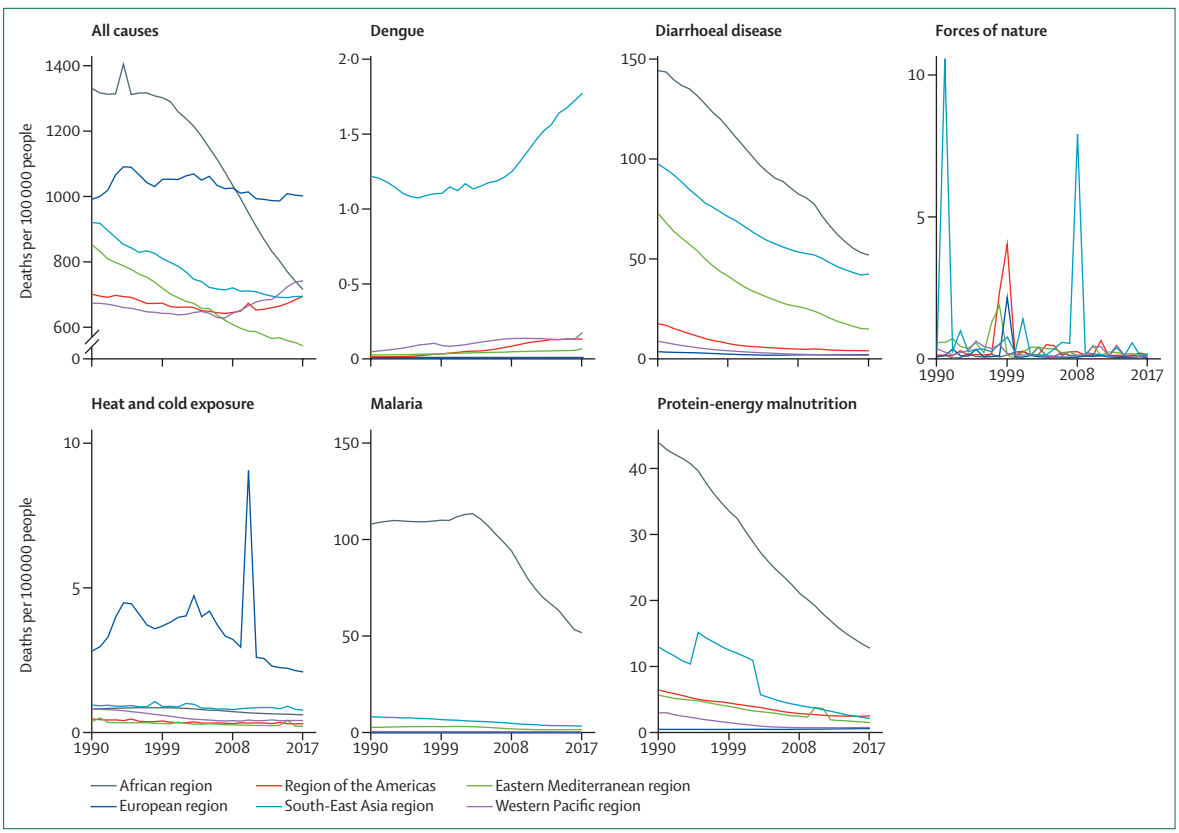


Figure 5: **Global trends in all-cause mortality and mortality from selected causes as estimated by the Global Burden of Disease 2017 study[52] for the 1990–2017 period, by WHO region**

expected to result in an additional 2 billion flood-exposure events per year by 2090, which will likely overwhelm health systems and public infrastructure.[13]

Indicator 1.3: global health trends in climate-sensitive diseases

Headline finding: although mortality due to diarrhoeal diseases, malnutrition, and malaria is improving, mortality due to dengue is rising in the regions most affected by these diseases

As described in the preceding indicators, climate change affects a wide range of disease processes. Corresponding health outcomes result from a complex interaction between the direct and indirect effects of climate change and social dynamics, such as population demographics, economic development, and access to health services.[13] This indicator provides a macro view of these interactions, using GBD data to track mortality from diseases that are sensitive to climate change.[52] Mortality due to earthquake and volcano events has been removed from the GBD forces of nature category for estimates of weather-related events.

Global trends in climate-sensitive disease mortality from 1990 to 2017 are shown, with all-cause mortality presented as a reference (figure 5). Death from diarrhoeal diseases and protein-energy malnutrition has declined considerably over this period in regions most affected (Africa, South-East Asia, and Eastern Mediterranean). Similarly, a marked decrease in mortality from malaria since 2000 has been observed in Africa. Socioeconomic development, improved access to health care, and major global health initiatives in sanitation and hygiene, and vector control, have all contributed to these improvements in health outcomes.[13,53] However, mortality from dengue fever continues to rise, particularly in South-East Asia.

Indicator 1.4: climate-sensitive infectious diseases

Indicator 1.4.1: climate suitability for infectious disease transmission—headline finding: suitability for disease transmission has increased for dengue, malaria, V cholerae *and other pathogenic* Vibrio *species. The number of suitable days per year in the Baltic for pathogenic* Vibrio *transmission reached 107 in 2018, the highest since records began, and two times higher than the early 1980s baseline*

Climate change affects the distribution and risk of many infectious diseases.[47] The 2019 *Lancet* Countdown report provides an updated analysis of the environmental suitability for transmission of dengue virus, malaria, and *Vibrio*, with the most recently available data, and presents an additional analysis of *V cholerae* environmental suitability in coastal areas.

Malaria and dengue fever are endemic in many parts of the world and, as described in the previous indicator, continue to contribute substantially to burden of disease, with young children particularly vulnerable. Suitability for transmission of mosquito-borne infectious diseases is affected by factors including temperature, humidity and precipitation. For dengue, vectorial capacity, which expresses the average daily rate of subsequent cases in a susceptible population resulting from one infected case, is calculated using a formula including the vector to human transmission probability per bite, the human infectious period, the average vector biting rate, the extrinsic incubation period, and the daily survival period.[54] For malaria, the number of months suitable for transmission of *Plasmodium falciparum* and *P vivax* malaria parasites is calculated on the basis of temperature, precipitation, and humidity. Climate suitability for these mosquito-borne diseases is averaged for the most recent five years for which data is available and compared with a 1950s baseline.

Vibrio species cause a range of human infections, including gastroenteritis, wound infections, septicaemia, and cholera. These bacteria are found in brackish marine waters and cases of infections are influenced by sea surface salinity, sea surface temperature, and chlorophyll A concentrations.[55–57] Climate suitability for *Vibrio* species was estimated on the basis of sea surface salinity and sea surface temperature globally and focally for two regions (the Baltic and US northeast coastlines) where *Vibrio* (excluding *V cholerae*) infections are most frequently observed. For pathogenic *Vibrio* species (excluding *V cholerae*), an average of the 5 most recent years for which data is available is compared with a 1980s baseline, whereas the new *V cholerae* specific analysis compares data from the most recent 3 years with a 2003–05 baseline (based on data availability). Full details on methods used are presented (appendix pp 14–24).

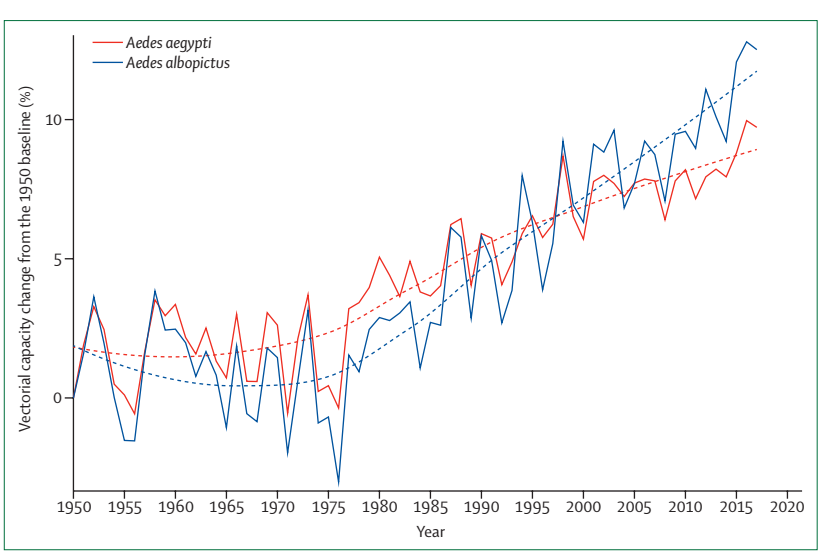


Figure 6: **Changes in global vectorial capacity for the dengue virus vectors *Aedes aegypti* and *Aedes albopictus* since 1950**

Climate suitability for transmission is rising for each of the pathogens studied. The second highest vectorial capacity for both dengue vectors was recorded in 2017, with the 2012–17 average 7·2% and 9·8% above baseline for *Aedes aegypti* and *Aedes albopictus*, respectively (figure 6). This change emphasises the continued upward trend of climate suitability for transmission of dengue, with 9 of the 10 most suitable years occurring since the year 2000. Malaria suitability continues to increase in highland areas of Africa, with the 2012–17 average 29·9% above baseline. The percentage of coastal area suitable for *Vibrio* infections from 2010 has increased at northern latitudes (40–70° N) by 3·8%, compared with the 1980s baseline, with 2018 the second most suitable year on record (5% above the baseline; figure 7). The area of coastline suitable for *Vibrio* has increased by 31% in the Baltic coastline and 29% in the northeastern coastline of the USA. Additionally, the number of days per year suitable for *Vibrio* in the Baltic reached 107 in 2018, which is double that of the early 1980s baseline and the highest on record. Globally, environmental suitability for coastal *V cholerae sensu lato* has increased by 9·9%, driven by regional increases in Asia, Europe, the Middle East, North America, and northern and western Africa.

Indicator 1.4.2: vulnerability to mosquito-borne diseases—headline finding: climate change induced risk of mosquito-borne diseases could be offset by improvements in public health systems. Investments in public health have resulted in a 31% fall in global vulnerability observed from 2010–17. However, this success is not spread equally, with vulnerability to recurrent dengue outbreaks increasing in the Western Pacific and South-East Asia over the same period

While the previous indicator describes the influence of climate over the transmission of several infectious diseases, this indicator tracks vulnerability to one of these (dengue). Importantly, population vulnerability to dengue is modulated by human, social, financial, and physical factors, as well as the adaptive capacity of a community.[53,58]

Country-level data relating to surveillance, preparedness, and response from WHO International Health Regulations' (IHR) core capacities for the years 2010–17,[59] are used as a proxy for adaptive capacity. *Aedes aegypti* vulnerability is defined by abundance and vectorial capacity as described in indicator 1.4.1. This index estimates the population-level risk of exposure to *Aedes* mosquitoes, accounting for the public health core capacity to cope with the potential effects. A full description of the methods used is provided (appendix pp 24–25).

A contraction of the vulnerability to dengue is observed from 2010 to 2017 in tropical and sub-tropical areas of South America, Africa, and Asia. However, this decrease

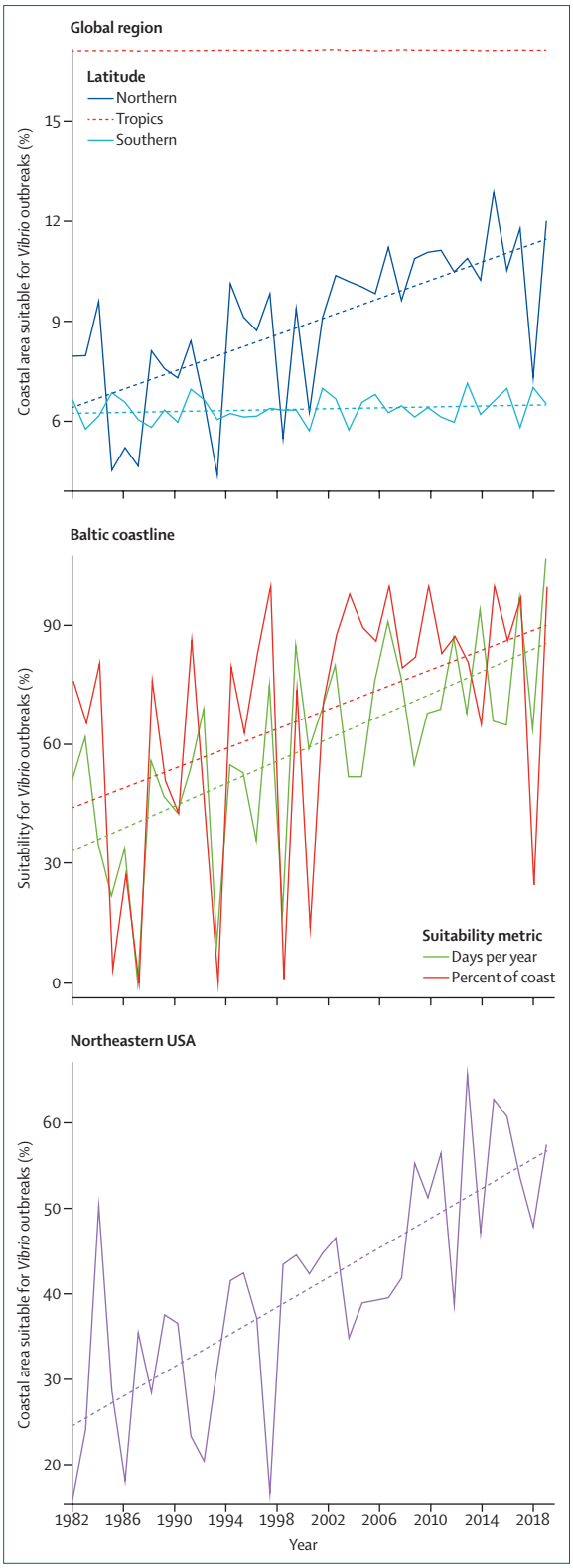


***Figure 7*: Change in suitability for pathogenic *Vibrio* outbreaks as a result of changing sea surface salinity and sea surface temperatures**

in vulnerability has levelled off since 2014, with a reversing trend in the Western Pacific and South-East Asia regions.

Indicator 1.5: food security and undernutrition

Indicator 1.5.1: terrestrial food security and undernutrition—headline finding: data from all major crops tracked—maize, wheat, rice, and soybean—showed that increases in temperature have reduced global crop yield potential

Currently, improvements in nutrient and water management, as well as expansion of agricultural areas in lower income countries, are resulting in increases in global food production.[60,61] However, the number of undernourished people worldwide appears to have been increasing since 2014, driven by challenges to access, availability, and affordability of food.[62] Undernutrition overwhelmingly affects children younger than age 5 years, causing intrauterine growth restriction, stunting, severe wasting, micronutrient deficiencies, and poor breastfeeding.[63] Evidence suggests that crop production is threatened in complex ways by changes in the incidence of pests and pathogens;[64] increasing water scarcity;[65] and increases in frequency and strength of extreme weather conditions that can damage or even wipe out harvests.[66]

Change in crop growth duration is used as a proxy for yield potential for maize, wheat, rice and soybean, and is based on the time taken in a year to accumulate a reference period (1981–2010) accumulated thermal time. A reduction in crop growth duration means the crop matures too quickly with lower seed yield.[67] This methodology is discussed alongside a full description of the Climatic Research Unit database used (appendix p 26).[45]

Globally, crop yield potential for maize, winter wheat, and soybean has reduced in concert with increases in temperature (figure 8), challenging efforts to achieve SDG 2 to end hunger by 2030.[66] This data resonates with a meta-analysis of the literature by Zhao and colleagues,[68] which suggests that global yields of these four key crops are reduced respectively by 6%, 3·2%, 7·4%, and 3·1%, globally for each 1°C increase in global mean temperatures.

Indicator 1.5.2: marine food security and undernutrition—headline finding: between 2003 and 2018, sea surface temperature rose in 34 of 64 investigated territorial waters, presenting risk to marine food security

Fish provide almost 20% of animal protein intake to 3·2 billion people, with a greater reliance on fish sources of protein in low-income and middle-income countries, particularly small island developing states.[69] Climate change threatens fisheries and aquaculture in a number of ways, including through sea surface temperature rise; change in intensity, frequency, and seasonality of extreme events; sea level rise; and ocean acidification.[70] Acute disturbances such as thermal stress lead to impaired recovery of the coral reefs, which threatens marine fish populations and subsequently marine primary productivity—a key source of omega-3 fatty acids for many populations.[71]

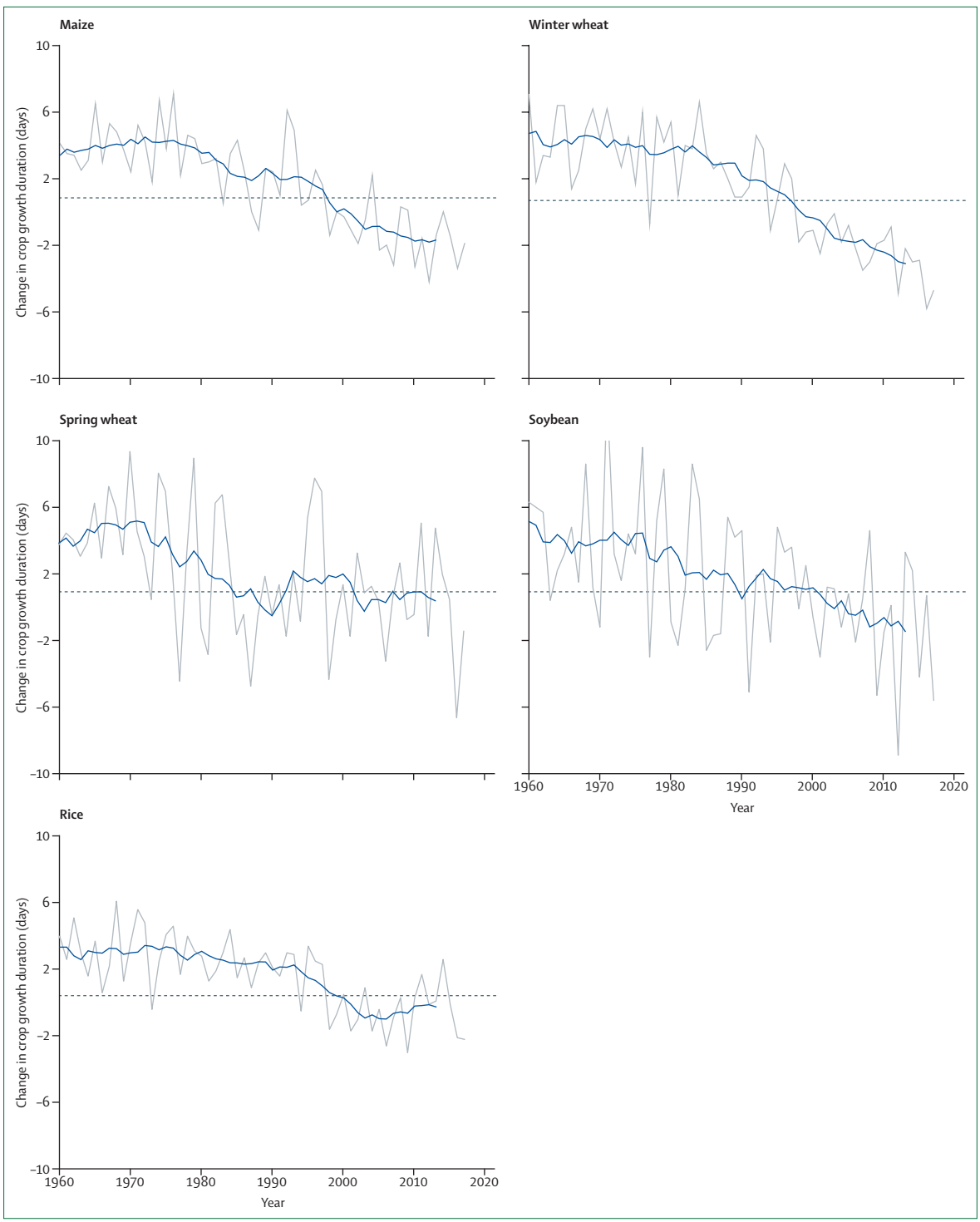


Figure 8: **Change in global crop growth duration as a proxy for crop yield**
Dashed line=the average change in crop duration of the 1981–2010 baseline. Grey line=annual global area-weighted change. Blue line=running mean over 11 years (5 years forward, 5 years backward).

This indicator tracks sea surface temperature in territorial waters, selected for their geographical coverage and importance to marine food security, using data sourced from Food and Agriculture Organization of the UN (FAO), NASA, and National Oceanic and Atmospheric Administration.[72–74] Following a period of development,

this indicator now includes 64 territorial waters (including countries for which data is available) located in 16 FAO fishing areas, and is complemented by monitoring of coral bleaching due to thermal stress (abiotic indicators), and per-capita capture-based fish consumption (biotic indicator; appendix pp 27–47). Between 2003 and 2018, sea surface temperature has risen in 34 of the 64 territorial waters, with a maximum increase of 3·5°C observed in Finland.

Conclusion

The indicators presented in this section provide evidence of the exposures, vulnerabilities, and impacts of climate change on health. They show worsening exposures and vulnerabilities along a range of temperature and precipitation pathways, with reductions in crop yield potentials, and increases in vectorial capacity for a number of climate-sensitive diseases. These effects are felt most acutely by low-income and middle-income countries across the world.

Continued work on attribution remains an important consideration with regards to outcome. For example, migration was addressed in earlier reports, in which questions of attribution to climate change remained particularly challenging.[20,37] Irrespective of how climate change migrants are counted,[75] many factors contribute to health risks faced by migration. Resulting health impacts depend on both pre-existing conditions (eg, mental health and nutritional status, desire to migrate, and existing health systems) along with interventions (eg, health-care access, provision of food and shelter, and changing health-related resources).

Similarly, in 2018, the links between climate change and mental health were presented.[37] Mental health might be negatively affected in various ways by heatwaves, loss of property, and loss of livelihoods due to floods, or climate-induced migration. However, although many varied links have been identified between climate and mental health, they are highly socially and culturally mediated. Attempting to operationalise these linkages as a single-number indicator—linking climate change and mental health outcomes—remains elusive, yet quantifying these effects is of clear importance.[76]

Section 2: adaptation, planning, and resilience for health

As knowledge of the health consequences of climate change increases, so too does the urgent need to increase efforts to protect people from adverse effects, particularly given the slow progress of mitigation of these effects. Health systems will be placed under increasing and overwhelming pressure, and adaptation to climate change is essential, even with the most ambitious mitigation efforts.[58] An adaptation gap is apparent, emphasised in some of the aforementioned impacts, and the rapid introduction of adaptation initiatives with better development strategies and funding across all sectors is necessary to close this divide. The health sector was selected as one of the top three priority areas for adaptation in an analysis of Intended Nationally Determined Contributions prepared for the Paris Agreement.[77]

By their very nature, adaptation and resilience measures are local and specific to regional hazards and underlying population health needs. Identifying readily available global metrics, with adequate data and proximity to climate change and to health adaptation, is particularly challenging.[78–80] Additionally, evaluating the success of any intervention is difficult, given that the goals of adaptation are inherently long-term, and no counterfactual is readily available. Rising to this challenge, the work in this section has expanded, from the initial three indicators proposed in 2016,[19] to the eight presented here. The structure of these indicators, and this section, builds on the WHO Operational Framework for building climate resilient health systems,[81] monitoring progress across the following selected domains: adaptation planning and assessment (indicators 2.1.1, 2.1.2, and 2.1.3), adaptive information systems (indicator 2.2), adaptation delivery and implementation (indicators 2.3.1 and 2.3.2), and adaptation financing (indicator 2.4.1).

True to an iterative approach, many indicators have been further developed. For the indicators evaluating national health adaptation planning and vulnerability mapping (indicators 2.1.1 and 2.1.2), the number of country respondents has increased from 40 to 101. Additional information on implementation and government funding is included alongside qualitative analysis, which was undertaken as part of the validation of the self-reported data. A new indicator has been added, focusing on air conditioning use as an adaptive measure to heat mortality (indicator 2.3.2). This is the first of a new suite of indicators under development, which monitor adaptation to a specific exposure pathway, complementing existing work on health adaptation efforts.

Several indicators in this section rely on self-reported data in surveys of national and subnational governments to track health adaptation, with clear strengths and limitations to this approach. Self-reported survey data is subject to response and non-response error, with local verification difficult;[79] however, the datasets here—from the WHO and the Carbon Disclosure Project (CDP)—provide the best available information on national-level and city-level specific health adaptation measures, globally. Further information on the validation techniques of the national data is summarised (appendix pp 48–49).

Indicator 2.1: adaptation planning and assessment

Indicator 2.1.1: national adaptation plans for health—headline finding: recognition of the need for health adaptation to climate change is widespread, and development planning is underway. In 2018, almost half of the countries surveyed declared that a national health and climate change plan was in place

Over the past decade, a steady increase in countries scaling up health adaptation projects to build climate

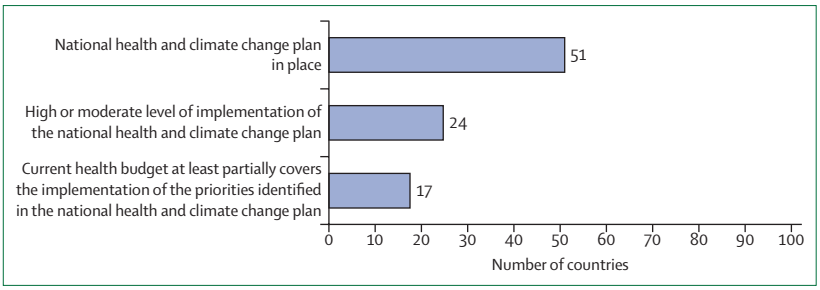


Figure 9: **Number of countries with a national health and climate change plan or strategy**
Data from 101 country respondents of the 2018 WHO Health and Climate Change Country Survey,[83] by permission of the World Health Organization.

resilience has been observed.[82] This indicator, based on data from the 2018 WHO Health and Climate Change Country Survey,[83] tracks the number of countries that have a national health and climate change plan or strategy, current levels of their implementation, and the commitment of national health funds for achieving the health adaptation and mitigation priorities outlined by governments in these documents. Importantly, the country response rate has more than doubled, with 101 of the 194 Member States reporting in the 2018 survey compared with 40 reporting in the 2015 survey presented in earlier *Lancet* Countdown reports.[20]

Global coverage of national adaptation plans for health is growing, with 51 of 101 countries now having a national health and climate change plan in place. Just over half of these countries report at least a moderate level of implementation of their plans; however, challenges to full implementation remain, with less than 20% of countries reporting actions underway or plans in place to address most of their key priorities (figure 9). National funding for implementation of health and climate change plans was identified as a central constraint with fewer than 4 in 10 countries reporting at least partial funding for the implementation of their main health adaptation and mitigation priorities.

A further analysis of approximately 40 strategies or plans, collected as part of the survey, emphasises that the comprehensiveness and scope of the national health and climate strategies or plans varied widely, with only a small number of plans directly linked to the National Adaptation Plan (NAP) process as part of the UN Framework Convention on Climate Change (UNFCCC). About 30% of the national health and climate change plans were published more than 5 years ago. Opportunities exist in national health and climate planning to update and expand the comprehensiveness of plans and for these to be developed into health components of NAP,[81] thereby anchoring health within national climate processes and potentially strengthening access to international climate finance for health adaptation.

Indicator 2.1.2: national assessments of climate change impacts, vulnerability, and adaptation for health—headline finding: of 101 countries surveyed in 2018, 48 indicated that a national assessment of health vulnerability to climate change had been done. However, of these 48 countries, just over 40% reported that assessment findings had influenced the allocation of human and financial resources

An adequate health adaptation response requires an assessment of the vulnerability of populations to different kinds of health effects, an assessment of local geographical and meteorological trends, and assessment of the corresponding capacity of health services. A health vulnerability and adaptation assessment serves as a baseline analysis, against which changes in disease risks and protective measures can be monitored, and strengthens the case for investment in health protection.[84] Data for this indicator is sourced from the 2018 WHO Health and Climate Change Country Survey.[83] Additional information on the survey methods and data is presented (appendix pp 49).

An increasing number of countries are implementing national vulnerability and adaptation assessments, with most countries indicating that these assessments are having at least some influence over policy prioritisation. However, translating evidence into funding decisions remains an issue, with only 40% of countries reporting that resource allocation is guided by evidence generated from vulnerability and adaptation assessments for health.

Indicator 2.1.3: city-level climate change risk assessments—headline finding: in 2018, 54% of global cities surveyed expected climate change to seriously compromise their public health infrastructure, with 69% of cities actively developing or having completed a comprehensive climate change risk or vulnerability assessment

The effects of climate change are experienced locally, with cities and local governments forming a crucial component of any health adaptation response. For this indicator, The *Lancet* Countdown works with the CDP to include data from their annual global survey of cities.[85] Two components of this data are analysed: the number of global cities that have undertaken a city-wide climate change risk or vulnerability assessment; and their perceived vulnerability to climate change of critical health infrastructure. In 2018, 489 cities participated in the survey, with 297 (61%) from high-income countries.

Just over half (52%) of all responding cities have undertaken an assessment and about a quarter either have an assessment in progress (17%) or intend to undertake an assessment in the future (7%). These values represent a small, but steady increase from 2017.[37] The health impacts of climate change are of increasing concern for cities, with 54% of responding cities noting that critical assets or services related to public health would be affected by climate change, compared with 51% in 2017.[37]

Indicator 2.2: climate information services for health

Headline finding: progress has been observed in the number of countries providing climate services to the health sector, increasing from 55 in 2018 to 70 in 2019

Meteorological and hydrological services should work with health services to monitor and prepare for the climate-related risks to health tracked in section 1.[81] This indicator tracks national climate information services for health, which help monitor and prepare for climate-related health risks, using data reported by national meteorological and hydrological services to the World Meteorological Organization (WMO) Country Profile Database integrated questionnaire.

70 national meteorological and hydrological services of WMO Member States reported providing climate services to the health sector, 15 more than reported in the 2018 *Lancet* Countdown report.[37] Of these, 18 were from Africa, 5 from the Eastern Mediterranean, 22 from Europe, 13 from the Americas, 4 from South-East Asia, and 8 from the Western Pacific. Additional detail was provided by 47 respondents, with several services working with the health sector and creating products accessible to the health sector. However, although climate services can be used for health in a range of ways, including monitoring, provision of early warning systems, and forecasting of environmental risks, application of these services to policy making remains low, with only 4 of the 47 Member States reporting that climate services are guiding health sector policy decisions and investment plans.

Indicator 2.3: adaptation delivery and implementation

Indicator 2.3.1: detection, preparedness, and response to health emergencies—headline finding: 109 countries have medium to high implementation of a national health emergency framework in place, in preparation for all public health events and emergencies

The IHR are an international legal instrument aimed at helping the global community prevent and respond to acute public health risks.[59] Countries are assessed through a set of core capacities, reported in an annual survey of State Parties. The survey was initially a yes or no questionnaire from 2010, and in 2018 was updated to a more detailed tool that assesses the degree of implementation of each of the core capacities (appendix pp 53–61). Capacity 8 (C8) of the IHR focuses on countries' national health emergency framework, which applies to all public health events and emergencies, covering disease outbreaks, air pollution, extreme temperatures, droughts, floods, and storms, as well as societal hazards (such as conflict and financial crisis). The survey encompasses three components: planning for emergency preparedness and response mechanism; management of health emergency response operations; and emergency resource mobilisation.[86]

In 2018, 182 WHO Member States completed the survey relating to C8. Of these, 109 countries had medium to high implementation of the three components for this core capacity. However, the degree of implementation varied greatly by region, with Africa reporting having achieved 21·3% and Europe having achieved 75·5% medium to high implementation of the framework, corresponding to an average score of the three C8 components of 50–74% and 75–100%.

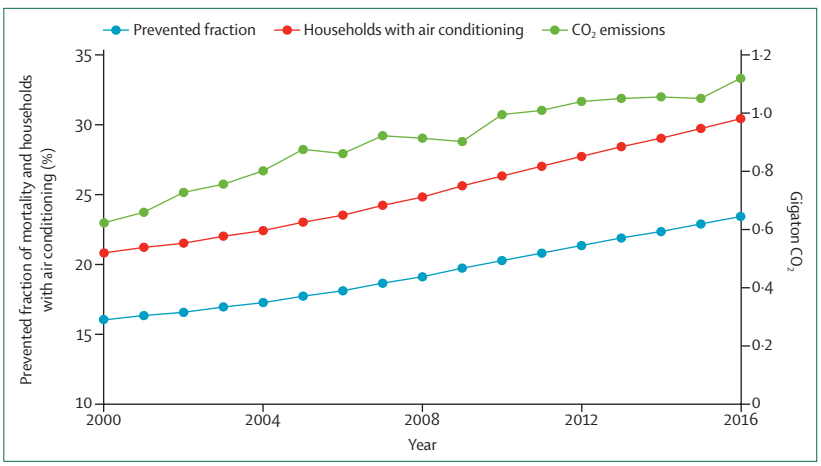


Figure 10: **Global proportion of households with air conditioning (red line), prevented fraction of heatwave-related mortality due to air conditioning (blue line), and CO2 emissions from air conditioning (green line) 2000–16**

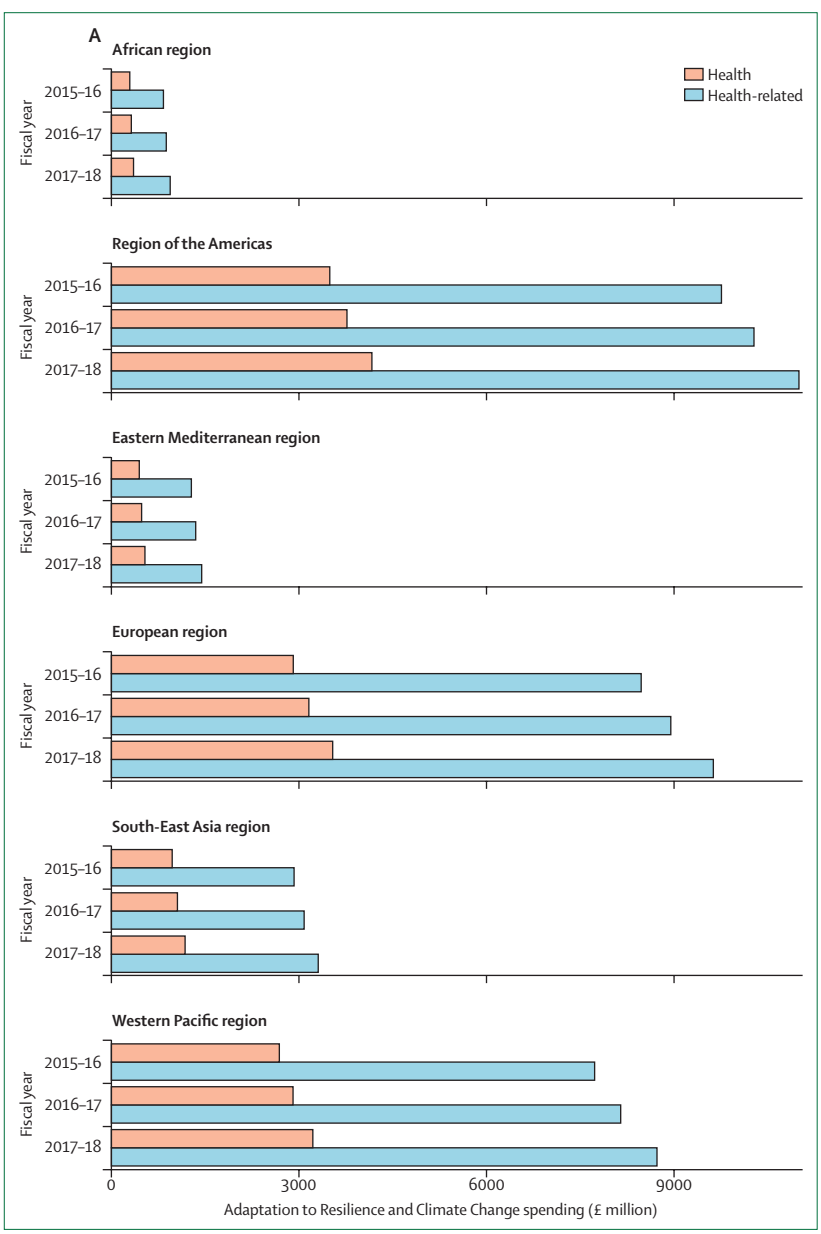
CO_2=carbon dioxide.

Indicator 2.3.2: benefits and harms of air conditioning—headline finding: use of air conditioning as an adaptation measure is a double-edged sword: on the one hand, global air conditioning use in 2016 was estimated to reduce heatwave-related mortality by 23% compared with the complete absence of air conditioning; on the other hand, it also confers harms, by contributing to climate change, worsening air pollution, substantially adding to peak electricity demand on hot days, and enhancing the urban heat island effect

Indoor cooling is an important adaptation to extreme heat, with air conditioning emerging as a primary mechanism. Access to household air conditioning is highly protective against heatwave-related mortality;[87] however, it is also associated with substantial indirect harms. On hot days in locations with high air conditioning prevalence, this can account for more than half of peak electricity demand[88] which, if sourced from fossil fuels, contributes to both CO_2 and particulate matter $(PM)_{2·5}$ emissions. Additionally, waste heat from air conditioning can paradoxically increase external night temperatures by more than 1°C.[89] Hydrofluorocarbon refrigerants used for air conditioning can escape into the atmosphere where they act as powerful greenhouse gases. In baseline scenarios, these hydrofluorocarbon emissions will increase to 1–2 gigatons of CO_2 equivalent ($GtCO_2e$) per year by 2050.[90,91] Consequently, a nuanced approach to heat adaptation must be deployed, which protects vulnerable populations

across the world from heat-related morbidity and mortality, while minimising the health-associated harms of air pollution, the urban heat island effect, and contribution to climate change.

This new indicator includes four components: the proportion of households using air conditioning; the prevented fraction of heatwave-related mortality attributable to air conditioning use; CO_2 emissions attributable to air conditioning use; and premature mortality from air conditioning attributable to $PM_{2·5}$. Unpublished data for household air conditioning use, electricity consumption, and CO_2 emissions was provided by the International Energy Agency (IEA).



(Figure 11 continues on next page)

The prevented fraction,[92] (the percent reduction in heatwave-related deaths due to a given proportion of the population having household air conditioning, compared with a complete absence of household air conditioning) was calculated using a relative risk for heatwave-related mortality of 0·23 for having household air conditioning compared with not having household air conditioning,[87] and the proportion of populations with household air conditioning. The relative risk estimate used for these calculations is based on studies focused on European and US populations, and further research is required to fully understand the effect modification across different contexts.[87] The air pollution source attribution methods discussed in section 3 (indicator 3.3.2) were used to calculate deaths due to $PM_{2·5}$ emissions from air conditioning.

Between 2000 and 2016, the world's air conditioning stock (residential and commercial) more than doubled to 1·62 billion units and the proportion of households with air conditioning increased from 21% to about 30% (figure 10). In 2016, this proportion was 4% in India, 14% in the EU, 58% in China, and more than 90% in the USA and Japan. Correspondingly, the global prevented fraction of heatwave-related mortality increased from 16% in 2000 to 23% in 2016, ranging from less than 10% in India, Indonesia, and South Africa to more than 66% in the USA, Japan, and Korea.

These trends have also been associated with increased harms. In 2016, air conditioning accounted for 10% of global electricity consumption and 18·5% of electricity used in buildings.[93] Under the IEA's baseline scenario, these figures will increase in 2050 to 16% and 30%, respectively.[93] Following the trend in the proportion of households with air conditioning, CO_2 emissions from air conditioning use tripled from 0·35 gigatons in 1990 to about 1·1 gigatons in 2016 (figure 10), and are projected to rise to 2 gigatons in 2050 in the IEA's baseline scenario.[93] In 2016, the number of premature deaths due to $PM_{2·5}$ exposure attributable to air conditioning was 2480 in India, 2662 in China, 1088 in the EU, and 749 in the USA.

Fortunately, various paths forward provide for adaptation against heat-related mortality for those who need it, without the associated harms of greenhouse gases and $PM_{2·5}$ emissions, excessive electricity demand, and undue contribution to the urban heat island effect. Air conditioning use could be reduced by promoting energy efficient appliances and energy efficient building design through strong, enforced building codes.[93] Traditional building designs in tropical and sub-tropical regions reduce thermal stresses by providing shade, thermal mass, insulation, and ventilation.[93] Harms associated with air conditioning can be greatly reduced by increasing its efficiency,[93] by generating electricity from non-fossil-fuel sources, and by implementing the Kigali Amendment to the Montreal Protocol to phase-down hydrofluorocarbons.[94]

Indicator 2.4: spending on adaptation for health and health-related activities

Headline finding: in 2018, global spending on health adaptation to climate change was estimated to be £13 billion (5%) of all adaptation spending, and health-related spending was estimated at £35 billion (13·5%). These estimates represent increases in absolute and relative terms over previous data

A higher demand for health adaptation measures requires increased adaptation funding. This indicator tracks adaptation spending, using 2015–16, 2016–17, and 2017–18 data from the Adaptation and Resilience to Climate Change dataset produced by kMatrix,[95] as described in the 2017 and 2018 reports.[20,37] Health adaptation spending is defined as national adaptation spending specifically within the formal health-care sector, whereas health-related adaptation follows adaptation spending for disaster preparedness and agriculture, in addition to health care. Data in this year's indicator covers 191 countries and territories reported in the Adaptation and Resilience to Climate Change dataset. Per-capita values are based on 183 countries with population estimates from the International Monetary Fund (IMF) World Economic Outlook.[96]

Spending on adaptation to climate change in health and health care increased by 11·2% in 2017–18, compared with 2016–17 data. This percentage increase is notably larger than the change in total adaptation spending generally (an increase of 6·5% from 2016–2017). At the country level, growth of health adaptation spending ranged from 17·5% (UK) to 10% (Latvia); however, smaller increases and less variation were recorded for health-related values, from 11·1% (UK) to 6·8% (Kazakhstan). Importantly, health still represented a small proportion of the total adaptation spend, having grown from 4·6% in 2015–16 to 5·0% in 2017–18.

Grouped by WHO Region, the highest per-capita spending for 2017–18 is in the Americas (£4·2 for health, £11·2 for health-related spending; figure 11). By contrast, in the African, Eastern Mediterranean, and South-East Asian regions, per-capita health adaptation spending is less than £1.

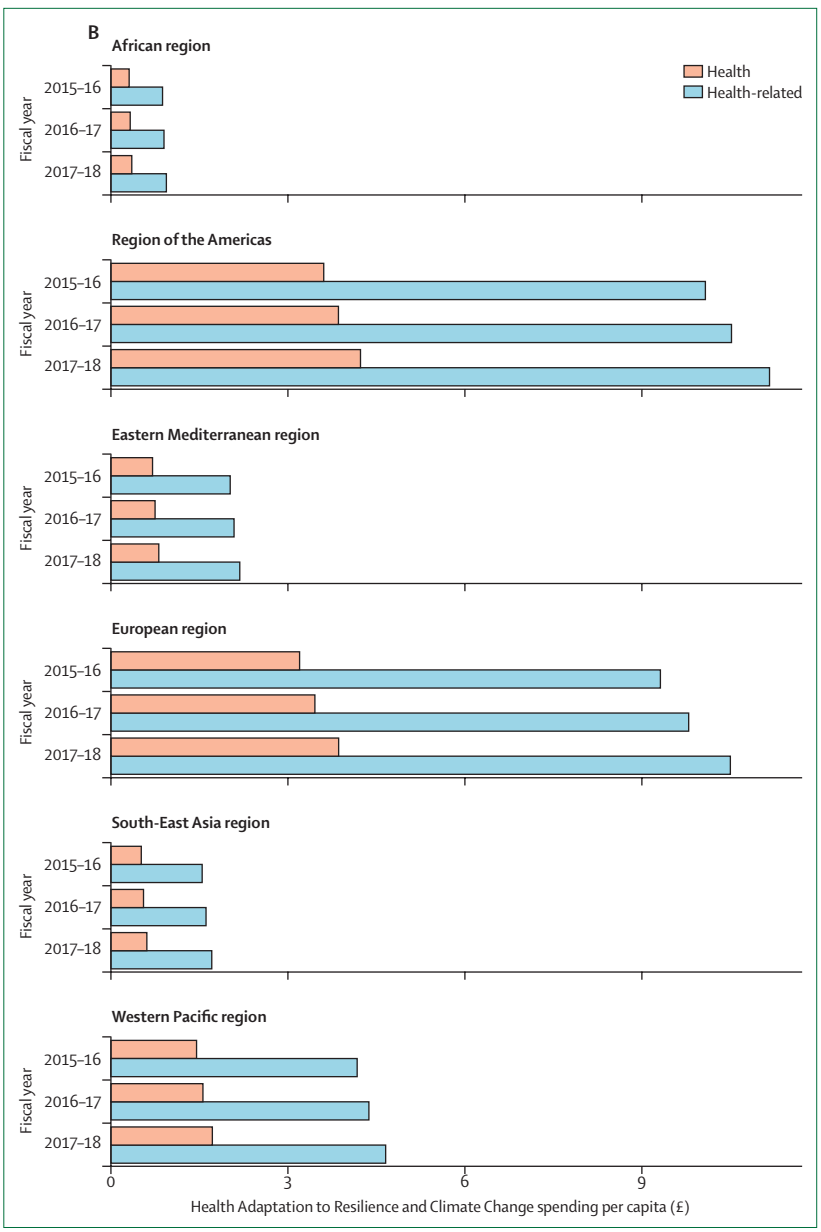


Figure 11: **Spending on adaptation for health and health-related activities in WHO-specified regions.** Graphs show Adaptation to Resilience and Climate Change spending (A) and spending per capita (B).

Conclusion

Although many of the indicators presented in section 2 are moving in a positive direction, the pace of the adaptation response from the health community remains slow. The number of countries with national adaptation plans for health and the number of countries and cities that have assessed health risk and vulnerabilities has increased, along with the spending on health adaptation. Thorough consideration of the best adaptation options is required before implementation. For example, the health benefits of adaptation measures such as air conditioning might be counteracted by harms caused through a contribution to heat generation, climate change, and air pollution (indicator 2.3.2).

These findings and those from the UN Environment Adaptation reports show that further work is required globally, both in terms of the planning and implementation of adaptation measures, to improve health.[97,98]

Section 3: mitigation actions and health co-benefits

As emphasised in section 1, climate change has already impacted human health and requires an urgent response, both in terms of health adaptation (section 2) and importantly, in mitigation, to minimise future effects from climate change.

In keeping with the Paris Agreement's commitment of limiting temperature increase to "well below 2°C", and to pursue the 1·5°C target, global emissions must peak as soon as possible (some studies suggest as early as 2020) and then follow a steep decline to 2050.[2] However, current mitigation actions and commitments are not consistent with this goal. Total global greenhouse-gas emissions for 2017 were the highest ever recorded, at 53·5 $GtCO_2e$.[99] The sum of all nations' current commitments under the Paris Agreement is far from sufficient, with 2030 emissions estimated to be lowered by only 6 $GtCO_2e$—which is only a half of the reduction required to achieve the 2°C scenario, and a fifth of that necessary to achieve the 1·5°C goal.[97]

Discussions of greenhouse-gas emission reductions must be directly interlinked with any associated potential positive economic and health benefits. Mitigation actions not only improve health in the long term, through minimising climate change, but can also have near-term benefits through numerous pathways such as reductions in risk of respiratory and cardiovascular disease attributable to air pollution,[8] reductions in the risk of diseases associated with physical inactivity and obesity (because of increased cycling and walking),[100] and a variety of improvements that could result from healthier diets.[101]

This section of the *Lancet* Countdown 2019 report tracks mitigation and its health consequences in different sectors including: energy (indicators 3.1.1, 3.1.2, 3.2); air pollution (indicators 3.3.1, 3.3.2); transport (indicator 3.4); agriculture (indicator 3.5); and health care (indicator 3.6).

Crucially, two new indicators of great importance to health have been added to the section: emissions attributable to livestock and crops (allowing a more nuanced discussion about the health and climate benefits of reductions in ruminant meat consumption), and emissions from national health-care systems. This section will continue to expand in future years by monitoring mitigation and health co-benefits in other important sectors, including industry, buildings, and land use.

Overall, CO_2 emissions from fossil fuels have risen by 2·6% from 2016 to 2018 (indicator 3.1.1). Concerningly, the previous downward trend in coal supply has reversed, with a 1·7% increase recorded in total primary energy supply from 2016 to 2018 (indicator 3.1.2). However, more encouragingly, growth in renewables continues apace and comprised 45% of total growth in electricity generation. At present, modern renewables represent 5·5% of global electricity generation (indicator 3.1.3), but are predicted to reach 30% by 2023.[102] The implications of maintenance of both of these trends are important for air pollution. A continued demand for fossil fuels and an increase in coal consumption have resulted in the number of deaths attributable to ambient air pollution remaining stagnant (2·9 million deaths in 2016; indicator 3.3.2).

The transport sector is an equally entrenched emitter of greenhouse gases, with emissions and fuel use maintaining a modest growth trajectory of 0·7% per capita CO_2e in 2016. Although use of electric vehicles has increased, they continue to represent a small proportion of the global vehicles worldwide. Yet, countries such as China have positioned electric vehicles as the future of driving with electricity in transport, with 21·4% growth in per capita usage from 2015 to 2016, rising from 1·5% to 1·8% of total fuel use (indicator 3.4).

Feeding the global population is a crucially important aspect of health and wellbeing along with ensuring economic stability and security. However, the agriculture and food sector are both energy and carbon intense and an important area for climate change mitigation. Global agricultural greenhouse-gas emissions (indicator 3.5) have increased between 2000 and 2016 by 14% for livestock and 10% for crops.

As outlined in sections 1 and 2, the health sector is on the frontline of climate change and plays a vital role in any response. This sector is also a major contributor of greenhouse-gas emissions (indicator 3·6), with global estimates as high as 4·6% of global emissions in 2016.

Indicator 3.1: emissions from the energy system

Indicator 3·1.1: carbon intensity of the energy system—headline finding: in 2018, the carbon intensity of the energy system remained unchanged from 1990. However, greenhouse-gas emissions from fossil fuel combustion have returned to a growth trajectory, rising by 2·6% from 2016 to 2018. Limiting warming to 1·5°C would require a 7·4% year-on-year reduction from 2019 to 2050

In the 2019 *Lancet* Countdown report, this indicator includes data up to 2016, supplemented with additional statistics for global CO_2 emissions from energy combustion for 2017[103] and 2018.[104] It tracks the carbon intensity of the energy system, monitoring the CO_2 emitted per terajoule of total primary energy supply (TPES). TPES reflects the total amount of primary energy used in a specific country, accounting for the flow of energy imports and exports. Key improvements in this analysis are seen in the disaggregation of fuel type, the extension of data from 1970, and the inclusion of new projections forward to 2050. A full description of data and methods is provided (appendix pp 68–69).

Global emissions of CO_2 from fossil fuel combustion, having been flat between 2014–16, have increased to a new high of 33·1 $GtCO_2$ in 2018 (figure 12).[104] This 2·6% increase over the past two years has resulted from continued growth in energy demand—energy mostly from fossil fuels.

The carbon intensity of the energy system will need to reduce to near zero by 2050. Over the past 15 years, carbon intensity has largely plateaued, as the growth of low-carbon energy has been insufficient to displace fossil fuels. However, IEA data suggest that carbon intensity could be starting to reduce, with gas slowly displacing coal (figure 12).[104]

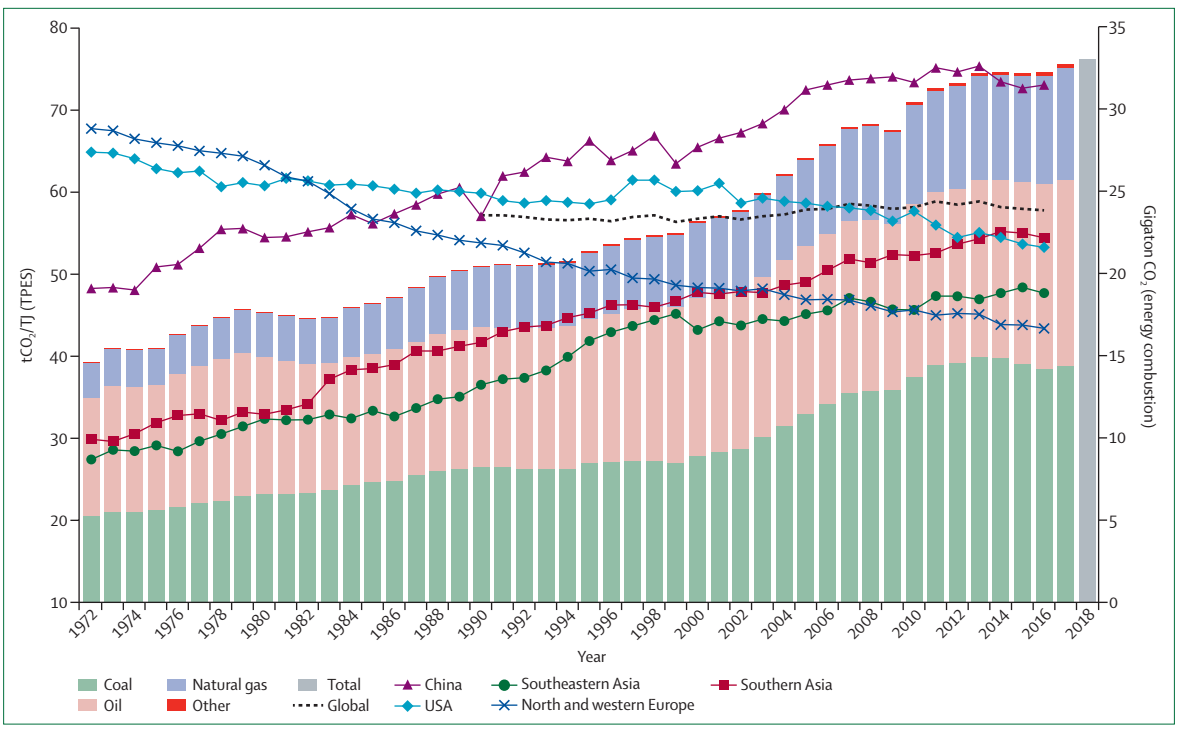


Figure 12: **Carbon intensity of TPES for selected regions and countries, and global energy-related CO_2 emissions**
Carbon intensity is shown by lines (primary axis) and global emissions by stacked bars (secondary axis). CO_2=carbon dioxide. tCO_2/TJ=total CO_2 per terajoule of energy. TPES=Total Primary Energy Supply.

Indicator 3.1.2: coal phase-out—headline finding: TPES from coal increased by 1·7% from 2016 to 2018, driven by growth in China and other countries in Asia

Coal phase-out is essential, not only as a key measure to mitigate climate change, but also to reduce morbidity and mortality from air pollution.[8] As of December, 2018, 30 national governments, along with many sub-national governments and businesses, have committed to coal phase-out for power generation through the Powering Past Coal Alliance.[105] In this year's *Lancet* Countdown report, this indicator tracks TPES from coal, plus projections for coal phase-out, using the scenarios that informed the IPCC Special Report on Global Warming of 1·5°C.[2]

Coal has returned to a growth trajectory from 2016 to 2018 (figure 13); however, because of the overall growth in global energy demand, the share of coal in primary energy supply continues to fall (appendix pp 70–73). Coal continues to be the second largest contributor to global primary energy supply (after oil) and the largest source of electricity generation (at 38%, compared with gas, the next highest at 23%). Most of the growth in TPES of coal has been in Asia, notably China, India, and southeast Asia.

Rapidly decreasing coal use to zero is crucial to meeting the commitments of the Paris Agreement. For example, no less than an 80% reduction in coal use from 2017 to 2050 (a 5·6% annual reduction rate) is consistent with a 1·5°C trajectory (appendix pp 70–73). However, given that the technology to support coal phase-out exists, a more rapid reduction rate is probably feasible.

Indicator 3.1.3: low-carbon emission electricity—headline finding: in 2018, renewable energy continues to account for a large share (45%) of growth in electricity generation, with 27% of growth from wind and solar sources

With the power generation sector accounting for 38% of total energy-related CO_2 emissions, the displacement of fossil fuels with renewable energy sources is of crucial importance.This indicator tracks total low carbon electricity generation (which includes nuclear sources and all renewables, including hydro) and new renewable electricity generation (excluding hydro), using the World Extended Energy Balances dataset from the IEA.[104] Renewable electricity generation was also projected using the scenarios that informed the IPCC Special Report on Global Warming of 1·5°C.[2] A full description of the datasets, methods, and projections is presented (appendix pp 73–75).

In 2016, low-carbon electricity globally accounted for 32% of total global electricity generation (figure 14). Promisingly, renewable energy accounted for 45% of growth in electricity generation in 2018,[106] and solar generation continues to grow at an unprecedented rate of around 30% per annum (but still only accounting for 2% of total global generation).[107]

An assessment of scenarios compliant with the 1·5°C goal emphasises that generation from new renewable

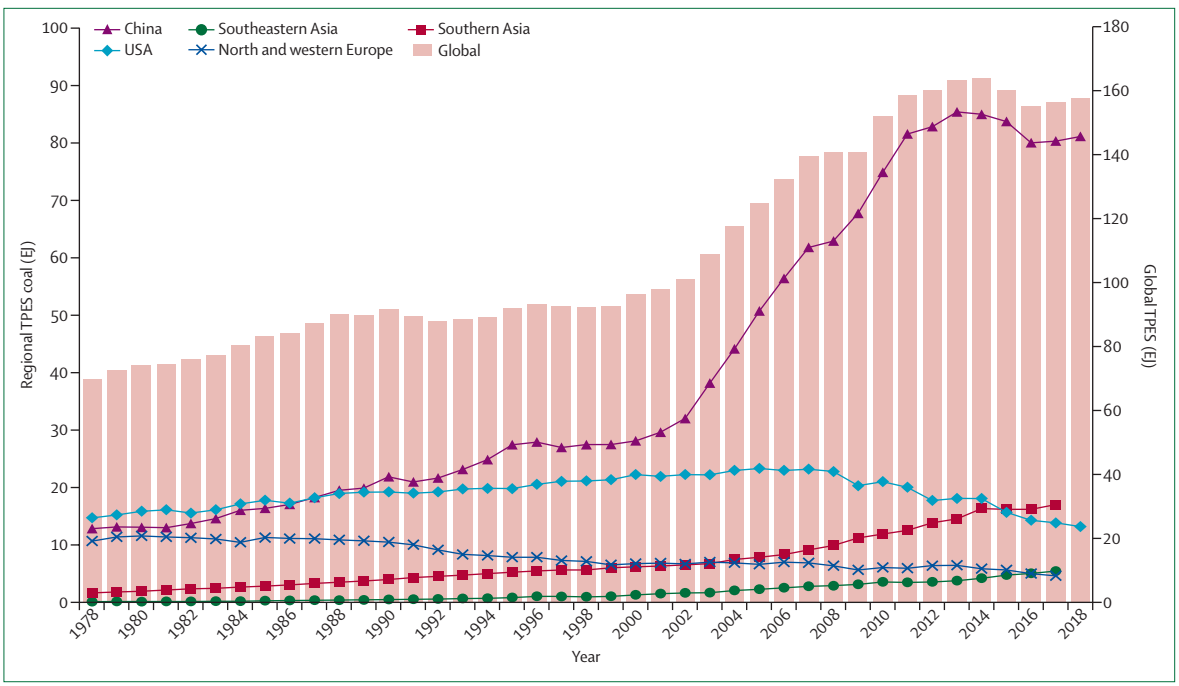


Figure 13: **TPES coal in selected countries and regions, and global TPES coal**
Regional primary energy supply of coal is shown by the trend lines (primary axis) and total global supply by the bars (secondary axis). EJ=exajoule. TPES=Total Primary Energy Supply.

sources (solar, wind, geothermal, wave and tidal) need to increase by 9·7% per annum, so that generation in 2050 is larger than total global electricity use today. Since 1990, the annual growth rate for these renewable sources was more than 14%, a very promising trend, but one that must be maintained for a further three decades.

Indicator 3.2: access and use of clean energy

Headline finding: almost 3 billion people live without access to clean fuels and technologies for cooking, and only 7·5% of households in low-income countries report using such fuels

Globally, 3·8 million deaths per year are estimated to be attributable to household air pollution,[108] largely arising from use of solid fuels, such as coal, wood, charcoal, and biomass, for cooking. Efforts to provide clean cooking and heating technologies could result in substantial health co-benefits in addition to reducing greenhouse-gas emissions and short-lived climate pollutants.[108–111] Additionally, universal access to affordable, reliable, sustainable, and modern energy for all is a key determinant of economic and social development and is central to health and wellbeing.[112,113]

This indicator combines both a top-down and bottom-up approach from IEA and WHO datasets, capturing total household energy use and household fuel use for cooking, respectively.[114,115] The new data on household clean fuel use represents an impressive effort from WHO, combining the results of thousands of national household surveys done across three decades and in more than 140 countries. Details of the methods, definitions, and data for this indicator are presented (appendix pp 75–76).

Use of clean fuels and technologies for cooking for 2015–17 remained low, at 7·5% in households in low-income countries, and 40% in households in lower middle-income countries (figure 15). These data reflect a slow improvement in global access to clean cooking fuels and technologies, which has increased by just 1% since 2010, with almost 3 billion people remaining in access-deficit.[116]

Concerningly, although access to electricity has risen from 83% in 2010 to 87% in 2016, residential clean energy usage—which, at point of demand, includes electricity of all sources, solar thermal and geothermal—remains low. In 2016, the global proportion of clean energy use in the residential sector was approximately 24%, an increase from 17% recorded in 2010.[114] Solid biomass, which contributes to respiratory and cardiovascular diseases attributable to household air pollution,[117] is currently estimated to account for 36% of total residential sector energy use.

Future forms of this indicator will work to link residential energy and fuel use to household air pollution morbidity and mortality across the world. One possible approach to achieving this linkage is presented, discussing slum housing in Viwandani in Nairobi, Kenya (panel 2).

Indicator 3.3: air pollution, transport, and energy

Exposure to ambient air pollution, most importantly fine particulate matter ($PM_{2·5}$), constitutes the largest

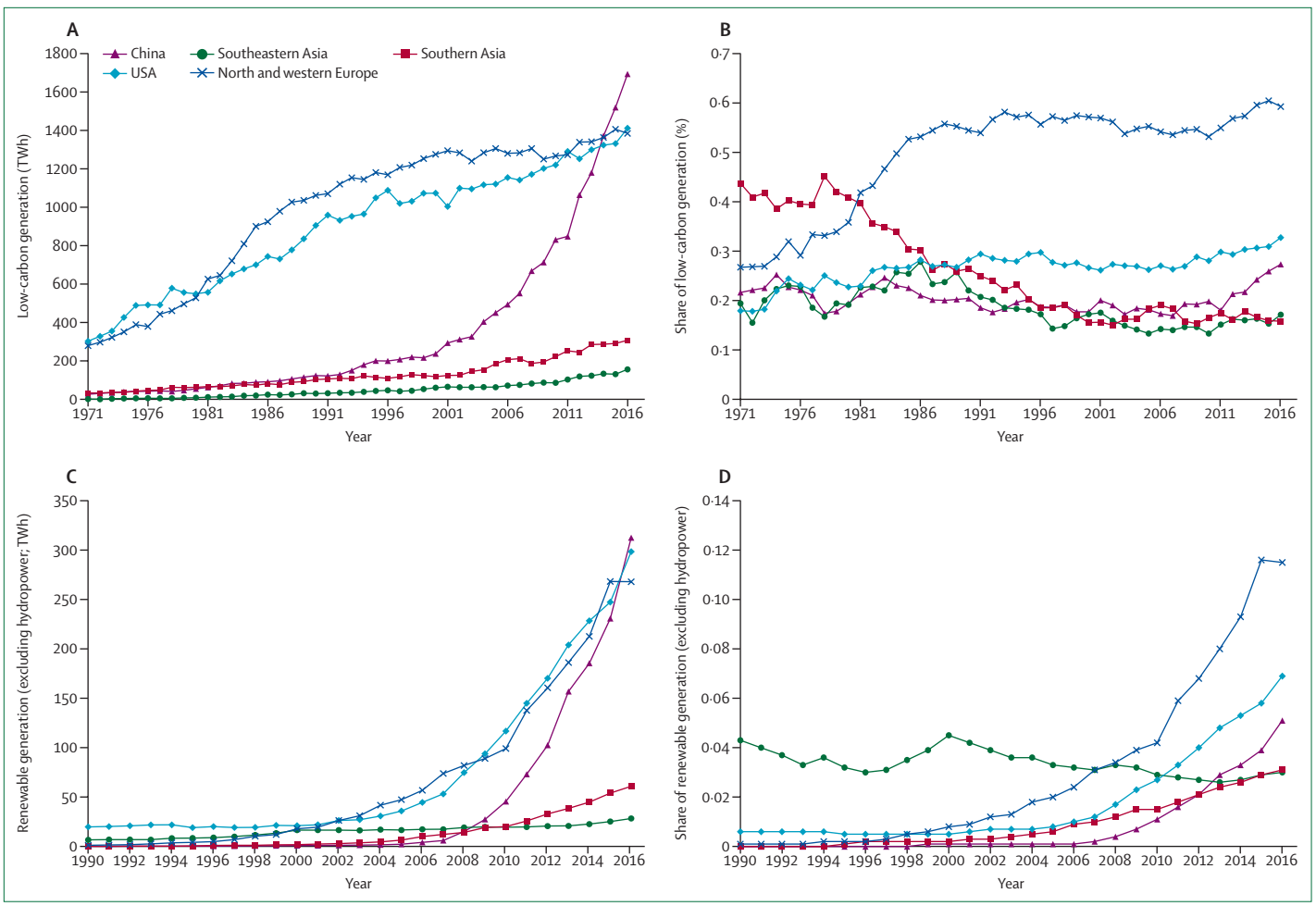


Figure 14: **Renewable and low-carbon emission electricity generation**
(A) Electricity generated from low-carbon sources. (B) Share of electricity generated from low-carbon sources. (C) Electricity generated from renewable sources (excluding hydropower). (D) Share of electricity generated from renewable sources (excluding hydropower). TWh=terawatt hours.

global environmental risk factor for premature mortality, and results in several million premature deaths from cardiovascular and respiratory diseases every year.[8,123,124] More than 90% of children are exposed to $PM_{2·5}$ concentrations that are above the WHO guidelines,[125] which can affect their health throughout their life, with an increased risk of lung damage, impaired lung growth and pneumonia, and a subsequent risk of developing asthma and chronic obstructive pulmonary disease.[126] Most of the exposure to $PM_{2·5}$ results from anthropogenic activities, and much of this is associated with combustion of coal and other fossil fuels for electricity generation, industrial production, transport, and household heating and cooking; therefore, $PM_{2·5}$ emissions share many of the same sources as greenhouse-gas emissions.[127]

Indicators 3.3.1 and 3.3.2 report on source contributions to ambient air pollution and its health effects, drawing from the GAINS model,[128] which calculates emissions of all precursors of $PM_{2·5}$ by use of a detailed

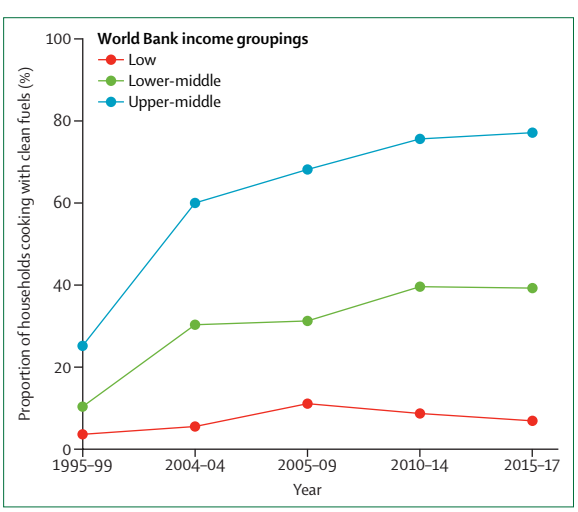


Figure 15: **Graph showing proportion of households cooking with clean fuels in World Bank grouped low-income and middle-income countries**

***Panel 2:* Case study of household air pollution conditions in Nairobi, Kenya**

This case study focuses on indoor exposure to fine particulate matter $(PM)_{2·5}$, the mortality attributable to this exposure, and carbon dioxide equivalent (CO_2e) emissions in slum housing in Viwandani, Nairobi, Kenya. In this setting, cooking is done with solid fuels (14·6%), kerosene (72·9%), or electricity (12·5%). Most dwellings do not have space heating (84·6%), with the rest using solid fuel heaters from June to August. Houses without electricity use kerosene-burning koroboi lamps for lighting for the whole year, and 8 h average ambient outdoor pollution levels are around 67 μg/m³.[118]

Indoor exposure and space heating estimates were estimated on the basis of 2016 levels using EnergyPlus,[119] calibrated to monitored indoor levels in dwellings using different fuel types and ventilation behaviours.[120] Two scenarios were modelled, involving the following changes in exposure and heating energy consumption.

The first scenario modelled electrification of all existing stoves, lamps, and heaters using the standard electrical network, which was assumed to reduce outdoor pollution by 40% on the basis of the estimated contribution of residential combustion to annual mean air pollution in Nairobi from the GAINS model.[121]

The second scenario modelled electrification as in the first scenario, but with low energy lighting, and heater installation extended to all dwellings. Additionally, upgrades to dwelling energy efficiency and airtightness inline with local sustainable design guidelines were modelled.[122]

Current mean 24-hour exposures in Viwandani are estimated to average 60 μg/m³ with the fuels producing an estimated 425 kg of CO_2e per household year. Electrification was estimated to result in halving of both greenhouse-gas emissions and $PM_{2·5}$ air pollution (and hence premature deaths associated with $PM_{2·5}$), with annual greenhouse-gas emissions reduced to 210 kg of CO_2e per year and an annual average $PM_{2·5}$ concentration of 31 μg/m³. For upgrades to the building envelope and increased electric heating and lighting coverage, the decrease in CO_2e emissions was similar to that for electrification, but with a substantially greater reduction in $PM_{2·5}$ concentrations down to an annual average of 25 μg/m³, and hence a reduction in premature deaths associated with air pollution. However, these changes do not reduce indoor exposures to less than the WHO-recommended limit of 10 μg/m³. Therefore, reduction of indoor $PM_{2·5}$ to adequate and safe concentrations would also necessitate further substantial reductions in outdoor ambient levels or the application of additional technologies such as air filtration systems.

breakdown of economic sectors and fuels used. Underlying activity data are based on statistics reported by the IEA.[129]

Indicator 3.3.1: exposure to air pollution in cities—headline finding: urban citizens have continued exposure to high levels of air pollution, with 83% of cities exceeding the WHO's recommended safe concentrations. Energy use, particularly residential combustion, is a major contributor to this pollution

The world is becoming increasingly urbanised, with almost 70% urbanisation of the global population expected by 2050.[130] Because of the increased population and higher concentrations of emissions, many cities have become hot spots of air pollution. Few cities worldwide have achieved $PM_{2·5}$ concentrations that are below the WHO guideline of an annual mean of 10 μg/m³, and many cities exceed this guideline amount several- fold.[131] The highest measured concentrations currently have been reported in south and east Asia, while data gaps exist in other world regions. The fact that these high $PM_{2·5}$ concentrations have been further increasing or stagnant in many regions of the developing world is particularly concerning. A positive exception to this trend is China, where many highly polluted cities have improved air quality because of their ambitious emission control efforts. Cities in Europe and the USA have seen slowly decreasing $PM_{2·5}$ concentrations with effective implementation of air pollution control legislation and regulation.

This analysis estimates source contributions to ambient $PM_{2·5}$ concentrations in urban areas outside Europe (more than 3500 cities with more than 100 000 inhabitants), with results aggregated to the WHO world regions—83% of these cities do not meet the WHO guideline regarding ambient $PM_{2·5}$ concentrations.

In most regions, residential combustion of solid fuels for cooking and heating was the dominant source of high $PM_{2·5}$ concentrations in 2016. Although coal is prominent in some countries, most of the burden arises from the use of biomass in traditional stoves, which is often associated with net greenhouse-gas emissions due to unsustainable harvesting.

Indicator 3.3.2: premature mortality from ambient air pollution—headline finding: in 2016 there were 2·9 million premature deaths globally that were associated with ambient $PM_{2·5}$ pollution, with minimal improvement in global mortality from 2015. On a decadal scale, improvements are seen in some regions because of efficient emission controls, particularly from industrial processes and power generation

Knowledge of the sources of ambient air pollution is essential for designing efficient mitigation measures that maximise benefits for human health and climate. This indicator estimates the source contributions to ambient $PM_{2·5}$ and their global health impacts, quantifying contributions from individual economic sectors and assessing coal combustion across sectors.

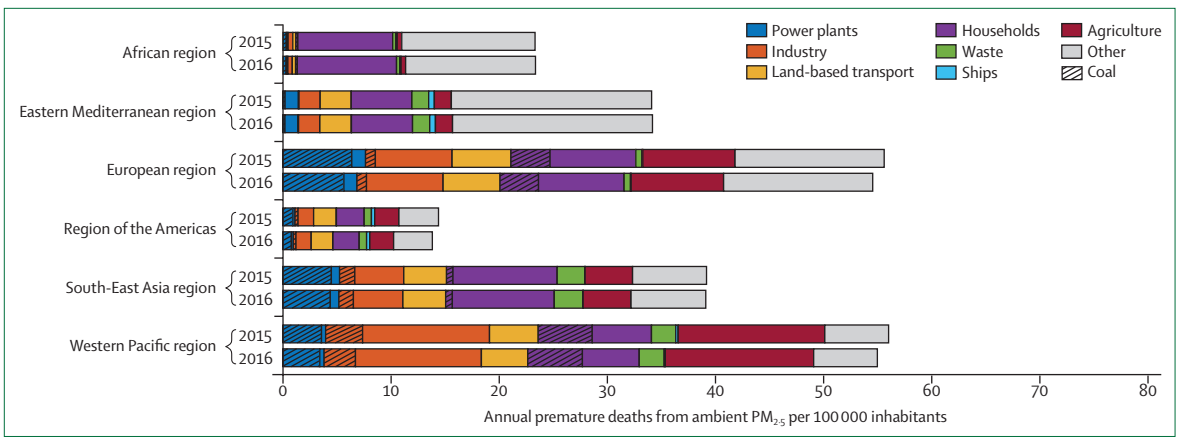


Figure 16: **Premature deaths attributable to exposure to ambient fine particulate matter ($PM_{2·5}$) in 2015 and 2016, by key sources of pollution in WHO-specified regions**

$PM_{2·5}$=atmospheric particulate matter with a diameter of less than 2·5 μm.

Results for 2016 are similar to the estimates for 2015, with an overall number of premature deaths attributable to ambient $PM_{2·5}$ estimated at 2·9 million. The dominant contribution varies between and within world regions: in Africa, household cooking primarily contributes to high $PM_{2·5}$ concentrations; whereas in other regions, industry, transport, electricity generation, and agriculture are the primary contributors (figure 16). Small decreases in the number of premature deaths have been observed in the European region and the Western Pacific region (mainly from closing of coal power plants). Sustained improvements over the past 10 years have been recorded in these regions, presumably due to implementation of end-of-pipe emission controls on power plants (Western Pacific) and on other emission sectors in Europe. However, worldwide, more than 440 000 premature deaths are still estimated to be associated with coal burning.

Indicator 3.4: sustainable and healthy transport

Headline finding: global road transport fuel use increased by 0·7% from 2015 to 2016 on a per-capita basis. Fossil fuels continue to dominate as the primary transport fuel, but their growth is being tempered somewhat by rapid increases in biofuels and electricity

As with electricity generation, the transition to cleaner fuels for transport is important for climate change mitigation and will have the added benefit of reducing mortality from air pollution.[100] Fuels used for transport currently produce more than half of the nitrogen oxides emitted globally and a substantial proportion of particulate matter, posing a large threat to human health, particularly in urban areas (indicator 3.3).[132] Additionally, the health benefits of increasing uptake of active forms of travel (walking and cycling) have been shown through a large number of epidemiological and modelling analyses.[17,49,100,133,134] Encouraging active travel (particularly cycling) has become increasingly central to transport planning, and growing evidence suggests that bikeway

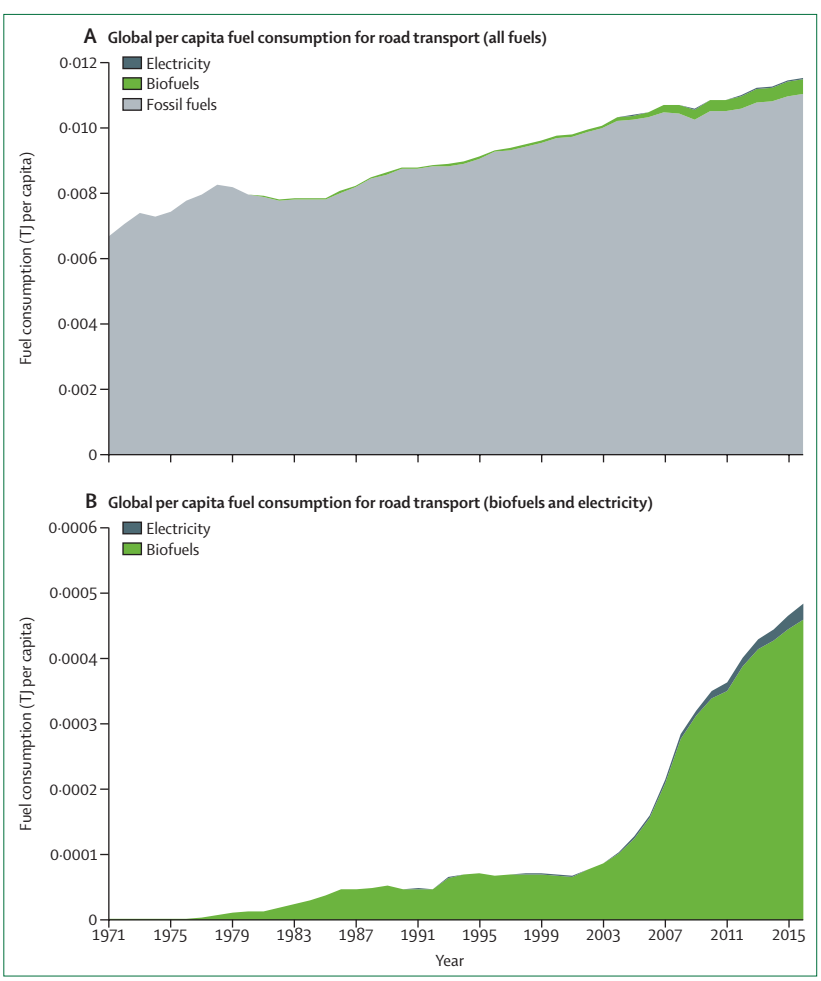


Figure 17: **Per-capita fuel use by type (TJ per capita) for road transport**

(A) Global per-capita fuel consumption for road transport using all types of fuels. (B) Global per-capita fuel consumption for road transport using biofuels and electricity.

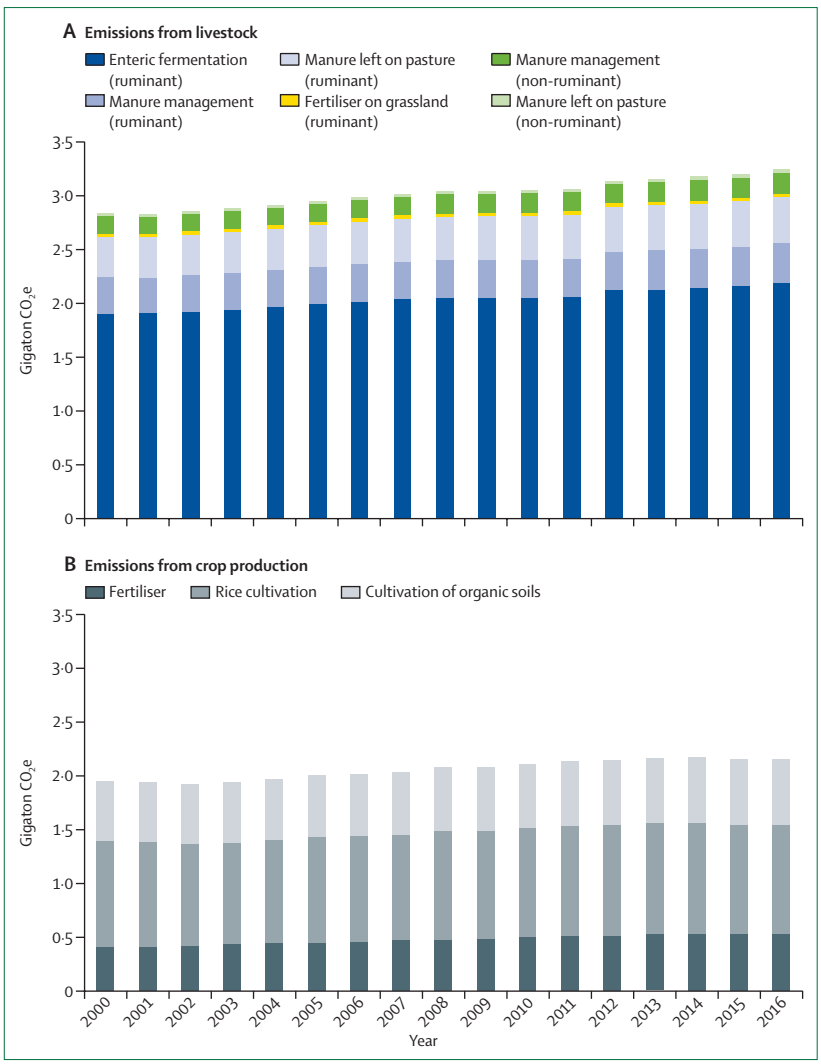


Figure 18: **Gigaton CO_2e emissions from 2000 to 2016**
(A) CO_2e emissions from livestock. (B) CO_2e emissions from crop production. CO_2e=carbon dioxide equivalent.

infrastructure, if appropriately designed and implemented, can increase cycling in various settings.[135] A modal shift in transport could also result in reductions in air pollution from tyre, brake, and road surface wear, in addition to a reduction in exhaust-related particulates.[136]

Global trends in fuel efficiency and the transition away from the most polluting and carbon-intensive transport fuels are monitored using data from the IEA; specifically, it follows the metric of fuel use for road transportation on a per-capita basis (TJ/person) by type of fuel.[37,137] In response to feedback, this year's indicator displays data in three categories of fuel: fossil fuels, biofuels, and electricity.

Globally, per-capita fuel use increased by 0·7% from 2015 to 2016 (figure 17). Although fossil fuels continue to contribute 95·8% of total fuel use for road transport, the use of clean fuels is growing at an increasing rate: fossil fuel use increased by 0·5%, compared with 3·3% growth in use of biofuels and 20·6% growth in use of electricity. In China, electricity now represents 1·8% of total transportation fuel use. This is more than any other country and an 80% higher share than observed in Norway (0·85%), who have committed to 100% of new vehicles sold being zero-emission by 2025.[138] A growing number of countries and cities have announced plans to ban vehicles powered by fossil fuels and automaker Volkswagen has announced that they will stop developing engines fuelled by petrol or diesel after 2026.[139]

A number of cities have made considerable progress towards improving the amount of cycling. Notably, cycling mode share has increased from almost zero to about 15% in Vitoria-Gasteiz, Spain, in less than a decade.[140] The city's transport policy has strongly promoted cycling though the expansion of the cycle lane network, improved cycle parking facilities, and the introduction of safety courses and new cycling regulations, in addition to enhanced communication on the health benefits of cycling.[141] The search for a more comprehensive metric of active transport remains elusive, principally limited by scarcity of data access in this field.

Indicator 3.5: emissions from livestock and crop production

Headline finding: total emissions from livestock have increased by 14% and emissions from crop production have increased by 10%, from 2000 to 2016, with 93% of livestock emissions attributed to ruminants

Obesity and undernutrition present two great challenges to global public health, and both these forms of malnutrition share many common systemic drivers with climate change.[142] Current dietary trends are contributing to both non-communicable diseases and greenhouse-gas emissions, with further planetary impacts including biodiversity loss and changes in water and land use.[101] In particular, excess red meat consumption contributes to the risk of cardiovascular disease and type 2 diabetes as well as increased greenhouse-gas emissions.[143] Although total emissions from crops and livestock will need to substantially decline in the future, particular attention should be given to capitalising on low-carbon production processes, and reducing the consumption of ruminant meat and other animal source foods, particularly in high-income settings.[20,37] Importantly, the nuance and complexity of any such indicator must be emphasised, and no one-diet-fits-all solution exists.[101]

For the 2019 *Lancet* Countdown report, this indicator focuses on emissions from livestock and crop production. The new analysis added here provides a novel method of understanding the emissions profile of agricultural groups—for example, ruminant livestock. A full description of the methods and data is provided (appendix pp 81–84).

Overall emissions from livestock have increased by 14% since 2000 to over 3·2 $GtCO_2e$ in 2016 (figure 18). Ruminants contribute 93% of total livestock emissions

(3 $GtCO_2e$ per year), with 62–65% of this value attributed to non-dairy cattle (used for meat; appendix pp 81–84). However, the largest increase in emissions from 2000 to 2016 has come from poultry, with a recorded increase in emissions of 58% (an increase from 30·6 million tonnes CO_2e in 2000 to 48·5 million in 2016), more than double the increase from non-dairy cattle.

Total emissions from crop production have increased by 10% since 2000, to around 2 $GtCO_2e$ in 2016. Paddy rice cultivation, which releases methane, contributes around half of these emissions (47–50%), with cultivation of organic soils (such as peatlands) contributing 27–29%, and addition of nitrogen fertilisers (synthetic and manure) to soils contributing 21–25%.

Indicator 3.6: mitigation in the health-care sector

Headline finding: greenhouse-gas emissions from the global health-care sector were approximately 4·6% of the global total emissions

Section 2 emphasises the central role of the health-care sector in managing the damages to health resulting from a changing climate; however, this sector is also a large contributor of greenhouse-gas emissions, both directly and indirectly through purchased goods and services. National-level studies for the USA,[144] Canada,[145] and Australia,[146] have used environmentally-extended input-output (EEIO) modelling to show that health-care sector emissions contribute between 4% and 10% of total greenhouse-gas emissions in these countries. EEIO models have been widely used since the 1970s,[147] and underpin consumption-based accounting of emissions done at national and global scales.[148] An important advantage of using EEIO modelling is that health-care sector emissions are estimated on a life cycle basis, meaning that all emissions are accounted for, from the electricity use of health-care facilities, to the energy to produce and transport medical equipment and pharmaceuticals.

National-level studies cannot easily be compared because of differences in how emission inventories, monetary input-output tables, and health expenditure data are collected in each country. Additionally, a proportion of health-care sector emissions in each country is imported from other countries as embodied carbon in traded commodities, thus requiring a global scope and the use of multi-region input-output (MRIO) models that cover more than one country. For this edition of The *Lancet* Countdown, a standardised, international measure of health-care sector greenhouse-gas emissions was created using multiple MRIO models (EXIOBASE, WIOD; figure 19) that cover 40–47 countries and rest-of-world regions, in combination with WHO health expenditure data for 187 countries, assigned to the MRIO model geographic units.

Variations in per-capita greenhouse-gas emissions associated with health care as a function of time, affluence, and the proportion of national economic output spent on health care are shown (figure 19). Per capita, US emissions

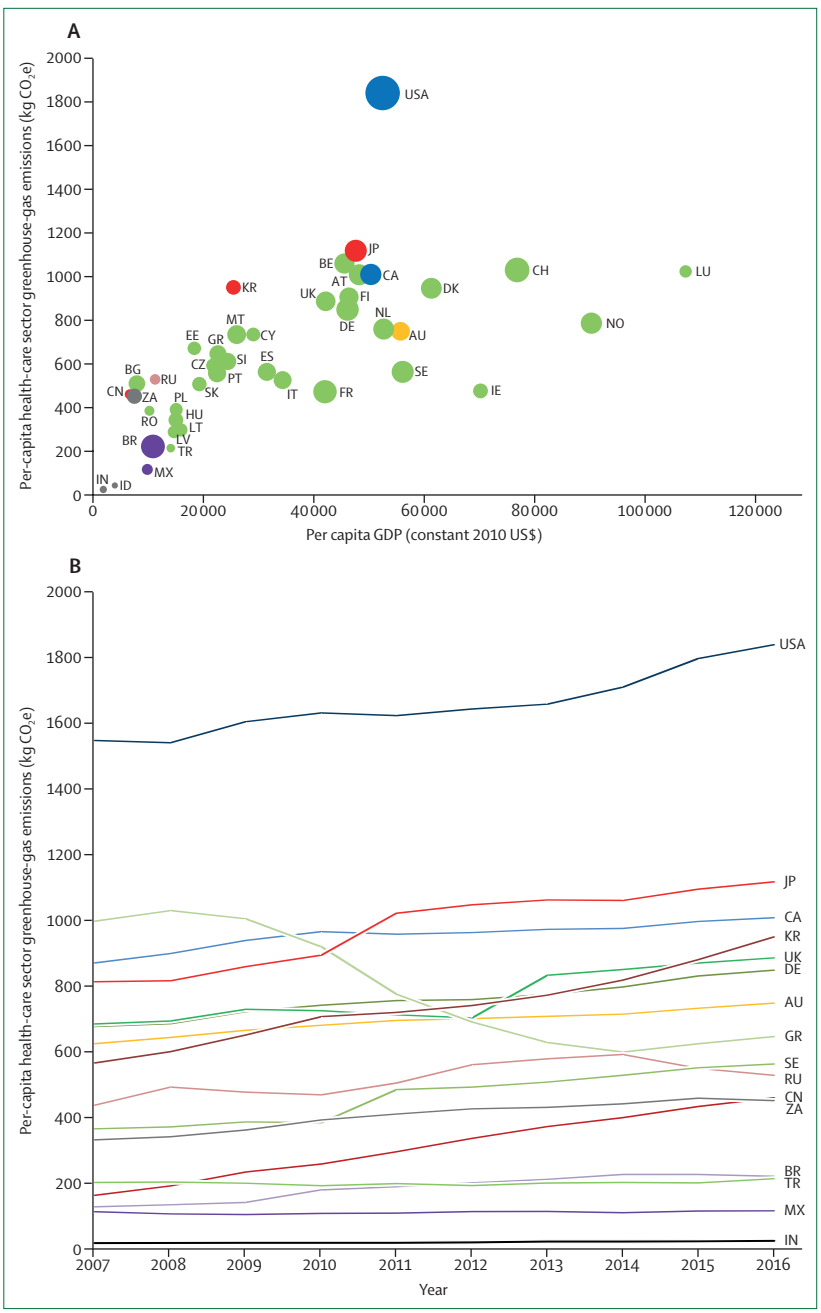


Figure 19: **Variations in per capita health-care sector emissions as a function of time, per capita GDP, and the proportion of national spending on health care**

(A) Health-care sector emissions as a function of GDP per capita (bubble widths indicate the proportion of national spending on health care). (B) Health-care sector emissions as a function of time. Graphs created using multiregional input-output EXIOBASE model. CO_2e=carbon dioxide equivalent. GDP=gross domestic product. AU=Australia. BR=Brazil. CA=Canada. CN=China. DE=Germany. GR=Greece. IN=India. JP=Japan. KR=South Korea. MX=Mexico. RU=Russia. SE=Sweden. TR=Turkey. ZA=South Africa.

are substantially higher than those of any other country and have risen steadily over the study period 2007–16, with a 19% increase. However, per-capita health-care emissions of other countries have increased even more substantially, albeit from a lower base, including China (CN, 180% increase), South Korea (KR, 75%) and Japan

Panel 3: Response of the health-care sector to climate change

Health systems are increasingly faced with the dual challenges of responding to the health impacts of climate change and reducing the contribution of the health-care sector to greenhouse-gas emissions. From 2013 to 2018, participants from health systems, health centres, and hospitals, from 19 different countries, and representing 9199 health centres and 1693 hospitals, have participated in the Health Care Climate Challenge. The Challenge addresses key areas including local climate change risk assessments, health adaptation plans, fossil fuel and renewable energy project investments, and works with government agencies to support greenhouse-gas emission reductions and health-care sector adaptation.

A leader in climate action progress is Kaiser Permanente (KP), one of the largest not-for-profit health systems in the USA, serving 12·3 million members. Between 2008 and 2017, KP reduced its operational greenhouse-gas emissions by 29%, and increased its membership by 36%. As of early 2018, 36 KP facilities hosted onsite solar panels. KP is working to increase its purchasing of renewable electricity to 100% of total usage by 2020. Anaesthetic gases account for 3% of KP's greenhouse-gas emissions. Between 2014 and 2018, KP achieved a 24% reduction in greenhouse-gas emissions associated with its use of anaesthetic gases through progressive elimination of the drug Desflurane.[150]

The largest example of a health system taking steps to reduce greenhouse-gas emissions and other environmental effects comes in the form of the UK National Health Service (NHS). A national-level detailed analysis of government funded health care shows that the NHS public health and social sector in England reduced its greenhouse-gas emissions (excluding chlorofluorocarbons) by 18·5% from 2007 to 2017, while clinical activity increased by 27·5% over the same time period.[151] Efforts are also being made to reduce water use, plastic waste, and air pollution from the NHS.

(JP, 37%). By contrast, health-care greenhouse-gas emissions in Greece showed a marked decrease (GR, –35%), probably reflecting the economic hardships. Results using the WIOD MRIO model show similar trends but slightly lower absolute greenhouse-gas emissions. The lowest per capita emissions modelled were for India (IN) and Indonesia (ID), which were less than 2·5% of values recorded for the USA. Comparison of emissions per capita and Gross Domestic Product (GDP) per capita show a levelling off trend for health-care emissions versus affluence, except for in the USA.

Overall, health care was responsible for approximately 2250 metric tonnes of CO_2e in 2016, or 4·6% of the global total emissions (excluding land use change). A parallel global analysis using a different MRIO model (EORA) measuring CO_2 only (excluding other greenhouse gases) for 36 countries determined a health-care contribution of 4·4% to the global total for the countries considered,[149] corroborating the results presented here. Although global health-sector greenhouse-gas emissions are rising, efforts to reduce these have begun (panel 3).

Conclusion

The indicators of section 3 present a mix of encouraging and concerning trends. Renewable electricity generation continues to grow, as does access to energy, and electric vehicle sales. However, the carbon intensity of the energy system remains unchanged, with coal supply increasing, reversing the 2014–16 downward trend, and a substantial effort is required to decarbonise the agricultural sector and the health-care sector. In summary, greenhouse-gas emissions continue to rise. Notably, the year 2020 is important for two reasons—it is the year that the implementation period of the Paris Agreement begins, and the year during which most studies suggest global emissions must peak to remain on the path to achieving the 1·5°C goal. To meet both commitments, a substantially stronger global response is urgently required, to reduce greenhouse-gas emissions and minimise the future health risks of climate change. The health sector has an important role to play in achieving these goals, both by reducing its own emissions and working with policy makers to help design and implement measures that reduce greenhouse-gas emissions and maximise health co-benefits.

Section 4: economics and finance

Section 4 examines the financial and economic dimensions of the effects of climate change, and of mitigation efforts required to respond to these changes. Although many indicators in this section could appear to be distant from human health, they are key to tracking the low-carbon transition that underpins current and future determinants of human health and wellbeing described in sections 1–3.

The projected economic cost of inaction to tackle climate change is enormous. For example, compared with maintaining a 2°C limit, the costs of 3°C of warming are expected to reach US$4 trillion per year by 2100 (around 5% of total global GDP in 2018), and the total economic costs of a 4°C rise are estimated at US$17·5 trillion (over 20% of GDP in 2018).[152]

Investment to mitigate climate change substantially reduces these risks and generates further economic benefits. For example, the UK's independent Committee on Climate Change calculated that achieving net-zero emissions in the UK in 2050, in line with the more ambitious objective of the Paris Agreement, is likely to require investments of 1–2% of the UK's GDP in 2050. However, if the economic value of co-benefits to human health (and savings to the NHS—for example, from reduced air pollution), and the creation of low-carbon industrial opportunities are considered, the economic implications are likely to be positive.[153] Global economic benefits are likely to be maximised (and costs minimised) if strong policy action is taken as soon as possible to accelerate the low-carbon transition.

The nine indicators in this section fall into four broad themes: economic costs of climate change (indicator 4.1); economic benefits of tackling climate change and air pollution (indicator 4.2); investing in a low-carbon economy (indicators 4.3.1, 4.3.2, 4.3.3, and 4.3.4); and pricing greenhouse-gas emissions from fossil fuels (indicators 4.4.1, 4.4.2, and 4.4.3).

The 2019 report adds an additional indicator tracking the economic value of change in mortality associated with air pollution (indicator 4.2).

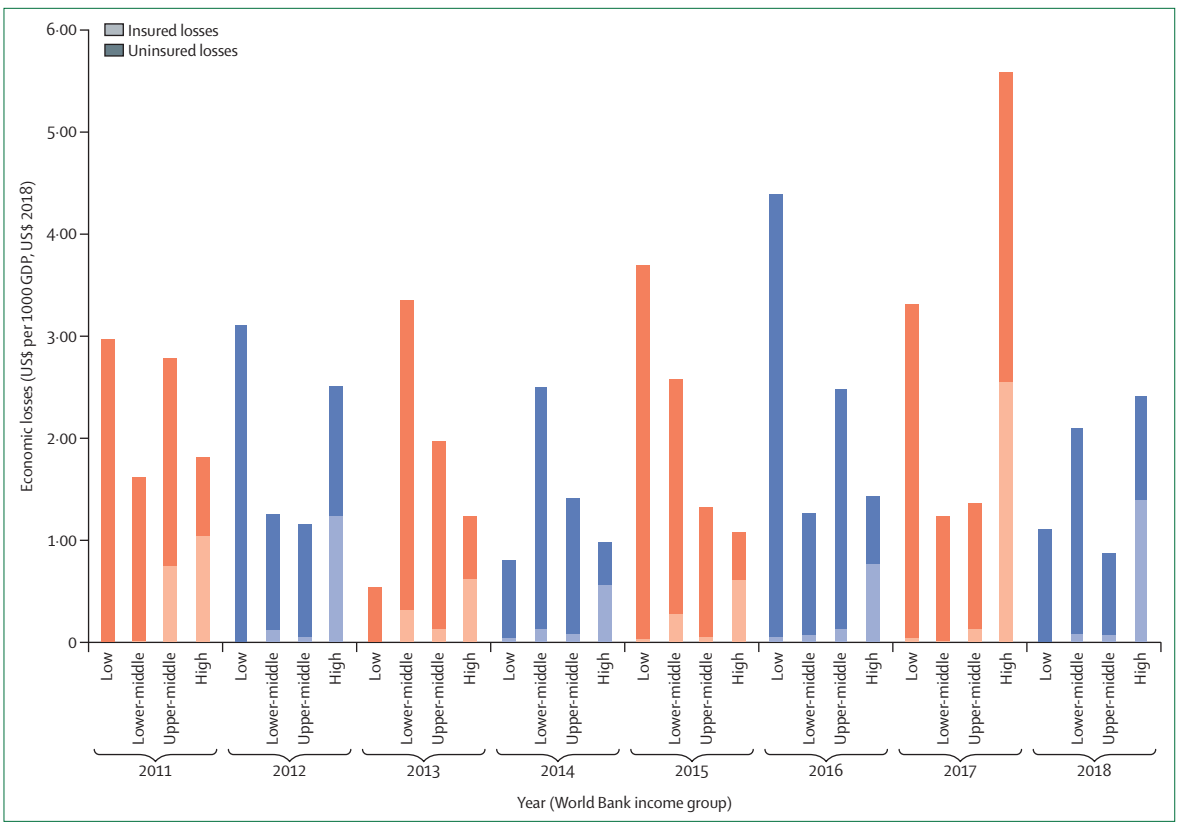


Figure 20: **Economic losses from climate-related events relative to GDP**
GDP=gross domestic product. US$2018=based on the value of the US dollar in 2018.

Indicator 4.1: economic losses associated with climate-related extreme events

Headline finding: in 2018, a total of 831 climate-related extreme events resulted in overall global economic losses of US$166 billion. Although most losses were in high-income countries and insured, no measurable losses from events in low-income countries were covered by insurance

The indicators in section 1 presented changes in exposures and resulting effects on health of climate-related extreme events (indicators 1.2.1, 1.2.2, and 1.2.3). The economic costs of extreme climate-related events might exacerbate the direct health impacts that these events produce. This indicator tracks the total annual economic losses (insured and uninsured) across country income groups relative to GDP, resulting from climate-related extreme events.

The data for this indicator is sourced from Munich Re's NatCatSERVICE,[154] with climate-related events categorised as meteorological, climatological, and hydrological events (geophysical events are excluded) as well as data from the World Bank Development Indicator Database.[155] The methodology remains the same as was used in the 2018 *Lancet* Countdown report.[37] Full methodology, along with data for 1990–2018 are presented (appendix p 87–90).

Insured and uninsured economic losses resulting from extreme climate-related events, relative to GDP, are shown (figure 20). Absolute global economic losses in 2018 were US$166 billion, around half the value experienced in 2017, but still higher than any other year since 2005. Economic losses are highest in high-income countries, but more than half of these losses in high-income countries were insured. By contrast, although in previous years less than 1% of losses in low-income countries were insured (for example, US$20 million of $1·9 billion losses in 2017), in 2018, not a single event recorded created measurable losses covered by insurance.

Indicator 4.2: economic costs of air pollution

Headline finding: across Europe, improvements in particulate air pollution from human activity were seen from 2015 to 2016. If the change in pollution over these 2 years remained the same over the course of a person's life, this difference would lead to an annual average reduction in YLL worth €5·2 billion

Indicator 4.2 is a new indicator for the 2019 report and is the first indicator tracking the economics of the health co-benefits of climate change mitigation, capturing the economic costs of the effect of air pollution on human health (indicator 3.3.2). It will be developed into a full suite of metrics over the coming years, with 2019 presenting values for the EU alone.

This indicator is based on estimates of the total YLL to the 2015 population of EU Member States that results from the change in anthropogenic $PM_{2·5}$ exposure from

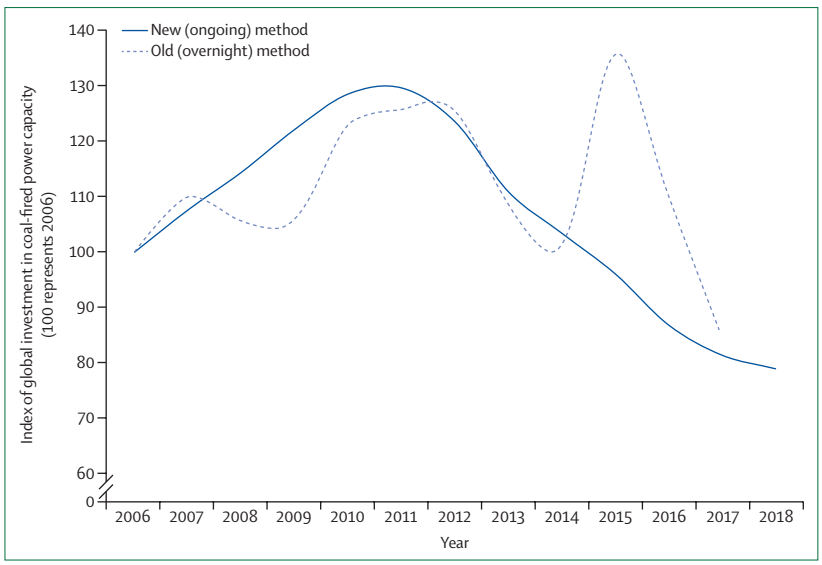


Figure 21: **Annual investment in coal-fired capacity from 2006 to 2018**

2015 to 2016, if such emissions and subsequent population exposure were to remain constant over the course of their remaining lifetimes. Each YLL is assigned a Value of a Life Year of €50 000, which is the lower bound estimate as suggested by the EU Impact Assessment Guidelines.[156] Further details regarding this indicator are discussed (appendix pp 90–93).

As described under indicator 3.3.2, anthropogenic $PM_{2·5}$ pollution decreased between 2015 and 2016 in Europe, largely because of a reduction in emissions from the power sector. If the population of the EU in 2015 were exposed to anthropogenic $PM_{2·5}$ emissions at the concentrations recorded in 2016 (rather than the concentration recorded in 2015) consistently to the year 2115, the total annual average economic value of the reduction in YLLs would be about €5·2 billion. However, even at the concentrations of anthropogenic $PM_{2·5}$ pollution recorded in 2016, the total annual average cost to the population of 2015 would still be €129 billion, with the greatest costs generally found in countries with the largest populations. The greatest projected average life lost per person due to high ambient $PM_{2·5}$ concentrations is seen in Hungary, Romania, and Poland (at more than 8 months per person), with an EU average of 5·7 months of life lost per person.

For the first iteration of this indicator, calculation of annual YLLs attributable to $PM_{2·5}$ exposure in a given year was not possible. However, methodological refinements should allow this metric to be reported in the 2020 report.

Indicator 4.3: investing in a low-carbon economy

Indicator 4.3.1: investment in new coal capacity—headline finding: global investment in new coal-fired electricity capacity declined again in 2018, continuing the downward trend observed since 2011

Indicator 3.1.2 tracks progress on coal phase-out through the total primary energy supply of coal, while this indicator discusses the future of coal-fired power generation through tracking investments in coal-fired capacity.

The data source for this indicator (IEA) remains the same as in the 2017 *Lancet* Countdown report;[20] however, the methodology has altered and has been retrospectively applied to reanalyse all data presented. The revised approach considers ongoing capital spending, with investment in a new plant spread evenly from the year new construction begins, to the year it becomes operational. Previously, data was presented as a so-called overnight investment, in which all capital spending on a new plant is assigned to the year in which the plant became operational (appendix p 93). Data for 2006–17 using the overnight method are presented for comparison with the ongoing capital spending method (figure 21).

Although TPES for coal increased in 2018 (indicator 3.1.2), investment in new coal-fired electricity generating capacity continued the downward trend observed since 2011. Notably, this decline was mostly due to reduced investment in the same countries that increased their coal TPES in 2018 (China and India), providing hope for coal phase-out. The number of total Final Investment Decisions (ie, the decision to begin construction) declined by 30% in 2018, with costs and construction times for new plants generally increasing because of larger, more efficient, and complex designs, and the use of advanced pollution control systems, in response to concerns regarding air quality.[157]

Indicator 4.3.2: investments in low-carbon energy and energy efficiency—headline finding: trends in energy investments are currently heading in the wrong direction. In 2018, investments in fossil fuels increased, whereas investments in low-carbon energy decreased

Indicator 4.3 monitors global investment in low-carbon energy, energy efficiency, fossil fuels, and electricity networks. It complements the tracking of low-carbon electricity generation (indicator 3.1.3) in section 3 and potentially predicts future trends in this indicator. All values reported are based on the value of the US dollar in 2018 with data sourced from the IEA.[157] The data sources for this indicator remain the same as described in the 2017 *Lancet* Countdown report;[20] however, the methodology has been updated (appendix pp 94–95).

Total investment in the global energy system remained stable at around US$1·85 trillion in 2018, following a steady decline between 2015 and 2017 (figure 22). Investment in fossil fuels increased slightly, driven by an increasing oil price, and investment in low-carbon energy slightly decreased, driven by reduced investment in renewable electricity—partly the result of continually declining costs. Investments in energy efficiency and electricity networks remained stable between 2017 and 2018.

In contrast to the growth in low-carbon electricity generation (indicator 3.1.3), these investment trends are not consistent with limiting warming to "well below 2°C". The IEA estimate that in order to achieve a pathway consistent with the goals of the Paris Agreement,

investment in low-carbon energy, electricity networks that enable it, and energy efficiency, must collectively increase 2·5-fold by 2030 (even with further expected reductions in the cost of such technologies and actions), and account for at least 65% of total annual investment in the global energy system.[157,158]

Indicator 4.3.3: employment in renewable and fossil fuel energy industries—headline finding: in 2018, renewable energy provided 11 million jobs—an increase of 4·2% from in 2017. Employment in fossil fuel extraction industries also increased to 12·9 million—a 2% increase from in 2017

Occupational health consequences of working in certain key fossil fuel industries, such as risk of injury and respiratory disease, and risk of damage to hearing and skin, are well documented.[20] However, with appropriate planning and policy, the transition of employment opportunities from high-carbon to low-carbon industries could yield positive consequences for both the economy and human health.[159]

This indicator tracks global direct employment in fossil fuel extraction industries (coal mining and oil and gas exploration and production) and direct and indirect (supply chain) employment in renewable energy (figure 23). The data for this indicator are sourced from the International Renewable Energy Agency (IRENA) (renewables) and IBISWorld (fossil fuel extraction).[160–162] The data for fossil fuel extraction employment for 2012–2017 differs substantially from that presented in the 2018 Countdown report, because of improved data collection and estimation methods for global coal mining employment by IBISWorld. Similarly, values for hydropower and other technologies for renewable energy employment have been revised, following methodological changes (appendix pp 95–96).

In 2018, around 11 million people were employed either directly or indirectly in the global renewable energy industry. This value represents a 4·2% increase from 2016, with growth in five of the six renewable energy categories. Employment in the solar photovoltaic industry increased by more than 7%, and remains the largest employer, with China responsible for nearly two-thirds of jobs in this industry. Overall, 32% of global renewable energy jobs are held by women.[162]

Growth in employment in the fossil fuel extractive industries has been driven by both the growth of coal mining in China and other emerging markets (particularly India), despite a decline in many high-income countries, and the upstream oil and gas industries, following rising prices in 2018. However, employment in both industries is expected to decrease in the coming years because of the slowing growth in demand for coal in key markets such as China, and a decline in other (particularly high-income) markets, as the transition to low-carbon electricity continues, along with a potential decline in oil and gas prices—coupled with increasing productivity.[160,161]

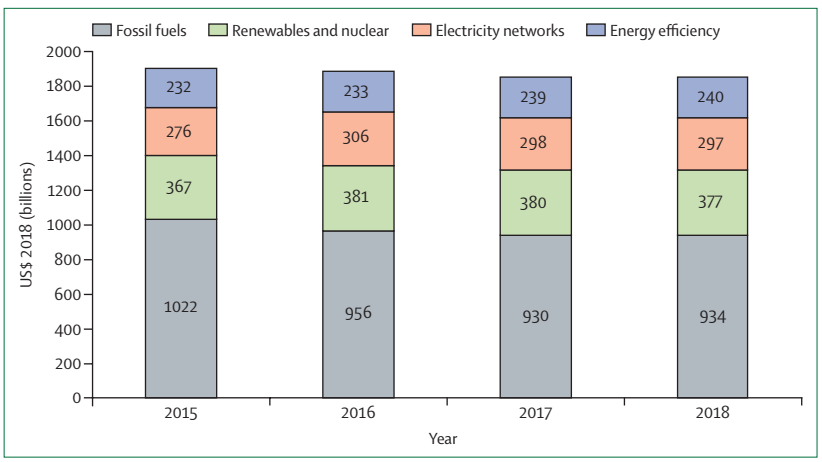


Figure 22: **Annual investment in the global energy system**
US$ 2018=based on the value of the US dollar in 2018.

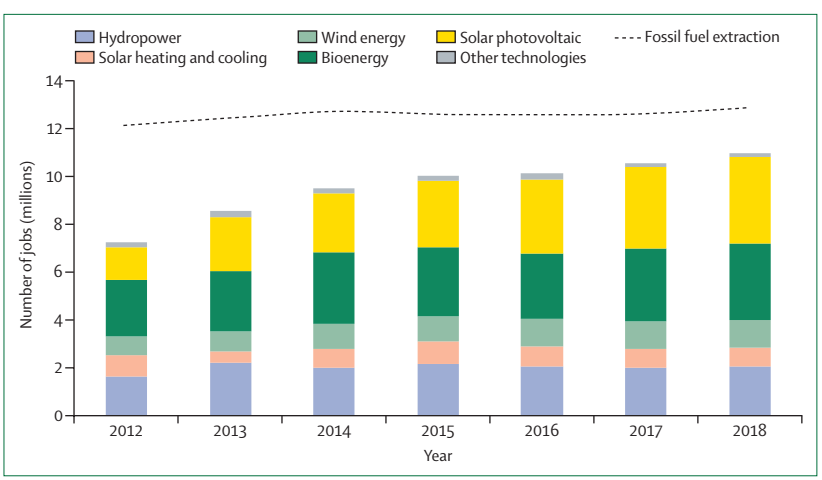


Figure 23: **Employment in renewable energy and fossil-fuel extraction sectors**
Data from IBISWorld [160,161] and IRENA.[162]

Indicator 4.3.4: funds divested from fossil fuels—headline finding: the global value of new funds committed to fossil fuel divestment in 2018 was US$2·135 trillion, of which health institutions accounted for around US$66·5 million; this represents a cumulative sum of US$7·94 trillion since 2008, with health institutions accounting for US$42 billion

Originating in the late 2000s, the divestment movement aims to remove the so-called social licence to operate from the fossil fuel industry and guard against the risk of losses from stranded assets, by encouraging investors to commit to divest themselves of assets related to the industry. The debate on the direct and indirect consequences of these approaches is nuanced and complex, with evidence regarding their effects only beginning to emerge.[163]

This indicator tracks the total global value of funds divested from fossil fuels and the value of divested funds from health institutions, by use of data provided by 350.org.[164]

For more on **funds divested from fossil fuels** see https://gofossilfree.org

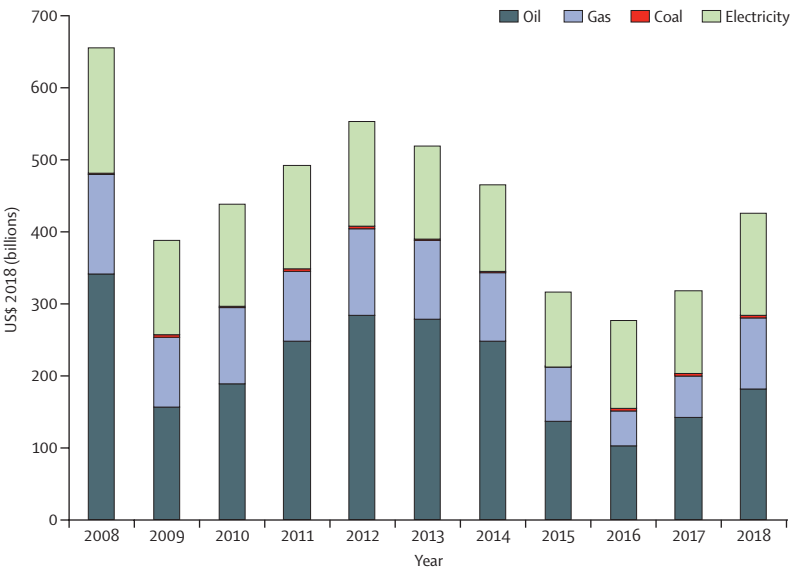


Figure 24: **Global fossil-fuel and electricity consumption subsidies in 2008–18**
US$ 2018=based on the value of the US dollar in 2018.

	2016	2017	2018	2019
Global emissions coverage*	12·1%	13·1%	13·1%	13·1%
Weighted average carbon price of instruments (prices in US$)	7·79	9·28	11·58	13·08
Global weighted average carbon price (prices in US$)	0·94	1·22	1·51	1·76

*Global emissions coverage is based on 2012 total anthropogenic greenhouse-gas emissions.

Table 1: **Carbon pricing—global coverage and weighted average prices per tonnes of carbon dioxide equivalent**

From 2008 to the end of 2018, 1026 organisations with cumulative assets worth at least US$7·94 trillion, including 23 health organisations with assets of around US$42 billion, had committed to divestment, including the World Medical Association, the British Medical Association, the Canadian Medical Association, the UK Royal College of General Practitioners, and the Royal Australasian College of Physicians. The annual value of new funds committing to divesting increased from US$428 billion in 2017 to $2·135 trillion in 2018. However, health institutions have divested at a reduced rate, with just US$866·5 million divested in 2018, compared with $3·28 billion in 2017.

Indicator 4.4: pricing greenhouse-gas emissions from fossil fuels

Indicator 4.4.1: fossil fuel subsidies–headline finding: in 2018, fossil fuel consumption subsidies increased to US$427 billion, more than a third higher than 2017 subsidies, and more than 50% higher than 2016 subsidies

Negative externalities, including the various direct and indirect consequences for human health and the natural environment, mean that the true cost of fossil fuels is far greater than their market price.[165] Fossil fuel subsidies (both for their consumption and their extraction) artificially lower prices even further, promoting overconsumption, further exacerbating both greenhouse-gas emissions and air pollution.

This indicator tracks the value of fossil fuel consumption subsidies in 42 countries, most of which are not members of the Organization for Economic Cooperation and Development. Although these countries account for a large proportion of such subsidies around the world, they are by no means comprehensive, meaning that the values reported are conservative. The methodology and data source (IEA) for this indicator remains unchanged since the 2018 *Lancet* Countdown report[37] Data for 2008 and 2017, which was previously not available, is now included (appendix pp 97–102).

Although fossil fuel subsidies declined between 2012 and 2016, this trend was reversed in both 2017 and 2018, reaching US$319 billion and $427 billion, respectively (figure 24). These values do not include the economic value of the unpriced negative externalities. If these values were to be included, the IMF estimated that in 2017 global subsidies to fossil fuels increased to US$5·2 trillion—equivalent to 6·3% of Gross World Product.[166]

Indicator 4.4.2: coverage and strength of carbon pricing—headline finding: carbon pricing instruments in early 2019 continue to cover 13·1% of global anthropogenic greenhouse-gas emissions, but average prices were around 13% higher than in 2018

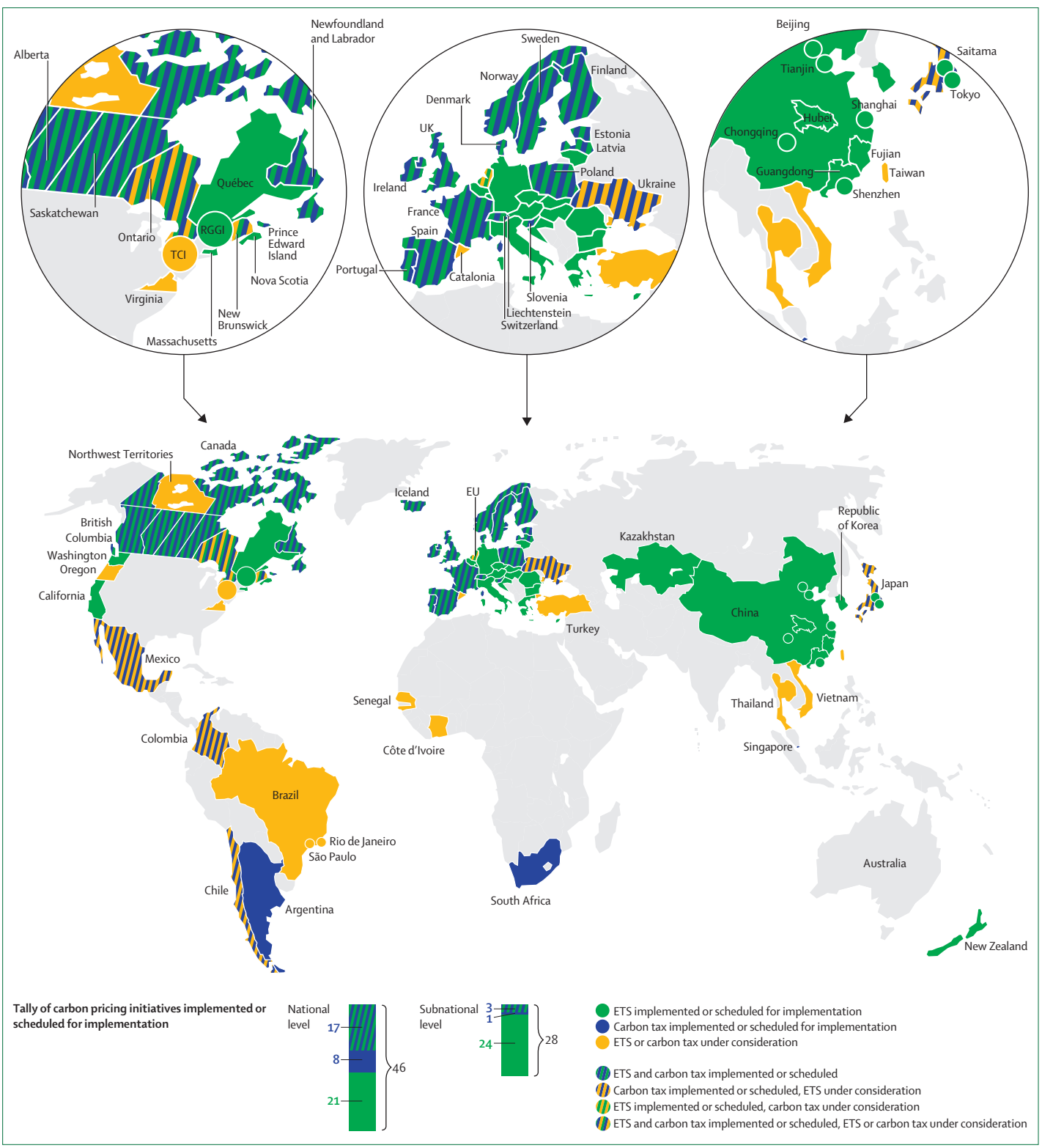
Adequately pricing carbon emissions is an essential component in shifting investment to develop a low-carbon economy. This indicator tracks the extent to which greenhouse-gas emissions are priced, and the weighted-average price these instruments provide (table 1), using data from the World Bank Carbon Pricing Dashboard.[167] The full methodology is presented and remains unchanged from the 2017 *Lancet* Countdown report (appendix pp 102–104).

The coverage of carbon-pricing instruments remained at around 13·1% of global anthropogenic

Figure 25: **Summary map of regional, national, and subnational carbon pricing initiatives implemented, scheduled for implementation, and under consideration (ETS and carbon tax)**
Adapted from State and Trends of Carbon Pricing 2019,[167] by permission of World Bank Group. The large circles represent cooperation initiatives on carbon pricing between subnational jurisdictions. The small circles represent carbon pricing initiatives in cities. Carbon pricing initiatives are considered to be scheduled for implementation when they have been formally adopted through legislation and have an official, planned start date. Carbon pricing initiatives are considered to be under consideration if the government has announced its intention to work towards the implementation of a carbon pricing initiative and this has been formally confirmed by official government sources. The carbon pricing initiatives have been classified in ETSs and carbon taxes according to how they operate technically. ETS not only refers to cap-and-trade systems, but also to baseline-and-credit systems as seen in British Columbia. Australia had a carbon tax implemeneted in 2012, which was then removed in 2014.
ETS=Emissions Trading Scheme.

greenhouse-gas emissions between 2018 and 2019, implemented through 44 national and 27 sub-national instruments.

Carbon prices across instruments are widely varied, from less than US$1/tonne CO_2e (tCO_2e) in Poland, Ukraine and the Chongqing and Shenzhen pilot schemes



	Value (US$)	Proportion of total funds
Mitigation	24·36 billion	56·6%
Adaptation	258 million	0·6%
Revenue recycling	5·50 billion	12·8%
General funds	12·91 billion	30%
Total revenue	43·03 billion	100%

Table 2: **Carbon pricing revenues and allocation in 2018**

in China, to \$127/tCO_2e in Sweden. Weighted-average prices in early 2019 were 13% higher than 2018 prices, driven in large part by an increasing price under the EU Emissions Trading Scheme (EU ETS; the largest carbon pricing instrument in the world, responsible for nearly half of the economic value of all instruments combined). However, the weighted average of these carbon pricing instruments remains insufficient to remain "well below 2°C", which would require a carbon price of US\$40–80/tCO_2e by 2020,[168] and the revenue generated through carbon pricing (described in indicator 4.4.3) is far less than the potential annual impacts of unmitigated climate change on global GDP.[152]

Further carbon pricing instruments are under consideration (figure 25). With the addition of these instruments—and in particular the Chinese national Emissions Trading Scheme (ETS; replacing the existing subnational so-called pilots), more than 20% of global anthropogenic greenhouse-gas emissions will be covered by carbon price.[169]

Indicator 4.4.3: use of carbon pricing revenues—headline finding: revenues from carbon pricing instruments increased by US\$10 billion between 2017 and 2018, reaching \$43 billion, with \$24·4 billion allocated to further climate change mitigation activities

As the previous indicator outlined, adequately pricing carbon is essential for mitigating greenhouse-gas emissions. How the revenue generated by these pricing instruments is used will also have important consequences. Four ways the revenue could be used include: investment in further mitigation; investment in adaptation; recycling for other purposes (such as enabling the reduction of other taxes or levies); and contributing to other general government funds. This indicator tracks the total government revenue from carbon pricing instruments and the area in which it will be allocated.

Data on revenue generated is provided on the WBG Carbon Pricing Dashboard,[167] with revenue allocation information obtained from various sources. Only instruments with revenue estimates and with revenue received by the administering authority before redistribution are considered. Further information regarding the methodology and various sources used to obtain information on revenue allocation are presented (appendix pp 104–106).

Government revenue generated from carbon pricing instruments in 2018 totalled over US\$43 billion; a \$10 billion increase from the \$33 billion generated in 2017. This change was driven by increasing prices of allowances sold at auction in the EU ETS; higher tax rates for instruments in Alberta, British Columbia, and France; and allowance sales in California and Quebec.[169]

The revenue allocated to mitigation activities increased by about US\$10 billion between 2017 and 2018, and revenue allocated to revenue recycling and general funds also increased (table 2). Revenue allocated to adaptation reduced substantially, from more than US\$1·5 billion to around \$250 million.

Conclusion

Section 4 has presented indicators on the economic impacts of climate change, the financial and economic underpinnings of climate change mitigation, and the economic value of the associated health benefits. The results of these indicators suggest that the shift to a low carbon global economy is slowing in various sectors, and previously promising trends emphasised in the 2018 report have been reversed. Given the need to transition the global economy to net-zero greenhouse-gas emissions by 2050 to limit warming to well below 2°C, governments at all levels—in collaboration with the private sector and the population—must take immediate steps towards implementing strong, ambitious policies and related actions to steer and rapidly accelerate their economies towards a low-carbon state. The health sector and health professionals can contribute through the removal of institutional investment in fossil fuels, assessments of the health economics of mitigation co-benefits, and by communicating the negative externalities associated with the continued use of fossil fuels.

Section 5: public and political engagement

As the previous sections have emphasised, climate change is human in both origins and effects. Its origins lie in the burning of fossil fuels, particularly during early industrial periods, and its effects include an increasing toll on human health. Reductions in global greenhouse-gas emissions at the speed required by the Paris Agreement depend on engagement by all sectors of society.

In the 2019 *Lancet* Countdown report, section 5 focuses on engagement in four domains: the media, government, corporate sector and, for the first time, individual engagement. It tracks trends in engagement across the last decade, complementing this evidence with analyses of the content and dynamics of engagement in 2018. The methods for an indicator relating to a fifth domain, scientific engagement, are being refined to ensure the long-term sustainability of this work, and will be reported again in 2020. In every case, indicators in this section build on methods used in earlier *Lancet* Countdown reports, which continue to be refined and extended.

The media is central to public understanding of climate change; it provides a key resource through which people make sense of climate change and assess the actions of

governments to address it.[170–173] The media indicator (5.1) includes an analysis of global coverage of health and climate change in 62 newspapers from 2007 to 2018. For the 2019 *Lancet* Countdown report, this has expanded to include coverage of health and climate change in China's *People's Daily* (in its Chinese-language edition, *Renmin Ribao*). As the official outlet of the Chinese party-state, the *People's Daily* is China's most influential newspaper.[174] The indicator has been further enhanced by a content analysis of the elite press in two contrasting societies, India and the USA. Elite newspapers both reflect and shape engagement in climate change by governments and elite groups.[175–179]

The internet is an increasingly important medium of civic engagement and has transformed individual access to global knowledge and debates. The second indicator tracks engagement in health and climate change through individuals' information-seeking behaviour on the online encyclopaedia, Wikipedia.[180] Because of its accessibility, breadth, and user trust, Wikipedia is one of the most widely used online resources.[181–185]

Recognising that climate change is harming people, the global public support government action to decrease greenhouse-gas emissions.[186–188] The third indicator relates to government engagement in health and climate change and focuses on high-level government engagement in health and climate change at the UN General Assembly. It tracks references at the UN General Debate, the major international forum during which national leaders have the opportunity to address the global community on issues they consider important.[189,190]

The fourth indicator relates to the corporate sector, recognised to be central to a rapid transition to a carbon-free economy, both through its business practices and wider political and public influence.[191–193] Focusing on the health sector, the indicator tracks engagement in health and climate change through analyses of the annual reports submitted by companies signed up to the UN Global Compact—the world's largest corporate sustainability initiative.[194]

Indicator 5.1: media coverage of health and climate change

Headline finding: media coverage of health and climate change continued to increase between 2007 and 2018 with the elite press emphasising the health impacts of climate change and the co-benefits of climate change action

This indicator tracks coverage of health and climate change in the global media, including in the Chinese *People's Daily*. Additionally, it provides insight into which aspects of the health–climate change nexus are receiving attention in the elite media in India and the USA. For the 2019 *Lancet* Countdown report, methods to track newspaper coverage have been improved and greater attention is also given to the content of coverage.

Global media coverage of health and climate change has increased since 2010. Alongside broader coverage of climate change, spikes in media engagement with health and climate change coincided with major events in climate governance.[195] These include the 2009 and 2015 UNFCCC Conferences of Parties (COPs) in Copenhagen and Paris and, in 2016, the Paris Agreement and the Sustainable Development Goals coming into force. However, health continued to represent only a small proportion of the wider coverage of climate change. Analysis details, together with data sources and methodological enhancements are described (appendix pp 107–127). The indicator is based on 62 newspapers (English, German, Portuguese, Spanish) selected to provide a global spread of higher-circulation papers.

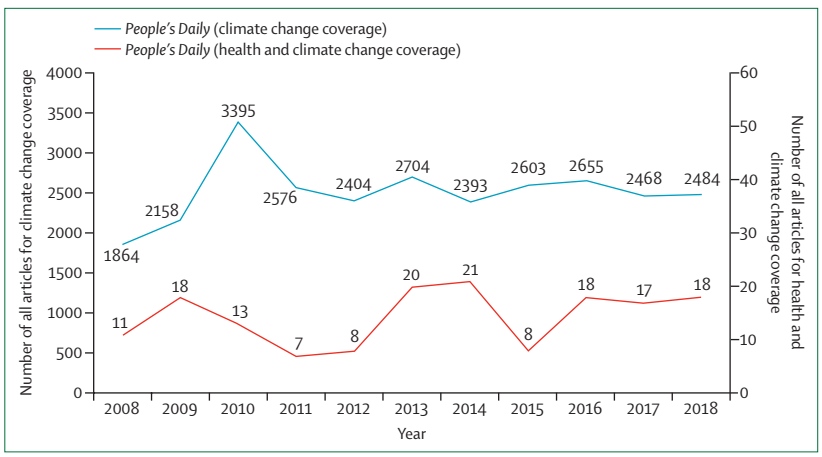


Figure 26: **Coverage of climate change and health and climate change in *People's Daily* between 2008 and 2018**

Additionally, coverage of health and climate change in the *People's Daily* was tracked to extend the analysis (figure 26). Although the Chinese media has changed and diversified in recent decades, the *People's Daily* retains its dominance.[174,196,197] Across the 2008–18 period, an average of 2519 articles per year were published discussing climate change. A small proportion of these related to human health, with a mean of 14 articles per year. Spikes in coverage are less closely tied to important events in global climate change governance (such as the signing of the Paris Agreement in 2015) than in the global media. An explanation for this difference in reporting might be the timing of *People's Daily* coverage of global events, including the COPs, which occurs after their conclusion; coverage of November and December COPs might occur in the following calendar year.

This addition to indicator 5.1 was based on the *People's Daily* online archive,[198] and combined electronic searching of the text corpus (keyword searches and algorithm-based natural language processing) with manual screening of the filtered articles (appendix pp 110–117).

The analysis of the content of coverage focused on the high-circulation elite press in India and the USA: *Times of India*, *Hindustan Times*, *New York Times*, and

Washington Post. Two time-periods were selected to cover months July–September, during which both countries experienced extreme weather events (monsoon flooding and wildfires, respectively) together with months November–December covering the 2018 COP in Katowice. Articles in international news databases Nexis and Factiva were keyword searched and manually screened for inclusion. Template analysis was used to identify themes; a priori coding derived from *Lancet* Countdown indicators and inductive coding from recurrent topics in the data were employed.[199] Additional analyses and full details of methods are provided (appendix pp 117–127).

Coverage of health and climate change clustered around three broad connections between the two areas (panel 4). The first theme is associated with the health impacts of climate change. These impacts related to climate change-related stressors (eg, increased temperatures, wildfires, precipitation extremes, food security, population displacement) and health sequelae (eg, vector-borne disease, heat stress, mental health disorders) and were discussed in 62% of the articles. The health effects resulting from heat were the most commonly-mentioned impact. The second theme focused on the common determinants of health and climate change, particularly air pollution, and the co-benefits to be derived from mitigation strategies to address them (eg, investment in clean energy, active travel, and plant-based diets) and was discussed in 44% of articles. The third theme is related to adaptation. Evident in 13% of the articles, it included both emergency response and longer-term planning. The three themes were represented in similar proportions in *Hindustan Times, New York Times,* and *Washington Post*, but *Times of India* gave greater emphasis to common causes and co-benefits than did the other newspapers.

Panel 4: **Dominant themes in elite newspaper coverage of health and climate change in India and the USA in 2018**

Health impacts of climate change

"Climate change [is] making mosquitoes bolder and the germs they transmit stronger, leading to a spurt in mosquito-borne diseases, particularly chikungunya." (*Times of India*, August 9)

"As large wildfires become more common—spurred by dryness linked to climate change—health risks will almost surely rise…a person's short-term exposure to wildfire can spur a lifetime of asthma, allergy and constricted breathing." (*New York Times*, November 17)

Benefits of addressing climate change and health together

"To protect our future, new infrastructure must be low-carbon, sustainable and resilient…in 2030, this kind of climate action could also prevent over 700 000 premature deaths from air pollution annually…if cities are built in more compact, connected and coordinated ways, they can improve residents' access to jobs, services and amenities while increasing carbon efficiency." (*Hindustan Times,* December 5)

"For a short time on Thursday night, a small but fiercely determined group of marchers took over a busy DC street to demand better safety for pedestrians and bicyclists…the district has reported 31 traffic deaths so far this year, up from 29 in all 2017…yet lives could be spared…even if it means taking the space from curbside parking. Gove said. "This is a public health crisis. This is a climate change crisis."" (*Washington Post*, November 16)

Adaptation

"Ahmedabad Municipal Corporation (AMC) has adopted a heat action plan which necessitates measures such as building heat shelters, ensuring availability of water and removing neonatal ICU from the top floor of hospitals…it has helped bring down the impact of heatwave on vulnerable populations." *(Times of India,* November 29)

"We rarely do much to protect our cities until disaster strikes… (the) effects of climate change, including the ways it boosts droughts, floods and wildfires, would put more pressure on cities to adapt, mitigate the effects of climate change and become resilient… preparing for disasters and recovering from weather challenges require many different strategies, including holding that rainwater, keeping the flow from going into the drains faster, raising your homes above the flood line." (*New York Times*, December 13)

Indicator 5.2: individual engagement in health and climate change

Headline finding: individuals typically seek information about either health or climate change; when individuals seek information across these areas, it is primarily driven by an initial interest in health-related content

The internet is an increasingly important domain of public engagement, particularly for information-seeking on issues that engage people's attention.[200] This indicator tracks individual-level engagement in health and climate change in 2018 through an analysis of use of Wikipedia, the world's largest encyclopaedia. With reviews noting its accuracy,[181,201] Wikipedia is one of the most-visited websites worldwide,[182] with a high correlation between user visits to Wikipedia and search activity on Google.[202] The analysis is based on the English Wikipedia, which represents around 50% of global traffic to all Wikipedia language editions.

This is a new indicator for the 2019 *Lancet* Countdown report and its analysis uses the online footprint of Wikipedia users to map the dynamics of public information-seeking in health and climate change.[180,203] It analyses clickstream activity, reported on a monthly basis, that captures visits to pairs of articles, for example an individual clicking from a page on human health to one on climate change.[204]

Articles were identified via keywords and relevant hyperlinks within articles, refined using Wikipedia categories, and then filtered by the initial keywords. Data and methods are described along with further analysis (appendix pp 127–137).

Articles on health and on climate change are internally networked, with extensive co-visiting within these clusters (figure 27). However, the co-clicks suggest little connectivity between the clusters. Health and climate change are seldom topics that an individual connects when they visit Wikipedia; initial engagement in one topic rarely triggers engagement in the other. The

proportion of co-clicks from a health article to a climate change article represented only 0·18% of total health article co-clicks to articles discussing any topics, and only 1·12% of climate change article co-clicks were to a health article. This data also reflects the greater interest of the individual in health articles compared with climate change articles, with the majority (79%) of co-visits originating from a health-related webpage.

Indicator 5.3: government engagement in health and climate change

Headline finding: national leaders are increasingly drawing attention to health and climate change at the UN General Debate in a trend led by small island developing states, which make up 10 of 28 countries referencing the climate change–health link at the UN General Debate in 2018

This indicator tracks high-level political engagement with climate change and health through references to this topic in annual statements made by national leaders in the UN General Debate (UNGD). The UNGD takes place at the start of the annual UN General Assembly and provides a global platform for all UN member states to speak about their priorities and concerns.

An updated dataset, the UN General Debate corpus, was used for the analysis, based on 8093 statements made between 1970 and 2018.[205,206] Keyword searches used sets of terms associated with health and with climate change, and engagement in the health–climate change nexus was determined by the proximity of relevant keywords within the statement. Methods and data, as well as further analyses are presented (appendix pp 138–151).

The proportion of countries that refer to the links between health and climate change in their UNGD statements, together with the proportion referring separately to climate change or to health, or both, are presented (figure 28). In 2018, 28 countries referenced the climate change and health link at the UNGD.

The data points to an upward trend in government engagement in health and climate change since 1970; a trend that is consistent with broader trends for engagement in climate change. This increase is particularly noticeable since 2004, peaking in 2014, when more than 20% of national leaders spoke of the links between climate change and health. This spike coincided with the transition from the Millennium Development Goals to the SDGs and preparations for the COP 21 in Paris. Since 2014, conjoint references to health and climate change have remained broadly stable; in 2018, 13% of countries made such references. However, increased engagement in health and climate change as separate issues has been noted (figure 28). Around 75% of all countries referred to climate change and 50% to health issues in their 2018 UNGD statements.

The upward trend in engagement in health and climate change is led by the small island developing states, for example, Fiji, Palau, Samoa, Dominica, and St Kitts and Nevis, with ten of these developing states referring to the climate change–health link in 2018. In these speeches, connections between climate change and health are explicitly made and linked to wider inequalities between and within countries. For example, the 2018 address by St Kitts and Nevis notes that "NCDs [non-communicable diseases] and climate change are two sides of the same coin" and Dominica's statement makes clear that "climate change arises from activities that support and reflect inequalities…it is the poor whose

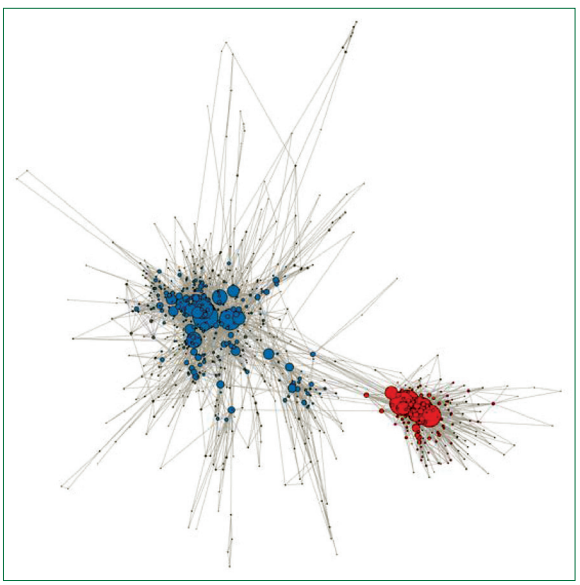


Figure 27: **Connectivity graph of Wikipedia articles on health (blue) and climate change (red) visited in 2018**
Popularity of articles is indicated by node size; lines represent co-visits in clickstream data.

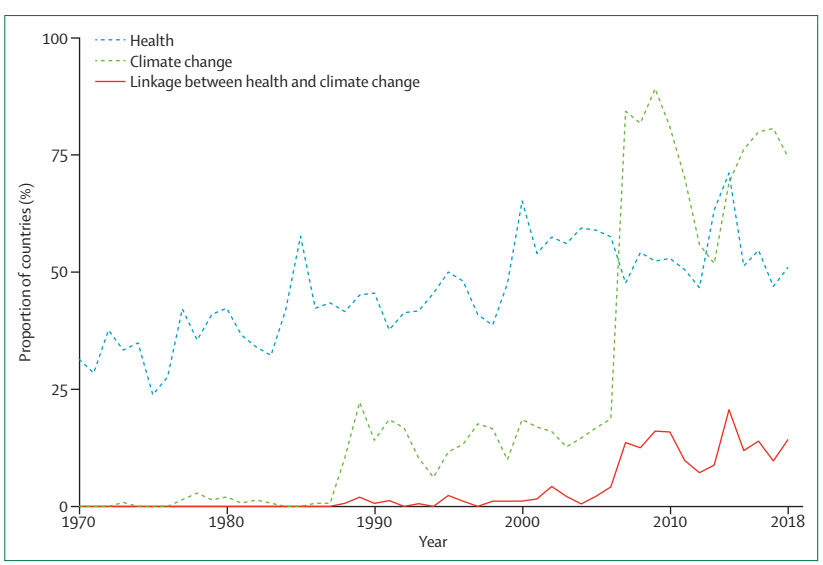


Figure 28: **Proportion of countries referring to climate change, health, or the linkage between health and climate change in UN General debates between 1970 and 2018**

lands are impacted by severe droughts and flooding and whose homes are destroyed and whose loved ones perish. It is the poor who have the least capacity to escape the heavy burdens of poverty, disease and death." The social justice theme is echoed in other speeches; for example, the Malawi address notes that "the hostile consequences of climate change, food insecurity and malnutrition are serious threats in a country that still relies on rain-fed subsistence agriculture."

Indicator 5.4: corporate sector engagement in health and climate change

Headline finding: engagement in health and climate change remains low among companies within the UN Global Compact, including companies in the health-care sector

This indicator tracks corporate sector engagement through references to health and climate change in companies that are part of the UN Global Compact (UNGC), a UN-supported platform to encourage companies to put a set of principles—including environmental responsibility and human rights—at the heart of their corporate practices.[207] Although the UNGC has been the topic of criticism, it remains the world's largest corporate citizenship initiative.[208–210]

Companies submit annual Communication of Progress reports with respect to their progress in advancing UNGC principles. Over 12 000 companies have signed up to the UN Global Compact from more than 160 countries.[194]

Analysis was based on keyword searches of sets of health-related and of climate change-related terms in Communication of Progress reports in the UNGC database;[194] conjoint engagement in health and climate change was identified by the proximity of relevant key words within the Communication of Progress report. Methods, data, and additional analyses are presented (appendix pp 151–164). The analysis focuses on the period from 2011 to 2018 because very few reports are available with data from before 2011.

A small proportion of companies referred to the links between health and climate change before 2017.[37] This pattern continues in the 2018 Communication of Progress reports. Although about 45% of the 2018 reports refer to climate change, and 60% refer to health, only 15% refer to a linkage between the two topics (appendix pp 151–164). This pattern was even more pronounced in the corporate health-care sector, which might be expected to be the global leader in addressing links between health and climate change. In 2018, although most companies in the health sector referred to health (72%) and an increasing minority to climate change (47%), only 12% made a conjoint reference to both.

Conclusion

Engagement by all sectors of society is essential if action on climate change is to be mobilised and sustained. Section 5 has focused on key domains of engagement, including the media, governments, the corporate sector and, in a new indicator, individual-level engagement. Each sector is recognised to be central to moving global emissions onto a pathway that maintains global temperature increases to below 1·5°C.[211]

Two broad conclusions can be drawn from the analyses presented in section 5. First, engagement in health and climate change has increased over the last decade, with a more pronounced upward trend for engagement by the media and government than by the corporate sector. With respect to the elite media, there is evidence of informed and detailed engagement with the health impacts of climate change and with the co-benefits of climate change action. At the global forum of the UN General Assembly, an increasing number of countries are giving attention to the health–climate change nexus. Led by the small island developing states, these countries are underlining the north–south inequalities in responsibility for, and vulnerability to, climate change and its adverse health impacts.

Although media engagement is increasing, it is episodic rather than sustained, with so-called issue attention increasing at key moments in global climate governance, particularly the UNFCCC COPs. The role of the COPs in public and political engagement has been noted in other reports,[195,212] with the meetings providing a global stage for both national leaders and non-government organisations (including scientists, religious leaders, and health professionals), to contribute to the public debate. The pattern for the corporate sector, including the health-care sector, is different; it does not display spikes in engagement linked to the global governance of the planet.

Second, although engagement has increased over the past decade, these indicators suggest that climate change is being more broadly represented in the media and by governments in ways that do not connect it to human health. As this suggests, the human face of climate change can be easily obscured and the analysis of individual engagement illustrates this pattern. The online footprint of Wikipedia users confirms that although health is a major area of individual interest, it is rarely connected with climate change. In the mind of the public, health and climate change represent different and separate realms of knowledge and concern and, when connections between the two areas are made, this is driven by an interest in health rather than in climate change.

Taken together, these two conclusions point to modest progress in making health central to public and political engagement in climate change, but underline the challenge of mobilising action at the speed and magnitude required to protect the health of the planet and its populations.

Conclusion: The *Lancet* Countdown in 2019

The *Lancet* Countdown: tracking progress on health and climate change was formed 4 years ago, building on the work of the 2015 *Lancet* Commission. It remains

committed to an open and iterative process, always aiming to strengthen its methods, source new and novel forms of data, and partner with global leaders in public health and in climate change. The 41 indicators presented in the 2019 report represent the consensus and work of the past 12 months and are grouped into five categories: climate change impacts, exposures, and vulnerabilities; adaptation, planning, and resilience for health; mitigation actions and health co-benefits; economics and finance; and public and political engagement.

The data published here elucidate the ongoing trends of a warming world with effects that threaten human wellbeing. As the fourth hottest year on record, 2018 saw a record-breaking 220 million additional exposures to extremes of heat, coupled with corresponding increased vulnerability to heat across every continent. As a result of this and broader climatic changes, vectorial capacity for the transmission of dengue fever was the second highest recorded, with 9 of the past 10 most suitable years occurring since 2000. Progress in mitigation and adaptation remains insufficient, with the carbon intensity of the energy system remaining flat; 2·9 million ambient air pollution deaths; and a reversal of the previous downward trend of coal use.

Despite this slow progress, as the material effects of climate change reveal themselves, so too does the world's response. 51 of the 101 countries tracked have developed national health adaptation plans, 70 countries provide climate information services to the health sector, 109 countries have medium to high implementation of a national health emergency framework, and 69% of cities have mapped out risk and vulnerability assessments. Health adaptation funding continues to climb, with health-related funding now responsible for 11·8% of the global adaptation spend. Finally, public and political engagement continues to grow, with heightened interest around the school climate strikes, the UNFCCC's annual meetings, and divestment announcements from medical and health associations.

The last three decades have witnessed the release of increasingly concerning scientific data showing the importance of a reduction in greenhouse-gas emissions. Although the report discusses several positive indicators, CO_2 emissions continue to rise. The health implications of this are apparent today and will most certainly worsen without immediate intervention.

Despite increasing public attention over the past 12 months, the world is yet to see a response from governments which matches the scale of the challenge. The role of the health profession is essential—communicating the health risks of climate change and driving the implementation of a robust response which will improve human health and wellbeing.

With the full force of the Paris Agreement to be implemented in 2020, a crucial shift must occur—one which moves from discussion and commitment, to meaningful reductions in emissions.

Contributors

The *Lancet* Countdown: tracking progress on health and climate change is an international multidisciplinary collaboration that builds on the foundation work of the 2015 *Lancet* Commission on health and climate change, convened by *The Lancet*. The *Lancet* Countdown's work for this report was done by its five working groups, each of which were responsible for the design, drafting, and review of their corresponding indicators and sections. All authors contributed to the overall structure and concepts of the report and provided input and expertise to the relevant sections. Authors contributing to Working Group 1 included Nigel Arnell, Jonathan Chambers, Luis E Escobar, Ilan Kelman, Tord Kjellstrom, Bruno Lemke, Yang Liu, Rachel Lowe, Jaime Martinez-Urtaza, Maziar Moradi-Lakeh, Kris Murray, Fereidoon Owfi, Mahnaz Rabbaniha, Elizabeth Robinson, Jan C Semenza, Meisam Tabatabaei, and Joaquin Trinanes. Authors contributing to Working Group 2 included Sonja Ayeb-Karlsson, Peter Byass, Diarmid Campbell-Lendrum, Robert Dubrow, Kristie L Ebi, Lucia Fernandez Montoya, Lucien Georgeson, Jeremy Hess, Dominic Kniveton, Mark Maslin, Karyn Morrissey, Tara Neville, Maria Nilsson, Maquins Odhiambo Sewe, Dung Phung, Joacim Rocklöv, and Joy Shumake-Guillemot. Authors contributing to Working Group 3 included Markus Amann, Kristine Belesova, Carole Dalin, Michael Davies, Matthew Eckelman, Ian Hamilton, Stella Hartinger, Gregor Kiesewetter, Melissa Lott, James Milner, Tadj Oreszczyn, David Pencheon, Steve Pye, Ruth Quinn, Jodi Sherman, Jonathon Taylor, and Paul Wilkinson. Authors contributing to Working Group 4 were Paul Drummond and Paul Ekins. Authors contributing to Working Group 5 included Maxwell Boykoff, Wenjia Cai, Stuart Capstick, Meaghan Daly, Niheer Dasandi, Paul Haggar, Hilary Graham, Lucy McAllister, Slava Jankin Mikhaylov, and Olivia Pearman. The coordination, strategic direction, and editorial support for this paper was provided by Anthony Costello (Co-Chair), Hugh Montgomery (Co-Chair), Peng Gong (Co-Chair), Nick Watts (Executive Director), and Alice McGushin (Programme Manager). The findings and conclusions in this Review are those of the authors and do not necessarily represent the official position of the European Centre for Disease Prevention and Control, WHO, the World Bank, or the World Meteorological Organization.

Declaration of interests

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carol uschyk

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

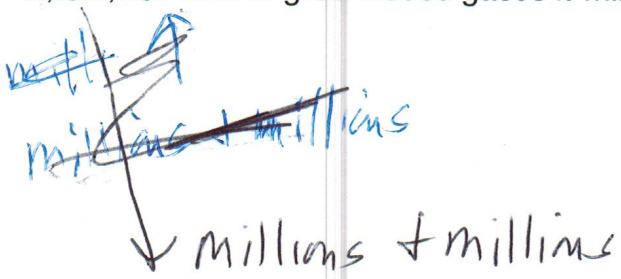
I want to touch on two topics that are a constant refrain from proponents of this project.

One. We need jobs, this is good for our families good for our economy good for our spiritual health, the underlying implication: environmentalist, the do gooders are taking food from our babies.

I reject those testimony implications here that there are opposing sides and one is right and one is wrong. We have a common interest in human survival and sustainable livelihoods. "If God had intended some people to fight just for the environment and others to fight just for the economy he would have made some people who could live without money and others who could live without water and air. There are not two groups of people here, environmentalists and workers. We all work, we all need a livelihood and we all need a livable planet. If we don't address both we'll starve together while we're waiting to fry together.

Two. Most of the proponents have latched on to Nick Caudill's charts and explanations showing just how much better this project is going to be than using coal as a fuel source. It's a hard argument to counter because they're right. This project likely would have lower emissions than coal as a fuel source. But comparing only two huge greenhouse gas emitting projects to each other surely cannot be the way to evaluate a project unless you have the kind of unassailable information that no one in their right mind would claim to have: that plastic from fossil fuels is here to stay for the next 40 years, and that China will never build another coal fired plant producing methanol if this one is built,. I don't care what cool looking persuasive charts Nick makes to show us the emissions, the entire underlying assumption is dead wrong. The information required to support these assumptions is now not known. It's not like climate science where you have scientific models produced by international coalitions of scientists—which by the way have consistently underestimated our worsening climate. It's like guessing which stocks are going to go up in the stock market for the next 40 years. It cannot be done.

Testimony of unemployed trade union workers tears at everyone's hearts, stories of climate catastrophe tears at everyone's hearts too. But it's not Ecology's job to find jobs for construction trades. That's for the legislature. It's their job to figure out how to support renewable energy projects. Your job is much more limited in scope. Your job is to protect the environment "for future generations" as stated in your mission statement. Viewing this project as a stand alone application and not making these unfounded assumptions for the next 40 years, this project surely fails by virtue alone of the ~~4,600,000~~ tons of greenhouse gases it will emit every single year.



I'm opposed to the proposed Kalama Manufacturing and Marine Export Facility in any form. I've lived in the Pacific Northwest for over 40 years and have loved being on the shorelines of our great waters while camping, rafting, kayaking, fishing, hiking and cycling. There is a complete disconnect between the very idea of shoreline that most of us cherish and what the applicant intends to do with the shoreline in Kalama. From the Shoreline Management Act: "The SMA establishes the concept of preferred shoreline uses. These uses are consistent with controlling pollution, preventing damage to the natural environment, or are unique to or dependent upon use of Washington's shorelines." How can this use possibly be consistent with the mission of the Shoreline Act itself. Words matter.

This use stands in complete opposition to the goals Ecology sets forth on its website that "Washington is a national leader in cutting greenhouse gas emissions to prevent climate change. Gov. Jay Inslee and the Washington Legislature have adopted a variety of regulations, programs, and initiatives designed to reduce greenhouse gas emissions. Ecology stands proud to protect, preserve and enhance Washington's environment for current and future generations." Again, words matter.

And as far as mitigation is concerned, I don't see how you can speculate about future energy decisions in foreign energy markets. No one can successfully predict the stock market day to day much less the 14,600 days of this project's length that applicant insists will be high demand for its product. By the way are they making fuel like they told their investors or plastic like they lied to you? I've watched too many tv police dramas not to know that if you lie to me about what you said then how can I know you're not lying to me now. It's not Ecology's job to try to figure out which of applicant's statements are lies and which are truths. It's too late for that and I hope too late for this applicant to lay waste to beautiful Kalama.

Kathleen Jonsson

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Tosha Mayo

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Julie Raggio

We need immediate action in the climate crisis, and accepting NWIW's proposal is not the option. I have two teenagers, and I do not want them to inherit an unlivable planet. Please make the choice to prevent this plant to protect our communities. The project would emit a mountain of CO2, and cause great damage to Washington's community, as well as to people in Oregon and British Colombia. Please reject this proposal. Thank you.

Cameron Cover

We need immediate action in the climate crisis, and accepting NWIW's proposal is not the option. I have two teenagers, and I do not want them to inherit an unlivable planet. Please make the choice to prevent this plant to protect our communities. The project would emit a mountain of CO2, and cause great damage to Washington's community, as well as to people in Oregon and British Colombia. Please reject this proposal. Thank you.

Nick Cover

We need immediate action in the climate crisis, and accepting NWIW's proposal is not the option. I am 14 years old, and I do not want to inherit an unlivable planet. Please make the choice to prevent this plant to protect our communities. The project would emit a mountain of CO2, and cause great damage to Washington's community, as well as to people in Oregon and British Colombia. Please reject this proposal. Thank you.

Mirabai Peart

Hi, I'm Mirabai Peart, I live in Portland, OR.

Last Christmas, visiting family in Australia, we feared for our lives, as 46 million acres burned in fires unlike we'd ever seen. Now, here in the West Coast, we experience the same unprecedented destruction from 'climate fires', as the California Governor rightly calls them. Right here and all over the globe, fires rage, glaciers and polar ice steadily melt at alarming rates. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.

It is our serious responsibility now to outright reject any new fossil fuel infrastructure and we must deny the Kalama Methanol Refinery. Instead we can create jobs and careers within sustainable industries.

The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an outright nonsensical evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.

We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.
We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution, and use more fracked gas than all of Washington's gas-fired power plants combined.
Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.
Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.

Let's be bold, and redefine our generation by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you.
Mirabai

Hillary MacDonald

We need immediate action in the climate crisis, and accepting NWIW's proposal is not the option. I have a teenage son, and I do not want him to inherit an unlivable planet. Additionally, the seismic activity in the PNW has the potential to create a disaster if this project moves forward. Please make the choice to prevent this plant to protect our communities. The project would emit unacceptable levels of CO2, and cause great damage to Washington's community, as well as to people in Oregon and British Colombia. Please reject this proposal. Thank you.

Melissa Mager

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Mark or Uhart

My name is Mark Uhart and I am a retired US Army career officer. My wife and I live near Kalama in the foothills overlooking the Columbia River. We are against this project. We purchased this property so we could enjoy the unobstructed view of the Columbia River and enjoy recreation and dining in the local area. We walk, hike, bicycle, and have kayaked the Columbia River. One of my hobbies is wildlife, landscape and astrophotography, all of which will be affected by this project.

Most importantly, I am concerned about the future of my children and grandchildren. It's hard for me to comprehend why anyone in this area would support a project that will adversely impact their health, safety, and long-term quality of life. The short-term economic gain will be offset by 40 years of dirty air and water, noise and landscape pollution, depletion of the Columbia River-Kalama River aquifer, and a definite impact on our climate. I grew up in southern California next to oil fields and refineries. I've lived in Texas and observed the stinky and noisy refineries along the coastline. Trust me, we don't want the smell, the noise, the air and water, and landscape pollution of this facility.

I served 21 years as an active duty officer in the Army from battery to Corps Artillery level, and an assignment in special weapons quality assurance. The strategic objective of our adversaries, Russia and China, were always part of our professional development. I was, and still am, very aware of the strategic implications of foreign countries' attempts to get deeply embedded into our financial system in order to influence both economic and military outcomes. One author says it best, "The signs that China is gearing up to contest America's global leadership are unmistakable, and they are ubiquitous." They are doing it with our money and our natural resources. When will the average Washington resident wake up and smell the coffee?

It really bothers us that the US citizens of Northwest Innovation Works (NWIW), the Port of Kalama and the Cowlitz County commissioners, would support a project that is owned by the Chinese government; that will be financed primarily by US Government and Washington taxpayers; that will pollute our air and water; and only add to the devastating effects of anthropogenic (human-caused) climate change. We will bear most of the financial and environmental risks associated with this project while they take in the profits and improve their position toward world financial, economic, Southeast Asia maritime and political dominance. Money talks and the Chinese government are throwing a lot of money into marketing this project in its quest to control much of the world's technology and energy natural resources by 2030.

An assumption that was not stated, but can be inferred from these EISs, is that the international community will choose not to address climate change and regulate GHGs. If every country that wants to improve their energy position and economy, like China and the US, took the same approach purported in this report, then the earth is doomed. The assumption is that if this plant is not built herein Kalama, it will be built elsewhere. The law of supply and demand shows that if there is a shortage of a commodity, and prices increase, people will use it less and seek alternate technologies. We saw this before the fracking boom when gas prices went up. That drove better fuel efficiency and new technology (all electric cars, hybrid vehicles, and now fuel-cell vehicles.) Denying these projects will constrain these fossil fuel supply channels and force countries to develop clean, non-fossil fuel, energy alternatives.

I read the SSEIS and the voluntary mitigation framework presented in Appendix D is laughable. By using the term "in-state", NWIW is not willing to mitigate GHGs outside the state of Washington. This includes the upstream fugitive methane and CO2 from the methanol burned in transport to China, and as a fuel or in olefin production. I will address this further in another comment.

This project is a climate killer and the only responsible decision is for Ecology to deny the shoreline permit.

Mark Uhart
LTC, USA Ret.
Kalama, WA

Mark Uhart

My name is Mark Uhart and my wife and I live near Kalama. I appreciate the opportunity to comment on the SSEIS. Thank you Ecology for providing this opportunity.

What are the long-term social and economic costs if the KMMEF and other fossil fuel projects are approved? We are at a tipping point, best described by higher temperatures that are melting glaciers and snow packs, changing how our earth reflects or absorbs sunlight. We are seeing biome shifts that are changing how plants and animals survive during extreme heat and cold weather, uncharacteristic of the geography. We are seeing circulation changes in the atmosphere and oceans bringing extreme conditions that our fisheries and aquatic plants cannot survive. We are at a tipping point and a slower rate of fossil fuel consumption is not going to forestall global warming. We must stop it now. We are living with the effects of fossil fuels consumed as far back as 100 years ago. The GHGs emitted by this plant will impact at least 10 future generations. The last time the earth warmed this rapidly was 56 million years ago.

The framework for the economic analysis presented in Section 3.4.5 of the SSEIS is flawed, as it focused only on GHG emission alternatives. It doesn't address the negative economic impacts from climate change, only the positive ones. The SSEIS fails to address the following economic costs:
o The cost of fighting wildfires and the subsequent disaster relief.
What will be the firefighting and disaster relief costs to the state and those affected by the fires.
o The cost of lost timber harvests as a result of wildfires?
How many logging truck drivers, lumber mill and lumber exporting employees will lose their jobs?
o Decreasing timber harvests as a result of hotter and drier weather.
How will the lower timber yields affect jobs and revenue from state lands?
o Loss of commercial fishing revenue, directly and indirectly, as a result of decreasing salmon, steelhead and shellfish harvests.
How will this affect the fisherman, the processors, resellers, merchants, and state tax revenue?
o State and Federal disaster monies committed due to extreme weather events and fishery disasters.
How will this affect the state budget? Higher taxes?
o Repairs to public roads and utilities as a result of extreme weather events.
How will this affect our state budget?
Higher taxes?
o Loss of property and productivity due to extreme weather events.
Why wasn't there an attempt to quantify these costs? How will this affect residential property values for homes with a view of the Columbia River?
o Effects on human health?
What are the costs associated with the increased PM2.5 air pollution and water pollution.
o Increased healthcare costs?
What are the associated healthcare costs based on scientific studies of similar plants?

Lastly, none of the EISs make any assumptions about future possible actions by nations of the world, under the Climate Change Accord, to limit the consumption of fossil fuels or pay penalties for their GHG emissions. The day will come when the KMMEF investors will have pay for the GHGs for which this plant is responsible, just like the TransAlta coal-fired plant in Centralia, which must be shut down by 2025. What if Washington passes a cap and trade bill that requires NWIW, or

its successors and assigns, to pay for the GHGs for which it is responsible, to include upstream and downstream GHGs? What if the members of the OECD, of which the US is a member, enforces a cap and trade system? How will this affect the long-term profitability of the KMMEF? These are all risks that were not addressed in any of the EISs.

The flawed framework used for this economic analysis is just one of the many shortcomings I found in the SSEIS. We encourage you to reject this project.

Mark Uhart
LTC, USA Ret.
Kalama, WA

Donna Browne

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Wesley Allen

I ask that Ecology reject the Methanol refinery and deny the Shorelines permit. Ecology must use science-based analyses to evaluate the true, whole impact of this destructive project, not just its local consequences.

This project would cause millions of tons of greenhouse gas pollution. Permitting it would renege on WA state's climate goals.

Can't we measure this project by what's possible, what's meaningful, and what's needed for a thriving Kalama and sustainable future? Stating that methanol is "better than coal" orients us to past inadequacies, but doesn't help us imagine the future. It might be better to lose an arm than a leg, but that doesn't mean that either is good. Ecology should focus on the real-world, known pollution that would come from the methanol refinery, rather than NWIW's silly 'displacement' argument.

Washington must keep its promise to be a leader in keeping global warming under 2 degrees Celsius. We cannot further entrench ourselves in fossil fuels.

Please reject this project. Please deny the permit.

Thank you.

Marianna Grossman

September 22, 2020

Kalama Manufacturing and Marine Export Facility Public Hearing testimony

Dear Mr. Zenk:

Thank you to you and your Ecology Dept. colleagues for setting up hearings. Here is the text of what I presented verbally this evening.

I am Marianna Grossman. I live in Portland Oregon. I strongly oppose this plant and agree with the concerns others have expressed about the climate and pollution costs of this refinery.
The State of Washington must meet its climate goals and set an example for other states so that humanity has a chance of limiting global warming to 1.5C. We can see that our current trajectory is already resulting in catastrophic fires, storms, smoke and enormous social, environmental and economic costs.

I am troubled by the unnecessary conflict expressed today between good paying jobs and human and environmental health and well being.

One example of a community that shifted from fossil fuels to locally produced bio and renewable energy is G�ssing a small town in Austria, near the Hungarian border. Now they produce high quality jobs in clean energy production, technology research and innovation. They even had to build a hotel to support visitors coming to study their transformation and the technology and economic models they innovated. We should do this in our region too. We can increase forestry and agricultural jobs as well as technology and hospitality jobs by investing in all of our futures.

The initial investment in Gussing's transformation came from a combination of sources: the EU, the Austrian Department of Environment, local government and private investors.

The region went from out-migration for work and spending on fossil fuels to innovative new businesses, including an eco-industrial system where waste saw dust from the veneer/furniture plant is used to power heat for the noodle factory which uses eggs from local chickens and creates zero CO2 noodles, as one example.

Here is information about G�ssing achieving zero GHG emissions.
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To quote the European Union website report this has been a profitable investment:
"The plant gets around 15 euro cent per kWh for its electricity. This is much less than the price, around 25 euro cent, being paid by domestic consumers in the area. It is estimated that this plant, together with another wood-fired heating system with a capacity of 42 MW, means that €18 million stays in the district each year that would otherwise have leaked out. This represents massive return on investment.
The availability of cheap heat (30% cheaper) has led to over 1,000 new jobs being created in and around the town, including 100 in a new office building on an industrial estate which

houses the European Centre for Renewable Energy. This employs 12 people itself and the other people renting space in the building are mostly from companies or consultancies to do with renewable energy. One of the centre's activities is arranging visits for the increasing number of visitors who come to see what G�ssing has done, an activity which itself creates employment in hotels and restaurants.
By making the switch from fossil fuels to renewables, the people of G�ssing are now more than self-sufficient for electricity and heat."
They raise agricultural crops for biomass as well as using cultivation techniques to remove excess vegetation from surrounding forests and strategically located solar energy generation, as well.
This transformation was designed to lift the well-being of all the residents of this small town and rural community. We should do the same in our own communities.

Sincerely yours,

Marianna Grossman
Portland, OR

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Robert Young

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Brett Ensor

Washington Dept. of Ecology Sept. 22, 2020
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

Hi, I'm Mirabai Peart, I live in Portland, OR.

Right here and all over the globe, fires rage. Glaciers and polar ice steadily melt at alarming rates. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.

It is our serious responsibility now to outright reject any new fossil fuel infrastructure and we must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.

The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an outright nonsensical evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.

We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.
We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution, and use more fracked gas than all of Washington's gas-fired power plants combined.
Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.
Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.

Let's be bold, and redefine our generation by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you.
Brett

Michael Kennedy

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Jean Avery

It is important to remember the history of this place we call home. The area we're talking about is the ancestral homeland of Native Americans. Indigenous peoples continue to honor Mother Earth through sustainable stewardship and cultural traditions.

Natural areas and wildlife in SW Washington are at risk with the NWIW project because of air pollution and increased vessel traffic. Several of these natural areas are designated as IBA's:Important Bird and Biodiversity Areas. IBA's are internationally recognized as globally important for the conservation of bird populations. The "Washington State BIrding Trail" includes these IBA's close to Kalama:

-- J.B. Hansen National Wildlife Refuge: 6,000 acres of Columbia River islands and sloughs.

-- Chinook County Park and the 1,900 acre Cape Disappointment State Park.

-- Ridgefield National Wildlife Refuge, 5,000 acres of wetlands, grasslands, and woodlands.

-- Vancouver Lake Park and Columbia River Lowlands are also designated as IBAs.

The NWIW plant would degrade the area's air and water, threatening natural areas and wildlife. Yet none of these significant impacts are included in the SSEIS.

I would like to end with this Native American proverb:

Listen to the Wind; it talks.
Listen to the Silence; it speaks.
Listen to your Heart; it knows.

(Presented as oral testimony Tuesday evening, 9/22/2020)

Brett Ensor

Washington Dept. of Ecology Sept. 22, 2020
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

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Bridget Irons

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Patricia Kullberg

September 23, 2020
To the Washington State Department of Ecology:
Thank you for this opportunity to testify today in opposition to the proposed methanol refinery in Kalama. My name is Patricia Kullberg. I am a retired physician and public health official, a member of Oregon Physicians for Social Responsibility and a life-long resident of the Pacific Northwest. I recently spent more than a week confined to my home in Portland because the smoke-filled air outside was too hazardous to breathe. Fires were consuming forests west of the Cascades, which in my seven decades in Oregon have never burned, because normally they are too wet. Climate change is not something off in the future. It's here and it's now. For this reason I find the draft Second Supplemental Environmental Impact Statement (SSEIS) for Kalama Manufacturing and Marine Export Facility (KMMEF) a shockingly reckless document. At a time when we should be pulling out all stops to avert climate disaster, this analysis represents nothing more than business as usual. Despite presenting a dizzying array of future scenarios, the analysis makes unsupportable claims about corporate behavior, makes highly speculative assumptions about market trends, and forecloses on the very opportunities we have to save our way of life in the Pacific NW.
After so much documentation about how Northwest Innovation Works (NWIW), the company behind KMMEF, has mislead the public about its intentions for marketing the methanol it generates, it is unbelievably nave to take their current statement of intent to target the plastics industry at face value. To assume that at most 40% of the methanol will be marketed as fuel is a fantasy. NWIW will market their methanol in whatever way they please to turn a profit, even if that means 100% of their product is used as fuel. Given that the plastics industry itself is subject to increasing regulatory demands, that 40% assumption seems particularly untenable.
The SSEIS assumes that the market for methanol will continue to grow unabated for the next 40 years, once it recovers from the current pandemic-induced contraction. Underlying this assumption are many more: that we will never be faced with another pandemic, which is not what the infectious disease experts are telling us; that there will be global political and economic stability, which is difficult to imagine in an era of increasing numbers of nation-states ready to conduct trade wars and withdraw from long-standing regional economic relationships, plus the social unrest and dislocation associated with massive climate induced migration; that the regulatory environment will remain unchanged when countries all over the globe are looking for ways to reduce their carbon footprint. But most egregious of all is the total lack of consideration in the SSEIS for true alternatives to the climate-destroying fossil fuels. Coal-based production of plastics in China should not be our benchmark for comparison. Anything better than coal is not the policy that will spare the planet. We should be bench-marking against climate-saving scenarios, for example, a ban on single-use plastics, which alone would reduce the production of plastics by up to 40%. Or a ban on methanol and coal based production of plastic in favor of naphtha-based production, which method results in the lowest net greenhouse gas (GHG) emissions. Allowing the KMMEF proposal to move forward not only locks the community of Kalama into supporting an industry that is doing immeasurable harm to our planet, it will have the effect of squeezing renewable sources of energy out of the market. Additionally it risks sending Kalama into a boom-bust cycle. After a significant contraction in the market for methanol, which is hardly a rash prediction, the community would be saddled with all the costs of a stranded asset. You can be sure that NWIW will not be picking up the tab.
I, like most residents of the Pacific Northwest, am devoted to our way of life here. We should be

promoting projects that protect and preserve our natural resources like our forests, our abundant and clean water and our clean air, not projects that will only hasten their destruction.
Respectfully submitted,
Patricia Kullberg, MD MPH

Kathy Wolff

Washington Dept. of Ecology Sept. 23, 2020
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

Greetings,
My name is Kathy Wolff and I've lived in Portland for the past 16 years. I have fourteen close members of my family who live in Portland too, most importantly (to me) are my two young grandsons.

Our planet is in an escalating crisis that threatens human life on earth. The results of climate change are happening all around the globe and right here in our northwest with this summer's unprecedented fires. The Northwest charted the worst air quality in the world for weeks on end. Fires rage across our planet. Glaciers and polar ice steadily melt at alarming rates. Hurricanes and super storms are no longer "once in 500 year events" but happening sometimes more than once a year. Mass extinction of the animal and plant kingdoms is documented. Plastics already clogs huge areas of our oceans, destroying marine life. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.

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I appeal to you, please work tirelessly to do whatever is necessary to reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you.
Kathy Wolff

Renee Lang

Renee from Tacoma WA
I'm a working mother of two handsome boys. We spend a lot of time in SW Washington camping, hunting, fishing and working. I've worked in construction my whole life and I'm very thankful to have had a job through out COVID-19. Not only is this Project necessary for our environment and future for our children, it will also bring jobs to our community.
I am in support of the Kalama Project and appreciate the review done by the Department of Ecology. This project sets new High standards for development in Washington State and lead other states. Please approve this project as a great example to drive those high standards.
Thank you , Department of Ecology. Good Work!!
Please procced swiftly to allow positive impacts.

Marianna Grossman

September 22, 2020

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Thank you to you and your Ecology Dept. colleagues for setting up hearings. Here is the text of what I presented verbally this evening.

I am Marianna Grossman. I live in Portland Oregon. I strongly oppose this plant and agree with the concerns others have expressed about the climate and pollution costs of this refinery.
The State of Washington must meet its climate goals and set an example for other states so that humanity has a chance of limiting global warming to 1.5C. We can see that our current trajectory is already resulting in catastrophic fires, storms, smoke and enormous social, environmental and economic costs.

I am troubled by the unnecessary conflict expressed today between good paying jobs and human and environmental health and well being.

One example of a community that shifted from fossil fuels to locally produced bio and renewable energy is Güssing a small town in Austria, near the Hungarian border. Now they produce high quality jobs in clean energy production, technology research and innovation. They even had to build a hotel to support visitors coming to study their transformation and the technology and economic models they innovated. We should do this in our region too. We can increase forestry and agricultural jobs as well as technology and hospitality jobs by investing in all of our futures.

The initial investment in Gussing's transformation came from a combination of sources: the EU, the Austrian Department of Environment, local government and private investors.

The region went from out-migration for work and spending on fossil fuels to innovative new businesses, including an eco-industrial system where waste saw dust from the veneer/furniture plant is used to power heat for the noodle factory which uses eggs from local chickens and creates zero CO2 noodles, as one example.

Here is information about Güssing achieving zero GHG emissions.

Here is more information about the technology and economic impact of their regional transformation.

To quote the European Union website report this has been a profitable investment: "The plant gets around 15 euro cent per kWh for its electricity. This is much less than the price, around 25 euro cent, being paid by domestic consumers in the area. It is estimated that this plant, together with another wood-fired heating system with a

capacity of 42 MW, means that €18 million stays in the district each year that would otherwise have leaked out. This represents massive return on investment.
The availability of cheap heat (30% cheaper) has led to over **1,000 new jobs** being created in and around the town, including 100 in a new office building on an industrial estate which houses the European Centre for Renewable Energy. This employs 12 people itself and the other people renting space in the building are mostly from companies or consultancies to do with renewable energy. One of the centre's activities is arranging visits for the increasing number of visitors who come to see what Güssing has done, an activity which itself creates employment in hotels and restaurants.
By making the switch from fossil fuels to renewables, the people of Güssing are now more than self-sufficient for electricity and heat."
They raise agricultural crops for biomass as well as using cultivation techniques to remove excess vegetation from surrounding forests and strategically located solar energy generation, as well.
This transformation was designed to lift the well-being of all the residents of this small town and rural community. We should do the same in our own communities.
Sincerely yours,

Marianna Grossman
Portland, OR

Dashiell Glenn

The world does not need more plastic right now. I find it everywhere I go, in the city and in the mountains. Do the Columbia a favor and keep this plant from being built.

Eileen Fromer

My name is Eileen Fromer. I live in Portland and I am passionate about the climate crisis and stopping greenhouse gas emissions. I believe that the Department of Ecology has an opportunity through its analysis and these hearings to do the right thing: simply, that is to deny the Shorelines Permit for the Kalama Methanol Refinery.

On its website, Ecology states "Washington is a national leader in cutting greenhouse gas emissions to prevent climate change." Now they state that the Kalama refinery would be one of the top greenhouse gas polluters in Washington emitting 4.6 million tons of carbon pollution annually...for 40 years. How on earth can Ecology claim to be cutting greenhouse gas emissions and approve this shoreline permit?

The Kalama fracked gas to methanol refinery will in no way cut greenhouse gas emissions to prevent climate change.. They mention mitigation. Mitigation is a pipedream in the Ecology analysis. It's meaningless.

But what is not meaningless is the underestimated methane leakage from fracking natural gas, transmission along the pipe route and at the refinery. And after the methanol leaves the refinery....what then?

First, it was only going to be used to make plastics...as if plastics are not already an environmental disaster, but at least the methanol wouldn't be burned for fuel. Then, NWIW changed their story so 40% might be burned as fuel yielding 2 million tons of carbon pollution each year. And, there is no guarantee that all the methanol won't be burned. That would mean 5 million tons of pollution a year. In other words, NWIW will do whatever they want with it and never mind their claims and never mind the environmental impacts.

This refinery would increase Washington's global warming impact by 10% and in just 5 years, by 2025, this refinery could be the largest polluter in the state.

We are in a climate crisis. The wildfires are here along with drought, storms, floods and displaced people all over the world. It's time to say 'no' [illegible] enough is enough. Washington and the Dept. of Ecology must live up to their claim and be a leader in addressing the climate crisis.

Peter Fink

If you're told you're an alcoholic and you need to quit or it will kill you, you don't go out and buy a bunch of drinks to stock your liquor cabinet—even if the alcohol content is lower than something else. Why not? Because why pay all that money for a bunch of drinks you know you shouldn't drink and will have to toss soon after? And perhaps more importantly, so long as that bottle of wine is there it will tempt you, and you'll want to get your money's worth.

We have been told we have 20 years before the worst of the climate emergency's wrath will be fully inflicted. The cause? A terrible dependency on fossil fuels which with each ton burned will worsen the situation. In those 20 years every ton burned will bring flooding to Southeast Asia, and the American South, drought to the Sahel and California, and fires there and in Australia, the Amazon, and the Congo Basin. Millions will be displaced, sickened, or killed; thousands of species will go extinct. So if the prognosis is to quit fossil fuels the last thing we should be doing is investing in that infrastructure. It is a waste of money if we get our act together and decide to never use it just a few years after it's built. It's a waste of money if we use it for 30 years and have to spend trillions curing the climate harm with Band-Aid fixes, and restoration and relief efforts. It doesn't matter that this fossil fuel infrastructure will be less damaging, less toxic, lower emitting. We have other options even for an energy-intensive economy: the solar and wind capacity is logarithmically approaching demand. To fulfill an immoral, unnecessary need with the most efficient method doesn't make it moral or necessary. To choose to kill someone with a slow drip of drugs instead of a burning at the stake shouldn't be tolerable.

And the few jobs this project will bring? What about the fastest growing job sector: renewable energy? Do jobs and profits from producing clean energy to distribute or convert not compare with the glory of industrial plastics or fuels sustaining a pollution indulgence?

Our liver is giving out but as it goes it's taking the kidney, the heart, and the lungs down with it. From an economic standpoint we need to reject anything remotely long term that only has viability in the short term. From a land rights standpoint we must reject a project that further degrades the land, dismisses the traditional custodians' council and appeals, and pollutes the industrialized section that through affordability subjects the most vulnerable to the greatest risks from emissions. From a global justice standpoint we must reject a project that accepts a climate regime where the greatest polluters are allowed to pollute (even if it's to a lesser degree) for their "economic stability" and "growth" while the least emitting are forced to bear the most unbearable of the consequences. From a human standpoint we must reject the utter surrender to the ails of dependency. We have the will and the power to get clean, we can quit, we might need help, but this addiction WILL be overcome one day.

Comments on proposed Methanol Plant near Kalama, WA: 9-21-2020

Local opposition to this project is very strong, and for the State Department of Ecology to even consider building a facility of this scale, with the massive amount of pollution (4.6 Million Tons per year) that would be released in a heavily populated area like ours, would be to act without consideration for the people that live in this State, and near this plant.

If this project is completed, property values in the area are sure to drop, the locals will lose money as NWIW rakes it in, and then sends a chunk of it to China. Health problems would increase from aforesaid 4.6 Million Tons of pollutants being dumped into the air, and the effect of removing large amounts of water from the Columbia for the plant's use on the local fisheries is unknown.

NWIW claims a "net benefit to the environment", which would only be true if the exact terms of their vision of the future comes to pass, and only from a global perspective. The Washington State Ecology Board needs to consider the local effect as the deciding factor, not the global effect.

The only way that the local environment will benefit is if this plant is not built at all. The net benefit language is based on global standards, not local, and again, there is no benefit to increased pollution of our local air. I live just 13 miles from the planned plant site, and if this monstrosity is allowed, I will be considering selling my property, and moving as far as possible away from it.

As a property owner in Cowlitz County, and a citizen concerned about his health, I strongly request that you do not allow a permit for this plant to be issued.

James Tejcka

3669 Old Lewis River Road

Woodland, WA 98674

Sue Rutherford

Good day and thank you for this opportunity to say: Deny the permit for the proposed Kalama Methanol Plant, Kalama, Washington

First of all, the method for production is a huge project unto itself. Building a natural gas pipeline for the Methanol plant. This would part would require huge amounts of natural gas to be garnered and maintained to the manufacturing of the methanol. The plant would use up to as much as 1/3, one third of all the natural gas being used in the State of Washington, as of today.

Next is the impact on the Columbia River. I have lived in Cowlitz County for almost 50 years and it has taken almost that long to bring the Mighty Columbia back to a pristine level. The pollution was abhorrent and disastrous to the fishing industry. If this plant is built, there are two major factors that could deliver a severe environmental impact: 1) Many containers that would travel on the Columbia River and the Pacific Ocean. Any amount of methanol would have serious effects on aquatic life. It only take .5% methanol to hinder digestion. Methanol will be broken down into water and CO2 (USMEOH)- gee, more to add to the climate change disaster, occurring before us. 2) If the carbon dioxide emissions are not reduced, the impact of global warming will expedite the melting of glaciers in Greenland and Antarctica, raising global sea levels by 15" by 2100 if the world keeps producing greenhouse gases at or near its current pace - Cryosphere(ISMIP6)

Finally, the air we breath. The area to be considered sits in a bowl, where air stagnates during the worst of the winter season. The entire West Coast just went through weeks of hazardous air, where the conditions of global warming/climate change, exacerbated the dry forest and a high pressure system of heat. It makes absolutely no sense, to add to the problem of global warming/climate by adding to the amount of CO2. The argument of we won't be adding as much as some other method is ludicrous. To avoid paying Peter (the future), this methanol plant is going to cheat Paul (the present).

The air, the water, and the earth are counting on us to be better stewards. We don't want to be at the point where we say' "I wish we would haven't done that". Please please deny the permit for the building of the Kalama Methanol plant, in Kalama, Washington.

Don Roberts

Based upon the findings of the draft second supplemental EIS, any plans to permit this methanol plant are extremely shortsighted and pose a significant threat to our environment and the planet. As a WA licensed professional mechanical engineer, I agree with the EIS report indicating negative effects of the plant. Washington should refocus its efforts on clean alternative energy and not enable dirty energy to continue as business as usual. Clearly, China could burn the methanol rather than produce plastics as Governor Inslee suggested. Please do not permit this falsely promoted scheme.

Andrea Burke

Hello, I am Andrea Burke, an educator in Portland, Oregon:

I have taught my students to live simply and naturally. To protect the earth and support nontoxic projects. I oppose the Kalama Methanol Refinery and encourage my students to oppose it, too, for future life in our region and on the planet.

It is our serious responsibility now to outright reject any new fossil fuel infrastructure and we must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.

The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an outright nonsensical evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.

We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.
We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution, and use more fracked gas than all of Washington's gas-fired power plants combined.
Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.
Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.

Let's protect future generations by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you,

Andrea Burke
andreasueburke@gmail.com
Portland, Oregon 97219

Philip Scott

I am hereby testifying against the Kalama Methanol Refinery. This proposed refinery will have a devastating impact on the environment both upstream, downstream and through localized emissions.

We already face an existential threat to the planet associated with greenhouse emissions. While one can argue in favor of jobs and a better manufacturing design which will reduce emissions versus a similar operation overseas, and natural gas being a cleaner fuel, this is a short term perspective which doesn't address overall climate change. As your analysis indicated, methane and other greenhouse gases will rise significantly even with the improvements and mitigation efforts associated with this project. Furthermore, this project is not consistent with the State of Washington's initiatives regarding climate change.

We are at a climate tipping point. Global temperatures have already risen 1 degree centigrade and 2 degrees centigrade is likely to result in irreversible devastation of our environment, leading to the end of life throughout the world as we presently know it. Wildfires, drought, historic high temperatures, extreme storms and hurricanes will only intensify in size and scope short of drastic reductions in greenhouse emissions.

The only acceptable answer to this existential threat is to stop building any and all significant generators of carbon emissions, together with phasing out all existing coal and natural gas facilities. Any new developments must only focus on new clean energy facilities.

The future of mankind, including your children and your children's children beseech you to reject this project outright.

Anonymous Anonymous

There is no guarantee or even any likelihood that NWIW would "mitigate" its greenhouse gas emissions over a sustained period. Plus we have NO idea what kind of mitigation measures they are talking about. Since we don't have any way to remove CO2 from our atmosphere other than plant material, are they planning on planting trees? And when someone plants a small sapling, it is NOT capturing much CO2 for generations. You can't plant a field of saplings and say you are offsetting much CO2, but that's what companies do. Plus, with climate change, that tree is as likely to burn in a wildfire and release its CO2 anyway.

This project would emit massive amounts of methane from the fracking well, through transport, and I don't even know what would happen after it leaves Washington. There is no way to mitigate methane. Any talk of mitigation should be completely disregarded for this dangerous project.

We need ALL resources dedicated to removing greenhouse gases currently existing in the atmosphere, and you have the power to STOP THIS POTENTIAL release of inconceivable amounts of additional greenhouses gases. I BEG YOU TO DO THE RIGHT THING AND DENY THIS PROJECT'S PERMITS!

barrett gifford

My name is Barrett Gifford. I live in Southern
Oregon. I am writing to voice my thoughts on the Kalama Refinery, while also being evacuated from my home due to wildfires. These wildfires are a direct result of climate change, rising temperatures and drought all along the west coast. Please consider the science!
It is our serious responsibility now to outright reject any new fossil fuel infrastructure and we must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.
The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an outright nonsensical evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.
We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.
We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution, and use more fracked gas than all of Washington's gas-fired power plants combined.
Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.
Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.
Let's be bold, and redefine our generation by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Lakshin Kumar

It is absolutely essential that permits for this facility are not passed as it would represent a drastic step in the wrong mansion for the fight against climate change. The Department of Ecology has shown that the construction of this facility will likely increase global amounts of Greenhouse Gases, harming the Earth by trapping heat, destroying ozone, and polluting the breathable air. This facility is slated to create 4.6 million tons of climate pollution per year for forty years which is unacceptable at this point in the fight against climate change. In addition, the methanol that is refined at this plant will likely be used to manufacture plastics, increasing the already abysmally high count of plastics that will eventually find their way into dump sites around the world and poison the Earth. It is paramount for the health of life on Earth that we take a stand against climate change, starting with the rejection of this plant's construction.

Hilary Gaddis

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I am called to act out my values – I'm a member of Fauntleroy United Church of Christ and also a local Washingtonian for the past 30 years or so. My upbringing was centered around protecting our natural resources, fostering an understanding of stewardship. It's becoming clearer every year that more and more of our environment is at risk of being lost forever.

Yet I continue to remain hopeful and was proud of our state for declaring their commitment to clean energy and climate goals. I believe that clean energy for all is the path forward and the only way to move if we want to protect all we hold dear.. such as our human right to clean water and healthy air.

However I am concerned about this proposed menthol plant and wholeheartedly believe it goes against the values I have shared with you tonight – it frightens me that we are cowing to the pressures of the fossil fuel industry – I know in my heart that we can reject the path they have set out , a path that does not align with my values of clean water and healthy air.

So in conclusion I am firmly rejecting this proposal and need YOU Dept of Ecology to deny the Shoreline Permit in order to preserve a HEALTHY – SUSTAINABLE – THRIVING – FUTURE – WITH – CLEAN ENERGY !!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,

Hilary Gaddis
3655 S Spokane St Unit 4 Seattle, WA 98144-7113
hilgaddis@gmail.com

Jennifer Ibach

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. If this summer has shown anything, it's that we need to take urgent action to reverse the effects of climate change. I do not want to see any more pollutants added to the air!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms Jennifer Ibach
3246 15th Ave S Seattle, WA 98144-6317
jibach@olgseattle.org

John Preston

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. This earth is meant for all! I bless the ground I walk on, the air that I breathe and the water that I drink every day. This fracked gas-to-methanol plant here in Washington at the Port of Kalama is against everything I believe in! You have a moral responsibility to protect our public health and reduce our region's climate pollution!

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise.

Sincerely,
John Preston

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. john preston
4655 NE 89th St Seattle, WA 98115-4975
gepreston@msn.com

Gary Brill

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Karen Varney

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Elizabeth Page

Washington Dept. of Ecology Sept. 23, 2020
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

Hi, I'm Liz Page, I live in Beaverton, Oregon.

Right here and all over the globe, fires rage. Glaciers and polar ice steadily melt at alarming rates. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.

It is our serious responsibility now to outright reject any new fossil fuel infrastructure and we must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.

Please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you.
Liz

Jane Heisler

Washington Department of Ecology
RE: Kalama Methanol Refinery
The State of Washington has made many positive accomplishments toward pursuing a lower carbon future. This year, Governor Inslee signed new zero emissions vehicle standards, mirroring California's high standards. Last year, the Legislature adopted standards to increase efficiency of office buildings and other workplaces. In 2019, the governor signed the Clean Energy Transportation act to require all electric utilities to transition to carbon neutral electricity by 2030, and 100 percent carbon free electricity by 2045.
In light of these positive actions, it is shocking that the State of Washington would consider approving a polluting, climate disaster like the Kalama methanol refinery, making a mockery of your other good efforts. This refinery would be inconsistent with the low-carbon future that Washington aspires to and that the region needs. I live in the Portland/Vancouver area and do not want this in my backyard. I care about the quality of life in our area, including air, water and land quality.
The idea that methanol displaces "dirtier" energy is speculative at best. Burning methanol as fuel would generate millions of tons of pollution each year. Do not allow this major source of pollution to move forward. Deny the Kalama methanol refinery.
Sincerely,
Jane Heisler

Tod Johnston

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Vikesh Kapoor

Washington Dept. of Ecology Sept. 22, 2020
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

Hi, I'm Vikesh Kapoor, I live in Topanga, CA.

Right here and all over the globe, fires rage. Glaciers and polar ice steadily melt at alarming rates. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.

It is our serious responsibility now to outright reject any new fossil fuel infrastructure and we must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.

The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an outright nonsensical evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.

We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.

We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution, and use more fracked gas than all of Washington's gas-fired power plants combined.

Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.
Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.

Let's be bold, and redefine our generation by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you,
Vikesh

Earl Godfrey

I have spent days paddling through the Columbia river on canoe. I have slept nights on its banks. I do not want to see a natural system I love so dearly be polluted and corrupted by the manufacturing of plastic. Please think of the environment.

Laurie Schaetzel-Hill

RE: Kalama Manufacturing and Marine Export Facility-EIS. I wish to state that i do not support advancing with this facility. The environmental consequences could be detrimental and the mitigation suggestions are not adequate. During this era of climate change causing drastic weather pattern changes (hurricanes, fires, floods, drought) we need to focus on reducing and not increasing carbon and methane release into the atmosphere.

Linda Magnuson

Methanol is a potent greenhouse gas. We are in the midst of a climate crisis and extreme drought in Washington as well as Oregon, where I live. Hazardous air quality due to the smoke of numerous, monstrous wildfires, have weighed on us. These fires were driven by a combination of dryness of the forests, unsuccessful forest management practices that left lots of kindling and high wind conditions. The drought is effected by increase in greenhouse gases from the use of fossil fuels. This plant is not a good fit with what is going on in the world right now. From a personal level, I wants viable future for my family and for all people and other species with whom we share this planet. Consider the future and the health of our planet.

Kiah Patzkowsky

I oppose this production plant due to the increase of greenhouse gas emissions into the region.

My name is Mark Uhart and I'm a Kalama area resident. We believe Ecology will hold true to their mission and deny the shoreline permit.

Over the last two online comment sessions I've listened to both sides. I understand the need for jobs and how this project will improve the lives of the working class in Cowlitz County for the first few years of the project. But the high-paying jobs will not likely come from current Cowlitz County residents. The skills needed to run this plant will require mechanical and chemical engineers that will be recruited from out of state. Key inside jobs, like the CEO/Chairman, CFO, comptroller and COO, will be filled by foreign nationals, as proven by the three H1B visa applications submitted by Pan Pacific Energy. The only jobs that will go to local residents will be the hazardous blue collar and administration jobs. I've seen this play out in the Chinese-owned refineries in Texas and Louisiana.

It is true the project would provide additional local, county and state revenues from taxes and fees. But what are the long-term social and economic costs if the KMMEF and other fossil fuel projects are approved? We are at an environmental tipping point and a slower rate of pollution is not going to forestall global warming. The last time the earth warmed this quickly was 56 million years ago.

The US is still the most powerful country in the world, yet we are not taking responsibility for the mess we created, nor the future of mankind. We can either take the lead and say NO to these fossil fuel projects, as our Governor directed, or stand by and watch the earth heat to a point our grandchildren will be one of the last generations to survive. The United States is responsible for most of the GHGs emitted since industrialization in the US surpassed that of the UK in 1910. As of 2017 the US is responsible for 397Gt of CO2, with China emissions at 214Gt and the former USSR countries at 180 Gt.

The United States is responsible for most of the GHGs emitted since industrialization in the US surpassed that of the UK in 1910. This is illustrated in one of the many CO_2-tracking portals, such as the US Energy Information Administration (USEIA) and non-profits like CarbonBrief, which issues the status of the climate each year. As of 2017 the US is responsible for 397Gt of CO2, with China emissions at 214Gt and the former USSR countries at 180 Gt.

The IPCC projects global energy-related CO_2 emissions will grow 0.6% per year from 2018 to 2050 assuming global GDP remains around 2%. However, future growth in energy-related CO_2 emissions is not evenly distributed across the world: relatively developed economies collectively have no emissions growth, so all of the future growth in energy-related CO_2 emissions is among the group of countries outside the Organization for Economic Cooperation and Development (OECD), of which China is not a member.

There is no assurance China will retire a coal-fired methanol production plant if the KMMEF is built. On the contrary, energy sector economics and their plan for economic and social development indicate they may even build more coal-fired plants. China's 14th five-year plan (FYP), setting out its national goals for 2021-2025, will provide more insight as to the use of coal for energy. China's National Energy Administration released a risk warning notice No. 12 on coal power planning and construction in 2023. In this document the provinces were notified that they may construct additional coal power plants under certain risk conditions. This contradicts NWIWs replacement theory.

I realize the fact that the KMMEF will be owned and operated by a foreign entity is not a legal restriction under Washington State code. However, the risks associated with Chinese ownership, governance, transparency in environmental protections, and public safety oversight should be a concern.

I certainly hope Ecology will read all the written comments, and scrutinize the information in this SSEIS. I read the SSEIS and there are so many bad assumptions, omissions of relevant information, poor application of technical information, and a covert attempt to under report upstream, operational and downstream emissions. I documented my review and I am submitting multiple comments, referencing all my sources.

This project:

- Underreports GHGs because it doesn't mitigate upstream and downstream GHGs outside of Washington.
- It continues to refer to information in the FSEIS, such as the 100-year global warming potential, instead of the 20-year GWP for fugitive methane.
- It refers back to GREET_2017 emissions data in some tables. The standard now is GREET_2019.
- It cherry picks information from fugitive methane research papers such as Yu Gan (2020), Alvarez (2017 and 2019), and others.
- It presumes the use of Ultra-low Emissions (ULE) technology that has not been approved by the EPA through application of a Prevention of Significant Deterioration (PSD) Permit for GHG emissions. This technology was first used in 1994 in an Australian power plant.
- NWIW reports ULE will emit 38% less GHGs than CR Technology, but I found several articles that indicate the savings is only around 31%. The actual emissions from ULE are unknown.
- The GHG emissions reported in Section 3 are based on "net GHG emissions." The emissions this plant will be responsible for include all upstream, operations, and downstream GHGs to include at least 60% of the methanol used as a fuel.

- The Voluntary Mitigation Framework (VFM) presented is inadequate and unenforceable. The VMF Board of Directors doesn’t include stakeholders from local Kalama residents, environmental non-profits like the Columbia Riverkeeper and Sierra Club, and Native American tribes. Only a legally enforceable MOU/MOA, signed by all stakeholder representatives, is acceptable.

Thank you for giving us the opportunity to weigh in on this project. Your efforts are appreciated.

Mark Uhart
LTC, USA Ret.
Kalama, WA

Lezlie Popik

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Alan Smith

"The Kalama methanol company's cheerleaders are touting benefits that are only relative to a nightmarish reference point: that states and nations fail to live up to their climate agreements. They assume failure of the Paris Climate Accords, failure of China to approach fulfilling its pledge to be carbon neutral by 2060, and, along with it, unchecked growth of fossil fuels for transportation and cheap plastic. Then, relative to that catastrophic failure, they selectively point to a portion of the recently-released Second Supplementary Environmental Impact Statement, which uses dubious logic to show that the Kalama methanol would make things slightly better.
It is the moral equivalent of urging someone to jump off a slightly shorter skyscraper."

This project should not be approved! As China's leader has said, we cannot continue to ignore the warning signs from nature. We must transition from fossil fuels (and feed stocks) to clean and sustainable resources.

Ron Sikes

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Caroline Cates

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River Montijo

The foto says it all!


L.N.G. PIPELINE
THRU CLIMATE-
DAMAGED FOREST?
R.U. GUYS CRAZY?



Denise Busch

Urging your to not approve the Kalama Project. Protect the future of the environment.


Racing
Grannies
No Fracking
No Kalamity

Laura Feldman

I was born and raised in Portland, OR. I'm 66 years old, and each decade brings challenges of cleaning up our toxic, chemical, and radioactive wastes while stopping the sources of this pollution. I consider this to be the most important work now and for many generations to come. Anything else, like building this methanol refinery is simply an attack on all life trying to navigate ongoing climate disruption. And, it will be seen as such further down the road (if there is more road) by our communities which we either failed or tried to protect.
The fossil fuel industry is over. Most of us know this. Please, don't support NWIW in destroying this region. We are counting on you.
Sincerely,
Laura Feldman

Jeanne Poirier

NWIW advertises good jobs, boon to economy and reversal of carbon footprint by allowing this project. I trust you are smarter than this boondoggle. It is time to implement projects which support a livable future not lock us into decades of water waste and amazing pollution by using fossil fuels to make more fossil fuels. I've always been against this project and ask you deny it to move forward SO WE CAN!

Jennifer Vinnard

Trusting NWIW is like grabbing an electric fence and hoping you don't get shocked,..you know it's turned on, it's going to hurt, but you still grab it anyways because you want to believe that everything will be okay, despite knowing the most likely scenario is a powerful jolt. The draft SSEIS is still using data provided by NWIW, not independent sources like it's supposed to. The speculations are astonishing..the biggest being that this methanol plant would displace coal to methanol plants, when not one ounce of proof backs such a claim. Zero, not one single refinery in the entire world has indicated that they'll reduce or halt production if this plant is built, and with China's ever increasing methanol demands, dropping values and competitive prices will cause the inflated projected profits to plummet! More and more people are changing their support for this project, lack of trust in China, the truth about how many truly local residents might be able to work there, the amount of pollution it'll produce..which the EIS still underestimates, neglecting to include pipeline emissions, shipping emissions, being used for fuel, etc.. the only people supporting this are those who are being paid to promote it, those who still believe they might work there, and the few who stand to profit from it, most of whom don't live anywhere near the intended build site.

What has happened to people caring about the truth? The cons associated with this refinery are staggering, the risks far outweigh any amount of profit, at a projected $40 million/yr, it's nothing compared to the $395.5 million our state received in cannabis tax revenues just last year, which has grown each year..this refinery won't grow in profits, it'll drop due to competition and fluctuations in natural gas prices. Current natural gas users will see costs increase, the already strained pipeline cannot handle the demand of the refinery, current customers, and will hurt future construction because the facility will use all the gas available. The 2nd pipeline they'll need to build will face severe opposition as well, what happens when they can't get it approved?

Building atop dredged river landfill, the threat of liquifaction during an earthquake is enormous. The risks of the lateral pipeline, built on landslide prone hills and being ran under the I-5 freeway and train tracks leaves it vulnerable to accident caused ruptures..that is our only freeway from Portland to Seattle, if shut down for repairs, our transit system's would be completely halted. 4.6 million metric tons of ghg emissions PER YEAR, a lowballed amount, is not in line with our state and global emission goals, the negatives go on and on!

My family moved to Kalama for the beautiful mountain and river scenery, not for a gigantic smokestack billowing pollution over our land, into our waterways, into our lungs...we are begging Dept of Ecology to deny the permit and fight to keep Washington the wonderful state we've lived in our entire lives. Please don't sell out our health and our values for China's benefit, it's just not worth it! Thank you, Sincerely, The Vinnard family

Gloria Uhart

My name is Gloria Uhart and I live near Kalama.

I'm not an avid researcher like my husband, but I know a rotten fish when I smell one. And some information provided in the SSEIS stinks. The lack of discussion about the culture of the indigenous people of Washington tells me NWIW is not interested in telling us the truth. The truth is that our salmon, steelhead and shellfish fisheries are in rapid decline and this GHG bomb will accelerate their demise. These GHGs will increase ocean acidification, increase water temperatures in the Columbia River and Pacific Ocean, and reduce the amount of dissolved oxygen in the water. These effects will lead to the destruction of the fisheries Native American's depend on to survive, economically and culturally. I am 36% Native American and I want to be heard.

The Marine Spatial Plan for Washington's Pacific Coast, published Oct 2017 and revised June 2018, was jointly authored by the Washington Departments of Ecology, Natural Resources and Fish & Wildlife. As described in the "Marine Spatial Plan," "the management of the marine environment is crucial to each of the coastal tribes, as the marine environment is integral to their history, culture, identity, and future. The MSP Study Area overlaps with 67% of the combined, adjudicated tribal fishing 'Usual and Accustomed' areas (U&As.) Five federally-recognized tribes (the Hoh, Makah, Quileute, Shoalwater Bay Tribes, and Quinault Indian Nation) border the MSP study area, with the study area's southern boundary at the mouth of the Columbia River."

This area overlaps with the "action area" defined in the Marine National Fisheries Service biological opinion dated Oct 2017, and includes some of the "Usual and Accustomed Areas" fished by federally-recognized tribes along Washington's West Coast. The NMFS biological opinion stated that the "action area" is part of the critical habitat for these Washington fisheries. As such, they were included in the assessment of the methanol plant's direct and indirect impact on 24 ESA-listed endangered and threatened species.

The biological opinion asks the question for each of the 24 species, "Is the action likely to adversely affect this species or its critical habitat?" The answer was YES for 12 threatened species and YES for 7 endangered species. So, why wasn't this disclosed in any of the EISs? Why wasn't there an attempt to quantify the potential impact to our fisheries? Why weren't all the affected tribes invited to participate in the scoping of the EIS?

That's why I am asking Ecology to deny the shoreline permit. Our indigenous peoples' treaty rights must be respected.

Thank you for allowing us to be heard.

Kathleen Boylan

My name is Kathleen Boylan. I am a 70 year old retired RN with respiratory problems. I am fortunate enough to own a house in SE Portland with filtered air conditioning.
Unlike thousands of my fellow Oregonians I was able to stay home during the smoke filled week of the worst air pollution in the world
We are experiencing the effects of climate change NOW. We must not add the millions of tons of green house gas pollution Into the atmosphere that this refinery would spew.
Please deny this project which will only serve to exacerbate our existing health crises.

Kimberly Seater

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Josh Furlong

Please do consider the health and well being of the children in our state. I own 5 properties in cowlitz county which are rented to 6 seperate families, one property being multifamily. My wife and I feel it would be inviting an environmental hazard into our back yard. The country backing the development and receiving the goods has been reckless in their environmental impact on our global environment for decades. Their intent shared thus far to local stakeholders have been deceptive. We would appreciate the state we pay taxes to and depend on to keep our righs protected to think very critically about the air quality we depend on while raising our children in. If you look at the fires as of lately and consider the trend winds of the Columbia it was evident being between to busy urban areas it is not satisfactory for clearing pollution.
Please do not allow this plant to be permitted to develop in Kalama, Wa, under the current scale for which it has applied for and the dangerous activity it would encourage by way of fracking that has decimated the beautiful Dakota and Big Sky planes. We urge you to take this decision into critical consideration for the future of our youth and environmental well being.

Respectfully,

Josh Furlong

Jessica Adams

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Nick's emissions analysis shows that this is a good deal because this project emits fewer outrageous numbers of tons of GHG emissions when compared to even more outrageous coal sources. To get there you have to assume the doomsday scenario that for the next 40 years there will be no global action to address climate change. On top of that if any of the following the assumptions are true then this big idea that applicant's plant will displace a coal methanol plant from being built, fails. You have to buy into applicant's claim that:

1. For the next 40 years there will be endless growth in demand for fossil fuel based plastics or methanol or other fossil fuels.

2. And for the next 40 years we can with certainty predict Chinese manufacturing, trade and environmental policy, tech development and global commodity markets.

3. And for the next 40 years no coal based competitors will produce methanol because they'll see the Kalama plant in operation and fold their tents knowing methanol consumption will be a fixed amount.

It's so divisive to this community for Ecology to promote this project as one that reduces greenhouse gas emissions.

The fact is the low cost methanol that applicant sells to the into global market will affect demand, will affect price and will affect supply. Actually it's gonna incentivize other methanol plant production. It won't at all displace coal but instead will displace Renewable Energy Sources!

And you're lowballing the amount of methane that will be released. The "bottom up" method of measuring methane relies wholly upon the gas industry granting permission to measure

where they want us to measure. ZERO independent verification. And we're talking 40 years of this production to distribution gas highway. Blow outs will occur, they're inevitable. Just one gas well in Belmont, Ohio blew out in 2018 and spewed more methane into the air in 20 days than most of Europe did in an entire year. Bottom up measuring, completely dependent upon the gas industry's permission to measure where it wants us to measure, is the opposite of random testing. Couple that with inevitable catastrophic discharges and you have a rock solid basis for denying this permit on the basis of untenably large greenhouse gas emissions.

Ecology's job is not to provide jobs and not to weigh the merits of plastic, its stated mission is to protect the environment for future generations.
.

Jean Avery

Today (9/23) in the news, China's President Xi announced a target of carbon neutrality by the year 2060. Speaking to the United Nations, he referred to "green development."

According to the Financial Times, "this could push coal demand in China close to zero."

This shift significantly alters the primary assumptions regarding the need and/or justification for methanol from Kalama. Certainly, we can no longer assume the demand as projected in the SSEIS.

This project is too risky. The future is uncertain. I urge the Department of Ecology to deny the permits for this project.

Mark Uhart

My name is Mark Uhart and I live near Kalama. Many of my neighbors are fisherman but not many fish are being caught these days.

In my quest to bring facts to the table, I read many peer-reviewed research papers on the aquatic biodiversity of our oceans and the effects of climate change on our fisheries. This includes the Pacific Ocean all the way to the coast of Alaska and the Bering Sea where salmon spend a good part of their life. Washington fisheries are not the only ones in decline. This year salmon returns in Alaska are so poor that many Alaskan communities are claiming fishery economic disasters and requesting government assistance. As of August 12th all sockeye, chinook, pink and chum salmon fisheries were below projections, with some areas completely closed to commercial fishing.

I reviewed the 2019 and 2020 Washington Coho Forecast Summary published by the Dept. of Fish and Wildlife. The forecasted and actual returns for hatchery and natural Coho salmon went from a little over two million (2,013,316) in 2019 to just under 1 million forecasted (987,494) in 2020, less than half. Runs will likely be just above 50% of the 10-year average. Every production unit is forecasting significantly fewer natural fish. Although this is a snapshot, and only represents one of the 19 species, the running 10-year average indicates nearly all species of salmon and steelhead are in decline. Many species will be on the edge of extinction by 2050 as a result of climate change, and here we are still considering the approval of a shoreline permit that will speed up global warming. I'm in shock. What are we thinking?

And to think China is going to shut down coal-fired plants if this one comes online is wishful thinking. Do the research. This author discovered an open source document in mandarin and translated it to English. China's National Energy Administration released guidance to provincial governors for the construction of more coal power plants in 2023 (China National Energy Administration Bulletin No. 12, 2020.) It states, "In order to implement the requirements of the national coal power development policy for issuing and implementing coal power planning and construction risk warnings on an annual basis, strengthen the power and heat supply guarantee capabilities, and better guide local and power generation companies to approve and construct self-use coal power projects in the province in an orderly manner..." In order to achieve the goals set in their 14th 5-year plan, for 2021-2025, they will be building more natural gas refineries and coal power plants. So much for NWIW's assumptions.

I hope Ecology sees the SEIS for what it is. It is a scheme that underreports GHGs, avoids mitigation, and sells local jobs now for a climate emergency in the future that cannot be avoided anyway. Therefore, NWIW purports it an acceptable outcome. If this plant is approved, the Port of Kalama will be the ring in the bull's nose, waiting to be pulled at China's discretion.

I urge Ecology to deny the shoreline permit.

David Purkerson

I would like to add my voice to those who are speaking out to oppose the siting of a methanol plant ANYWHERE in the Pacific Northwest. This is contrary to our NW values and will compromise the environment my family has lived in and respected since 1859. There is no amount of money that would change my mind. Nobody that loves the Pacific Northwest would even consider this. Please do not build a methanol plant in Washington state or anywhere in the Pacific Northwest. Sincerely, D. N. Purkerson

Lynn Stiglich

The fact of climate change is undeniable. The signs are everywhere, and have been for years.

The fossil fuel industry has been deceitful in its knowledge of climate change due to their products. The industry continues to distort facts, citing statistics that are suspect and misleading.

The Kalamazoo methanol refinery project is a case in point. It is unconscionable to proceed with this project, in light of the pollution it will generate and the potential for an accident.

Please deny permits, reject the proposal and instead focus on projects that put Washington at the forefront of the clean energy movement. There are jobs and opportunities in pursuing clean energy, as well as the importance of curbing emissions.

Please reject the Kalamazoo refinery project.

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a

faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Bill Adams

Please reject the proposed methanol refinery in Kalama. It would be an environmental disaster should it happen. Why? It would use up to 130 million cubic feet of mostly fracked gas daily, more than all other gas users in our state combined. Fracking is anything but a clean process. It uses known toxic chemicals to clean and lubricate the drilling pipes. It has contaminated ground water with these chemicals. Some of the waste water reclaimed from the fracking process can be reclaimed and reused but only for more fracking. It's still so dirty it cannot be used for growing food or for human and animal consumption. Just more fracking. It has even been known to have caused earthquakes in areas that have experienced few, if any, earthquakes. But, most significantly, it has been fully documented that fracking is a source of methane leakage. Methane leaked into the upper atmosphere is 30 times more of a heat blanket than C02 measured over a 20 year period. More fracking to support this proposed refinery's voracious appetite for so-called natural gas will simply mean more methane leakage as well as the other drawbacks already mentioned. As such, this project is not in our state's best interest nor the entire planet's for that matter. Please reject it. Thank you, Bill Adams

Susan Williard

Washington Dept. of Ecology
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

September 23, 2020

Dear Mr. Doenges,
All over the globe, fires rage. Glaciers and polar ice steadily melt at alarming rates. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.
It is our responsibility now to reject any new fossil fuel infrastructure. We must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.
The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.
We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.
We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution and use more fracked gas than all of Washington's gas-fired power plants combined.
Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.
Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.
Let's be bold, and redefine our generation by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.
Thank you for your attention to this important matter.

Kind regards –

Sue Williard
San Francisco, CA 94122

Mary Gallagher

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Carolyn Treadway

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Don Steinke

The market forecasts used in considering likely scenarios in the draft SEIS were inconsistent with China's pledge to peak emissions by 2030 and then scale down. But on Sept 22, 2020, China promised to be carbon neutral before 2060.
Your market projections for new demand for methanol could be inconsistent with either China's commitment to scale down or its new commitment to be net zero before 2060.
Please address that in your final SEIS.
Source:
https://gcaptain.com/china-pledges-to-be-carbon-neutral-by-2060/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:Gcaptain (gCaptain.com)&goal=0_f50174ef03-c7996e9511-169978253&mc_cid=c7996e9511&mc_eid=033cdd1d41

Electronic Submission to the Department of Ecology, State of Washington

September 24, 2020

Subject: Review Comments and Recommendations on the Draft SEIS for Permits/Approval of Northwest Innovation Works Proposed Kalama Gas to Methanol Refinery

Summary: As the Final EIS and Decision Documents are prepared for this project, I call on the Washington State, Department of Ecology to not approve the Shoreline Conditional Use Permit and to deny any proposed action associated with Proposed Methanol Refinery on the Columbia River in Kalama, Washington.

Response to Report's Summary Findings:

- **The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year.** The Kalama facility would be one of the 10 largest sources of greenhouse gas emissions in the state. Northwest Innovation Works has said that it will mitigate all of the facility's in-state emissions.

  Response: Avoidance of adding over 1 million metric tons of CO2 and other Greenhouse Gas (GHG) emissions to our Region will be the best action for all. The documents don't adequately address methanol leakage and impacts to the local area. Mitigation measures are susceptible to failure and inadequacy.

- **Worldwide demand for methanol is likely to increase in the decades ahead**, leading to higher greenhouse gas emissions with or without the Kalama facility

  Response: We can all work together now to stop and reverse this trend before more serious impacts of Rapid Global Climate Change occur.

- **It would lead to methanol being burned as a fuel.** Northwest Innovation Works has said all of the methanol from the Kalama facility will be used in plastics production, but increasing methanol supply makes it more likely that more methanol will be used as fuel, regardless of the source.

  Response: Burned as fuel, the Kalama project could add between 2 and 5 million tons of carbon pollution per year. Even China is reportedly beginning to take action to reduce pollution and GHG emissions!

- **Extracting and transporting the natural gas used to make the methanol could produce higher emissions than previous estimates.**

Response: This is a serious issue, throughout our Country, methanol pollution is increasing and has caused serious air quality including reduced poor visibility – The Methanol Haze.

- **Methanol made in Kalama could produce lower greenhouse gas emissions than many competing methanol supplies**, from coal or less efficient natural gas sources. This means that global greenhouse gas emissions would increase with the addition of the Kalama facility, but likely less than they might if that demand was met by other sources.

  Response: Weak argument. See my comments herein. Let's work together and form a Green Business Center in Kalama!

Detailed Comments:

The original Environmental Impact Statement (EIS) as well as the supplemental documents (SEIS) are full of generalities, assumptions and unsupported statements. Reviewing Officials are urged to be open minded and listen to all commentors on this project. (Collectively, under law, I will refer to this as the EIS to incorporate the SEIS and SSEIS under this project, as a final decision document nears).

The air quality analysis is particularly weak and limited in its scope.

The Analysis is to address existing and estimates of project emissions and compare expected impacts against a variety of standards under various scenarios. The analysis fails to simply and adequately address the relationship of the project and the local area along with greater impacts to the regional area, and global climate change, in fact, rapid climate change should be addressed, as this proposed project is a likely component of such.

The Regional area around Kalama has just experienced over a week of unhealthy and hazardous air quality conditions. https://www.columbian.com/news/2020/sep/15/clark-county-is-worst-in-state-as-washington-sets-record-for-hazardous-air/

The document is incomplete in its analysis of emissions of CO2 and other GHG along with local air quality hazardous air events. Visual Quality impacts have also not been adequately addressed.

The EIS documents actually assumes that the air quality in the area will improve with future improvements in other standards, including an expectation that EPA will have new more stringent air quality standards for methanol, ships, etc. – when in fact, most recently, EPA has been relaxing standards. This is one, among a number of completely unsupported and likely inaccurate assumptions in the EIS and SEIS Documents.

Particularly disturbing is that there now appears to be little to no oversight of methanol pollution from existing and abandoned gas wells and fracking projects throughout the US. As a result, air quality conditions have deteriorated in many parts of the US, including the Southwest USA and California – where reports of methane air pollution, including a visual and visually degrading "methane haze" increase yearly. https://www.bloomberg.com/news/features/2020-09-

17/abandoned-gas-wells-are-left-to-spew-methane-for-eternity?utm_source=url_link&fbclid=IwAR2IZicvXTRm0jluzdnPfdE4m1iQ8b6ZXU4cArXgPekpcImnX9CNsHHER0M

https://www.cbsnews.com/news/who-are-the-biggest-us-methane-emitters/

The air quality analysis in the documents, including this current SEIS, do not examine the air quality for special management areas nearby, including Mt Rainer NP, Columbia River Gorge NSA, Mt St Helens or the National Wildlife Refuges nearby including many islands in the Columbia River.

Many islands of the Julia Butler Hansen Refuge for the Columbia White-tailed Deer (JBH CWTD) and the Lewis and Clark National Wildlife Refuge have been designated as Wilderness Study Areas.

https://www.fws.gov/pacific/planning/main/docs/WA/jbh-lc/Final%20CCP%20EIS/LAC%20JBH%20Final%20CCPEIS.pdf

The US Fish and Wildlife Service has yet to complete these studies, however, some of the important criteria in analyzing Wilderness characteristics and values includes Air Quality. There is no or limited analysis of the potential impacts of the proposed plant's operation, nor the increased ship traffic and the associated impacts to air, fish, wildlife, including Threatened and Endangered Species and other natural resources of these important areas.

I contend that proceeding with the proposed action could likely impact the potential Wilderness Designation of Islands within the nearby Lewis and Clark and JBH CWTD Columbia River National Wildlife Refuges, and possibly the management purposes and objectives for these as well as other nearby Federal Lands. Analysis of the impacts of achieving and maintaining a Class 1 Air shed should have been addressed in the EIS documents from a variety of actions associated with the project proposal.

Burning Methanol or Making Plastics - - The project's purpose should be clearly explained. However, whether it is to ship the refined natural gas to burn and directly contribute to air pollution and GHG emission or to make Plastics, neither purpose stands out to be more significant and important as helping to stop or slow down global climate change. In fact, the most significant positive action would be for the Kalama Community and Project Proponents to come together and denounce this project and work together as a community to develop Green Businesses. International networks of such communities are starting up and the growth potential seems unlimited, as well as a very positive future.

As for the future of plastics and it's recycling – I refer you to the following, which demonstrates the myth that all plastics are being recycled, when in fact it has never been greater than 10%,

and the future of recycling will need to rely on new innovations, but primarily and avoidance and use of sustainable and reusable products.

https://www.npr.org/2020/03/31/822597631/plastic-wars-three-takeaways-from-the-fight-over-the-future-of-plastics

Perhaps somewhere in Washington State there is a good place to help with recycling of plastics, if China is not going to take it from the US any longer. (I don't believe it is in Kalama). Or perhaps the US should ban the sale of methanol to China until they agree to a plastics recycling program…. However, with less than 10% of the volume of plastics generated worldwide being recycled, the future of plastic use for many products is unsustainable and unacceptable – the best alternative is to reduce plastic use and in our environment. Reuse, Recycle, Invent New!

Burning Methanol from the Kalama project as a fuel would generate millions of tons of particulate pollution yearly. Simply, these types of projects can't continue worldwide, without more serious complications associated with global climate change.

It is hard to imagine that the people of the Kalama area would want to have such a facility in their community. Or to have such a facility that causes so much environmental harm, on a global scale as well as the impacts to the local area – Columbia River natural resources, scenic beauty, fish and wildlife, public recreation, small town charm, etc.

Not only is this project proposed in the wrong location for a facility like this, we all must question whether or not just a facility should be built anywhere in the Western USA – or anywhere on Planet Earth!

I suggest that all of us, including the people of Kalama and the Project Proponents - must avoid taking the road of Short Term Economic Gain for the benefit of a small group of wealthy individuals when it seems clear that a road of Long Term Economic Stability and Sustainability with the Positive Benefits for the Public Good – including public health - - for Long Term sustainability – including clean air, water and healthy natural resources, is a better choice. We need to examine more clearly for all to understand what projects are healthy for our communities that will provide long term positive benefits for everyone, not just a few. And when necessary, as is the case herein, what are the long-term impacts for everyone.

From the Intergovernmental Panel on Climate Change (IPCC) Report:

Climate change has been intensively studied and acknowledged at the global, national, and regional scales. Climate change is being fueled by the human-caused release of greenhouse gas emissions, in particular carbon dioxide and methane. The Intergovernmental Panel on Climate Change ("IPCC") is a Nobel Prize-winning scientific body within the United Nations that reviews and assesses the most recent scientific, technical, and socio-economic information relevant to

our understanding of climate change. In a recent report to policymakers the IPCC provided a summary of our understanding of human-caused climate change. Among other things, the IPCC summarized:

• Human influence on the climate system is clear, and recent anthropogenic emissions of greenhouse gases are the highest in history. Recent climate changes have had widespread impacts on human and natural systems.

• Warming of the climate system is unequivocal, and since the 1950s, many of the observed changes are unprecedented over decades to millennia. The atmosphere and ocean have warmed, the amounts of snow and ice have diminished, and sea level has risen.

• Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane, and nitrous oxide that are unprecedented in at least the last 800,000 years. Their effects, together with those of other anthropogenic drivers, have been detected throughout the climate system and are extremely likely to have been the dominant cause of the observed warming since the mid-20th century.

• In recent decades, changes in climate have caused impacts on natural and human systems on all continents and across the oceans. Impacts are due to observed climate change, irrespective of its cause, indicating the sensitivity of natural and human systems to changing climate.

• Continued emission of greenhouse gases will cause further warming and long-lasting changes in all components of the climate system, increasing the likelihood of severe, pervasive, and irreversible impacts for people and ecosystems. Limiting climate change would require substantial and sustained reductions in greenhouse gas emissions which, together with adaptation, can limit climate change risks.

• Surface temperature is projected to rise over the 21st century under all assessed emission scenarios. It is very likely that heat waves will occur more often and last longer, and that extreme precipitation events will become more intense and frequent in many regions. The ocean will continue to warm and acidify, and global mean sea level will continue to rise. Carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are recognized as the key greenhouse gases contributing to climate change. (IPCC AR5, Summary for Policymakers (March 2014))

In short, this project will add to and exacerbate the already declining quality of human health and impact the natural environment. Nationally, and globally, we all need to aggressively work to slow GHG emissions and attempt to slow and reverse the negative trends of rapid climate change. We must act locally, everywhere, to effect this change.

Closing

In closing, as the Washington State Department of Ecology completes the Final documents and reaches its Decision, based on my review of the project proposal and EIS documents, I urge rejection of the Shoreline Conditional Use Permit and non-approval of the Kalama Methanol Refinery. I encourage the businesses, Port and local government and citizens of Kalama and the

surrounding Region, and the proponents of this project to aggressively work together for climate solutions, discover local projects that will add to the beauty and charm of the community, the Columbia River Watershed, the State of Washington and the PNW. Focus on the quality environments that exist and work to help and improve water quality, air quality and the natural resources which support the great Columbia River fishery, wildlife and wilderness characteristic of the nearby and surrounding State and Federal lands. Kalama and Southwest Washington, and beyond will be better without this project.

Sincerely,

Charles Houghten

Charles J Houghten

16909 NE 227th Ave.

Brush Prairie, WA 98606

Anonymous Anonymous

Gentlemen - I am very concerned about the proposed Kalama Manufacturing and Marine Export Facility. I understand the need to create jobs and economic activity, but because of the impacts on our air, water and community health, this project may be a deal with the devil.

It is widely accepted that this plant, once built, will instantly become one of Washington state's largest polluters. What is less well known however, is the nature of this pollution. It is toxic, and it is radioactive. Other towns with similar facilities have reported worrying health impacts, including cancer clusters.

As we all know, when dealing with such large operations accidents and spills are inevitable. I wonder about the wisdom of pursuing such a course if it poisons the town for our children and grandchildren. What will these jobs really be worth if in the future, the town becomes less desirable as a place to visit or raise a family. And God forbid something horrible occurs that makes this town uninhabitable.

Please think about the long term success of Kalama when deciding on whether to move forward with this project. There is still time to pursue more sustainable business enterprises, thus ensuring both jobs, income and livability for generations to come.

Dee Johnson

Please do NOT permit this plant to be built. Yesterday's (9/23) LA Times article is attached and gives a glimpse into our future if this plant is built.

A Methane Plant in LA was leaking methane gas for years while keeping leakages hidden. This was because the operators didn't feel it was important to warn their oversight & the vicinity. This article shows multiple incidents of methane leakages that were kept from the regulatory agencies and the public in general.

An excerpt: "The plant's compressor units had been leaking gas "for the last couple years," one staffer said. The utility had a plan in place to fix the compressors later in the year but decided to go public now because NASA's Jet Propulsion Laboratory had detected the leak as part of a drone survey, and "their information is getting more publicized," Adams told the board."

Please do not permit this project!

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Los Angeles Times

Los Angeles hid a methane leak for a year. Activists want the power plant shut down

Sammy Roth 3 hrs ago

Andres Ramirez doesn't know who scrawled the words "SHUT DOWN THE PLANT" across a cinder-block wall outside Valley Generating Station, where red and white smokestacks tower over the northeast corner of the San Fernando Valley.



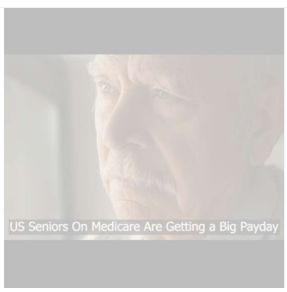
© (Myung J. Chun / Los Angeles Times) Activists have been campaigning for over a year to shut down the Los Angeles Department of Water and Power's Valley Generating Station. (Myung J. Chun / Los Angeles Times)

But in a neighborhood burdened by dozens of landfills, recycling centers, junkyards, trucking companies and other noisy and polluting industrial facilities — and bisected by three major freeways — the graffiti artist could have been almost anyone.

Residents of Sun Valley and Pacoima breathe some of California's worst air and suffer from asthma-related hospitalizations at rates far higher than most of the state. So when the Los Angeles Department of Water and Power revealed last month that its power plant had been leaking methane gas for at least three years, local outrage was loud and swift.

The leak "really fired up the community on this greater conversation of why is this plant even open still," Ramirez said as he walked past the facility's main entrance, stepped over sidewalk chalk art reading "KIDS DESERVE CLEAN ENERGY." He pointed out that the surrounding community is mostly Latino and low-income.

"For Black folks, it's police kneeling on their necks. For a community like Sun Valley, it's poisoning you slowly for 75 years," he said.



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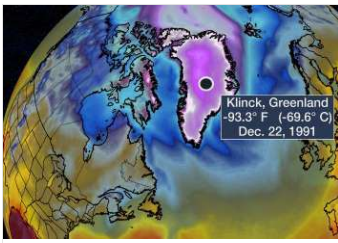

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A swirling column of smoke, or "smokenado", was seen amid the Mullen Fire, west of Laramie, Wyoming, on Friday, September 18, before the blaze expanded to 14,653 acres by September 22. Footage captured from a distance by Cory Nuhn shows the twister on a

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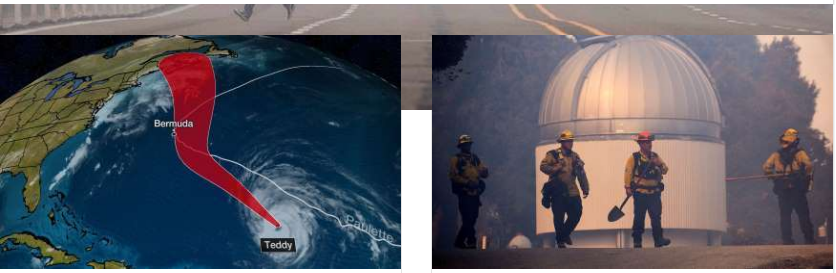

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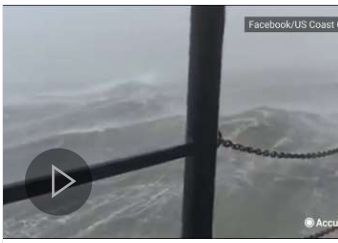

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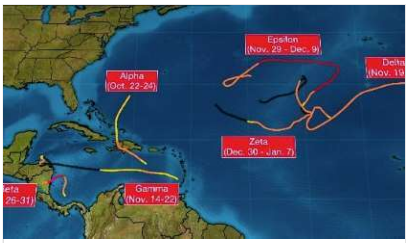

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Few resources, old-growth forest allowed for fire's growth

LOS ANGELES (AP) — A lack of firefighting resources in the hours after it was sparked allowed a fast-moving wildfire to make an unprecedented run through Southern California mountains and eventually find fuel in old-growth

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Storm heading northward toward Japan packing winds, downpour

TOKYO (AP) — A tropical storm developing in the Pacific Ocean, was slowly sweeping toward Japan on Tuesday, threatening the main island of Honshu with heavy rainfall and harsh winds. Tropical Storm Dolphin had

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California firefighters race to subdue flames before heat and winds return

Reuters

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larry johnson

I grew up in Texas. I know the Oil Patch and internally, how it operates.

After completing my GI Bill in the 70's, I started my career as a Systems Engineer processing data in the Oil & Gas Industry working in Dallas and for decades later along the Gulf Coast working out of Houston.

Much like the tobacco industry, there were many internal studies made that revealed the perils of producing oil and gas. These internal studies and their incidental hazard reports were kept away from the public conscience. These studies were then used to minimize information on all publicly known hazards and avoided mentioning other hazards unknown to the general public. This was SOP damage control for proposed projects. This practice has always been there and will continue. I would expect the Chinese owners of this development are more accomplished at this spin/secrecy than their American counterparts.

While this Methanol Plant will be a short-term boon to the area by generating a thousand jobs for the short-term and a couple of hundred long-term jobs; the cost is too great. If you need more proof, take a ride along the Texas/Louisiana coastline. There lie the corroding remnants of a dyeing industry. To bring a dyeing industry and future Superfund site to the great Northwest is a travesty of the highest magnitude.

Please do not approve this permit!

Thank you!

Vivian Chin

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

publicly opposing massive fracked-gas projects, halting new fossil-fuel infrastructure, and protecting our air, water, rivers, forest, health, safety, and climate.

Kay English

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We owe it to our children and grandchildren to tend to the "Garden" of our earth.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Kay English
2926 28th Ave W Seattle, WA 98199-2706
kaysme@gmail.com

Alice Shapiro

We are in the midst of many crises at this beyond challenging time. One of the most severe, due to its lasting and damaging impact on our communities and the entire world, is the climate crisis. I have read your mission statement many times and the words, "To protect, preserve and enhance the environment for future generations" are excellent. Now, you must follow through and not allow Northwest Innovation Works, LLC to build its methanol plant at the Port of Kalama. To be truly innovative, sustainable energy projects must occur. As the Northwest continues to increase in temperature and decrease in rainfall due to climate change with its accompanying drought conditions and more sunshine and wind, why not innovate and seek bids on projects for solar energy and wind power. We are experiencing a climate emergency. If we don't act boldly and quickly, it will be too late to avert more climate catastrophes.


We The People
DECLARE A . .
CLIMATE
EMERGENCY

Paula Arms

The Department should deny any further permitting to NWIW for building a methanol refinery plant in Kalama. In Washington State, we should be making strong effort to combat climate change, not contribute to it. Every effort should be being made to reduce our carbon emissions, not raise them. And our beleaguered and precious Columbia River does not need one more polluting industry on its shores. As a resident of Cowlitz County, I am strongly opposed to the further industrialization of our area, and especially a refinery that contributes so many emissions to our local air quality and furthers the use of non-recyclable plastic on our planet. Considering the scope and intensity of the wildfires of this summer, Ecology should deny the permit to build a plant that will contribute to detrimental climate change, and also affect the air I breathe every day.
Sincerely,
Paula R Arms

Carole Connell

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

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Coleman Byrnes

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Renee Burcal-Harris

I have degree from the University of Washington school of Oceanography. I would like to know if you have concidered the effects of the air pollution that will converge and often linger in the same areas because of the Fjord topography as well as the surface waters where any leaked methanol will migrate then accumulate.

TeresaThe DepartmentThe Flynn

The Department Ecology needs to dismiss the speculative basis for this proposed project. The idea they would displace more polluting facilities using coal is not proven.Washington State needs to protect our citizens, living things, and resources. No Kalama Methanol Refinery! Teresa Flynn Kalama, Washington

Adrienne Blackburn

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Dana Monroe

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Jay Monk

It is absolutely essential that the proposed Kalama Methanol refinery be denied its application for construction. The reason is simple: we cannot afford to build new infrastructure factory dependent for its functioning on using resources (Methane is a potent GHG) that contribute to the worsening of conditions in our climate and producing plastic which is known to pollute the water and land and people's bodies. The external costs associated with plastics production and its end of life process is enormous and Northwest Innovations LLC will surely not take responsibility for these costs in its factory and business model.

ANNE DOR

The report highlights the enormous amount of greenhouse gas emissions, which I find unacceptable. One of the reasons I moved to WA was due to its environmental record. I am against this project moving forward.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

The Department of Ecology needs to know when NWIW is dissolved; all bets will be off.

NW Innovation Works is the company responsible for:

• The $2 billion loan to pay for the entire facility.

• Offsetting GHG emissions

• Using ULE and ZLD technologies for environmental permitting.

• Not using it as fuel.

• Donating $1 million for the schools.

• Donating $1 million for the fire dept.

• Providing the training money to employ 20% of its workforce.

Take NW Innovations out of the equation, and it's all a lot of hot air.

With NWIW out of the picture, Pan Pacific, the parent company of NW Innovation Works, will take over, and all prior commitments will be void. It will be a seamless transition since most of the same people work at both companies.

Pan Pacific is also a Delaware LLC company, and will not be responsible for any of its prior liabilities or promises.

According to an online article on INC Now-

A Delaware LLC exists as a separate legal entity from its members, creating a shield that insulates the owners from individual liability beyond their investment for the LLC's financial obligations. Unlike a corporation, the protection in an LLC also runs in reverse. This shield also protects the Delaware LLC from future judgments against individual members due to the state's exclusive "charging order" remedy. This means that a creditor who obtains a judgment against a member of the Delaware LLC can only receive that member's distributions from the LLC and not a voting interest, nor can the creditor of a member order the liquidation of the LLC.

They can promise anything within reason. The best thing is that the refinery promoters can say anything without worrying about the repercussions of their actions.

NW Innovation Works or PPE might try to explain to the county that the infrastructure will be put in at the end or are just waiting for the federal agencies to approve the permits since ULE

technology hasn't been approved in the U.S. yet.

By the time that the county figures out there's that there is no way that NW Innovation Works or PPE isn't going to use ULE or ZLD due to the feasibility issues, it will be too late. The county isn't going to care, since they never did care about the environmental reviews in the first place.

If they were going to use ULE, the language about CR would have been totally removed from the review documents. Instead, the documentation says: if feasible or, if possible.

I talked to an industrial engineer about the project to get his take on it. He asked me to see the engineering or the finished blueprints for the entire facility. I told him that the company has concept drawings and not layout as the whole and how all of these processes work together, including the ZLD and ULE technologies. He was very concerned and said that it sounded like a sham. He asked who is the person or company that could put all of these parts together and be able to run it.

When the permitting for the ULE or ZLD gets denied, or the financial equation doesn't add up, it will be too late, the pipeline will already be under construction. The company will begin the refinery and say that it's too late to stop it now. PPE will say that the previous company made those promises. The backers of this refinery will get what they have always wanted, a Canadian monetizing facility.

The person that signed all of the contracts, the president of NW Innovation Works, will be long gone. No one will be held accountable for all of the carnage that would be left behind.

How is the Department of Ecology going to be sure that this start-up company with no assets or income will be there two years down the road, much less thirty?

Amy Tejcka

September 18th, 2020

Dear Washington State Department of Ecology,

My name is Amy Tejcka. My husband and I live in Cowlitz County, Woodland, WA. We are approximately 12 miles downwind of the proposed methanol refinery in Kalama. For myself and my family I am asking – no- I am begging you, please, DO NOT allow NW Innovation Works to build the world's largest methanol refinery in our backyard!

We have wildfires currently raging right here in our midst. These ferocious fires are becoming more prevalent. Proponents claim it is "safe" to pipe in mega tons of fracked natural gas and turn it into methanol primarily to benefit the Republic of China. I realize that we have been promised a few jobs as well as some other perks that will seem like chicken feed compared to the profits likely to be made by the Chinese and their affiliates. But what happens to us if the east wind decides to blow a fire into Kalama?
Why would anyone consider building such a monstrosity in such a densely populated area? Why would we risk our beloved Columbia River, so key to the entire Pacific NW economy and way of life? What about the real possibility of a Cascadia Mega-Earthquake? What about the 5 million gallons of water the plant will be drawing daily from our local aquifer? What about our sadly dwindling salmon and steelhead runs?

Property values will likely tank locally, including my own, here in Woodland if this plant is approved. Folks are going to love the unsightly plumes of hazardous vapor clouds billowing up regularly, higher than those blown from the Mount Saint Helens eruption in 1980! Who wants to live near that?

This proposal is absolutely ludicrous! It's SO DANGEROUS! And what are we building it for – more plastic? We don't need more plastic in the world – we need less! And we DON'T NEED a methanol refinery in SW Washington!!

My grandchildren are 5 and 7 years old. Please protect their health and safety. It's their air and water we're talking about here. You are the Washington State Department of Ecology. It is your job is to protect Washingtonians. Please exercise your common sense and DO NOT grant this permit!

Thank you for listening.
Amy Tejcka

Woodland, Washington

September 24, 2020

Rich Doenges re: NWIW SSEIS
Washington Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775
submitted via Department of Ecology Online Public Comment Form

RE: Draft Second Supplemental Environmental Impact Statement for the proposed Kalama Manufacturing and Marine Export Facility

Dear Mr. Doenges:

Thank you for the opportunity to comment on the draft Second Supplemental Environmental Impact Statement (SEIS) regarding the proposed Northwest Innovation Works (NWIW) project at the Port of Kalama.

I urge the Washington Depart of Ecology (DOE) to reject the proposal to build and operate the world's largest fracked gas-to-methanol refinery by denying the Shoreline Conditional Use Permit and any associated permits for the following reasons.

NWIW has sought to mislead regulators and the public regarding the purpose and impact of the refinery, falsely claiming that this project would solely produce methanol for plastics. This new SEIS demonstrates some important improvements in evaluating the true climate impacts of this proposed methanol refinery, including addressing the likelihood that methanol produced will be used as transportation fuel in China, not just for the production of plastics.

Burned as fuel, the Kalama plant's methanol would add between two and five million tons of carbon pollution per year. China just announced yesterday, however, that it will cuts its net carbon emissions to zero by 2060. China is using this plant to transfer its emissions to other countries.

The SEIS has made some necessary adjustments in the methane leakage rates, but the estimated rates still are too low given the widespread under-reporting of leaks. Even given the unreasonable assumptions regarding the single-sourcing of natural gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the SEIS confirms that NWIW's proposed facility would be enormously polluting. The proposed plant would use up to 320 million cubic feet of fracked gas per day, more than all of Washington's gas-fired power plants combined.

Methane is a potent greenhouse gas, trapping 86 times more heat in the atmosphere that carbon dioxide. Nearly 20 percent of the Earth's warming can be attributed to methane. DOE concluded the methanol refinery would emit 4.6 million tons of greenhouse gasses every year for 40 years.

It would become one of Washington's largest source of climate pollution at the same time we are trying to reduce emissions statewide. It would make our climate problems worse.

The evaluation of potential mitigation and displacement contained in this SEIS is misleading in its reliance on speculative, unproven and unenforceable assumptions. This displacement assumption is a major flaw in the SEIS. If China has sufficient petroleum imports, the low price of oil will negatively affect coal-to-methanol plant production. Global oil prices are likely to remain low. This means there will be little need for coal-based methanol in the plastics process.

The document is filled with generalities and unsupported statements. It is dangerous to presume this SEIS can accurately predict global fuel markets, technology developments, consumer behavior, or climate regulations for the coming four decades. Improved technologies are creating a growing commercial market for a variety of alternatives to traditional plastics. Growth in bioplastics will be fueled by a number of factors, including consumer demand for environmentally-sustainable products, the development of bio-based feed stocks for commodity plastics and increasing restrictions on the use of non-degradable plastic products, particularly plastic bags. Further, bioplastics manufacturing usually requires lower temperatures, further bringing down production costs and energy usage.

The SEIS assumes no new climate regulations, no changes in the world economy, no new technologies and no new developments in trade policy for the next 40 years. This is not realistic; we cannot predict the future.

The air quality analysis is particularly weak. Methane is emitted during the production and transport of natural gas. Methane in the air absorbs the sun's heat, warming the atmosphere and creating one of the most basic forms of air pollution. Haze is caused when sunlight encounters tiny pollution particles in the air, which reduce the clarity and color of what we see, especially during humid conditions. Haze degrades visibility over our public lands. Hazy days don't just block the view; they mean the air contains particulate matter that can compromise human health.

The Clean Air Act gives special air quality and visibility protection to national parks larger than 6,000 acres and national wilderness areas larger than 5,000 acres that were in existence when it was amended in 1977. These "Class I" areas include Mount Rainier, Olympic and North Cascades National Parks and Mount Adams and Goat Rocks Wildernesses in western Washington.

All other federal areas are "Class II" allowing for a moderate amount of air quality deterioration. Because air pollution is often regional in nature, reductions in pollution to improve visibility in Class I parks and wildernesses will also improve visibility in all other parks and wildernesses in the surrounding area. Class I areas are managed by the National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, and several Native American Tribes.

When greenhouse gasses are combined with wildfire smoke, as happened recently across Washington and Oregon, that air pollution also makes people more susceptible to complications from COVID-19. The Centers for Disease Control and Prevention warns on its website that wildfire smoke irritates the lungs, causes inflammation, impacts the immune system and makes people more prone to lung infections such as the virus that causes COVID-19. Air pollution

disproportionately affects already vulnerable people including those with chronic illness (e.g. heart or lung disease), children, older adults, low-income communities, and communities of color.

The SEIS assumes that air quality will improve in the future, despite the NWIW plant emissions, due to the expectation that the Environmental Protection Agency (EPA) will issue new, more stringent, air quality standards for methanol and tanker emissions. This assumption is unrealistic when the EPA has instead been relaxing standards. In 2016, Columbia University scientists showed that climate change has doubled the area of the western U.S. affected by forest fires over the past three decades. "Climate is really running the show in terms of what burns," one of that study's authors said. "We should be getting ready for bigger fire years than those familiar to previous generations." The SEIS should anticipate more times of hazardous air quality exacerbated by both the cumulative climate impacts of the emissions from the proposed project and the day-to-day unavoidable impacts of the proposed project's emissions when combined with other hazardous air events like wildfire smoke.

The SEIS provides too little detail on the actual mitigation that would be accomplished within the "voluntary" mitigation framework, and this mitigation fails to address the full impacts of NWIW's emissions that will occur both "upstream" during gas extraction in Canada and transport to Kalama and "downstream" after the methanol is manufactured and transported to China.

The "upstream" impacts include the industrialization of rural landscapes, abandoned and leaking wells, cumulative impacts to aquifers, mining of groundwater, loss of agricultural land and impacts to poor and indigenous communities. Abandoned gas wells deteriorate over time, the steel piping and cement corrode, and methane leaks into the air. There are an estimated 29 million abandoned gas wells globally. There is not any regulatory requirement to monitor emissions from abandoned wells. The oil and gas industry fought fiercely against the Obama administration's efforts to start regulating methane emissions. A 2016 rule requiring operators to measure methane releases at active wells and invest in technology to prevent leaks was overturned by the Trump administration at the beginning of August 2020.

The only way to keep the well from leaking is to fill it up. Plugging a well costs $20,000 to $145,000, according to estimates by the U.S. Government Accountability Office. Plugging does not last forever, however. Scientists and engineers debate how long cement can survive in the harsh environment of the Earth's interior. Estimates typically are between 50 and 100 years so eventually the wells will leak methane again.

Another issue is how much greenhouse gases will be emitted by refining a fossil fuel with electricity. Greenhouse gases from purchased electrical power are significant and should not be under-estimated. I am concerned that the large load of electricity for this facility will be permitted a share of the currently limited clean power sources in Washington. We are not conserving electricity and investing in clean power generation just to power a dirty fossil fuel facility to send our resources to China. Removal of the Snake River dams to save salmon should be higher priority than this project.

The mitigation framework is too vague for DOE to conclude that this project's impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option, after all other impacts are reduced in order to address unavoidable impacts, not simply to maintain the status quo.

The Intergovernmental Panel on Climate Change (IPCC) is the United Nations body for assessing the science related to climate change. Last month the IPCC published a statement on the 30th anniversary of the First Assessment Report, which was a robust, rigorous, exhaustive and transparent assessment of the state of knowledge of climate change. From the First to the Fifth Assessment Report, there has been substantial progress in understanding of climate science. "The main message from the Fifth Assessment Report is that the scientific case for urgent action on climate change is clearer than ever. We have very little time before the window of opportunity to stay within 2°C closes forever but we still have that opportunity. The choice is within our hands. The Fifth Assessment Report provides a framework to support good decisions and better integrates adaptation, mitigation, development and equity."

This refinery would commit Washington state to decades of fossil fuel consumption and air pollution, contribute substantially to climate change, use vast amounts of fresh water and expose citizens of the Pacific Northwest to health and safety risks – all for a Chinese-backed company to make profits at our expense.

It is unacceptable for Washington state to issue permits for such an enormously polluting methanol manufacturing facility based on speculative analysis and unsubstantiated hope of theoretical emission reductions. It is profoundly inconsistent with achieving Washington's climate goals. This massive polluter should not be built anywhere. DOE should dismiss this proposal and deny state permits.

Sincerely,

Susan Saul
10102 NE 10th St
Vancouver, WA 98664

Robin Cody

My daughter and granddaughter live in Vancouver WA, just 28 miles south of Kalama. I'm worried first about their safety when it comes to converting natural gas to methane. Both gasses are highly explosive. An earthquake, in particular the overdue "big one" could shoot flames right down the Columbia River shore. What's the point anyway of shipping methane to Asia? The gas is is a notorious contributor to global warming. Please let's not let Washington State export a substance that fuels climate change, the enemy of forest products and clean air.

Joanne Parrent

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Cheyenne Ness

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Nancy Adams

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Debi Zickefoose

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Linda Leonard

Northwest Innovation Works' states it will voluntarily mitigate 100 percent of all in state direct and indirect greenhouse emissions in Washington state. As for being voluntary, offset carbon emissions was the stipulation required for the shoreline conditional use permit.

The SSEIS shows the Voluntary Mitigation Framework has no details on how mitigation will be accomplished.

Footnote 40 on D-2 reads: NWIW is undertaking research how to configure and account for the Voluntary Mitigation Program, including consideration of forming an independent nonprofit arm to administer the funds.

Additional conditions and required fulfillment documentation will be developed in coordination with Cowlitz County and the Department of Ecology following the completion of the environmental review of the facility.

The citizens of this state are being excluded from knowing anything more about the Voluntary Mitigation Program Framework.

How can the public make their own analysis in regard to this project?

Northwest Innovation Works' identifies no specific projects or measures that will address the enormous greenhouse gas pollution impacts. The Department of Ecology should not base the permit approval on speculative assumptions.

The decisions made will last for decades, we cannot keep ignoring climate change, time is running out.

Please deny the permit.

Diane Kochendorfer

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Diane Kochendorfer
191 S Palmer Dr Port Townsend, WA 98368-9436
dboushek@gmail.com

Natalie Reich

You have already received boatloads of expert testimony from experts and other concerned citizens. I simply want to add my name to those who are opposed to this behemoth of a fossil fuel project. Given the abundance of evidence that we are already in the thick of climate catastrophe, we cannot put off acting if we have any hope for a healthy existence now and in the future.

Thank you for saying NO to the Kalama Marine Manufacturing and Export Facility currently proposed, and to any future proposals.

Natalie Reich

Linda Matthews

I oppose the construction of the Kalama Manufacturing and Marine Export Facility. The consensus on the world's scientists is that stabilization of the earth's climate requires reduction of greenhouse gas emission to net zero in less than a decade. All members of the global community must take unprecedented action to limit global greenhouse gas emissions beginning immediately. Building a new mega facility that will contribute enormous amounts of greenhouse gases to the atmosphere will further destabilize our climate.

Cyndra Norman

I stand in opposition to the KMMEF facility to produce methanol from natural gas. It is clear we need to reduce greenhouse emissions now in order to avoid further destabilizing our climate. Methanol is a known greenhouse gas. Please, for the sake of our grandchildren reconsider the building of KMMEF.

George Keefe

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Sincerely,
Mr. George Keefe
960 5th Ave S Edmonds, WA 98020-4037
georgewanc@gmail.com

Glen Anderson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

HAVEN'T YOU HEARD ABOUT THE CLIMATE CRISIS??????????????

Don't you know that WE MUST RAPIDLY TRANSITION AWAY FROM FOSSIL FUELS?

Don't you know that METHANE IS HORRIBLY WORSE THAN CARBON DIOXIDE as a greenhouse gas?

I AM APPALLED AND HORRIFIED THAT YOU HAVE NOT ALREADY PROHIBITED THIS EXTREMELY RECKLESS PROJECT!!!!!!!!!!!!!!!

I DEMAND THAT YOU DO YOUR JOB AND PROTECT OUR ECOLOGY from this horrible abuse!!!!!!!!!!!!!!!!!!!

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Sincerely,
Mr. Glen Anderson
5015 15th Ave SE Lacey, WA 98503-2723
glenanderson@integra.net

Dennis C

At best, this SSEIS assumes "business as usual" with zero success in mitigating GHG by replacing fossil fuel energy sources with sustainable energy sources. The Department of Ecology should be doing its best to protect air quality and the climate from polluters. I believe that this assessment is a travesty!

Julia Sokoloff

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

As a longtime resident of Washington, as a physician with a public health background and as a citizen of the world, I need to add my comments on the proposed Kalama Manufacturing and Marine Export Facility.

As a member of the Washington Academy of Family Physicians Public Health Committee, I am very concerned about the air and water discharges that would result from this refinery. The Columbia River Aquifer is very sensitive and could be irreparably damaged.

The proposed methanol refinery would lead to millions of tons of greenhouse gas pollution each year, and once built it could not be shut down for the life of the refinery, some 30-40 years. Ecology's own analysis shows that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.

In 2018 and 2019, NWIW informed potential investors that methanol from the planned refinery could be burned as fuel overseas, in sharp contrast to claims NWIW made to local and state regulators that the methanol would only be used to manufacture plastic. Now, Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year.

Washington State needs to take a stand and not make a commitment to the fossil fuel industry to allow the industry to use our land and our shoreline to ship methanol overseas under long term contracts.

The risk to our environment in Washington from potential leaks and discharge from the plant damaging our fragile Columbia River Shoreline is not acceptable. Ecology should deny the Shorelines permit for the refinery.

Why should Washington State take the risks to our environment and the health of our population for a small number of jobs, only to provide fuel for pollution in China and elsewhere. The voters of the state of Washington should say that we are not going to sacrifice our health and our environment to further the destruction of our planet. We are seeing the early effects of climate change now, and the effects will be exponentially worse in 10-20 years, but the plant once built will be irreversible.

Please let the voices of reason from the citizens of this state be heard before finalizing the Second Supplemental EIS.

Sincerely,

Julia Sokoloff, MD
Family Physician, Kaiser Permanente
WAFP Public Health Committee

Jean M. Avery

When I originally wrote this on September 15, I was sitting indoors for another day, because of hazardous air quality from the wildfires. I wondered if and when we would be able to enjoy the outdoors again in beautiful Washington state. I kept checking the air quality alerts on the Dept. of Ecology's website, with maps colored in red and purple.

While on the same website, I also saw an article about a past "Clean Air Month." This article had nostalgic overtones: reminders to reduce our vehicle emissions, ride a bike, not let our cars idle, take the bus, buy a ZEV. Then the article restated Ecology's mission "to protect and enhance the environment today and for future generations."

Under consideration now is a proposal from an international company to build a huge methanol refinery in Kalama and operate it for 40 years. According to an independent study by Sierra Club, the refinery would emit millions of tons of greenhouse gases per year, "equivalent to 2.4 million cars." The refinery would also consume "more fracked gas than the region's biggest cities combined," making it "Washington's largest climate polluter by 2025."

If one project can undermine Washington's efforts to keep our air clean, why should such a project even be considered? I fear that any approval of this project would also undermine Ecology's credibility to represent Washington as "a leader in responding to climate issues" (from "Clean Air Month" blog, May 26, 2018).

I urge the Dept. of Ecology to deny the permits for this project.

Bill Adams

This fossil fuel project should not go forward mainly for its dependence on mostly fracked natural gas. There's nothing remotely good about fracking. It's only purpose is to bring more fossil fuels into the world when the world's scientific community says we need less. Less so that we can transition to clean, renewable energy which does not pollute. This transition is not going to happen overnight but it has to happen if we are to have a planet that is safe and habitable. 97% of the world's scientific community are behind me in making this statement. This project with its voracious appetite for mostly fracked gas, a fossil fuel, will only slow the transition. Clean, renewable energy is inevitable. Why delay it with a project of this magnitude which would also be a major polluter? Please deny it. Thank you,

Bill Adams

Linda Leonard

Industry is a major contributor to climate change. The more fossil fuels are extracted and burnt, the more earth will be impacted for generations to come.

Scientists have long acknowledged the fingerprints of global warming with the massive wildfires in the West, the large recorded numbers of hurricanes in the oceans and the extreme weather conditions throughout the world.

The proposed methanol refinery in Kalama would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year.

Our climate future is at stake from this project. We will be handcuffed to this dirty fossil fuel infrastructure for the next 40 years.

It seems Kalama has everything to lose from this venture and Northwest Innovation Works' LLC, a new company backed by the Chinese government, will reap the rewards.

What a price the citizens of this area will pay! Please deny the shoreline permit.

Jean M. Avery

The NWIW refinery would be harmful to oceans and marine life -- both because of shipping and also because of the plastics produced.

SHIPPING
The marine route from Kalama to China is more than 5,000 nautical miles (p. C-13). Added into the Second SEIS is a stunning map of the route: literally from one end of the earth to the other (p. 48). Huge tankers would transit down the Columbia River -- across the dangerous Columbia River Bar -- three to six times per month. After unloading, the vessels would return empty. This 10,000-mile round trip would use marine fuel, which impacts water quality and marine life. There are also risks of spills. None of this would be mitigated, because the SSEIS clearly states that there will be no mitigation outside of Washington state.

PLASTICS
The Second SEIS states that the end uses of methanol would be 40% fuel and 60% olefins. Olefins can be used in plastics, resins, fibers, lubricants, and gels.

According to the Ocean Conservancy, plastics pollute oceans from the surface to the sea floor, affecting all forms of marine life -- from planktons to whales. Studies show that plastic has been found in sea turtles, sea birds, and even fish sampled from restaurants. In addition, there are harmful impacts to local economies if seafood or beaches are spoiled. The best solution is to prevent the plastic production at the source. Plastics are harmful to oceans, marine life, waterbirds, and beaches -- and yet, there is no planned mitigation by NWIW for such environmental damage.

GLOBAL IMPACTS CANNOT BE MITIGATED
In summary, the NWIW refinery could have widespread deleterious effects on oceans globally. If the Dept. of Ecology approves this project, might Washington inadvertently be harming oceans far beyond its borders? This is certainly not consistent with Ecology's stated mission. In fact, such a globally impactful project is likely beyond the purview of one state's Dept. of Ecology.

Please deny the permit for this project.

scott daly

I am a Kalama resident Opposed to the Methanol Plant in Kalama for the following reasons:

1. Health – Planned emissions may be below US environmental safety laws, but the overall history of medical science is that the acceptable levels of the past are found to be unacceptable as medical technology and diagnosis capability improves. Plus, there is always the concern of accidental releases.

2. Safety – Possible explosions due to gas leaks, as well as methanol production, such as has occurred in in Garland TX, 2012, and in Tianjin, China 2015 (killing 173). Proponents of the plant cite these explosions were caused by human error, but the Kalama plant will also be operated by humans, capable of new unforeseen errors. Plus, China's record on chemical factory explosions is poor. They haven't improved since the 2015 explosion, as there were explosions in 2018 in Hebei province (killing 23), and another in Sichuan this year (killing 19). While the US OSHA laws generally result in higher safety than China's, skirting of these laws by companies is not infrequent, often at the top-down directive of upper management and ownership (which will be Chinese for NWIW). Even in the EU, with very stringent safety regulations, there was a recent methanol plant explosion in Norway (Dec 19, 2018). Even if the explosion is contained within the site, which is an argument of the proponents, this area is heavily wooded and the region has been subject to extreme wildfires due to drier summers. Average wind speeds would be enough to cause a fire to spread into the nearby forests, then to the rural homes, and finally to the town of Kalama.

3. Impede new residential development and Aesthetics- Installing a >150' emission tower in a new part of town separated from the existing smaller emission towers will degrade visual environment, and likely start a new sprawl of such emissions towers. It will easily be visible from I-5, as well as many homes in the hills around Kalama river road, and to those on the north and west sides of Green mountain (While I live on the south side of Green Mountain, I do care about impact to my neighbors, and community). Kalama is poised to grow into a tourist and potential business office area, with its relative proximity to the PDX airport, and new attractions such as the McMenamin's Harbor Lodge, the scenic location, and recreational access to the Columbia river. There is a large subdivision being planned for Spencer Creek basin, and the flare stacks will be visible from that neighborhood, and impact the value of those homes, or hinder any interest. Let us continue to move in that direction of residential growth, business offices, tourism and entertainment, as opposed to a chemical factory that will pull us toward the past. Aesthetics are important and affects all local residents' home values.

4. Plastics - Right now in Cowlitz county, plastics recycling has failed, and there is continual evidence and reporting of increasing plastics' pollutions in our oceans, especially in the scientific press. We should not contribute to the plastics industry.

5. Financial – There is no clause in the contact for the factory owners to pay for the dismantling of the factory and tower if the economics don't work out. Given latest situation on tariffs between the Us and China, the financial viability of the plant is nowhere certain. If that happens, we will be left with a rusting eyesore, like are seen throughout the rust belt and creating disincentive for companies to locate offices there.

6. Scale of the factory – This is too huge for Kalama. the plant will consume more water than the entire city of Kalama, and more gas than the major NW cities combined, including Seattle, Portland, and Spokane.

7. Opening the door to further gas production facilities in Cowlitz and Clark counties- The inner mountain states like Utah, Wyoming, etc., do not have port access, and want to use our ports for closest access to the Asian market. Once this pipeline is increased, and branched off to this site, the door is open for many other similar plants as the volume of gas produced in those regions far exceeds their ability to economically transport it by other means (such as via the heavily polluted Gulf of Mexico region). We do not want to end up like that region, which is well known for extremely poor health, and threats to its fishing industry. We shouldnt be sacrificing our health, safety, and quality of life to the needs of the inner mountain states, who through their own poor planning, have economies that are overly dependent on resource extraction. I used to live in Utah and still have friends there, and they are frustrated at the amount of political power the energy extraction companies have over their lives.

Mike and Rita Mahaffa

Methane is in many respects a more dangerous planet killer. We strongly oppose increasing the potential proliferation of gas which will hasten making this planet uninhabitable. Classic short term benefit for a few in exchange for poisoning the earth.

Lisa Dennison

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We are called to be steward of God's creation- not pillagers of it.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Lisa Dennison
7500 11th Ave NW Seattle, WA 98117-4143
lisa2karl@aol.com

Ryan Schrader

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Kathy Wilmering

I appreciate that Ecology has consistently worked to keep pollution in our state to a minimum within the framework of legislative approval. I also appreciated that you insisted on a more extensive analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington. I urge you to reject permits for the project. I thought their argument that although the plant would increase global emissions, it would be less destructive than other fuels used overseas was very creative. However, given that China is rapidly moving to solar and other cleaner alternatives, their argument does not hold water. Plus their proposed mitigation plan for our state is vaguely written and is voluntary, which is a setup for foot-dragging.

As part of my comment, I want to include the information below in quotation marks. Although I did not write it, it represents my opinion much more clearly than I could write.

"This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change. "

Please rule to keep us on track to transition from fossil fuels. We have no more time to waste.

Linda Horst

I find it unsettling that even though Ecology found NWIW's 2018 mitigation proposal inadequate, this 2020 version has not been significantly improved. Misleading and concerning in its reliance on speculative and unenforceable assumptions, this Voluntary Mitigation Program (VMP) is really nothing more than a 'plan for a plan'. Pure flim-flam!

Mitigation is how rich fossil fuel companies buy their way out of the harm they cause! No mitigation will stop the pollution and environmental degradation inflicted upon Washington's current and future generations by this refinery.

Also disgusting, is the much hyped 'net green project' mantra. If this refinery is the environmental panacea NWIW claims it to be, why is every NW environmental organization opposed to it?

As a 30-year area resident and life-time Washingtonian, this refinery hits painfully close to home. If built, my family and hundreds of thousands of people like us will be forced to endure the myriad negative impacts of this dangerous, polluting behemoth for THE REST OF OUR LIVES!

As Governor Inslee said years ago, "We are the first generation to feel the impact of climate change and the last generation that can do something about it. Now is the time to act." Our Governor is right. Stop the madness. Deny the permit.

Elly Claus-McGahan

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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As you know we have a state goal of reducing emissions by 45% below 1990 levels by 2030. It makes no sense to then support a project that will make it even more of a challenge to meet this goal than it already is. Further we need to acknowledge that the world doesn't care where emissions take place, only that they did take place. That's enough to cause the enormous damages we now see from fires, storms, droughts, and freak winds to name only a few aspects. It is not cost effective to support a project like this given the growing tremendous costs we all have to pay to deal with the damages of climate change enhanced natural disasters, both in actual cash out lay and in human terms of things like loss of housing, food shortages and the like. With China also announcing its

desire to go carbon neutral, it's not wise for us to instead grow our emissions with plants like these.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Paul Sampson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Paul Sampson
8458 Tillicum Rd SW Seattle, WA 98136-2417
pdsampson@comcast.net

Elizabeth Hansen

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We cannot continue to desecrate our endangered planet by digging into its surface but must instead invest in energy sources above ground and in the skies above us.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
elizabeth - hansen
8831 42nd Ave SW Seattle, WA 98136-2520
emhansen74@gmail.com

Vicki Johnson

Washington state has already paid the price for "clean" energy when we allowed Hanford here. Fish populations up and down the Columbia have suffered greatly, some may never return to optimum populations ever again.
This Natural has plant is just another knife in the heart of our wild creatures and the environments that support them.
STAY OUT IF WASHINGTON

Don Steinke

Regarding Kalama Methanol. Please respond to these questions in your final SEIS.

1. Is this proposal consistent with the sense of urgency in the latest IPCC report?
2. Is this proposal consistent with the Paris Climate Accords which China signed?
3. Inslee's Clean Air Rule requires polluters like Kalama Methanol, and the paper mills in Longview, to reduce emissions 5% every three years. How will this project comply?
4. Will pipeline leaks be monitored and fixed promptly?
5. Exactly how will the company mitigate their emissions and will their plan mitigate the instate emissions the first year? It takes years before a planted tree is very effective in capturing CO2.
6. When given a range of impacts, why did you choose the least harmful option, instead of the worst-case scenario?
7. The models that EPA and others provide for estimating emissions are notorious for low-balling. In particular, I'm thinking of the fugitive emissions of methane and the emissions from flaring from the fracking fields, the pipeline gathering area, the compressor stations and the pipeline. How will you compensate for EPA's flawed models?
8. Are you using the 20-year or the 100-year global warming potential for fugitive methane? The next 20 years are the most critical. Why not use the 20-year global warming potential?
9. China has committed to electric buses and cars. The availability of cheap methanol for fuel could displace EVs. Include the emissions impact of that.

Gino Ceravolo

I don't understand how it can be said that adding fossil fuels into the economy will reduce greenhouse gases. Building a new facility with a 40 year life is dooming us with 4 decades of fracking wells polluting people's groundwater with undisclosed toxins, fracking wells actively leaking methane even after they are no longer in use, methane leaks along a pipeline that is laid across seized lands, CO2 release, massive amounts of our local energy being consumed for the profit of a foreign company, and then this methanol continuing to harm the atmosphere after it leaves the United States.

The Washington Department of Ecology is the last potential roadblock to this catastrophic project. How is it that well over 40 years after global warming was confirmed by scientists that our progressive state might allow a new fossil fuel facility on the shores of our Columbia River? My children look to you to give them hope that they are seen, that you understand the science and existential threat of the Climate Crisis, and that you will stand up for their future.

Thank you,
Gino Ceravolo

Don Steinke

Regarding Kalama Methanol

The business as usual market conditions you use if the Kalama methanol plant is NOT built does not include two mid-course corrections China has made on emissions policy, after the Kalama methanol plant was proposed.
In 2015 in Paris, China agreed to peak emissions by 2030, and then rapidly reduce emissions after that.
On Sept 22, 2020, at the United Nations, China promised to peak earlier than 2030 and be carbon neutral before 2060.
That means if the Kalama methanol plant is NOT built, policy makers in China will be reducing emissions wherever possible. They are not likely to consider single use plastic to be essential and thus not continue business as usual.
Mayors in China are required to reduce emissions and will be looking for ways to do that. (Source: The Question, by Daniel Yergin)
Eliminate or change the speculation about what would happen if Kalama methanol is NOT built.

Source:
https://gcaptain.com/china-pledges-to-be-carbon-neutral-by-2060/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:
Gcaptain (gCaptain.com)&goal=0_f50174ef03-c7996e9511-169978253&mc_cid=c7996e9511&mc_eid=033cdd1d41

Larry Horst

Northwest Innovations Works wants to put the health and safety of our community at risk so they can use massive amounts of fracked gas to make methanol that will be exported to China to be burned as fuel and used to make more plastic. I oppose this refinery because it is bad for Kalama, Washington state and the planet.

Kevin Walsh

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Paula Overholtzer

I'm a retired teacher, having taught 30 years in Clark County, and one year in Chongqing, China. Throughout China, the skies are
gray with Industrial Air Pollution. I know all about that!

Before becoming a science enhancement teacher for Battle Ground Public Schools, I had transformed my classroom into a Rain Forest, complete with water-misters, a water-fall, tropical plants, live reptiles and birds, plenty of posters, books, and films about wild-and-scenic places.....along with discussions about Ecology. Young students recited this "Earth Day" mantra: "Because the Earth is my home and needs my help to survive, I will try my best to respect the Earth at all times by conserving energy, recycling, and buying and using those products that are least harmful to the environment." Fracked Gas does indeed qualify as extremely harmful to the environment, along with pipelines, releasing greenhouse gases, fossil fuel spills and leaks, burning methanol as fuel in China, and the endless stream of single-use plastics.

Another consideration for me is the extreme amount of both Fracked Gas and Electricity to be used by this Methanol Refinery! It seems probable that the cost of these two commodities would go sky-high for Washington residents because we'd be competing with the Refinery for them! But many seem willing to squander away a peaceful, healthy existence for Peace River's Indigenous population; to allow transport of extracted gas through certain-to-leak pipelines passing through our state; to allow enormous amounts of Greenhouse Gas Emissions to pollute our state's air (and this planet-in-crisis); and then to voluntarily pay more (due to high demand) for the Natural Gas, Water, and Electricity that we need for our own current uses. It doesn't make any sense. And it doesn't make any sense that China would give up some of its coal-powered refineries just because, "Those people in Washington decided to allow the construction of the biggest fracked-gas-to-methanol refinery in the world!"

It is heart-breaking to realize that this proposed atrocity on the Mighty Columbia River is all about jobs, port rent receipts, tax revenue, high profits for a foreign developer, and, if truth-be-told, bribes behind-the-scenes. It cannot be worth it. We, as a human species need to act now to save our planet. Subsidized fossil fuel extraction and usage is devastating this world. Now's the time to make the switch to green, renewable energy. Our state is supposed to be all about that! Cowlitz County's citizens could be put to work building light-rail or a high-speed magnetic-levitation train along the I-5 corridor from Portland to Seattle, for instance! Good jobs!

At one rally I attended along the Kalama River, during which kayakers paddled past with signs that read NO FRACKED GAS..... and, by the way, two of my former students were among those activist kayakers!..... I was the person carrying the big sign that read, "Best Governor: Jay Inslee." It had been announced that Governor Inslee had come off-the-fence and proclaimed his disapproval of the Methanol Refinery. I supported him as the "presidential candidate with a strong environmental focus!!"

I hope that we can continue to count on our Governor, who claims concern for the Climate Crisis, along with Laura Watson and her Department of Ecology Team, to lead the way by rejecting another Fossil Fuel Disaster. Neither Indigenous Peoples of Canada nor citizens of Kalama wish to

reside in "sacrifice zones."

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

The concerns that I have is that there are two major deciding factors when it comes to tax revenues for the state and county coffers.

One of the major factors in deciding valuations of this refinery would be based on its capacity to generate income in the future. If this refinery sits idle like most of the methanol production was in America did only a decade ago, there would be significant disruptions in tax revenues. The methanol facilities were closed for years, and some just only recently started operating again.

The fossil fuels that methanol is made from would play a major part in the future of this refinery. Natural gas, oil, coal, and methanol market prices are all extremely volatile. Prices and the supply and demand for this product would fluctuate daily. The refinery would depend on almost all of these fuel types since Asia will buy methanol from the lowest producer, and they can source the methanol easily from any or all of these feedstocks.

There are other major factors that are not under our control are in Canada, where all of this natural gas is coming from including fracking regulations, tariffs, and other environmental concerns.

The second factor is based on the improved values of the property itself. It decreases substantially every year due to diminishing values.

We need to use this land for a project that produces more than 1.2 permanent jobs per acre after factoring in mitigation for this refinery. We also need to build the facilities here, not in another country, and assemble it when it arrives.

Cowlitz County leadership needs to stop hoping for a large, heavy industrial user or a massive fossil fuel company to save it. The Cowlitz County Economic Council needs to get businesses that would add a more secure economic engine to the county.

The day I knew that the county was in trouble was when the newsletter of a local business magazine said that Cowlitz County is looking forward to three things in the coming years.

1. The coal terminal.
2. The marijuana industry.
3. The methanol refinery.

If you went to any other city or county in the state and said that this is what the county is looking forward to, they would vote you out as fast as humanly possible.

Linda Wysong

Dear Department of Ecology,
Please do not allow the world's largest fracked gas-to-methanol refinery along the majestic Columbia River impacting Kalama and the whole region. If built, the proposed Kalama methanol plant would use staggering quantities of fracked gas, fresh water, and electricity to produce methanol for export to China.

The NW is burning, forests and homes are being destroyed and we can't breathe. Climate change is not some far off myth but our daily reality. I live just across the Columbia River In Oregon. This is impacts all of us.
For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. I am counting on you to do the right thing and stop this dirty, dangerous fossil fuel export project.
Linda Wysong

Lori McKenna

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Peter Fels

PETER FELS
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VANCOUVER WA 98663
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PLFELS@GMAIL.COM

September 25, 2020

Washington Department of Ecology
(submitted via on-line comment portal)

RE: Kalama Manufacturing and Marine Export Facility

Dear Ecology:

I oppose the permit application of NWIW for the KMMEF. You should deny the application.

I am an ordinary citizen with two children and two grandchildren and I am very concerned about the future of our earth's environment for their sake. I agree with the IPCC that it is crucial to take immediate steps to reduce GHG emissions. However, the KMMEF if built will greatly increase the total GHGs emitted in Washington (between 786,117 and 1,421,748 million tons annually, SSEIS p. 86), making it much more difficult for us to meet our state GHG reduction goals.

It is your obligation to review the proposed permit under SEPA to assure it meets state goals. The proponents claim they plan to fully mitigate their in-state GHG emissions using yet to be developed methods, but they have no existing method of doing so. Pursuant to RCW 43.21C.060, "(m)itigation measures shall be reasonable and capable of being accomplished." Even assuming the technology and availability of mitigation will exist, the overall increase in GHGs will make it more difficult for the state to meet its goals by removing potential mitigation reduction credits from the state market while still adding significantly (among the top 10 Washington emitters) to state GHG emissions and doing nothing to reduce total annual emissions.

You must evaluate a proposal under WAC 197-11-782 for how probable its outcome is Under WAC 197-11-794, an adverse effect may be considered significant even if its chance is not great but if the resulting impact would be severe. In this case, its proponents agree the likely GHG emissions from construction and continued operation of the KMMEF would be great and continue for approximately 40 years. Although the SSEIS argues on balance global GHGs would be reduced, the impact to Washington is so significant and the likelihood of full mitigation so unknown the permit should be denied.

Claims of global reduction of GHGs if KMMEF is built are speculative

The SSEIS states that all worldwide methanol demand will be met with or without KMMEF (SSEIS pp. 54 and 75). It further argues that under the most likely scenario, global emissions from methanol

production with KMMEF in place would be 55% less than without (SSEIS p. 76). However, because so many factors considered and conclusions stated by the SSEIS are either uncertain or unsupported, this conclusion fails to meet the definition of "probable" under WAC 197-11-782.

For example, the ESM assumes that methanol from Kalama will replace methanol produced by coal in China to varying degrees (SSEIS p. 52). However, the SSEIS also explains that KMMEF production will replace higher cost methanol in the market (SSEIS p. 52).
The SSEIS does not establish that coal-produced methanol is a higher cost product. It currently is the most profitable Chinese methanol (SSEIS p. 71). In fact, it seems likely that Chinese methanol produced from coal will continue to have a lower cost or be preferred by Chinese buyers due to political factors in the Chinese economy. Because the assumption that KMMEF methanol will replace methanol from Chinese coal is unsupported and contradicted by the evidence, the conclusion that KMMEF methanol will replace Chinese coal-produced methanol does not meet the probability test.

In addition, although the SSEIS states the market in 2019 was capable of producing approximately 50% more methanol than was used*, it also concludes that producers will continue to produce methanol, even at a loss, in order to benefit from expected future profits (SSEIS p. 68). If producers are willing to operate at a loss, they will sell their product at a lower price than KMMEF in order to assure future sales. In that case, KMMEF methanol will not replace other global sources.

Mitigation

KMMEF proposes to fully mitigate all in-state GHG emissions by designing a voluntary mitigation program. While its promises sound good, KMMEF cannot point to any existing method of mitigation nor does it specify exactly how it will be able to mitigate the huge negative environmental impact KMMEF will create on Washington's airshed. Whether it will actually be able to completely offset all GHGs for the full life of the plant and how it will do so remain completely speculative. KMMEF has not demonstrated its mitigation measures are capable of being accomplished as required by RCW 43.21C.060.

Furthermore, assuming mitigation measures such as carbon credits are available in the future, there may be a limited supply. The large amount of credits KMMEF will need will result in fewer credits available for other emitters, meaning there may simply not be enough mitigation measures in Washington to meet the overall need.

Finally, even assuming KMMEF is able to fully mitigate all of its annual emissions, doing so merely returns Washington to the current GHG count but does nothing to meet state goals for GHG reduction.

Conclusion

The SSEIS cites numerous other bases for uncertainty for its conclusions. See, e.g., SSEIS pp. 68, and 105. Under SEPA the outcome of an EIS must be probable. With so many uncertainties, the proponents cannot meet their burden.

Polluters often use the promise of future jobs as an excuse for their climate destroying operations. In this case, NWIW has continued to claim without credible factual support that not only will they

create jobs but they will magically reduce worldwide global GHG emissions by substituting "cleaner" methanol for "dirty" methanol. Ecology did not buy the promises made in NWIW's first and second EISes and it should not buy them now.

Washington citizens rely on the Department of Ecology to protect us and our environment from pollution, consistent with state laws. The future livability of our state and our climate depend on every jurisdiction doing its job to reduce global GHG emissions consistent with the IPCC findings.

For the sake of our children and grandchildren I hope you will deny this permit.

Thank you for your consideration,

/s/
Peter Fels

* At one place in the SSEIS global methanol production capacity is listed as 153 MMT (SSEIS p. 50) and at another place 157 MMT (SSEIS p. 68); while global use in 2019 was more than 98 MMT (SSEIS p. 50).

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September 26, 2020

Washington Department of Ecology
(submitted via on-line comment portal)

RE: Kalama Manufacturing and Marine Export Facility

Dear Ecology:

I oppose the permit application of NWIW for the KMMEF. You should deny the application.

I am an ordinary citizen with two children and two grandchildren and I am very concerned about the future of our earth's environment for their sake. I agree with the IPCC that it is crucial to take immediate steps to reduce GHG emissions. However, the KMMEF if built will greatly increase the total GHGs emitted in Washington (between 786,117 and 1,421,748 million tons annually, SSEIS p. 86), making it much more difficult for us to meet our state GHG reduction goals.

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Finally, even assuming KMMEF is able to fully mitigate all of its annual emissions, doing so merely returns Washington to the current GHG count but does nothing to meet state goals for GHG reduction.

Conclusion

The SSEIS cites numerous other bases for uncertainty for its conclusions. See, e.g., SSEIS pp. 68, and 105. Under SEPA the outcome of an EIS must be probable. With so many uncertainties, the proponents cannot meet their burden.

Polluters often use the promise of future jobs as an excuse for their climate destroying operations. In this case, NWIW has continued to claim without credible factual support that not only will they create jobs but they will magically reduce worldwide global GHG emissions by substituting "cleaner" methanol for "dirty" methanol. Ecology did not buy the promises made in NWIW's first and second EISes and it should not buy them now.

Washington citizens rely on the Department of Ecology to protect us and our environment from pollution, consistent with state laws. The future livability of our state and our climate depend on every jurisdiction doing its job to reduce global GHG emissions consistent with the IPCC findings.

For the sake of our children and grandchildren I hope you will deny this permit.

Thank you for your consideration,

/s/
Peter Fels

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Wayne Winther

I absolutely oppose building the world's largest methanol refinery here in Kalama. The climate crisis is getting worse every year. I don't see how anyone could be in favor of adding millions of tons of greenhouse gases to the atmosphere every year, not to mention the other pollutants this refinery would create. For the sake of all of us in Kalama, Washington, America, and the planet, do not allow this facility to be built. We all know the motivation for building the refinery is the greed of a limited number of people here and in China. It's time to be realistic about the climate crisis and put a stop to building monsters like the methanol refinery.

Don Steinke

Four questions
As I understand it, Kalama Methanol has no assurances of pipeline capacity. What will happen when demand exceeds capacity, which is likely when the temps drop below 40 degrees F?

Will the Jackson Prairie storage facility be used, and what will be the associated emissions from that?

Will a new pipeline be built, and what will be its associated emissions?
Until June of 2020, it was illegal to ship LNG by rail because it was too dangerous. But in June, the Trump administration approved LNG by rail.

It is now easier to put LNG on rail, than it is to get a building permit for a new commercial building with gas. For this reason, the Vancouver City Council has imposed a moratorium on all new bulk fossil fuel facilities.
What will be the ghg assessment for LNG by rail?

Jean Avery

The SSEIS clearly states that NWIW will provide no mitigation outside of Washington state. What about the 1400 miles of pipeline that will be constructed? The map on page 41 shows pipeline routes that would supply fracked gas to Kalama: 600 miles from British Columbia and 800 miles from Wyoming. How will pipeline construction impact land, water, agriculture, homes, and communities? Without any provision for mitigation, isn't this a giveaway of North American lands to a Chinese company?

With great humility, it is important to recognize that this entire project -- stretching across the northwestern U.S. and into Canada -- is on tribal lands. How will tribal communities be impacted? Have the tribes been consulted? Indigenous peoples have protected land and water for generations. Tribal "water protectors" continue to wage protests against usurpation of their tribal lands.

If the Dept.of Ecology approves this project, I fear that Ecology will be complicit in unmitigated and controversial construction outside its purview. If there are lawsuits, will the Dept. of Ecology have to expend scarce resources going to court?

For reasons of ethics, fairness, and land protections, the Dept. of Ecology should deny this project.

Jean Avery

During the recent hearings, there has been considerable discussion of the SSEIS and its statements and assumptions. I wish to point out three (3) items that I believe are false or misleading assumptions.

1. The SSEIS somehow assumes that Kalama is the best choice of a methanol supplier to China. However, the world map on page 48 shows other sources of methanol -- including two in SE Asia that are actually closer to China than Kalama (1,400 miles vs. 5,000 miles).

2. Recent news seems to undo NWIW's assumption that China will continue to prioritize coal for the next forty years. In a speech to the U.N. on September 23, 2020, President Xi announced that China would become carbon neutral by 2060. According to the Financial Times, "this could push coal demand in China close to zero." If China reduces coal consumption, then NWIW cannot assert that its methanol is less polluting than the (coal-based) alternative.

3. Some workers and unions welcome NWIW as a rare opportunity for jobs. However, clean-energy jobs are certain to increase in the coming years. Washington's own Governor Inslee paints an optimistic picture in his Freedom From Fossil Fuels Plan. He reminds us that increased investment in renewable energy will create more jobs, including skilled construction jobs. For Kalama and surroundings, this would be a BOTH-AND solution: clean-energy jobs AND pollution-free communities.

I urge the Dept. of Ecology to reject the NWIW project, which is risky and uncertain. Please take a longer view; a lot can change in forty years.

Mary Blumberg

How is a methanol plant in Kalama good for the environment? Will increased tanker traffic enhance the current salmon fishery? Will the light pollution from this plant interfere with migratory birds? Unfortunately salmon and birds don't pay taxes for the luxury of small town living, so they don't have a say.

This plant will do zero for the people who live in Kalama. As of now, extraneous light from the Port of Kalama interferes with enjoyment of a dark sky. There is also enough noise pollution in town from the current rail system and freeway. This plant will do nothing for the citizens of Washington.

China is allegedly our trade enemy, so why are we seating a plant on our fragile ecosystem? We know what environmental champions China is.

No doubt, this plant will be state of the art, blah, blah, blah until the unforseeable catastrophic event happens, then who is left holding the bag? At least we can be happy knowing that we helped create more wall to wall carpeting at the expense of our river and our children's futures.

Kirk Leonard

As a long time resident of Kalama, I am opposed to Northwest Innovation Works' building the world's largest fracked gas to methanol refinery.

This project would be a disaster for this community and for the environment. The refinery would consume 5 million gallons of water and 320 million cubic feet of gas each day, with 80% of the water lost as steam and diesel particulate, ammonia, carbon dioxide and nitrogen dioxide released into the air.

The SSEIS shows the facility would generate 4.6 million tons of carbon pollution each year, making this proposed project one of the largest sources of climate pollution in Washington State.

Speculating this project may displace other fossil fuels is not justification for the known pollution that will harm the citizens and climate.

Please do not approve this permit.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

According to the website -https://opencorporates.com/companies/us_wa/603366951, you can see how many Northwest Innovation Works LLCs there are. There has already been a long history of dissolving some of its companies at the drop of a hat, even with the Chinese government and other significant investors backing it.

Before the Department of Ecology makes recommendations on mitigations, there needs to be something more substantial in place than a signature by one person.

Here are all of the Northwest Innovation Works LLCs

Northwest Innovation Works LLC. Company number 97963194
Nov 25th, 2013 to present

Northwest Innovation Works LLC. Company number 603479637
Feb 19th, 2015 to present

Northwest Innovation Works LLC. Company number 97962691
Nov 25th, 2013 to present

Northwest Innovation Works LLC. Company number 603366498
Jan 14th, 2014 to present

Northwest Innovation Works LLC. Company number 603366951
Jan 15th, 2014, Administratively Dissolved.

Northwest Innovation Works LLC. Company number 603366954
Jan 15th, 2014 Voluntarily Dissolved

Marion Ward

The most important crisis facing our planet is climate change caused by carbon pollution. It is imperative that carbon-producing sources be phased out throughout the world. The Kalama gas-to-methanol project would "phase-in" a huge carbon producing source. Fracking at the source produces methane, the refinery would produce millions of tons of carbon every year, and burning it overseas releases even more carbon. What happens one place effects the whole planetary system. Nothing happens in isolation. For the sake of my children and grandchildren, I implore you to deny the permit for Northwest Innovation Works.

Laurie Solomon

My name is Laurie Solomon. I have been going camping and fishing since I was old enough to walk and talk. I have been an acupuncturist in Clark County since 2001. I have never gone to China; I realized in the 90's that colleagues who go there for Chinese herbs, or to study with acupuncturists there, usually have upper respiratory tract problems for at least a month after they return. As a former cigarette smoker, I have never considered visiting the country where my career ostensibly originated; Throughout China, the skies are gray with Industrial Air Pollution, with Beijing reportedly filled with pay-phone like stations for people to get a few minutes of Oxygen in these booths, after depositing a few coins.

It is not a surprise that companies supported by the Chinese companies, are spending so much to convince citizens and regulators in this country to continue to supply their country with Fracked Gas. Fracked Gas is extremely harmful to the environment, along with pipelines, releasing greenhouse gases, fossil fuel spills and leaks, burning methanol as fuel in China, and the endless stream of single-use plastics.

Another consideration for me is the extreme amount of both Fracked Gas and Electricity predicted to be used by this Methanol Refinery! It seems obvious that the cost of these two commodities would go sky-high for Washington residents because we'd be competing with the Refinery for them! But many seem willing to destroy our peaceful, healthy environment, where fishing has already become less productive due to climate change, to allow transport of extracted gas through certain-to-leak pipelines passing through our state; to allow enormous amounts of Greenhouse Gas Emissions to pollute our state's air; and then to voluntarily pay more (due to high demand) for the Natural Gas, Water, and Electricity that we currently pay relatively little to use. It doesn't make any sense. And it seems very unlikely that China would give up some of its coal-powered refineries just because we in Washington decide to allow the construction of the biggest fracked-gas-to-methanol refinery in the world. There are currently wind-generating machines sitting unused in China because the conversion from coal to wind-power is too difficult for each municipality to justify building.

It is heart-breaking to realize that this proposed atrocity on the Mighty Columbia River is all about jobs, port rent receipts, tax revenue, high profits for a foreign developer, and, if truth-be-told, bribes behind-the-scenes. This is not the long-term vision needed for future generations. We, as a human species need to act now to save our planet. Subsidized fossil fuel extraction and usage is devastating this world. Now's the time to make the switch to green, renewable energy. Our state is supposed to be all about that! Cowlitz County's citizens could be put to work building light-rail or a high-speed magnetic-levitation train along the I-5 corridor from Portland to Seattle, for instance! Retraining to build solar power and use the existing pipelines to transport water are other examples of good jobs!

I hope that we can continue to count on Governor Inslee, who claims concern for the Climate Crisis, along with Laura Watson and her Department of Ecology Team, to lead the way by rejecting another Fossil Fuel Disaster. Neither Indigenous Peoples of Canada nor citizens of Kalama should be expected reside in "sacrifice zones."

Thank you for your consideration of my comment.

The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years. Ecology should deny the Shorelines permit for the refinery.

The SEIS relies on a flawed, speculative analysis to argue that methanol could “displace” dirtier energy.

Burning methanol as fuel would generate millions of tons of pollution each year.

Ecology’s analysis should focus squarely on the significant pollution impact of the proposed refinery, which is profoundly inconsistent with a low-carbon future.

Burning methanol as fuel would generate millions of tons of pollution each year.

Ecology’s analysis should focus squarely on the significant pollution impact of the proposed refinery, which is profoundly inconsistent with a low-carbon future.

Washington cannot contribute to the goal of keeping global warming “well below 2 degrees Celsius” by allowing major polluters to move forward. A low-carbon future demands investment in lower-emitting production processes.

Ecology should not assume that future energy needs must be met by fossil fuels.

The SEIS provides little detail on the actual mitigation that would be accomplished as part of the “voluntary” mitigation framework. The mitigation framework is too vague for Ecology to conclude that the project’s impacts can and will be mitigated.

Ecology should be requiring mitigation of the full impact of the Kalama refinery.

The SEIS continues to use low estimates of methane leakage.

The SEIS continues to rely on a narrow set of “bottom-up” estimates for its methane leakage estimates. The SEIS should instead evaluate methane leakage rates based on “top-down” observations.

The SEIS makes unreasonable assumptions about the potential source of fracked gas and its impacts.

The analysis fails to NWIW spent five years attempting to mislead Washington account for the long-term impact of plastics.

Derya Ruggles

With all due respect, I am astonished we are even considering this dangerous, damaging and antithetical to all reason and science proposal!
The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years.
Ecology should deny the Shorelines permit for the refinery.
It's Time to Pursue a Truly Low-Carbon Future. Please do not put profits over people and sell-out our healthy future. How much more science and protestation from the people do we need to wake up? Deny this monster before it becomes a nightmare we all cannot wake from. Thank you so much. Sincerely, Derya Ruggles, very concerned community member

I have grave concerns about the proposed Kalama Manufacturing and Marine Export Facility. At a time when we are experiencing the harmful effects of climate change it is imperative that we support facilities that promote a healthier environment instead of degrading it. Greenhouse gas emissions from the pipeline bringing in the natural gas, the production and storage of the methanol and the end product of plastic ingredients all are detrimental to the environment and climate.

Washington state should be a leader in supporting projects that are beneficial to climate change and our health not destructive ones. For the health of our citizens and our world I urge you not to approve building this facility at Kalama or anywhere else.

Sincerely,

Marian Hayes

Denise Lytle

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Diane Dick

2020 09 27 Comment #4

Washington State Department of Ecology
Olympia, Washington

Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.

Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.

From information in the air discharge permit this refinery has the capacity to emit over 1 million metric tons of GHGs every year just on the process site.

While this is the least amount of GHGs the refinery will emit, can even 1 million metric tons be mitigated?

NWIW states they will mitigate all in-state emissions. Priority will be given to projects in Cowlitz County. PLEASE - require specific examples of mitigation projects and their verifiable ability to remove greenhouse gases from the atmosphere.

The only viable way to remove CO2 from the atmosphere that I am aware of is by growing trees or crops. According to the EPA greenhouse gas calculator it would take 1,306,000 acres of average forest land to remove 1 million tons of GHG in a year.

Cowlitz may be a large county but it only comprises about 746,000 acres. There is no way on God's green earth NWIW will be able to mitigate a fraction of its total emissions in projects in Cowlitz County or all of Southwest Washington.

Demand accountability for a realistic mitigation plan now because you surely will not get voluntary compliance later. Do not let NWIW be one more company that tries to buy its way out of fouling our environment and turns up the heat on climate change.

Deny shoreline permits for NWIW.

Thank you.

Diane L. Dick
Longview, WA

Jovohn Hornbuckle

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Miriam Margulies

The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years. Ecology should deny the Shorelines permit for the refinery. Ecology's analysis demonstrated that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.

The SEIS relies on a flawed, speculative analysis to argue that methanol could "displace" dirtier energy. The SEIS speculates on how methanol may compare with future, unsure, alternate sources of pollution in overseas markets. The SEIS makes a false and erroneous comparison with potential future other sources of methanol or olefin production. Rather than engaging in this speculation, Ecology should focus on the real-world, known pollution that will come from the facility rather than NWIW's dubious "displacement" argument.

Burning methanol as fuel would generate millions of tons of pollution each year. In 2018 and 2019, NWIW informed potential investors that methanol from the planned refinery could be burned as fuel overseas, in sharp contrast to claims NWIW made to local and state regulators that the methanol would only be used to manufacture plastic. Now, Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate 5 million tons of pollution each year.

The Proposed Facility would be devastating to public health

1. Fracking pollutes water systems, and causes physical harm from earthquakes and the devastation of surrounding habitat.
2. The pipeline required to transport fracked gas has a high risk potential for leakage and spills, releasing harmful chemicals into ground and surface water.
3. On-site operation of the facility would pollute the Columbia River and its tributaries with harmful runoff, and contribute to reduced air quality leading to increase instance of asthma and other respiratory illness.

We are in the midst of a global climate crisis, and it is time to stop all fossil fuel expansion.

Comments on the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS
from Linda Craig
2433 NW Quimby St.
Portland, OR 97210

The conclusion of the SSEIS that the project would not result in significant adverse impacts to GHG emissions or climate change is deeply flawed. The conclusion is reached not because operations of the plant will not result in significant GHG emissions, but because the plant will displace other, dirtier sources of GHG in the future. The reasoning is faulty.

I speak from experience. In the 1970's, I worked for the Pacific Northwest Regional Commission which was a federal/state partnership to fund economic development in the region. At the request of the utilities, we commissioned a study by a notable team of expert economists to look at the need for electrical power in the future. They found, based on their well-reviewed economic modeling, that the region's need for power would double every 10 years. Five new nuclear power plants were planned to meet the anticipated demand. Construction began. The modeling was seriously wrong. It did not anticipate that energy conservation would be a much less expensive source of power. Growth in electrical demand was not even close to what was modeled. The project resulted in the **largest municipal bond default** in history. It cost ratepayers thousands of dollars and 75,000 bondholders lost money. This is the story of the Washington Public Power Supply System (WPPSS, pronounced Whoops!, https://www.historylink.org/File/5482).

This EIS finds that the project will not result in adverse impacts because it will displace dirtier sources for olefins. This is another Whoops!, a conclusion drawn from economic modeling based on assumptions that could be grossly wrong. The economic models resulting in this conclusion make projections based on today's assumptions without anticipating changes that are bound to happen as new technology is developed and new public policy is set.

We don't know enough to know what GHGs, if any, will be displaced by this project. The adverse impact of this project and its GHG emissions must be based on the project's operations alone, not on what it might hypothetically displace.

I will leave it to people with more expertise than I have to comment on whether the direct emissions from this project are fairly measured. The FEIS says that they will be substantial. We who live in the PNW, having just lived through the worst air quality in the world due to fires, which are partially due to climate change, should not build giant projects which will damage the region and the planet for the next 40 years.

I urge you to choose the No Action alternative.

Emanuel Jacobowitz

As a Washington resident and a member of the Faith Action Network and Plant for the Planet, I write to urge the Department not to approve the proposed methanol refinery in Kalama. The Department's SSEIS indicates that Northwest Innnovation Works promises to mitigate the significant in-state carbon emissions associated with the facility. Respectfully, such promises are far more often made than delivered, and once begun, a project like this becomes politically far harder to end even if conditions are not fulfilled.

Furthermore, mitigating in-state impact is simply not good enough. The Department must be aware of the strong, nigh-universal consensus among climate scientists that the world is teetering on a precipice caused by too much carbon dioxide and methane emission. Washington has a responsibility to--at the very least--not add to the problem. We are supposedly a climate leader. Time to live up to that image.

Similarly, the promise that the refined methanol will not be used as fuel, only in plastics production, is ludicrous. Northwest Innovation cannot possibly guarantee that, nor can Washington enforce it.

Lastly, the SSEIS offers the tired old excuse: "if we didn't do it then someone else would," and maybe that person would do it worse. We cannot predict what some hypothetical other person might do. We can, however, control what we ourselves do. We should avoid doing harm. Furthermore, the argument is, bluntly, stupid. Filling a demand does not sate demand. It enhances demand. If we supply more methanol, that will simply lead to increased investment in and reliance upon methanol products, leading to more methanol production elsewhere, by those same hypothetically less careful producers.

Please stop this dangerous project.

Thomas Gordon

2060 is when Xi wants China to be carbon neutral 40 years from now which is the supposed life-time of the Kalama methanol plant.

Meanwhile, NWIW is trying to get the U.S. to loan $2 billion dollars to build this refinery.

So in 2060, does China shut the plant down and say goodbye? Leaving us the clean-up, useless equipment, depleted resources, a lot of polluted land, and haze in the air? And debt.

Please do not issue permits for this monstrosity for all except NWIW and China.

Thank you.

gunnar sievert

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Patricia Warden

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David Malcolm

I oppose the Kalama methanol project mainly because the natural gas used comes from fracking which is a highly polluting and dangerous process.

Tracy Cole

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9/28/2020

SUBJECT: Review of the KMMEF SSEIS

My name is Mark Uhart and my wife and I live near Kalama. I certainly hope Ecology will read all the written comments, and scrutinize the information in this SSEIS. I read the SSEIS and there are so many bad assumptions, poor application of technical information, and a covert attempt to under report upstream, operational and downstream emissions. I documented my review and I am submitting multiple comments, referencing all my sources.

1. The SSEIS refers to the research by Yu Gan, et al (2020), as referenced in Section 3.4.4.2.1 of the SSEIS (China-based natural gas to methanol),"… the average GHG intensity of the Chinese domestic natural gas supplies is 15.5 grams CO_2eq per megajoule (g CO_2eq/MJ) for conventional methods and 21.5 g CO_2eq/MJ for unconventional methods." It goes on to state, "the average GHG intensity for these supplies is 35.9 g CO_2e/MJ for international pipelines," which is a primary source for Chinese natural gas from Russia. Furthermore, the SSEIS goes on to state that based on the Gan study, both domestic and imported sources of China based natural gas have a higher GHG intensity than US-based sources, which average 12.1 g CO2e/MJ (Table B.5, Appendix B, First SEIS.)

   The Gan study states that the GHG intensities of the 104 shale gas fields, identified in his research, show the range is from 6.2 to 43.3 g/CO_2eq/MJ^{-1}. Due to increasing shares of GHG-intensive supplies from Russia, Central Asia, and domestic shale gas fields, the supply-energy-weighted average GHG intensity of China natural gas is projected to increase from 21.7 in 2016 to 23.3 g CO_2eq/MJ^{-1} in 2030. Unconventional/natural gas has a higher supply-energy-weighted average GHG intensity of 21.4 g CO_2eq MJ^{-1}, primarily driven by extraction-associated emissions. The average extraction-associated GHG emissions of China shale gas was estimated at 19.1 g/CO_2eq/MJ^{-1}. Gas extraction accounts for upward of 60% of the total GHG intensity of the supply chain. Figure Fig. 4, Well-to-city-gate GHG intensity supply curve of natural gas for China in 2030, in the Gan paper, illustrates extraction accounts for around 75%, with processing from 5-10% and transmission 5-15% (Gan et al.)

   With all types of GHGs (i.e., CO_2, CH_4, N_2O) converted to GWP_{100}, methane leakages constitute approximately 50–70% of extraction-associated emissions for tight and shale gas. Because methane GWP_{20} is ~3 times the GWP_{100} the extraction-associated GHG emissions of unconventional gas increase significantly for GWP_{20} compared to GWP_{100}. I know the SSEIS uses the AR4 GWP_{100} calculations in Table

3.5-12 Upstream Emissions from Natural Gas because that is the WAC 173-441-120. The RCW will likely be updated to AR-5 and the GWP_{20} factor foe Methane will be used, thus vastly increasing the GHGs to be reported.

Furthermore, the SSEIS only mitigates GHG emissions within Washington State. This approach doesn't account for the global warming potential of methane over the next 20 years from "well to wheel," a standard more countries are using. Certainly within the 40-year life span of this project Washington's RCWs will change to move more in line other states like California, which includes methane emissions from extraction, processing, storage and transport as well as all the GHGs resulting from the methane being consumes as a fuel, the well-to-wheel approach. Methane leakage during transport over approximately 1,500 miles of pipeline from Ft. St. John to Sumas, to Kalama, should be attributed to this project. GHG emissions from transmission increase as the length of the pipeline delivering the natural gas increases (Gan, et al. 2020.) Was the length of the pipeline delivering natural gas from the fields on BC to the lateral pipeline included in the lifecycle analysis? Although it is stated that the GHG emissions from transmission of natural gas from BC to the lateral pipeline would be included, this was not stated in subsequent Table 3.5-14, whereas upstream GHGs were only calculated for the in-state transmission of the natural gas.

A high proportion of impurities in raw gas (e.g., CO_2, H_2S.) would necessitate intensive energy consumption for gas processing. The CO_2 content, which itself is a GHG, is vented after separation and further increases emissions (Gan et.al. 2020.) Other factors influencing extraction-associated emissions include the estimated ultimate recovery rate (EUR) per well, which is unknown for the BC-sourced natural gas. The supply-energy-weighted average GHG intensity of 2030 is projected to be 23.3 g CO_2eq MJ^{-1}. Johnson Matthey, the supplier of the ULE/GHR + ATR process, discussed later, estimates that a minimum level import of electricity, and a North American Mix, would result in 33.6 g CO_2eq MJ^{-1} for the ULE/GHR + ATR process, much higher than NWIW's estimate.

2. The SSEIS states, "Thus, based on this study, both domestic and imported sources of China based natural gas have a higher GHG intensity than US-based sources, which average 12.1 g CO_2e/MJ (Table B.5, Appendix B, First SEIS). The problem with this statement is that it refers to Table B.5 in the First SEIS, which was (1) based on the GREET_2017 model, (2) assumed the AR4 100-year global warming potential (GWP) vs. 20-year, and (3) didn't include transmission leakage estimates along the 1,500 plus mile

pipeline from Ft. St. John, BC, to the BC-US border at Suma, WA, and on to Kalama, WA.

3. Section 3.4.4.2.2.1 states, "Due to the high uncertainty, the evaluation of upstream GHG emissions for non-KMMEF importers of methanol assumes that their upstream emission is equivalent to the upstream KMMEF emissions on a per MT of methanol produced basis." This is a bad assumption and contradicts other information in the SSEIS. Yu Gan stated that was why he researched the "Carbon Footprint of Natural Gas Supplies to China (Gan et al. 2020,) to determine the GHG emission intensities of various Asian feedstock inventories supplying China.

4. In Section 3.4.4.2.2.3 Direct Emissions, it is stated the Ultra-Low Emissions (ULE) process will be used instead of the EPA-PSD-permitted combined reforming (CR) process. The actual emissions from the ULE process are unknown. The term "Ultra-Low Emissions (ULE)" is not used in any EPA permits for the use of this technology in the US. The ULE proposed by NWIW uses gas-heated reforming (GHR) + autothermal reforming (ATR), as described by Johnson Matthey (JM). Johnson Matthey's reforming technology is currently being used in Coogee Energy Pty. Ltd.'s small (50,000 mt/yr)gas-to-methanol plant in Laverton, Australia. It was built by BHP Petroleum in 1994. (Methanex, Canadian-owned methanol supplier, is building a GHR + ATR methanol plant in Louisiana.) Has NWIW completed an application for a Prevention of Significant Deterioration (PSD) Permit for GHG emissions to the EPA for the ULE process? What devices or equipment are subject to this PSD GHG permit (reformers, combustion units, boilers, catalytic reduction systems, regeneration heaters, treaters, flares, fugitives processors, pumps, cooling towers, etc.) What are the risks in approving ULE for this project without an approved PSD permit? What if NWIW, or its successor, decides to change to the CR process if the price of electricity makes ULE no longer cost-effective?

5. In Section 3.4.4.2.2.3 Direct Emissions, it is stated, "as described in Appendix B of the First SEIS, it is assumed that the ULE technology provides a 38% reduction in CO_2e emissions relative to combined reforming (process.) However, this author found an article from Oil and Gas Industry News, March 30, 2016 by Marshall Frank (writes for the Methanol Institute), that ULE technology requires additional on-site electric power generation to satisfy the overall energy requirements of the methanol plant. Adding the emissions from the required electric generation facility to its process emissions, ULE still offers a 31.4% reduction in total

emissions. Unless the author of the SSEIS can validate the 38% figure then the lower figure, 31.4%, should be applied.

Based on Johnson Matthey Technical Review 61 (Alan Ingram, 2017), which is attached to the end of these comments, the amount of GHGs, expressed as gCO_{2e} MJ^{-1} methanol, is actually greater for GHR + ATR unless a maximum electrical import is used. If a maximum electrical import is used the difference is only about 12%. The only way this plant will see the efficiency stated in the FSEIS would be if they were using maximum electrical import and the electricity is from renewable resources. Ecology should check the data presented in Section 3.5.3.7. of the SSEIS against this JM Technical Review.

6. Section 3.4.5 Economic Analysis, the framework of the analysis was based on: a market analysis if the methanol was used as a fuel; how assumptions about the sources of methanol used influence the emissions analysis; and if the analysis of global GHG emissions can be more flexible based on a wider range of assumptions?

7. The SSEIS still fails to address the potential negative economic impacts from a "business as usual" approach to climate change. Without 100% sequestration of the GHGs for which this project will be responsible, it will contribute to the GHGs that affect climate change. What will be the economic impact to the state of Washington for the following:
   - Fighting wildfires?
     What will be the firefighting and disaster relief costs to the state and those affected by the fires?
   - Lost timber harvests as a result of wildfires?
     How many logging truck drivers, lumber mill and lumber exporting employees will lose their jobs?
   - Decreasing timber harvests as a result of hotter and drier weather?
     How will the lower timber yields affect jobs and revenue from state lands?
   - Loss of commercial fishing revenue, directly and indirectly, as a result of decreasing salmon, steelhead and shellfish harvests?
     How will this affect the fisherman, the processors, resellers, merchants, and state tax revenue?
   - State and Federal disaster monies committed due to extreme weather events and fishery disasters?
     How will this affect the state budget? Higher taxes?
   - Repairs to public roads and utilities as a result of extreme weather events?
     How will this affect our state budget?

Higher taxes?

- Loss of productivity from extreme weather events?
  Why wasn't there an attempt to quantify these costs?
- Effects on human health?
  What are the costs associated with extreme weather events and more air and water pollution.
- Increased healthcare costs?
  Who will bear the healthcare costs from the additional PM2.5 in the air?

8. In Section 3.5.3.1 the SSEIS states, "The ESM recognizes that limitations likely will be placed on coal-based methanol expansion in China in the future. Over time, the ESM predicts an increase in natural gas-based imports to fulfill the methanol demand in China under the alternate cases. This is why the average annual emission values are lower than the initial year values (2020), because over time substitution for coal is slowly reduced, and RC emissions decline." This statement discounts the projected growth in the methanol industry. (See Figure 3.5-8 and Section 3.4.5.3, where it states, "The methanol market is forecast to continue growing, having experienced an average annual growth rate of 4.5 percent per year between 2015 and 2020,… according to the methanol institute.) RC emissions will not decline, they will continue to go up as more methanol plants come online, as projected in this SSEIS.

   This author disagrees with some of the assumptions presented in Section 3.5.3.1. For example: "60 percent of the methanol produced by KMMEF is assumed to be used for olefin production, and 40 percent is assumed to be used for fuel production." The demand for methanol as a fuel is likely to be more because the production of olephin from conventional gas is a less expensive pathway. China's growing fleet of commuter vehicles and methanol-powered ships indicate it is more likely than not that methanol will be used as a fuel.

9. The assumption developed in Section 3.4.5.2, and illustrated in Table 3.4-3, Source Definition Under Three Alternate Cases, are questionable. As shown in the table presented by Yu Gan (2020), on the next page, imports from natural gas pipelines outside of China will increase. The new pipeline from Russia will deliver 12.6% of energy supply by 2030. This author questions the statement, "The RC/best estimate was designed to illustrate the most likely outcome, wherein 60 percent of the production that would come from the KMMEF would potentially be replaced by production from coal-based methanol in China (CCM), 10 percent would be from

natural gas-based methanol from China (CNGM), and 30 percent would come from imports." Based on Gan's research, and the fact that China's growing need for electricity cannot be met with only natural gas and renewable energy, the coal-fired plants will continue to operate. In fact, China continues to build more coal-fired plants based on their 14th 5-year plan (2021-2025.)

Category	Country	Gas fields[a]	% of supply energy[b]		
			2016	2020	2030
Domestic conventional	China	Shuangyushi & Jiulongshan (1), Chunxiao (2), Liwan & Liuhua (3), Anyue-longwangmiao (4), Datianchi (5), Panyu & Huizhou (6), Wolonghe (7), Mahe (8), Kelameili (9), Qingshen (10), Zhongba (11), Sebei (12), Tainan (13), Kekeya (14), Dongping (15), Luojiazhuai (16), Lingshui (17), Donohue (18), Longgang (19), Tieshanpo (20), Bozhong (21), Ya (22), Hetianhe (23), Wenchang (24), Yuanba (25), Puguang (26), Dina2(27), Kela (28), Yingmai7 (29), Tahe (30), Tazhong (31), Ledong (32), Changling & Songnan (33), Dongfang (34)	32.6	30.3	20.9
Domestic unconventional	China	Juggar CBM (35), Qingshui CBM (36), Bishuixing CBM (37), Ordos CBM (38), Qiongxi (39), Sulige (40), Guangan (41), Yingtai (42), Hechuan (43), Yulin (44), Zhaotong (45), Daniudi (46), Bajiaochang (47), Changning & Weiyuan (48), Wushenqi (49), Jingbian (50), Yanchang (51), Mizhi (52), Zizhou (53), Shenmu (54), Xinchang (55), Luodai (56), Fuling (57), Dabei (58), Keshen (59)	29.0	28.2	28.6
International pipeline	Myanmar	Shwe (60)	1.9	1.2	1.9
	Russia	Chayandinskoye (61), Kovyktinskoye (62), Urengoi (63), Nadym (64)	—[c]	5.6	12.6
	Uzbekistan	Karakul (65)	2.0	1.5	0.9
	Turkmenistan	Bagtiyarlyk (66), Galkynysh (67)	14.0	8.8	12.0
Overseas LNG	Qatar	Qatargas North Field (68)	3.2	3.4	2.1
	Oman	Khazzan (69), PDO block 6 (Saih Nihayda, Saih Rawl & Barik, 77)	0.1	0.06	0.04
	Russia	South Tambey (70)	—[c]	1.2	0.8
	Australia	Jansz-Io (71), APLNG fields (72)[d], QCLNG fields (76)[e], Gorgon (89)	7.5	8.8	5.6
	Papua New Guinea	Hides (73), Angore (74), Juha (75)	1.4	1.1	0.7
	Nigeria	Niger Delta (78)	0.2	0.1	0.07
	Trinidad&Tobago	Amherstia (79)	0.1	0.06	0.04
	Indonesia	Tangguh (80)	2.2	1.3	0.9
	Norway	Snohvit (81)	0.1	0.09	0.06
	Malaysia	Central Luconia (82)	1.9	1.2	0.7
	United States	Gulf of Mexico-offshore (83), Gulf Coast-conventional (84), Central-CBM (85), TX-LA-MS Salt-conventional (86), Central-conventional (87), Gulf Coast-tight (88), Illinois-conventional (90), North Central-conventional (91), Appalachian-conventional (92), Central-tight (93), TX-LA-MS Salt-tight (94), Appalachian-CBM (95), Fort Worth-shale (96), Central-shale (97), Appalachian-tight (98), Illinois-shale (99), Illinois-tight (100), Appalachian-shale (101), West Texas-shale (102), North Central-tight (103), North Central-shale (104)	0.2	1.5	1.4
Total			96.3	94.5	89.4

[a]Numbers in parentheses correspond to the gas field numbers in Fig. 1. [b]Detailed shares of supply from individual gas fields and data sources are presented in Supplementary Data 1. [c]— means no gas supply to China for the gas fields in 2016, and the fields are expected to start gas delivery later than 2016. [d]APLNG fields are gas fields of the Australia Pacific LNG project, which include fields of Spring Gully, Talinga, Combabula, Condabri, Peat, Orana, Reedy Creek, Jordan, Ruby Jo, Kenya, Bellevue, Fairview, Arcadia, Roma East, and Ironbark in the Surat and Bowen basin of Queensland Australia. [e]QCLNG fields are gas fields of the Queensland Curis LNG project, which include fields of Bellevue, Berwyndale, Charlie, Jordan, Kenya, Ruby Jo, and Woleebee Creek.

10. At the end of Section 3.4.5. it the SSEIS states, "Because methanol will increasingly replace higher-emission transportation fuels such as gasoline and bunker fuel for ships, it is likely that the increases in methanol production through time will also result in lower global emissions when compared with a future scenario that excludes methanol-based fuels." This might be true if the world population doesn't increase, but we know it will, thus driving the need to consume fossil fuels. It is more likely than not that there will be increased demand for all fossil fuel energy feed stocks.

- "Low natural gas prices are presumed to persist in North America." What does "persist" mean? I agree that a price will a price, any price, will persist. But if this means the "low" natural gas pricing will persist then I don't agree. The higher demand for natural gas in SW Washington, as a result of the new KMMEF, could increase natural gas prices. What is the capacity of the Williams pipeline and how will it factor into the cost?
- "Oil prices are assumed to remain stable at present levels – about $40/barrel." Again, this might be a good assumption for the short-term, but prices will rise when demand goes back up and the supply goes down.
- "The upstream methane emission rate is 0.97 percent for KMMEF." This is shown in Table 3.4-1b for the "Medium" scenario. The SEIS also states in footnote 3. of Table 3.5-14, "Upstream natural gas emissions in Washington State calculated by multiplying the transmission emissions from GHGenius or GREET (depending on scenario) by the fraction of the total pipeline miles from the natural gas source region that are within Washington State.
  The 0.97 percent is very low based on this author's research (Atherton, Risk et al. 2017, Zavala-Araiza, et al. 2018, Alvarez , et al. 2018, Howarth, 2019, Burnham 2019, and Gan, et al. 2020.) After reviewing the GREET 2019 table, this author believes the "Upper" scenario is the best for this facility based on the operating conditions and the author's review of many studies on upstream fugitive methane (production, processing, and distribution). The leakage rate should be between 2.5% and 3.1% of the amount of natural gas consumed. As part of that the leakage rate during transmission must include transportation from processing facilities in BC at Ft. St. John, to the BC-WA border at Sumas, to the KMMEF lateral pipeline, not just "within Washington State." This is approximately 1,500 pipeline miles.

11. The "Net Emissions" for the KMMEF shown in Table 3.5-10, and discussed in Section 3.5.3, should not be considered in the decision on the shoreline permit. It is not relevant as it is based solely on the displacement theory, and the assumption that most of the methanol will be used for the production of olefins, which is unlikely, cannot be assured and validated throughout the 40-year life of this project.

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Reducing the Carbon Intensity of Methanol for Use as a Transport Fuel

Impact of technology choice on greenhouse gas emissions when producing methanol from natural gas

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Methanol is increasingly being looked at as a way to reduce the emissions potential of transport fuel. It may be used in place or in addition to gasoline fuel, for example. The amount of greenhouse gas (GHG) emitted in producing methanol can vary hugely according to the syngas generation technology selected and the choice of electrical or steam turbine drive for compressors and pumps. This paper looks at the impact of these technology choices on GHG emissions and how the carbon intensity of methanol used as a transport fuel compares to the carbon intensity of other hydrocarbon fuels. It is found that methanol produces lower well to wheel emissions than gasoline under all production methods studied and can even produce lower GHG emissions compared to ethanol as a fuel supplement. However, the same is not always true if methanol is used to produce gasoline from natural gas.

1. Introduction

Many countries around the world are either using or looking to use methanol as a fuel. China is currently leading the way and in 2015 used as much as 12 million metric tonnes of methanol to fuel its cars, trucks and buses. Methanol now makes up 8% of the Chinese fuel pool and in over a dozen provinces fuel blends such as M15 (15% methanol and 85% gasoline) are sold for use in existing passenger cars (1). Methanol is an affordable alternative transportation fuel due to its efficient combustion, ease of distribution and wide availability around the globe. Methanol is a high octane fuel that enables very efficient and powerful performance in spark ignition engines. Engines optimised for methanol could provide an energy based efficiency gain of 50% over a standard (port fuel injected, non-turbo) gasoline engine in a light-duty vehicle (2).

Two different methods are used to compare the emissions from the flowsheets, the first is the direct GHG emissions from the methanol plant as a carbon dioxide flowrate per hour and the second is the carbon intensity of producing methanol based on the total carbon emitted from the process per unit of energy, and is expressed as grams of CO_2 equivalent per megajoule of methanol on a lower heating value (LHV) basis ($gCO_2e\ MJ^{-1}$ MeOH).

2. Natural Gas to Methanol Flowsheets

To produce methanol from natural gas, the natural gas must first be reformed to syngas before converting this syngas to methanol, further details of the Johnson Matthey reforming options can be found elsewhere (3). In order to generate a syngas with the correct stoichiometry for methanol production there are four main process flowsheets for reforming the natural gas:

1. steam-methane reforming (SMR)
2. SMR with maximum CO_2 addition (SMR + CO_2)
3. combined reforming (CR), with SMR and autothermal reforming (ATR)
4. gas heated reforming (GHR) and ATR (GHR + ATR).

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Each of the reforming options listed above has advantages and the choice of flowsheet depends on a number of parameters, with the most influential being the natural gas composition, operating cost and capital cost. There are several other factors that also have a significant influence when assessing the benefits of each process and the environmental impact of the plant is becoming increasingly more important. This is most noticeable in North America where the cheap natural gas price has led to numerous methanol projects being developed, all of which require a Title V environmental permit before construction can begin (4).

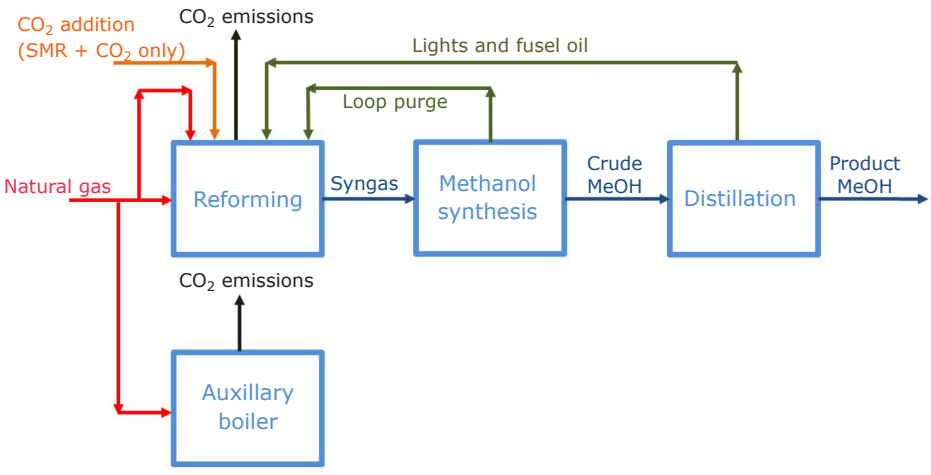
Figure 1 is an overview of the flow of carbon and the emission points from the methanol plant for Flowsheets **1** to **3**. **Figure 2** shows the same overview but for Flowsheet **4**, the GHR + ATR flowsheet, which due to the nature of the reforming section has a different layout.

Using a typical North American pipeline natural gas composition from a recent methanol project in the USA, a comparison of the natural gas efficiency, electrical power consumption and CO_2 emissions for the four flowsheets is shown in **Table I** based on a capacity of 5000 mtpd. These flowsheets are based on driving all compressors and large pumps with steam driven turbines and utilising import electricity to drive the air cooler fans and smaller pumps only. This is the minimal electrical import to the inside battery limit (ISBL) plant without the addition of a turbo generator, where the ISBL plant refers to the methanol unit only and does not include utilities other than the air separation unit (ASU), where applicable. The natural gas efficiency, on a LHV basis, has been split out to show where the natural gas is used within the ISBL plant and is quoted on a per tonne of methanol basis.

As an alternative flowsheet option, it is also possible to minimise the amount of natural gas burnt in the auxiliary boiler by maximising the number of compressors that are driven by motors, allowing an improvement in the natural gas efficiency of the ISBL plant as well as reducing the CO_2 emissions. The values in **Table II** are based on maximising the import electricity while maintaining the minimum load on the auxiliary boiler.

Two important trends are displayed in **Tables I** and **II**. The first is that the CO_2 emissions in **Table I** move in line with the natural gas efficiency of the flowsheet, with the exception of the SMR + CO_2 flowsheet. This stands to reason because, as **Figures 1** and **2** show, again with the exception of the SMR + CO_2 flowsheet, natural gas is the only carbon input into the ISBL plant, with methanol and CO_2 emissions the only output. Therefore, any carbon in the natural gas not converted to methanol will eventually leave the plant as CO_2. The SMR + CO_2 flowsheet is the exception to this rule as additional carbon is added to the process in the form of CO_2 injected upstream of the reformer. This additional carbon helps improve the natural gas efficiency but at the expense of increasing the CO_2 emissions from the ISBL plant. The increase in CO_2 emissions for the SMR + CO_2 flowsheet is due

(a)



(b)



Fig. 1. Methanol plant overview for Flowsheets **1–3**: (a) diagram of the unit operations for Flowsheets **1–3**; (b) picture of a SMR + ATR used in Flowsheet **3**

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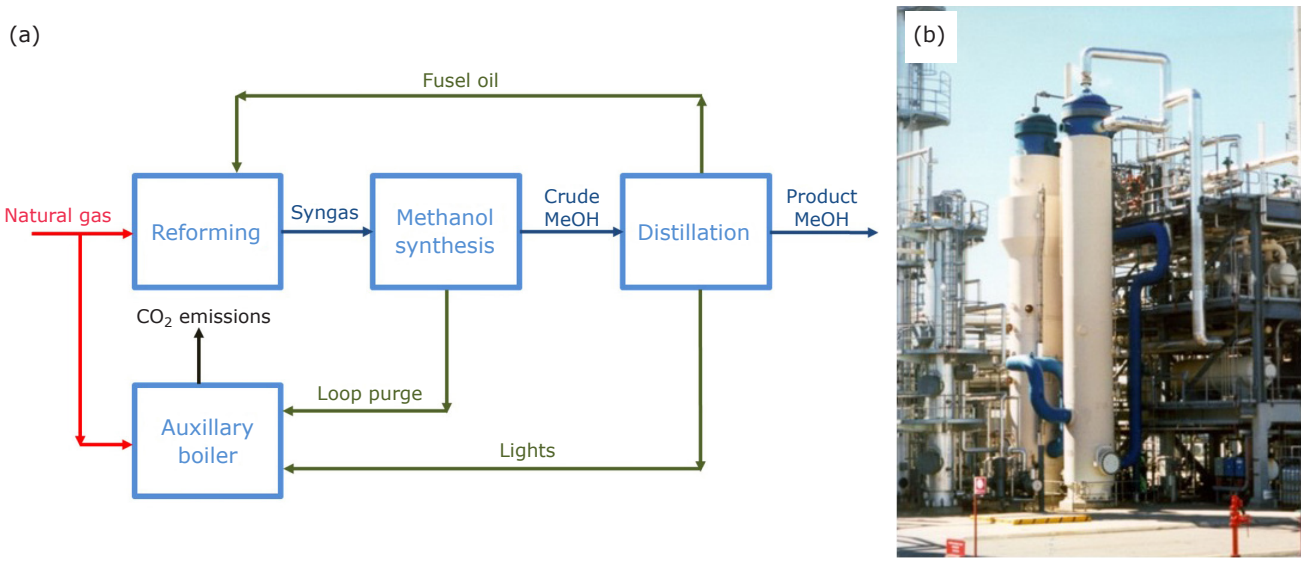

Fig. 2. Methanol plant overview for Flowsheet **4**: (a) diagram of the unit operations for Flowsheet **4**; (b) picture of a GHR + ATR used in Flowsheet **4**

Table I 5000 mtpd Methanol Plant Comparison for Minimal Electrical Import

	Units	SMR	SMR + CO_2	CR	GHR + ATR
Overall natural gas efficiency (LHV)	GJ mt^{-1}	32.6	31.6	30.8	31.0
Process		29.6	24.0	27.0	25.5
Reformer		1.7	6.4	3.0	0.0
Auxiliary boiler		1.3	1.2	0.8	5.5
Electricity	MW (MMBtu)	5.0 (17)	5.0 (17)	3.6 (12.3)	4.5 (15.4)
CO_2 emissions[a]	mt h^{-1} (st h^{-1})	92.8 (102.3)	144.9 [80.9] (159.7 [89.2])	71.7 (79.0)	77.3 (85.2)

[a]Based on using captured CO_2 as a feedstock, the net CO_2 emissions are shown in [ ] brackets

Table II 5000 mtpd Methanol Plant Comparison for Maximum Electrical Import

	Units	SMR	SMR + CO_2	CR	GHR + ATR
Overall natural gas efficiency (LHV)	GJ mt^{-1}	32.4	31.4	30.7	25.5
Process		29.6	24.0	27.0	25.5
Reformer		1.7	6.4	3.0	0.0
Auxiliary boiler		1.1	1.0	0.7	0.0
Electricity	MW (MMBtu)	13.4 (45.7)	12.9 (44.0)	8.3 (28.3)	90.5 (308.6)
CO_2 emissions[a]	mt h^{-1} st h^{-1}	90.4 (99.6)	142.8 [78.8] (157.4 [86.9])	70.9 (78.2)	13.9 (15.3)

[a]Based on using captured CO_2 as a feedstock, the net CO_2 emissions are shown in [ ] brackets

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to both the increase in natural gas fuel required in the reformer because of the reduced LHV of the methanol loop purge gas as well as an increase in CO_2 concentration in the recycled fuel from the methanol loop and distillation. Therefore, with any CO_2 injection flowsheet aside, the better the natural gas efficiency of the ISBL plant the lower the CO_2 emissions. If captured CO_2 is used as a feedstock to the ISBL plant for CO_2 injection flowsheets then **Tables I** and **II** show that the net CO_2 emissions fall back in line with this trend.

The second important trend is that as the comparison between **Tables I** and **II** shows, for the SMR, SMR + CO_2 and CR flowsheets there is no significant scope to maximise the electrical import while maintaining the minimum auxiliary boiler load. The SMR, SMR + CO_2 and CR flowsheets all generate high pressure (HP) steam as a way of cooling the process gas after reforming. This steam is a useful byproduct of the cooling process because it can be used to power the turbines of the large compressors on the plant. In addition, all flowsheets have an auxiliary boiler, whose primary purpose is for start-up and shut-down. In normal operation the boiler is kept running but it has a minimum turndown and so this steam also has to be utilised within the ISBL plant. After all this steam has been consumed, the additional power requirements of the smaller compressors are minimal and hence there is no real benefit in switching from steam turbine driven to motor driven compressors for reducing the ISBL plant emissions and improving the natural gas efficiency. In contrast, the GHR + ATR flowsheet uses the high temperature process gas to provide heat for the reforming reaction in the GHR, which then allows all the compressors and large pumps to be electrically driven if required. The ability to decouple the power requirement for the compressors and large pumps from the ISBL plant, and the fact that the GHR + ATR flowsheet does not contain a SMR, means that the CO_2 emissions of the ISBL plant can be reduced significantly for normal operation, as shown in **Table II**.

3. Gas Heating Reforming and Autothermal Reforming Flowsheet

To understand why the GHR + ATR flowsheet allows for increased flexibility in choosing the power to drive the rotating equipment, a more detailed description of the flowsheet is given below.

The GHR + ATR flowsheet incorporates a GHR in series with an ATR, with an interchanger on the feed to the GHR, as shown in **Figure 3**.

The GHR consists of a refractory lined vessel containing vertically supported tubes filled with nickel catalyst. The feed gas is preheated by the GHR shell-side effluent gas before it passes down through the tubes where the endothermic reforming reaction takes place (Equations (i)–(iii)).

$$\text{Reforming } CH_4 + H_2O \leftrightarrow CO + 3H_2 \quad \text{(i)}$$

$$\text{Water-gas-shift } CO + H_2O \leftrightarrow CO_2 + H_2 \quad \text{(ii)}$$

$$\text{Heavy hydrocarbon reforming } C_nH_m + nH_2O \leftrightarrow nCO + (½m + n)H_2 \quad \text{(iii)}$$

The heat required to drive the reaction is provided by reformed gas from the ATR which flows counter-currently on the shell-side of the reactor. The partially reformed gas leaves the tube-side of the GHR at approximately 700°C.

The product from the GHR is fed to the ATR, which is also a refractory lined vessel. Oxygen is fed to the burner gun of the ATR and this then mixes with the hydrocarbon feed and burns in the upper section of the ATR. In the middle section the hot gas passes over a fixed catalyst bed, where the temperature drops as the endothermic reactions proceed.

Sufficient oxygen is fed to produce a temperature exiting the catalyst bed of 1020°C and at these conditions the reformed gas contains low levels of methane slippage. The hot reformed gas from the exit of the ATR passes to the shell-side of the GHR where it flows counter-currently to the tubes and

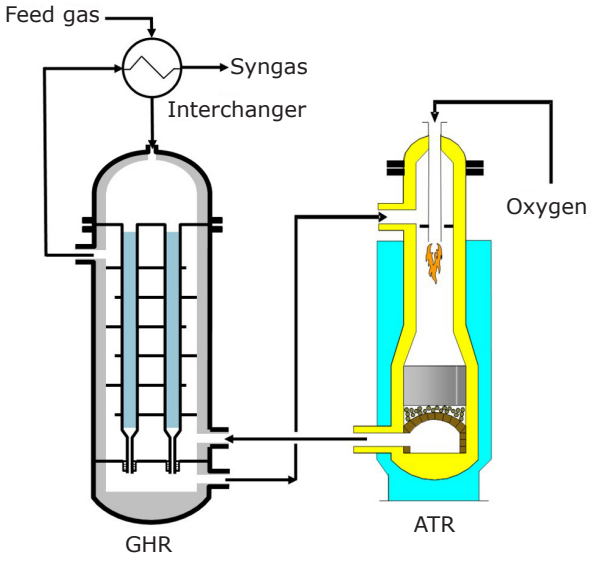

Fig. 3. GHR + ATR flowsheet arrangement

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provides sufficient heat for the reforming reaction in the GHR tubes. The reformed gas, now known as synthesis gas (syngas), exits the shell-side of the GHR and passes to the interchanger where it preheats the incoming feed gas. The syngas exits the interchanger then passes to the downstream heat recovery.

No steam generation is required as all the high grade process heat is recycled directly back into the process which provides the ability to decouple the power requirement for the GHR + ATR flowsheet and move it outside battery limits (OSBL). This is an effective method of reducing the emissions and improving the natural gas efficiency of the ISBL plant. However, typically the imported power to the plant will be from the grid, where the electricity is generated from a portfolio of technologies, with the largest contribution generally from fossil fuels burnt in a power plant. A typical North American portfolio of grid electricity is shown in **Figure 4** and this shows that 68% of the electricity is generated through burning carbon fuels.

The imported power means that the source of the CO_2 emissions generated by producing the electrical power is transferred from the ISBL plant to the existing producers, so essentially the emissions are just being moved from one location to another. When building a new methanol plant, this is advantageous as the emissions required for the Title V environmental permit in the USA are only those for the new plant and do not include those for the existing producers supplying the import electricity. Therefore, in areas where GHG emissions are restricted, the GHR + ATR flowsheet with imported power offers the best flowsheet for reducing GHG emissions for the ISBL plant and also for providing a natural gas efficient flowsheet.

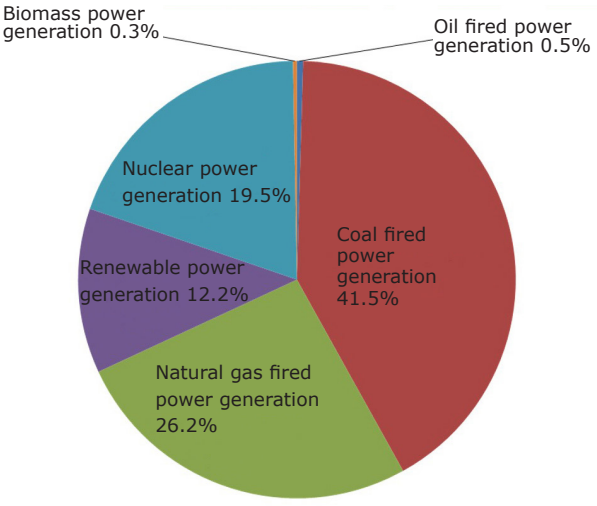

Fig. 4. A typical North American electricity mix (5)

Importing electricity allows the ISBL emissions to be reduced but it doesn't give a complete representation of the carbon intensity of producing methanol using the GHR + ATR process. For certain states in the USA and Canada, for example California, there has been a drive to reduce the carbon intensity of the fuels they use and this has resulted in the implementation of legislation in California called the low carbon fuel standard (LCFS), a summary of which is given in **Appendix A**. This standard looks at the total carbon emissions of a fuel from well to wheels and so tries to capture the total carbon intensity of that fuel over its whole life cycle. So taking gasoline as an example, the LCFS aims to take into account the GHG emissions during the extraction and refining of the crude oil, transporting the gasoline to the pump as well as the emissions from the combustion engine in the vehicle. In order to enable the carbon intensity of these fuels to be determined from well to wheels, software has been developed to calculate the GHG emissions over the whole life cycle of the fuel. This software can therefore also be used to determine the carbon intensity of producing methanol on a well to product basis, thus incorporating the GHG emissions from transporting the natural gas to the plant, the electricity used in the plant and from storing the methanol.

4. The Greenhouse Gases, Regulated Emissions and Energy Use in Transportation (GREET) Model

GREET is the software developed by Argonne National Laboratory, USA, in conjunction with the Californian government's LCFS to enable the calculation of GHG emissions for fuels produced and imported into the state of California (6). The software uses pathways to break each step of the product life cycle down and enables the emissions from each section of that process to be determined.

Using the GREET software, the figures generated below in **Tables III** and **IV** show the well to product values for the four flowsheets based on steam driven turbines for the compressors and large pumps, as **Table I**. The first section of the table is divided into three parts for the GHG emissions. The first is the processing and transportation of natural gas from the well to the methanol plant, the second is the emissions from the ISBL plant and the third is the storage of the methanol. The second section shows the GHG emissions for the

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Table III GREET Numbers for Minimum Electrical Import[a]

Stage	Units	SMR	SMR + CO_2	CR	GHR + ATR
(a) Natural gas to plant	$gCO_2e\ MJ^{-1}$ methanol	13.0	12.6	12.3	12.4
(b) Methanol plant[b]	$gCO_2e\ MJ^{-1}$ methanol	23.1	36.0 (20.1)	17.8	19.2
(c) Methanol storage	$gCO_2e\ MJ^{-1}$ methanol	1.3	1.3	1.3	1.3
Subtotal[b]	$gCO_2e\ MJ^{-1}$ methanol	**37.4**	**49.9 (34.0)**	**31.4**	**32.9**
Electricity					
North America mix	$gCO_2e\ MJ^{-1}$ methanol	0.76	0.76	0.54	0.67
Renewable mix	$gCO_2e\ MJ^{-1}$ methanol	0.005	0.005	0.003	0.004
Total (North America mix)[b]	$gCO_2e\ MJ^{-1}$ methanol	**38.1**	**50.7 (34.8)**	**32.0**	**33.6**
Total (renewable mix)[b]	$gCO_2e\ MJ^{-1}$ methanol	**37.4**	**49.9 (34.0)**	**31.4**	**32.9**

[a]The GREET values quoted in **Tables III** and **IV** have been peer reviewed but have not been confirmed as official GREET numbers by the Californian government

[b]The net CO_2 GREET GHG emissions are shown in brackets

Table IV GREET Numbers for Maximum Electrical Import[a]

Stage	Units	SMR	SMR + CO_2	CR	GHR + ATR
(a) Natural gas to plant	$gCO_2e\ MJ^{-1}$ methanol	12.9	12.5	12.2	10.2
(b) Methanol plant[b]	$gCO_2e\ MJ^{-1}$ methanol	22.5	35.5 (19.6)	17.6	3.5
(c) Methanol storage	$gCO_2e\ MJ^{-1}$ methanol	1.3	1.3	1.3	1.3
Subtotal[b]	$gCO_2e\ MJ^{-1}$ methanol	**36.7**	**49.3 (33.4)**	**31.2**	**15.0**
Electricity					
North America mix	$gCO_2e\ MJ^{-1}$ methanol	2.03	1.95	1.23	13.7
Renewable mix	$gCO_2e\ MJ^{-1}$ methanol	0.012	0.012	0.008	0.083
Total (North America mix)[b]	$gCO_2e\ MJ^{-1}$ methanol	**38.7**	**51.3 (35.4)**	**32.4**	**28.7**
Total (renewable mix)[b]	$gCO_2e\ MJ^{-1}$ methanol	**36.7**	**49.3 (33.4)**	**31.2**	**15.1**

[a]The GREET values quoted in **Tables III** and **IV** have been peer reviewed but have not been confirmed as official GREET numbers by the Californian government

[b]The net CO_2 GREET GHG emissions are shown in brackets

distributed electricity to the ISBL plant. There are two figures relating to the import electricity: the first is based on the standard North American electricity mix, as shown in **Figure 4**, and the second is based on a standard renewable energy electricity mix, as shown in **Figure 5**.

As **Figure 6** shows, the USA and China are leading the way in the installation of renewable energy and therefore being able to use electricity where the majority or all of the energy comes from a renewable source is a distinct possibility in the near future. This real possibility of access to electricity from a renewable source is why this option has been considered. In addition, it also gives a good indication of the total possible reduction in carbon intensity of producing methanol.

The units for the values in **Tables III** and **IV** are grams of CO_2 equivalent per megajoule of methanol on a LHV basis ($gCO_2e\ MJ^{-1}$ MeOH).

The GREET GHG emission values in **Table III**, for flowsheets with the minimum electrical import, follow the same trend as the CO_2 emissions in **Table I**. This is because for the minimum electrical import flowsheets the contribution to the GHG emissions from the import electrical power is minimal and so the total emission figures are dominated by the emissions from transporting the natural gas to the ISBL plant and from the ISBL plant itself.

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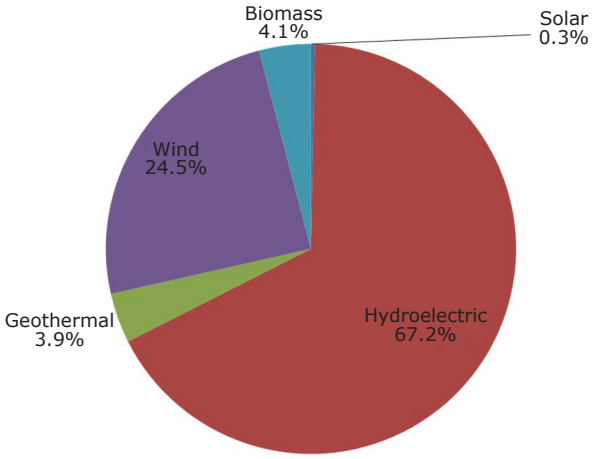

Fig. 5. Standard renewable energy mix (7)

However, the GREET GHG emission values in **Table IV**, for flowsheets with the maximum electrical import, show a different trend. For the SMR, SMR + CO_2 and CR flowsheets, moving to the maximum electrical import actually increases the overall well to product GHG emissions compared to the values in **Table III** when using the typical North American electricity mix and only a small reduction when using the renewable electricity mix. This is compared to the GHR + ATR flowsheet which shows a reduction in GHG emissions of 15% and 54% when using the typical North American electricity mix and the renewable electricity mix respectively. The reason for the increase in GHG emissions for the SMR, SMR + CO_2 and CR flowsheets when using the typical North American electricity mix compared to a reduction in emissions for the GHR + ATR flowsheet centres around the plant heat integration and utilisation of the steam from the auxiliary boiler. For the SMR, SMR + CO_2 and CR flowsheets the generation of HP steam in the reformed gas cooling train means that there is only sufficient heat remaining in the reformed gas to provide approximately 55% of the distillation duty, with the remaining duty provided by low pressure (LP) steam. There is therefore a large LP steam demand, which typically has been satisfied by using medium pressure (MP) steam in back pressure turbines, with the LP steam header topped up by letting down a small amount of MP steam. This therefore maximises the amount of work performed by the MP steam. When, however, the compressors driven by these turbines are switched to motor driven, the LP steam demand remains the same and so the shortfall in LP steam is made up by letting down more of the MP steam. This then results in the use of MP steam becoming less efficient and so the GHG emissions for the combined ISBL plant and import electricity actually increase. For the GHR + ATR flowsheet, the LP steam demand is small because all the distillation duty is provided by the reformed gas train cooling so the flowsheet does not need to incorporate backpressure turbines to satisfy the LP steam demand. Therefore, switching the compressors from turbine to motor driven does

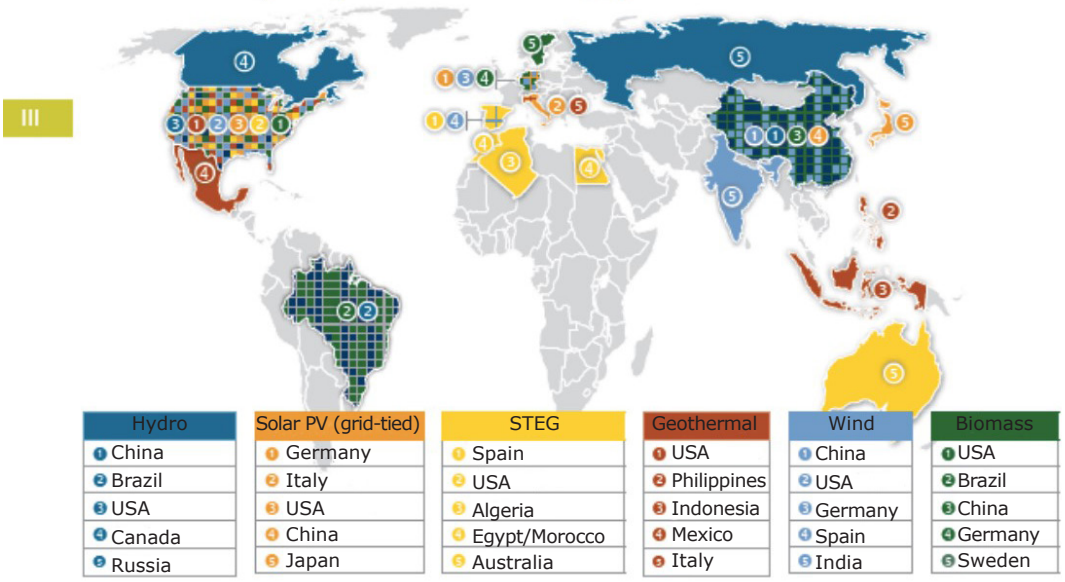

Fig. 6. Top countries with installed renewable electricity by technology in 2012 (8). PV = photovoltaic; STEG = solar thermoelectric generator

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not mean additional MP steam has to be let down to the LP steam level and so removing the steam driven turbines has a direct impact on the load of the auxiliary boiler, in proportion to the increase in electrical load and hence allows a total reduction in emissions.

For the GHR + ATR flowsheet, running all the compressors, pumps and air coolers on imported electricity shows a modest saving on the GHG emissions if the supplied electricity is from the grid with a typical North American electricity mix. However, using a renewable energy source to provide the electrical import power to the plant has a significant impact on the GHG emissions for producing methanol from natural gas, with the emissions over half that of the CR flowsheet, which has the second best emission figures. The GHR + ATR flowsheet is the only flowsheet that doesn't generate HP steam as a byproduct of the process, allowing a large portion of the energy requirement of the ISBL plant to come from electricity import. This in turn allows a large portion of the energy required to make methanol to come from a renewable source.

In addition to calculating the well to product GHG emissions using GREET it is also possible to go one step further and calculate the well to wheels value which allows methanol as a fuel to be compared to all the other available transportation fuels. **Table V** shows the comparison between the methanol well

Table V Well to Wheel Greenhouse Gas Emissions (9)

Fuel	Vehicle	Vehicle operation	Well to product	Total
		$gCO_2e\ MJ^{-1}$	$gCO_2e\ MJ^{-1}$	$gCO_2e\ MJ^{-1}$
Methanol (85%) + Reformulated gasoline E10 (15%). Methanol produced using maximum North America mix electrical import (Notes (i) and (ii))	Methanol flexible-fuelled car	26.6	(a) 36.7 (b) 47.3 (33.8) (c) 31.3 (d) 28.1	(a) 63.2 (b) 73.9 (60.4) (c) 57.9 (d) 54.7
Methanol (85%) + Reformulated gasoline E10 (15%). Methanol produced using maximum renewable mix electrical import (Notes (i) and (ii))	Methanol flexible-fuelled car	26.6	(a) 35.0 (b) 45.7 (32.2) (c) 30.3 (d) 16.6	(a) 61.5 (b) 72.3 (58.7) (c) 56.8 (d) 43.1
Reformulated Gasoline E10 (100%)	Gasoline car	66.3	25.0	91.3
Low sulfur diesel (100%)	Diesel car	75.7	17.1	92.8
Compressed natural gas (100%)	Compressed natural gas car	57.6	18.6	76.2
Liquefied petroleum gas (100%)	Liquefied petroleum gas car	64.7	12.5	77.2
Ethanol E85 (100%) (Note (iii))	Ethanol flexible-fuelled car	12.6	57.7	70.4
Gaseous hydrogen (100%)	H_2 car	0.8	94.5	95.3
Fischer-Tropsch diesel (100%)	Fischer-Tropsch diesel car	73.1	36.5	109.6
Electricity (100%) (Note (iv))	Electric car	0	174.4	174.4

Notes for Table V

i) The numbering for well to product and total GREET GHG emissions refers to the following flowsheets:
   1. SMR
   2. SMR + CO_2
   3. CR
   4. GHR + ATR

   The GREET values quoted for the methanol (85%) + reformulated gasoline E10 (15%) fuel have been peer reviewed but have not been confirmed as official GREET numbers by the Californian government

ii) The net CO_2 GREET numbers are shown in brackets

iii) Based on USA ethanol produced from corn

iv) Electricity based on typical North America mix

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to wheels carbon emissions and some of the other standard fuel types.

What **Table V** shows is that methanol as a fuel has a lower carbon intensity than gasoline over its full life cycle, irrespective of which flowsheet is used to produce the methanol. It also highlights that methanol as a blend stock for gasoline is less carbon intensive than using ethanol, unless non-captured CO_2 injection is used on the flowsheet.

When producing gasoline from crude oil, the well to product value for reformulated gasoline E10 in **Table V** is 25.0 $gCO_2e\ MJ^{-1}$. Therefore, to reduce the carbon intensity the well to product GHG emissions for producing gasoline from natural gas *via* methanol would need to be below 25.0 $gCO_2e\ MJ^{-1}$. As **Tables III** and **IV** show, with the exception of the GHR + ATR flowsheet, the GHG emissions for producing methanol from natural gas range from 31.2–51.3 $gCO_2e\ MJ^{-1}$ which is already higher than the 25.0 $gCO_2e\ MJ^{-1}$ for refining crude oil. Therefore, even if the carbon intensity of producing gasoline from methanol was zero, it would not be possible to produce gasoline with a lower carbon intensity from natural gas *via* methanol. The only exception to this is the GHR + ATR flowsheet using the maximum electrical import from a renewable energy source which has a well to product value of 15.1 $gCO_2e\ MJ^{-1}$ and there are companies that are currently developing novel flowsheets, incorporating the GHR + ATR process and renewable energy sources to produce low carbon intensity gasoline from natural gas.

Conclusions

Through raising HP steam in the SMR, SMR + CO_2 and CR flowsheets it is not possible to easily incorporate renewable electrical energy into the process to enable a reduction in carbon intensity of methanol. The heat integration in the GHR + ATR flowsheet allows the flexibility to significantly increase the electrical power input into the ISBL plant. This not only allows a large reduction in the GHG emissions from the ISBL plant but also allows a total reduction in the carbon intensity of the process over its entire life cycle and significantly so if the source of electricity is from renewable energy.

From well to wheels, methanol produced from natural gas provides a significant reduction in GHG emissions when compared to standard gasoline. Even when compared to ethanol, methanol shows a modest reduction in GHG emissions and emphasises why methanol is such a good supplement to gasoline fuel for the reduction of GHG emissions.

If the intended destination of the gasoline is to a state or country that has implemented a LCFS, then in general making gasoline from natural gas *via* methanol does not reduce the overall carbon intensity of the gasoline and in fact would increase the carbon intensity over the whole life cycle. The exception would be processes that are able to utilise both renewable energy and the GHR + ATR flowsheet in order to produce a low carbon intensity gasoline.

Acknowledgements

This article is an extended and updated version of the International Methanol Technology Operators Forum (IMTOF) London 2015 presentation (10). Amelia Cook, Process Engineer at Johnson Matthey, is acknowledged for her contribution to the data collection and processing.

Glossary

CR	Combined reforming, with steam methane reforming and autothermal reforming
GHG	Greenhouse gas
GHR + ATR	Gas heated reforming and autothermal reforming
LCFS	Low carbon fuel standard
M15	15% methanol and 85% gasoline fuel blend
MTPD	Metric tonnes per day
OSBL	Outside battery limits
SMR	Steam methane reforming
SMR + CO_2	Steam methane reforming with maximum CO_2 addition

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Appendix A

What is the Low Carbon Fuel Standard?

As further background surrounding the LCFS, the following is a summary (11). In California, USA, they have developed a method for determining the carbon intensity of a fuel for the whole of its life using the concept from well to wheels. In January 2010 the Californian state government implemented the LCFS which calls for a minimum 10% reduction in emissions per unit of energy by 2020. The policy focuses on decarbonising fuels for transportation and is a performance standard that is based on the total amount of carbon emitted per unit of energy. This crucially includes all the carbon emitted in the production, transportation and use of the fuel.

In America, transportation accounts for two-thirds of all the oil consumed and causes approximately one-third of all the GHG emissions. In an attempt to address this, the LCFS assigns a company (for example an oil refiner, importer or blender) a maximum level of GHG emissions per unit of fuel energy it produces. This level then declines each year with the intention of putting the state on a path to reducing total emissions.

There are several ways that regulated parties can comply with the LCFS and in the Californian model there are three compliance strategies available:

(a) Refiners can blend low GHG fuels, for example biofuels made from cellulose or wastes, into gasoline and diesel.
(b) Refiners can buy low GHG fuels, for example natural gas, biofuels, electricity and hydrogen.
(c) Refiners can buy credits from other refiners or use banked credits from previous years.

The LCFS in California is not the only fuel standard that has been implemented. A similar scheme is in place in British Columbia in Canada and others have been proposed in Ontario, Canada, several other states in North America as well as the European Union.

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The Author



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Don Steinke

Please do independent monitoring of ghg emissions in the fracking fields. Colorado will now require drillers to begin monitoring early.

https://www.postindependent.com/news/colorado-requires-early-pollution-monitoring-with-new-oil-and-gas-development/

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Cambria Keely

My name is Cambria Keely, I am 18 years old in my fourth year of my Bachelor's in ecology at Western Washington University, and I have been protesting the proposed refinery for a quarter of my life.

I was recently asked by a reporter about what moved me to get involved with the protest against this refinery. The answer is that fear, anger, and disbelief morphed into a feeling of responsibility to protect my hometown. Kalama and Cowlitz County officials have made it very clear that their priority is monetary profit, not protecting their constituents, thus it becomes our duty to protect ourselves and those around us by representing the community to decision-makers such as yourselves.

My companions and I have collectively committed thousands of precious hours, day and night, on holidays and birthdays, to defeating this calamity. One of my friends and fellow activists, Chris Turner, who spent decades fighting the climate crisis and frequented these very methanol hearings with her powerful testimonies, recently spent the last few hours of her life ensuring that her research would continue to spur the fight. I know she would be here tonight if she could, explaining the proper calculation of statistics in the DSSEIS.

I am telling you this to emphasize that we are not here for fun, we're here because we need to ensure that Washington is headed for a carbon-negative future. Climate legislature must be extensively considered and respected.

Every time I visit my 93-year-old grandfather, he asks me when I plan to start a family, and how many kids I want to raise. I tell him I'd like to have one or two kids in my 30's. What I don't tell him is that I'm terrified of what the world will look like in 20-30 years. Will the next generation know what it's like to have a snow day, and let raindrops fall on their tongue, and get a bird's-eye view of the world from the top of a tree? I can't imagine who I would be if the outdoors weren't pure enough for me to have those experiences. Will my children have to wear a mask everywhere to decrease their pollutant inhalation, and gape in disbelief at history books which show photos of a clean, healthy Columbia River?

Article 25, Section 1 of the Universal Declaration of Human Rights states "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family." I cannot in good conscience pass onto my children the burden of spending every day fighting for basic human rights.

We will not allow ignorance of the consequences of the construction of the world's largest methanol refinery in Kalama because if this project is permitted, the consequences are unavoidable: pollution of the biggest river in our region and vital ecosystems that rely upon it, the release of toxins into our air that is usually clean and healthy, and the exertion of powerful and plentiful greenhouse gases.

Change cannot wait. It is your mission to preserve, protect, and enhance our ecology and we are counting on you to quash this fossil fuel project. We believe that we can do better than to enforce a

fossil-gas dependent economy. Once again, I am here to ask you with utmost earnestness to please deny the shorelines permits for the proposed Kalama fracked-gas-to-methanol refinery.

[Expanded comments from those given in oral testimony on 9/22/2020.]

Cambria Keely

At the beginning of the pandemic, the shutdown of Asian factories left blue skies in Beijing, a city known in the U.S. as the epicenter of extreme air pollution. Environmentalists celebrated the idea of a world where people everywhere could breathe freely without concerns of lung diseases, and biodiversity would begin to thrive again. As industrial cities started to become pure again, and those of us that rely on their products still had access to essentials, environmentalists tried to spread the message of "Look, we can do this! This is our chance to make our Earth healthy again!" Despite the fact that factories have since reopened, we have not missed our chance to put an end to unnecessary carbon pollution.

At the very moment that I am typing these words, Earth's carbon budget is rapidly depleting. According to Carbon Brief, the IPCC report on the 1.5 degree Celsius maximum temperature rise suggests that we will hit that temperature rise mark next year, based on 2016 carbon emissions. Does that not terrify you? It terrifies me. Other sources say we have 25 years to prevent a global temperature rise of 2 degrees Celsius, which is barely the blink of an eye in terms of the Earth's history. 25 years is just over half as long as the Kalama fracked-gas-to-methanol-refinery is expected to be in production, meaning that if this project is permitted, the methanol refinery will still be heating our planet long after the 2 degree temperature rise has been surpassed.

"We do not have the time" was one of the most emphasized phrases in the recent methanol hearings, and it is completely correct. We absolutely do not have the time to make exceptions. We must not allow any new fossil fuel industries to make our Earth sicker, and furthermore, must shut down any existing fossil fuel consumers in Washington. I beg you with utmost urgency to deny the shorelines permit for this fracked gas polluter.

Lang Baker

As a former resident of Battle Ground WA, who loves the beauty of the great Northwest, I urge WA DOE to honor its mission to "Protect, preserve, and enhance the environment for current and future generations" by taking all steps available to prevent this project from proceeding. It portends devastating consequences for future generations of humans and other species.

Rebecca Railey

Twenty years ago, I moved to Washington State because of it's beauty and progressive politics. I am hoping that the state will REJECT this permit and try to lead the country in clean energy production. We just lived through a week of Hazardous air quality, a direct result of global warming, to which this plant will add. The smoke and mirror facts about the global benefits of methanol burning is just that. We should be moving away from any type of fossil fuel and leading the way, not approving this plant for the gain of a few jobs and profits for the stockholders. I have already let Governor Inslee know how I feel. I urge you, along with so many concerned citizens, to REJECT this permit. From the in-person and virtual meeting I just attended, the vast majority are against the project. Will you listen to the people or a small minority who will directly profit? Thank you. Rebecca Railey

Phyllis DeCristofaro

Global warming is primarily fueled by atmospheric carbon from fossil fuels. The Kalama Methanol Refinery will be the largest GHG emitter in Washington, it is dependent on fracked gas, one of the worst fossil fuels, particularly because it leaks methane. Methane is 80 times stronger in GHG's than Carbon Dioxide (Co2). Listen to the scientists and our governors who are calling for a halt to new carbon emitting fossil fuel projects and move to renewable energy - for a livable world for our children. Stop the Methanol Refinery project and help us have a greener future.


SAVE THE
COLUMBIA
RIVER
NO FRACKING!

Amy Jarvis

I am shocked and horrified that you, the Port of Kalama, and the WA Environmental Board would even consider allowing a water and gas guzzling, air polluting Chinese methanol refinery to be built along our shared Columbia River which runs through 7 states, 1 Canadian province, 4 mountain ranges, drains more water into the Pacific Ocean than any other river in North or South America, provides drinking water to numerous communities along its course, and irrigates 600,00 acres of farmland. This is not a decision to be made in isolation. As a long time Oregonian residing along the Columbia River, I worry for the health and safety of my family, city, state, region, local wildlife, and upward to our planet. It would be unconscionable to allow the Chinese to buy or convince their way into passing the hazards of this plant onto us! Do not allow NW Innovation Works to build this refinery.

Elizabeth Cross

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Gina Hicks

Please reject the methanol refinery and deny the shorelines permit. The current seis is woefully inadequate. It is is deeply saddening that the DOE has based their results using the assumption that there will be no efforts by anyone on the planet to reduce fossil fuel use. China has recently pledged to become carbon neutral by 2060. Further Washington has pledged to reduce our carbon emissions. the report uses unrealistically low bottom up methane leakage values. The report should also look at a more realistic scenario of the methanol being used as a fuel as the applicant indicates to its investors. The increased carbon emissions from this plant should be enough to deny the project. This plant should not be built as the climate impacts will be more than the world can handle. Also, there must be a realistic mitigation plan in place for all the effects. A plan to make a plan is not sufficient. We need to actually take care of our environment and this project will have too many negative impacts to be allowed to go forward. People and planet over profits and promises.

Felice Kelly

Humanity stands on the edge of a precipice, where we will decide to either reduce our greenhouse gasses and deeply decarbonize our whole economy or we will continue to slide towards climate chaos in a much warmer world. Which of these outcomes we will face depends on many small and large decisions that we will make, but the Kalama Methanol Plant is a huge decision, and should be an easy one to make. This plant is the wrong decision for the climate and for the Columbia River. The Kalama Methanol Plant would produce 4.6 million tons of carbon pollution each year, pushing Washington past its greenhouse gas goals.

The proponents of this project claim that the emissions would be better than if this plant were based elsewhere, but that argument ignores the effects of induced demand and is based on pure speculation about what the alternative "dirtier" sources of energy might be.

Northwest Innovation Works has misrepresented the purpose of the methanol produced at this plant, and told investors that it will be burned as fuel while telling the state of Washington that it will not be burned. This has a major impact on the projected climate affects of the project.

True decarbonization requires moving away from all fossil fuel use as quickly as possible to ensure a livable future. This project is incompatible with those goals, which are goals that have been embraced by Washington voters and Washington state leadership. To fulfill our obligations to fight climate change we must not build the Kalama methanol plant. Please deny the permit due to the lifecycle climate emissions of the project.

Phillip Englund

Dear Department of Ecology,

We are in a worsening and undeniable climate crisis. Every year now, we break heat records. Three years ago, in 2017, I stood with my father at a lookout point at midnight, watching what was happening across the Columbia river. I described it thusly at the time: "[There were] gigantic flare-ups, massive pillars of flame as trees exploded. A significant swath of the horizon just orange and spreading at a tremendous rate, burning so brightly that when we walked back down the trail it looked like kind of a faux-sunrise out of direct view; we could even see the fire from our deck when we got home around one-thirty. Some sort of apocalypse come to Oregon." That was the Eagle Creek fire. I'll never forget my Dad telling me that if the winds shifted and the fire jumped the river, we would have to evacuate.

This year, the entire west coast has gone up in flames. Here in Washington, 330,000 acres burned in a *single day.* 40,000 people had to evacuate their homes in Oregon. Millions of acres have been lost, I don't know how many homes, and the wildfires are still ongoing... as of this writing, an article published half an hour ago reports that nearly 70,000 people have had to be evacuated in Northern California. These numbers are so unthinkably enormous that they're almost difficult to comprehend. It doesn't seem real. And yet this *is* our reality.

I personally had a scare when a brush fire started very close to my parent's house in Washougal (from which I have since moved out), but as happened in 2017, we were lucky--the wind was blowing in the right direction and kept it from spreading. It was brought under control. Luck, however, runs out sooner or later; I don't know how many more times we can roll these dice. And even though we've been fortuitous enough to dodge the horrors of facing unstoppable flames to date, all of the Vancouver/Portland area and beyond was choking on smoke for at least a week, the air plunging far past the uppermost "hazardous" level on the Air Quality Index, to a point of toxicity *which didn't even have a designation.* God only knows how that will affect people's health in the long term, especially those with poor shelter or none at all. Smoke from our wildfires reached the east coast, and even Europe. This is not an aberration--thanks to the ungodly amount of greenhouse gas emissions we've already put into the atmosphere, this is going to be the new normal, and it's going to get worse and worse unless we take bold and immediate action to put the brakes on climate collapse.

Suffice it to say that such bold and immediate action does NOT include building, or allowing to be built, the world's largest methanol refinery in Kalama. It would use more gas--and necessitate more fracking--than all the Northwest's biggest cities combined and all the power plants in Washington. The facility would cause around 4.6 million tons of carbon pollution each year (and up to 9.4 million tons by some estimates), and become one of the largest greenhouse gas emitters in the state. In our current climate emergency, that is purely and simply unconscionable.

Having attended one of the comment sessions for the second supplemental EIS, it seems clear that supporters of this awful project have only two arguments, and neither of them are good. The first is, of course, predicated on employment: the refinery would bring lots of jobs into the area, and people need jobs. This, taken in a vacuum and absent anything else, is true. However: besides ignoring the

fact that this refinery would spell complete ecological disaster, what's frustrating is that these kinds of arguments always carry an implied assumption that a large-scale, rapid transition to green energy (i.e. what we need in order to save ourselves and maintain a habitable planet) somehow wouldn't just as easily bring with it a ton of well-paying jobs. It absolutely would. Kalama does not need to settle for jobs which only serve to hasten the complete destruction of our environment; Kalama deserves better.

Still, I am not a resident of Kalama, and jobs there are not my perview. Nor are they the perview of the Department of Ecology. So let us move on to what is more pertinent.

The second argument is the far, far worse of the two--while I can believe the jobs argument is misguided, I can also believe it is made in good faith. This one, on the other hand, is insidious, duplicitous, and completely outrageous. It is a point of view designed specifically to greenwash, to hoodwink people and peddle a dangerous mirage, and to this end it uses and highlights what is so tremendously flawed about the Second Supplemental EIS itself.

The argument in question claims that the proposed Kalama refinery, unimaginable polluter though it may be (and its proponents do concede that point), is somehow GOOD for the environment.

During the presentation which preceded the online hearings on this matter, an incredibly misleading graph was displayed in regards to the Department of Ecology's findings, portraying how much pollution would allegedly occur *with* the Kalama refinery (a smaller bar) as opposed to *without* the Kalama refinery (a larger bar). Stated on your website under "Preliminary Report Findings" is the justification for that display: "Worldwide demand for methanol is likely to increase in the decades ahead, leading to higher greenhouse gas emissions with or without the Kalama facility... Methanol made in Kalama could produce lower greenhouse gas emissions than many competing methanol supplies, from coal or less efficient natural gas sources. This means that global greenhouse emissions would increase with the addition of the Kalama facility, but likely less than they might if the demand was met by other sources."

This conclusion was reached, according to the aforementioned presentation, by considering such things as "economic analysis" and "market speculation." Or, translated into plain language--bullshit.

Said graph and associated statements are not indicative of any sort of reality; rather they represent pure, irresponsible guesswork. They're part and parcel of a capitalist shell-game, trying to bamboozle the audience into believing there's a positive outcome under a cup where actually none exists anywhere (and it therefore becomes an easily deployed tool for gaslighting from certain unscrupulous quarters: "You've already won this, climate people! Don't you see? The project will actually *help* the environment, so why would you want to fight it?").

To be clear: the ONLY thing the Kalama methanol facility will do is add a massive amount of emissions on top of already-existing emissions. Any other outcome is noticeably propped up using such slippery qualifiers as "likely," "could," and "if". Should this monstrosity be built, it doesn't replace a competitor--some coal or natural gas plant in China doesn't just magically shut down or disappear. Nor would its existence somehow deter other "less-efficient" sources from trying to crop up, particularly if there is indeed this claimed rising demand (which I'll address in a moment). The proposed refinery is in no way, shape, or form the lesser evil or a step in the right direction. NOTHING is reduced. Only increased by a suicidal amount.

And that brings us to this idea that the demand for methanol is likely going to rise. And my response to that is: of COURSE it is if projects such as the Kalama refinery are allowed. It's the very definition of a self-fulfilling prophecy. And since we're already into the realm of speculation, allow me to project a different scenario, just as plausible--if supply is replaced by better alternatives, demand for methanol will go down and go up for said alternatives. The most terrible options don't have to be foregone conclusions.

Finally there is the mitigation aspect to consider, another piece of deception meant to lull people into complacency. Northwest Innovation Works is claiming it will mitigate all in-state (but not out-of-state) emissions. This is not only vague and utterly, utterly insufficient, it is also completely unenforceable. NWIW has already proven themselves to be flagrant, completely unscrupulous liars. They repeatedly claimed to regulators that the purpose of the refinery was purely for the production of plastics, while openly telling their investors that the methanol produced would be burned for fuel in China! Why on earth should this sleazy company be trusted to even do the bare minimum to mitigate anything? Their fundamental dishonesty should have killed the proposed project by default the second it came to light in 2019.

All of this is to say, stopping the Kalama methanol refinery is a moral imperative for the well-being of our beautiful Pacific Northwest, our country, and our planet. The evidence against it is overwhelming. I urge you in the strongest terms possible: please do the right thing, for current generations and generations to come, and reject the shoreline permit.

Our future depends on this.

Thank you for your time,

Phillip Englund

Jennifer Vinnard

Dear Ecology, as a Kalama resident, I'm sure by now you see that, of the few who comment or participated in the virtual and public hearings, opposition to this proposed methanol plant has undeniably grown. More and more people are realizing just what this refinery would do to our beautiful town, as well as the state, the country, our planet, our health, our property values, and all to benefit China while we endure the harm.
This proposed plants entire platform is that this refinery would benefit the planet, "displacing" coal...yet there's ample proof showing the opposite is true. Documents showing that China is going to build a coal burning power plant in each province by 2023. Their dependance on coal is too strong, it's not financially feasible to retrofit businesses and homes to cleaner fuels or renewable energy sources. Their demands for coal only grow, digging and importing more and more every year..so why are you making assumptions that guide your decision regarding their permit? The recent announcement about China setting a goal to be carbon neutral by 2060 does not mean a reduction of use, rather to emit the same amount of "good" emissions to "bad", something that's questionably obtainable, but they'll still be burning coal.
NWIW has been deceitful, for one, they told everyone that the methanol would be used SOLELY for making olefin's for plastics, yet their PowerPoint presentation, 25 of 26 pages all about using methanol for fuel, just one discussed plastics. I appreciate that you partially took that into consideration with the draft SSEIS, but 40% is Not Enough..why wouldn't you do the analysis for 100%? Especially when "fuel uses" was such a commanding enticement to their potential investor's!
Waving the illusion of local jobs or money has lured supporters, trusting China's intentions over facts and proof, but now support has changed. Some prior supporters finally looked at the documents and examined the details, some don't trust China due to the coronavirus, some realized that a minimum of 4.6 million metric tons per year of chemicals and carbon wouldn't be good for our health, our beautiful mountainous paradise, whatever the reason, I hope that Ecology is taking the opposition into account in your decision, along with no clear plan on how they intend to mitigate their emissions..the risks of building the lateral pipeline on landslide prone hills and under our only freeway from Portland to Seattle, built on dredged river landfill adding to the earthquake liquifaction risks,the 2nd pipeline that would need to be installed to handle the demands of its current customers and the plant, what happens if that's not approved?
There are just so many assumptions and speculations surrounding this refinery, please base your decision on what you know, rather than what you think the gas market will be like in 40yrs. With the potential for new, green fuel technology to replace fossil fuels, we have no idea what the next 40yrs holds, amazing growth in green tech is booming, approving this project will lock us into 40 years of ghg/carbon emissions, at the time when we need to do everything we can do reduce our ghg/carbon footprint..please deny the permit. For all of us! Thank you for your hard work,
Sincerely, Jennifer

Debra McGee

Washington should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama.

The fires in Oregon and Wash.and the growing multiple devastating weather events are all "evidence" of what scientists are telling us.....we must STOP use of fossil fuels because they are heating up the atmosphere.
As a public school educator whose first job was in Yakima, I love the beauty of Wash. state. Climate change is destroying our home!

Please reject this project that will only take our species and all life closer to the edge of extinction. Time to change or die.
Please for the sake of my grandchildren and your own- reject this project.
Sincerely,

Cyndra Norman

I am opposed to building the KMMEF Methanol production facility. Our state should not be encouraging the production of greenhouse gases given the damage they have done to our climate. We should have long ago done our best to find other ways forms of energy for manufacturing, transportation, and heating. But we can start now with not allowing this facility to add to greenhouse gas emissions.

Carol Raphael

Hello. I am a retired writer living in Portland, Oregon and am deeply concerned about the proposed gas-to-methanol refinery in Southwest Washington and the impacts it will have on our environment and on future generations. I have two grandchildren who are already suffering the effects of a global pandemic and the effects of climate change with the recent devastating wildfires that have done huge and long-lasting damage. We must begin to respect the limitations of our planet and live in harmony with the natural world.

In particular, this project would cause millions of tons of greenhouse gas pollution, use millions of gallons of water from an aquifer connected to the Columbia River each day, pollute the air with cancer-causing emissions, and pose safety hazards during an earthquake. The refinery would use more fracked gas than all the gas-fired power plants in Washington combined. And the refinery would induce new fracked gas pipeline expansions throughout the region. All of these impacts are an excessive and unacceptable cost for fuel, which can now be acquired in many more sustainable and healthy ways.

I emphatically request that he Department of Ecology to reject the methanol refinery and deny the Shorelines Permit for the project.

Nicole Acevedo

A Methanol Plant in Kalama would be a disastrous. Methanol can be lethal to the health of people in community and you do not know how much can escape and harm the community and the water around it. I am opposed and if taken further there will be protests. this is not what we need nor want in our community. Our air has already been disrupted my smoke in the air, now long term affects of methanol can cause long term health problems to otherwise healthy people. I strongly opposed Kalama Manufacturing and Marine Export Facility

Monica Zazueta

Dear Department of Ecology.
I first want to say thank you for all that you do. Second I would like to say I oppose the proposed fracked gas to methanol refinery in Kalama. I have been on a journey this past year ever since I found out about climate change. I've been to workshops, coucil meetings, organized a protest, written LTE and spoken on webinars about climate change. The world is waking up and seeing that the burning of fossil fuels is making the earth heat up. The science is clear. My 6 year old son Aries is scared about his future. He says we have to tell the world about the earth heating up and we have to stop it. I am trying everything I can to save his future. I am even sending letters and t-shirts with, "Birthplace: Earth Race: Human Politics: Freedom Religion: Love", written on them to John Jay and Rich a morning radio show on Z100, 100.3 FM to try and spread the message of love and we are all one species that needs to work together to save us all. My job and my joy is to protect my son. I will bug our elected officials about finding solutions now until it is done. Everyday we should be working towards equality for all and a green planet. We can keep our temperature down and at a safe level but we must act now. Stop this project from going through. My sons life depends on it.

Thank you for your leadership and time.

Monica Zazueta
Concerned momma

Dena Turner

I oppose Kalama because if built, The Methanol refinery would require massive pipeline expansions. Gas pipelines leak methane (over 80 times more warming than CO2), have a history of dangerous explosions.
I oppose Kalama because of fracking. If built, thereby increasing the demand for natural gas in North America, this project will increase the demand for fracking. Fracking damages public health, pollutes water and contributes to climate change.
I oppose Kalama because of illegality and corruption. The port of Kalama and Cowlitz county, lead agencies for the EIS for the Methanol refinery in Kalama, have a conflict of interest. They are both receiving money from NWIW (the company proposing the project), the county through tax dollars and 'philanthropic donations' and the port through monthly rent.
I oppose Kalama because of local environmental injustices.The proposed methanol refinery in Kalama will increase pollution in a town that is already near the freeway, has high unemployment and poverty, and has oil and coal trains coming through consistently. Cowlitz County already experiences higher than average cancer rates.
Additionally, the Kalama methanol refinery would take 5 million gallons of water/day out of the Columbia River, and ship up to 6 tankers per month on the Columbia river. A methanol spill could be devastating for salmon. Orca Whales are starving because not enough Salmon are making it to the Salish Sea.

Kalama Reuter

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Kalama Reuter
920 NE Fields Ave White Salmon, WA 98672-0440
kalama@embarqmail.com

Helen Sargeant

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We have one common home and we must protect it. We are on the brink of a no-return climate crisis so for the sake of all, and the planet we cannot regress by increasing use of fossil fuels.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
HELEN M. SARGEANT
1114 W Edgehill Rd Spokane, WA 99218-2427
helen.sargeant@mygait.com

Heather Grube

Thank you for the opportunity to comment. While Northwest Innovation Works has promised to mitigate all of its carbon footprint in Washington state, the complete life cycle effects of its methanol production facility expands far beyond our state borders, and are just too detrimental to support. Our global lands and waters are choking from plastics pollution and fossil fuel emissions. There is no guarantee the methanol produced in Kalama will not be used for single use plastics or fuel. Perhaps by denying the Kalama permit, some fracked gas producers will cease their harmful operations as well.
Thanks again,
Heather Grube

scott theisen

The Kalama Manufacturing/Export facility is an incredibly bad idea. Everyone of us needs to focus on combating climate change. Fracking does not do that. Making more plastics does not do that (plastic "dust" is now in the air we breathe.) This is a bad project at an even worse time.

Ashley Bonnell

Dear Director Watson and Department of Ecology,

Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. I am concerned about climate change and the massive implications of this facility. I also am opposed to the continued proliferation of facilities that create chemicals to make more plastic.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is a mistake for Washington. Northwest Innovation Works cannot be trusted to mitigate the impacts of this fracked gas refinery.

Please deny this project.

Yours sincerely,

Ashley Bonnell
15221 9th Ave SW, Unit F Burien, WA 98166, USA

Susan Lee Schwartz
1102 Kessler Blvd.
Longview WA 98632
Slschwartz1951@yahoo.com

The methanol plant if built will be an environmental disaster. It will increase the state's greenhouse gas emissions by almost one million a year. This would make it one of the ten largest sources of emissions in Washington State. Greenhouse gases are the main reason for global warming.

You need to consider the fracked gas because it is being used to make plastic. There will be more extraction of natural gas than originally estimated. The gas would be fracked. Fracking is not good for the environment. The chemicals used are harmful to humans, especially pregnant women and the developing baby. There is a 40% chance of having a premature baby and 30% of high-risk pregnancy. Fracking gas causes people to lose water for cooking, drinking, taking baths or growing crops. People turn on the kitchen faucets and fire comes out not water. There are health ricks such as shortness of breath, wheezing and coughing.

The pipelines to carry fracked gas are old and have been for years. They will be subject to accidental leaks and deliberate release gas called blow downs and even devastating explosions. These pipelines will go next a cemetery where people loved ones is buried. If the pipeline leaks I know I would like to get gas on my relative.

Extra diesel boat traffic going to the plant will add to global warming. Ships emit black carbon, which causes pollution. The International Maritime Organization estimates that a carbon dioxide emission from shipping adds to global warming. There will be more ships on the river going to and from the methanol plant. The ships will not be good for the river creatures. The ships traveling on the Columbia River do make the river warming.

The states of Washington, Oregon and California are burning. Whole towns have burned. There is loss of life, people houses and jobs are gone. This is because o0f global warming. This methanol plant is built it will add greenhouse gases into atmosphere, which causes global warming. You need to say know too much pollution.

Anonymous Anonymous

I am among many voters Not wanting Fracked Gas and Electricity to be used by Methanol Refinery. I won't waste my words or your time going through all the environmental hazards this would cause.. Do you really want your forever next generations to be forced to breathe the toxic fumes just so put money in the pockets of all the powers that benefit from this? We need to leave this world a better place for our children and make their children proud to know that we did everything we could to give them clean water, clean air, and a perfect eco system.
Fracked Gas does indeed qualify as extremely harmful to the environment, along with pipelines, releasing greenhouse gases, fossil fuel spills and leaks, burning methanol as fuel in China, and the endless stream of single-use plastics.
We, as a human species need to act now to save our planet. Subsidized fossil fuel extraction and usage is devastating this world. Now's the time to make the switch to green, renewable energy. Our state is supposed to be all about that! Cowlitz County's citizens could be put to work building light-rail or a high-speed magnetic-levitation train along the I-5 corridor from Portland to Seattle, for instance! Good jobs!
I hope that we can continue to count on our Governor, who claims concern for the Climate Crisis, along with Laura Watson and her Department of Ecology Team, to lead the way by rejecting another Fossil Fuel Disaster. Neither Indigenous Peoples of Canada nor citizens of Kalama wish to reside in "sacrifice zones."
Thank you for your time.

Mark Keely

Ecology WA's Water Quality Program https://ecology.wa.gov/About-us/Get-to-know-us/Our-Programs/Water-Quality states, "The Water Quality program's goals are to prevent and reduce water pollution, to clean up polluted waters, and engage citizens in the work to protect and restore water quality in Washington."

This refinery would sit at the confluence of the Kalama River and Columbia River, a natural salmon spawning area. One gallon of methanol depletes the oxygen in 198,000 gallons of water. (Source: Univ. of Washington Urban Waters video, 2016-03-03, between minutes 34 and 39, https://www.tacoma.uw.edu/methanol.) What will happen when a tanker holding 14 million gallons of methanol goes aground (as ships often do in the Columbia) and starts leaking? Potentially deoxygenate 2.7 trillion gallons of water killing every living marine creature. Stand up for your own Water Quality Program goals. DENY Kalama methanol refinery shorelines permits.

Mark Keely

WAC 173-485-010 PETROLEUM REFINERY GREENHOUSE GAS EMISSION REQUIREMENTS. The purpose of this rule is to determine reasonably available control of technology for emissions of GHG emitted by petroleum refineries located in WA state. The emissions standard for this rule were developed under the requirements of RW 70.94.154.

NWIW's KMMEF *is* a refinery (Methanol is distilled in a "refining column," which is likely why project backers of the plant originally referred to it as a refinery. Now they balk at that term and have scrubbed it from their materials probably because it sounds nasty. But it is what it is, a petrochemical REFINERY.)

I've read the DSSEIS carefully. NWIW has not shown reasonable available control using technology for emissions either onsite or through their vague and flimsy mitigation framework. NWIW is skirting our laws of Washington state. The laws we set in place to protect our environment – land, air, soil, water, animals, plants, and humans. Obey our WA laws. DENY the shorelines permits. Let's move forward with NO new petroleum or petrochemical refineries in Washington State.

Linda Horst

"We can't solve problems by using the same kind of thinking we used when we created them"___Albert Einstein.

This kind of rational and forward Einsteinesque thinking is no where to be found in NWIW's sales pitch.....burning more fossil fuels is good for the climate! In fact, the entire premise of the Kalama project is establishing 40 more years of consumer demand for gas rather than moving away from fossil fuels. Basically, NWIW's solution to the climate change abyss we are descending ever deeper into is to 'go deeper' and all our climate change problems will be solved!

Ecology's analysis in the Draft SSEIS has clearly demonstrated the KMMEF refinery would, at the very least: produce 184 million metric tons of carbon pollution over the 40 year life span of the refinery; be equal to around 5 percent of the states total climate emissions from all other activities combined; rank among the top polluters in the state; generate 2 million tons of carbon pollution in China each year if 40 percent of the methanol production capacity is burned as fuel; and if the full methanol production capacity of the refinery is burned in China, 5 million tons of carbon pollution will be generated each year!

The factual realities of this NWIW proposal are irrefutable. This refinery is the antithesis of all that Ecology is tasked with protecting, preserving and enhancing....Washington's environment! The facts speak for themselves! Deny the permit .

Sandra Cobb

With the severe impact of climate change, all of our energy and funding should go towards renewable energy. This is for the USA and the world. Both methane production and plastic production should be discouraged and unfunded. It is totally unnecessary and detrimental to our health and environment. Please cancel this project and go 100% renewable.

Denise Schafte

There is no more time to continue energy production as usual when there are a myriad of options to replace any energy produced by this archaic system and the oil and gas industries being handed all rights over the American people and their futures.
It is insane to propose anything that would contribute to continued greenhouse gases and environmental destruction with exponentially devastating wildlife fires, hurricanes, desertification, temperature increases far higher than expected, poisoned water, cancer rates now at 1 out of 2 people, 500 extinctions a month, crops that are requiring more and more fertilizer every year due to soil degradation, mass refugee crisis world wide due to rising sea levels and evacuations of island states and coastal areas and due to food and water limitations.

Joel Carlson

Fracked gas or methane is extremely harmful to our environment and must be banned. New construction must be electric only with heat pumps, etc. We must also ban the fracked gas LNG projects in Tacoma and fracked gas to methanol project in Kalama. It is vital that we get this done now!

James Denton

Hello, My name is Jim Denton and I just want to say, that I am completely against this plant being upwind from my home... and directly on banks of my beloved Columbia river. We already have enough dangerous operations right on our riverbanks.. and adding this one is not a good idea. All the money in the world doesn't make this a worthwhile venture for Kalama residents, nor Americans in general. For every fact I present against... I know you have ten that state your point for it. So I just would like to say, I just don't want it here.. upwind from my home, nor sitting on dredge spoils from the Mt St Helens eruption. Ever heard of "Liquefaction"? Our natural resources are move valuable than the Port and the Chinese getting richer at cost of Kalama residents and our beloved Columbia River system.

Alison Stern

I encourage you to reject the permit for the Kalama Manufacturing and Marine Export Terminal. I have grave concerns about fracking - and the movement of fracked gas to the terminal would require the building of pipelines that are dangerous for people and the environment. The shipping of methanol to Asian markets is also very hazardous to the environment. We need to be focusing on ways to help avert a climate crisis and I believe that this would be a step in the wrong direction for our state. Thanks you for your consideration. Alison Stern

Allison Ostrer

>> ALLISON: Great I will be brief, my name is Allison roster I live in Seattle and I am a voter and tax pair and the irony of having this meeting.

The stated purpose of this Kalama is to ship fossil fuels to Asia and already drowning in plastic. We really don't need more.

I don't want more. Regarding the use of offsetting coal as a dying industry, its use will continue to fall without approving the Kalama project and stating we should approve it quote unquote to reduce coal use is the last gentleman was talking about. I think was disingenuous, misleading and false. I guess all use of fossil fuels for their life when we don't need to do that. I want Washington to create more clean energy companies and not, slightly less dirty if we ship the numbers just right companies. And the chance to have a major impact on reducing fossil fuels and on saving the environment. This industry needs our coast so we can say no to this project and have a direct impact on plastic pollution and climate change. This is a rare opportunity to think globally and acted globally by rejecting the project.

Anastasia Pyz

>> Hello my name is Anastasia prize anime 25-year-old youth climate activist working with sunrise PDX and 350 PDX out of Portland. And I just cannot fathom why in a time like this, as the previous commentator just noted, our entire coastline is on fire, the effects of climate change are just beyond undeniable at this point and talking about a project that needs to exist in order for just other companies to pollute less is just asinine. The only way forward is to not build places like this. We don't need a single bit more of plastic in our oceans looking every single bit of marine wildlife.

I mean we are about to enter a point in history where we have more poundage of plastic in our oceans that we do real fish. We cannot subsidize and keep making these changes happen for jury ways of fuel. The only way forward and the only way to save our way of life is to not pander to these companies that are just unaccepting of the damage that they are doing. We can only invest in green electric, alternatives. There is just no way around this. We cannot keep polluting the planet and justifying that this is an okay project to make on the banks of the river that we know will call innumerable damage. Just do what is right if you have any shred of decency and you. I'm done.

Becky Fletcher

>> These are desperate times, while it might bring relief to some locally it will be a far increase inflected on individuals and those far beyond these borders. I ain't ask yourself while places I love and I had the strength and privilege to visit I don't want my paintings to be near elegies to beauty to the beauty loss.

I see climate change, the lake, I saw the surrounding conifer forest turning from deep green to a dying gray. I have no words on how it tracks my heart for this slow death. And the tear of the forest and flames. The error has been on how soon we would see such catastrophic effects and I also member a time we got along fine without plastic. And flying across the immensity,[emotional speech] we do not need more of it. Now with this smoke and almost encircling the earth, we must have the vision to see you to a route that must slow this mountain of disaster. Not further exacerbated. I know we have the ability to find a better way forward. For the sake of our children, security and future, I call on the Department of ecology to reject the refinery instead their every resource into renewable energy sectors Thank you

Bill Kirkland

>> Okay I am Bill Kirkland, is a resident of the Pacific West, wildlife photographer and outdoor enthusiast, I treasure the Columbia River. My wife and I raised our kids hiking in the nearby mountains and windsurfing on the Columbia. Unique treasure was special value in the world of the missing wild places. When I read about the proposed Kalama gas and refinery plant I was extremely concerned about the welfare of the surrounding environment. I thought it would be destructive healthcare gas emissions at a time when our planet could not afford more fossil fuel investment. What? The negative emissions would impact the environment and people from British Columbia of Washington and beyond. In addition local indigenous communities will be harmed by greenhouse gas and included water caused by for acting, the concerns are being repeatedly ignored and this moment of racial reckoning nationwide we should seek to stop further injustice. I'm also concerned that this foreign owned company has no appreciation for our land, water, wildlife and local people. Our resources should not be compromised for a quick profit.

Once the damage has been done we are the ones left with the mass. Were scientists have warned we are a critical climate point. For all the reasons I urge the Department of ecology to redact the permit. Thank you.

Alice Shapiro

Please do not assume that our energy future depends upon fossil fuel use. Solar energy is becoming very affordable and is a good solution for future energy needs.
(NWIW) is trying to build the world's largest fracked gas-to-methanol refinery in SW Washington. It would cause millions of tons of greenhouse gas pollution, use millions of gallons of water from an aquifer connected to the Columbia River each day, pollute the air with cancer-causing emissions, and pose safety hazards during an earthquake. The refinery would use more fracked gas than all the gas-fired power plants in Washington, combined. And the refinery would induce new fracked gas pipeline expansions throughout the region.
The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years. This will put my grandchildren, great grandchildren and all species with whom we share this world. Ecology's analysis demonstrated that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.
This would be the world's largest fracked gas-to-methanol refinery. It would cause millions of tons of greenhouse gas pollution, use millions of gallons of water from an aquifer connected to the Columbia River each day, pollute the air with cancer-causing emissions, and pose safety hazards during an earthquake. The refinery would use more fracked gas than all the gas-fired power plants in Washington, combined. And the refinery would induce new fracked gas pipeline expansions throughout the region.
We cannot afford to risk the future by making unwise decisions in the present. Please be more far-sighted and deny any permits for this fracked-gas refinery. These young girls are seeking a livable future. Don't let them down!


PROUD
AND
NEAH-KAH-
GENERAL CONS
KYLE
CARLOS
MEGAN
COLIN PU
JENNIFER
JIM COX, FA

Jared Howe

I fully oppose this project and asked that all steps be taken to stop it.

Derek Benedict

Can we please move beyond fossil fuels in our state and deny the Port of Kalama methanol project?

WA State doesn't need the ensuing pollution or be complicit in sending this toxin overseas where it will be used to create more plastic.

Randall Kuhns

The increase in greenhouse gas emissions is too great. This facility should not be permitted.

Shari Goss

In this time of crisis the last thing we need for the planet is more greenhouse gas emissions. It is insane to even consider building a methanol production plant and storage facility. Science has spoken. Mother Earth has spoken through uncontrolled fires and hurricanes. I can only hope we learn before it is too late for our children.

Port of Woodland

September 17, 2020

Laura Watson, Director,
Washington State Department of Ecology
Gordon White, Program Manager
Shorelands and Environmental Assistance Program
Washington State Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Re: Northwest Innovation Works "NWIW" Kalama Methanol Facility

Dear Ms. Bellon and Mr. Lund,

The Port of Woodland Commission wishes to provide their comments to the Washington State Department of Ecology's second supplemental environmental impact statement released on September 2, 2020 . The Department of Ecology has focused the information of requiring this supplemental to address Greenhouse Gas impacts to Washington and the world. It is understandable that construction of any type of industrial facility will produce some sort of negative impact but it must have as equal to the impact of the positive job creation, the net loss of global Greenhouse gas emissions and fiscal impact to the community, the state and our country.

If Washington desires to improve the world's environmental health, it must do so by setting an example through the permit approvals of approved cleaner and sustainable alternatives to those fuels, like coal plants in China. The Northwest Innovation Works plants will improve the global environmental impact. Approving such a project may lead the world into a greener alternative, setting an example to the Governor's environmental policies. By not approving this permit, Washington State provides no guidance for alternative commodities like proposed by NWIW, allowing traditional commodities to continue in other nations, furthering global impacts.

As a neighboring Port, we have addressed these concerns in two resolutions by taking a stance of coal and other fossil fuel commodities to not be considered on our port property. Kalama's facility is only 5 river miles away from our closest property, so this project does impact the Port District and potential development on our properties.

The Port submitted a letter in December 2019 opposing Department of Ecology's statement of conducting this draft supplemental impact study. This project became unnecessarily political and, over the last year, we have seen this continue to impact the national political arena. Job creation should not be political. Providing a means for families to support themselves should not be political. The permitting of this facility should not be political and should follow the state's SEPA requirements and NWIW has met those conditions. Bottom line, this plant will displace coal-based processes in China, and addressed

each and every issue pertinent to their operations on achieving those goals of the state to confront climate change through improved technology and energy. Innovation in fuels is a growing market and has to be embraced to replace traditional fuels like coal that have a more detrimental impact to our environment. We hope that the State Department of Ecology will approve these permits and allow NWIW and the state of Washington to be a global example for the future of all industrial development opportunities.

Sincerely,

The Port of Woodland Commission

Robert Wile, President

Paul Cline, Secretary

Dale Boon, Commissioner

Kalama's Fracked Gas Methanol Refinery would be a terrible mistake on a world level

My name is Marilee Dea. I am a retired public health Nurse Practitioner, I worked for Multnomah County Health Department.

I am living on the coast in Beaver, Oregon now. Beaver was between two fires, the Otis fire by Lincoln City and the Bay City fire by Tillamook. The town of Otis is gone, demolished totally by the fires, as was Talent, Phoenix and much of Clackamus County. 48 fires occurred in Oregon and Washington last week. It could happen to Kalama and the methanol refinery just like it did to Otis. It is possible. Who would have ever thought that rainy coastal cities would catch on fire, but they did. What would happen if the largest Methanol plant in the world caught fire? It's Green House Gases (GHG) could be a disaster on a world level.

Why did these fires occur? It is not the usual suspects - arson, lightening or carelessness, but abnormal, long, dry hot weather with 2 days of 50 and 60 MPH gusting winds, causing trees to fall on power lines and transformers that burst into flames and with the winds spreading the fires, making it impossible for fire fighters to fight them head on.

What caused this odd weather in the Pacific Northwest? NOAA, meteorologists and the governors of Washington, Oregon, and California agree that it is global warming that is causing temperatures to soar around the world and sparking these fires.
Global warming is primarily fueled by atmospheric carbon from fossil fuels. The Kalama Methanol Refinery will be the largest GHG emitter in Washington, it is dependent on fracked gas, one of the worst fossil fuels, particularly because it leaks methane. Methane is 80 times stronger in GHG's than Carbon Dioxide (Co2). Listen to the scientists and our governors who are calling for a halt to new carbon emitting fossil fuel projects and move to renewable energy - for a livable world for our children. Stop the Methanol Refinery project and help us have a greener future.

Kalama Methanol Refinery is a mistake, and our fires are not the trees fault.

marileedea@comcast.net
503 490 8248

Vanassa Lundheim

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Lorana Leeson

The product would add to the destruction of global environment that will kill humans. Do not permit.

priscilla martinez

We need to take better care of what is left of our environment, for people, wildlife, and marine life.

Michele Trickey

Hi, my name is Michele Trickey, and I'm an Amazon employee in Seattle. I studied atmospheric physics in a prior life. I'm perturbed by the way the SEIS underestimates methane leak rates (I've seen 3% used as a conservative figure, and as much as 10% in some locations). I wasn't a healthy kid -- I lived in Southern California, and the smog made me sick. I had sinus infections such that I never wanted to play, only to cuddle up and read. The smoke this summer put me back in that place. I don't want that for my children. I know it's tempting to see this project as "better than them doing it elsewhere," but in the end, it's more fossil fuel infrastructure incentivizing more leaky pipelines and setting us farther back from drawdown. Please include more accurate leak rates in the final SEIS.

Don Steinke

The world has changed a lot since the idea for Kalama methanol was imagined.
Concern over plastic pollution has stimulated bans for certain types of single-use plastics.

And now California has passed a bill to require that soda bottles contain 50% recycled content. When California leads, others follow.
https://www.mercurynews.com/2020/09/25/california-passes-first-in-nation-plastics-recycling-law/?fbclid=IwAR254gBhaZ3IdGih401vhWMDP5hhhO8kp8LncXhK2xnipS1o7c-f4zJ1kwY

Therefore, the market speculations in your DSEIS should be discarded. Stick with what we know and get answers to what we don't know.

Don Steinke

The climate argument for building the Kalama methanol refinery assumes that China would not adopt more progressive climate policy.
China's pledge to go carbon neutral by 2060 obliterates that key assumption.

Ecology, reject this misguided, climate-wrecking fracked gas export proposal.

Sara Cate MD, MPH

To whom it may concern,

I'm strongly opposed to this proposal. We have a climate crisis and this is in direct opposition of the direction we should be going as a state and country. "The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years. Ecology should deny the Shorelines permit for the refinery. Ecology's analysis demonstrated that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C."

Anna Doty

>> Thank you for taking comments today. My name is Anna Doty and speaking on behalf of Washington environmental Council-- today to reject the speculative analysis as a basis of evaluating to Clement impacts and deny the shoreline permit for the energy for the facility. This does make some improvements by partially adjusting unrealistic the low leakage rates and finally acknowledging the likelihood that methanol produced by this facility will be used as trance rotation fuels. Despite livered efforts by Northwest innovation works to mislead your agency and the public otherwise. However the mitigation and displacement analysis is deeply concerning and is misleading and speculative and unenforceable a Sumption about this project. Dangerous to presume this analysis can accurately predict consumer behaviors or regulations for the coming four decades. The SEIS provides to do little detail on the actual mitigation that would be accomplished within this involuntary remark. Nor does it-- emissions overseas occurring. Also an X-Acto to use mitigation as a tool to simply maintain the status quo while we continue to build out the fossil fuel industry. We know that is us as usual is not-- even with all of these flaws, this announces and confirms this facility was still be become one of the greatest sources of pollution in Washington. Is unacceptable to build in a Norma's polluting facility based on speculated analysis and you should dismiss the speculative idea that this could displace even more polluting facilities and what is reasonably foreseeable and in fact assured about this project which is that it would cause millions of tons of greenhouse gas pollution each year for 40 years and inconsistent with the achieving of our climate goals.

Bill Sampson

>> Hello my name is Bill Samson and I'm calling in from Seattle and thank you for the opportunity to testify today. I have a lot of concerns about this project and I want to say first but I would like to everyone to have access to a good job and clean air and clean water and to be healthy and safe so I think fossil fuel industry, whether coal, oil, gas, it's not the way to do that but renewable energy is growing and it is the future and the projects like this, they increase instance of murdered and indigenous women, a lot of pollution and this project in particular and energy consumption is a monster and take a lot of water out of the Columbia River, this is already extremely polluted and-- extension. These are worthy indigenous people want to stay and a very important part of the-- economy for nonindigenous people as well. I have a lot of concerns about assumptions like it seemed like a gas industry report copied and and saying-- definitely for 40 years without any changes throughout the regulations and that this project is clean and the other guests will not be clean. And that all fossil fuels dash mac my time is almost up. Thank you.

Adam Davis

>> Good afternoon everyone my name is Adam, I lived in-- County and reside in Castle Rock with my wife and three children. I served the Western side of the state as a union rep for the local-- vendors, I have been involved and interested in this project for about six years now. During that time NWIW has continued to meet the requirements to obtain the necessary permits for this project. A lot of conditions they have far exceeded that as well. For example the projects incorporation of the 0 water discharge in the design and commitment to mitigate for 100% of emissions first day of Washington. The year-long review included the project will most likely result in reduction of 6 million tons-- carbon emissions globally. That is twice the amount of carbon emitted from the city. Some have chosen to ignore the benefits this can bring. I would say it does not stop at country's borders or state lines, in addition to this plant having a net reduction in GHG's globally there are a few benefits we will see as well such as 1000 plus local family with jobs during the three-year construction phase. And nearly 30 to $40 million in tax revenue. I encourage you to put Washington on the map and to help decarbonized Washington and I urge you to approve the spinal permit. Thank you.

Ecology has taken an untenable and indefensible position by saying that this project— although it will put over the limit amounts of GHG into the air could be worse— and compared to could be worse it's ok. This has even high school ecology students thinking this is a win win project for Kalama and testifying so in the hearings.

Ecology has put all its eggs into that basket and I'm concerned that Ecology will dig its heels in and double down on that analysis rather than face up to the error of its ways. I'm concerned Ecology will let this get personal the way the Kalama community has gone on this project.

The key underlying assumption for Ecology's so called displacement analysis justifying this project is that China will not change from its path of coal. With unwavering commitment to coal in China, Ecology posits that there will be one less coal sourced methanol plant in the world, and since the demand for methanol will also be unwavering for 40 years that seals the deal.

In the September 23, 2020 New York times "China's Pledge to Be Carbon Neutral by 2060: What It Means" , https://www.nytimes.com/2020/09/23/world/asia/china-climate-change.html, President Xi is quoted: "Humankind can no longer afford to ignore the repeated warnings of nature." There is absolutely no way to accomplish these carbon neutral goals in 40 years without running away from coal as fast as their 2.8 billion legs can take them. They will shift out of coal, they have to do so, it's clear that the writing is on the wall.

For Ecology to assume the exact opposite, that coal will be the China gold standard for energy production over the next 40 years, cannot stand the test of common sense. And with the legs of this displacement analysis shorn off that analysis cannot stand.

Ecology has unwittingly created a firestorm within the Kalama community, pitting neighbor against neighbor, high school students claiming opponents are anti science and a whole bandwagon of unintended consequences from their indefensible analysis. Change your position on this analysis, admit the errors of your ways, swallow your pride and deny this permit.

Bob Zeigler

>> My name is Bob Zigler and I live in-- Washington and commenting as an individual, I would like to comment just as a result of some of the religious communities that played on this issue. Right now there is, we are entering into a special times, special focus on care for the earth. Both in the Jewish communities with the Jewish high holy days with Rosh Hashanah starting tomorrow and New Year's continuing October 4 and Catholic and Episcopal Lutheran communities from September 1 in until October 4th in a season of creation and looking at what we can do to protect this. I would like to point out, there is Pope Francis, and announcing the season of creation, climate restorations utmost appointments since we are in the midst of a climate emergency we are running out of time as our children and young people have reminded us. And strengthen regulation of the activities of extractive companies to ensure justice for those affected. Especially indigenous communities. I would also like to point out that I have great concerns over the mitigation proposed. Because it says mitigate hundred percent, the is more of a wish and a hope then I guarantee. There is no way to guarantee it will be the political will to do this. There will be funding for staff to do this. And this will actually be happening on the ground. And also the requirement that the mitigation be cost-effective. Really limits what can be included. I would like to close with statements of Pope Francis. Which dash mac said strategy of buying and selling carbon credits can leave a new form of speculation which will not help, reducing emission and gases worldwide. And providing a quick and easy solution under the guise of commitment to the environment. And whether a ploy that permits employing some countries and sectors. Thank you.

Carrie Parks

>> Thank you my name is Carrie parks MA third generation Washington and I have hiked, camped and then in all parts of the state. The smoke reaching an uncontrolled forest fires, lungs burning, though it's scratchy, eyes an unusual event. Because of the fires it is unsafe to be outside and because of COVID is unsafe to be inside. This is the beginning of a new normal. The destructive effects of climate change are here now and only going to get worse. This is the third fire event in four years and in Vancouver we had as an smoke in both 2017, 2018 and now again and 2020. Wildfires are decimating Washington, Oregon and held for you. Smoke covers the entire western half of the U.S. and thousands of miles out over the Pacific ocean. I asked the park commissioners of Kalama are the jobs more important than those who have lost their homes, animals, jobs and even their lives along the West Coast?

Is your dream that great? Ten percent of or God z entire population has had to evacuate from their homes. Millions of acres have been scorched in Washington. If you allow this methanol went to go into this is the future you are locking your children and grandchildren into forever. This is not mitigatable. Deny the shoreline for this plant. Don't let them build it.

Camilo Marquez

>> Hello I lived in a pristine area that was part of the watershed of New York City and I came out here believing that those kinds of conditions would be available to me. Right in the heart of the metropolitan area. In Portland. But since I have been here, we have seen a number of events where the threats to the environment have been impossible to avoid. It is literally in the air. The air that you breathe floating down in the form of ash so given what we know about of what are the consequences of climate change in the fact we have seen severe consequences. It's hard for me to imagine how we can consider this kind of a project that would continue to contribute massive amounts of greenhouse gases and the events that we are suffering with today due to climate change, we knew about. And we know what will happen if we do not reduce the amount of greenhouse gases that we're producing. At this point we will add 4.6 metric tons annually for the next 40 years. The arguments for it, the arguments that justify it really are speculative and strike me as being speeches. So I ask you humbly to reject this request for permanent. Thank you.

Oregon Conservancy Foundation

>> I name is Catherine Xavi I'm speaking for the Oregon Conservancy foundation. We are experiencing immediate devastating impact of catastrophic climate change right now where we live, work and play. It is ironic that public hearings on this proposal are being held just as we are forced by claimant fires to closet indoors and breathe the most hazardous air in the nation into our lungs. The only way we can protect our region from the increased frequency and these destructive climate fires and toxic air pollution is to keep fossil fuels in the ground. Despite of the elusive Rosie picture by proponents and speculation, not fact, that conjectures unsupported conclusions about reducing mobile emissions sometimes in the future, your SEIS makes clear the operation of this facility will in fact pump 4.6 tons of carbon dioxide pollution for the next year and for the next 40 years into Washington. This is simply unacceptable at every level. Claiming this company with a track record of lying to those in the public, is not worth the paper is printed on. The mitigation promises a house of cards and toxic as the air we breathe and the aftermath of reaching claimant fires predicted to grow worse over time unless we set policies and make decisions that direct us away from fossil fuel facilities like this 1 this facility sentences our children to decades of adverse cost that you cannot ask them to bear. The Conservancy foundation teaches you to carefully examine the climate facts and not speculations in your own analysis. And ask that you deny the shorelines permanent and ultimately reject this refinery for the health, safety and long-term well-being of our children and the survivor of biological support systems on the planet.

Craig Heverly

>> My name is Craig have really, I am 82, however you decide this, probably not affect me very much. My time is short. But I have three young grandchildren living in Tacoma, Dixon and-- speaking with them on my mind and on my heart.

They are just starting out in their lives. And your decision have huge impacts on those lives. And to start pouring carbon into the atmosphere, we have a hope of something close to a livable planet, this project is 180 ° in the wrong direction in the name of my grandchildren I ask you to turn it down. Thinking of them something else, looking ahead a time all come when either the supply of gas or the demand for methanol will dry up Northwest innovation works will make the business decision to sell or declare bankruptcy and disappear. The jobs will be gone and the people of Kalama will watch this huge Hoke standing on the shore rest over it fall apart.

The damage will be done to the town, to the river, to the water table, to the land, to the environment, to the air into the planet. And who is going to pay to clean up? Certainly not Northwest innovation. No. It it will fall to all the rest of us.

Were a criminal diversion of tax dollars that would be when we could have stopped it right here. In the name of Viola, Dixon and Eula, I am asking you all to turn down this.

Government Council

>> My name is Bob Gregory I'm a resident of-- County, government counsel, I've seen and been involved with many different job creating projects close to-- County. The findings with the another project, it concludes it is time to permit the Northwest innovations project in Kalama and allow the county and comma in a tease to return to the economic vitality we have lost from the jobs that have occurred at warehouse or, fiber and the closure of-- resulting in the loss of 1000 jobs for after this project by the Department of ecology and using the most conservative approach, these examinations again clutter to conclude that the project will reduce greenhouse gas emissions equivalent of twice of what the entire city of Seattle produces each year. Emits each year. Even so Northwest innovations has committed to fully mitigate all the greenhouse gas what emissions in Washington and increase our global benefit. This project is one of the most environmentally sound new projects proposed in the past decade with examples such as 0 liquid discharge, traffic impacts, no solid waste and air emissions at the Southwest pollution control levels. It's time we conclude ambiguity and moving targets in the determinant of ecology to accept its own environmental impacts city and approve the permit. For the state of Washington.

Columbia River Keeper

Hello my name is Dan Sears and the conservation director with Columbia River keeper. I want to make three per main points today. First the climate methanol refinery would be a main source of rain house gas pollution. It mistreats the project would produce 4.6 million tons of greenhouse gas pollution each year. 1 million tons within Washington State along.

If all of it is combusted for fuel the number is higher. If ecology uses more numbers for methane leakage is higher. Regardless the impact would be staggering at a step from the worst impacts of lemon change.

On this basis ecology should deny the project. Secondly, every fossil fuel company has tried to claim that is other than coal or some other fossil fuel. This is a false standard.

Millennium coal try to claim cleaner coal but no one Sears I thinks shipping 44 million tons of coal would help the claimant. And trying to ship lower carbon oil but no one actually believed that shipping printer safety thousand barrels of oil a day would help the climate. Ecology will be setting a terrible precedent by allowing Northwest innovation works to claim that it would be doing anyone a favor by using shocking 320,000,000 ft. ^{3} of Frak aspirate date and belching millions of tons of climate pollution into the atmosphere and dumping methanol into a global arc it for decades. Third, the green economic appendix does not support conclusion that Northwest innovation works methanol would direct late displacement coal based methanol. Stating within China there is likely a preference for expanding domestic production were feasible, expanding low-cost ethanol is excited to make up the largest share of the methanol supplies in the coming years. We cannot control the decisions of other nations or predict 40 years of market shifts, technology improvements, payment policy or trade wars. The only reasonable, foreseeable impact of this project is massive pollution. Thank you and we will submit our comments in writing.

philippe letourneau

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Keith D'Alessandro

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Niki Vogt

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Dottie Butler

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Kimberly Holborn

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James Scarlett-Lyon

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Brian Gibbons

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Simone Fonseca

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Arnold Strang

THIS WILL REQUIRE A WW2 SCALE EFFORT!!!!

WE HAVE TO GET THIS RIGHT OR ITS ALL OVER!!!!

WE ARE OUT OF TIME!!!!

NOTHING IS MORE IMPORTANT!!!!

Climate change is an existential threat to human civilization if not humanity itself. We are out of time. The top climate scientists tell us that if we havent controlled our green house gases by 2030 climate change will be IRREVERSIBLE.THE END OF HUMAN CIVILIZATION!!!! As it stands, we will already experience severe effects because there is so much inertia built into the system. There are many positive feedback loops already in progress. Reversal of climate change could require hundreds of thousands of years, far longer than modern humans have been on the Earth. This will not be easy!!!!

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Phillip Norman

It is purely evil to pillage North American wilderness, forever ruining its habitability. This is in disdain for present inhabitants and those in the future needing habitation on a hotter planet. The grab is merely to enrich a few greedy investors and those witless on their "fund" coattails. Stop the madness, now!

The future of life on Earth must trend better, not worse, as planned in cities of more-progressive China (https://www.c40.org/researches/constructing-a-new-low-carbon-future-china). Don't foolishly accept that export of stolen methanol to China makes any sense.

Susan Schmidt

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RICHARD STERN

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It is time for the state to step up to protect its citizens and not the shareholders in this project.

Jim Rodrigue

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Anonymous Anonymous

We are a decade past due to begin to build a sustainable infrastructure for the future. Biden will start to provide green jobs and build it out. Don't take us backwards to the danger of a climate crisis, but keep it in the ground!

Greg Goodwin

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Linda Studley

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David Dart

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I. DANILOVS

Please oppose this project.

Julie Stone

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Catherine Federman

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Subject: NORTHWEST INNOVATIONS PROJECT - A "WIN-WIN"

Name: Kurt Sacha
Home Address: 2337 E. Lynnwood Dr., Longview, WA 98632
How long lived in SW Washington: 62 years

The Northwest Innovation Works (NWIW) proposed methanol project is a “win-win” for Cowlitz County and the State of Washington. Not only will this project employ 1,000 workers during construction and 200 to operate the facility upon the completion of construction, the investment in the NWIW project provides a much needed boost to a struggling Cowlitz County economy. NWIW’s tax contribution to Kalama schools, Kalama Fire District #5, the City of Kalama, Cowlitz County and the State of Washington will be significant and will provide a strong foundation for successful programs for generations to come.

Better yet- the NWIW project provides for the first “Zero Liquid Discharge” system on the Columbia River and the removal of 9.7 to 12.6 metric tons in climate change-inducing carbon dioxide annually. This facility protects the Columbia River system by recycling 100% of the plant’s wastewater and provides for a significant positive impact on global greenhouse gas emissions- the equivalent to removing approximately 2.2 million cars off the road.

Positive environmental benefits! Positive economic benefits! A “win-win” from every point of view. I urge you to please support this project.

The City of Longview Washington

Kurt Sacha
City Manager
Kurt.Sacha @ci.longview.wa.us
Phone: 360-442-5030

Andrea Faste

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Daniel Villa

Dear Mr. Doenges,

I was outside with the Protectors of the Salish Sea when they asked you, pleaded with you, begged you, to help stop fossil fuel expansion here in Washington State. To protect us and the future for our descendants. And you replied that we had the same goals, that Ecology does want to do that.

So it's confusing to me when I see an SEIS from Ecology that acknowledges the climate damage that the proposed methanol plant will cause in the first half then sings its hypothetical virtues in the next. How can the alleged benefits of a facility be based off of theoretical displacements of other fossil fuels, and their methods of use, that are far from being under the control of Northwest Innovation Works, Washington State, or even the USA?

How does this proposal fit into Washington State's own goals and obligations of reducing our local greenhouse gas emissions? I understand this plant would increase our state's emissions by 10% alone. The proposed facility will be a blight on the small town of Kalama, the Colombia River, the state of Washington.

Where will the enormous quantities of methane for this project originate? Up in Canada where the industry's self-reported leakage rates are allegedly lower than here in the US? Studies have shown that the natural gas industry is leaking from every possible place along the fracking, distribution and end-use chain. It's a climate disaster.

I understand that another pipeline would have to be built across the state, north to south. Are the climate impacts of building this pipeline taken into account? How much will that pipeline will leak? What habitats and waterways will it obstruct and damage along the way?

I don't have to tell you how much worse methane is as a greenhouse gas than carbon. Or maybe I do: at least 86 times worse over a 20 year period. Twenty years. Twice as much time than what the last Intergovernmental Panel on Climate Change report says we have left to move swiftly and radically away from fossil fuels. Yet if you approve this gigantic methanol facility it will be moving in the exact opposite direction of where we need to be going, and for forty years nonetheless, the anticipated life expectancy of the facility.

So once again I will ask you, plead with you, and beg you to use your power to put an end to this disastrous proposal once and for all.

For a better tomorrow,

Daniel Villa

Cheryl Henley

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M Aufrecht

Stop the Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama. NWIWs proposed facility would be enormously polluting in Washington State.

The argument that If we dont build it, someone else will, is a terrible reason to move in the wrong direction. Now is the time to remove fossil fuel infrastructure, not build more. It is time to urgently address the dangers of climate change by investing in alternatives.

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Derek Gendvil

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Cheryl Harrison

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helen carrick

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Amy Platt

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Carol Price

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Betsy Schultz

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Kelly Keefer

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Coleen O'Brien

Today, as I write, the skies above me are smoke filled and the sun is an unfamiliar orange/red orb in the sky.
Methanol is poisonous to our environment. A new facility in Kalama is another step away from an environment that will support human life.
Please, please! Do not allow this plant or any similar environmentally destructive facility to be built in our state. Or anywhere!!!

Bryan Branson

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Irina Clark

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Larry Maes

Having successfully witnessed the stopping of the coal export facility at Cherry Point in Whatcom County several years ago, I can certainly empathize with the opponents of the Kalama Methanol Project. Specifically, the manor in which the environmental impact of the project has been grossly understated. I appreciate that the second EIS was initiated and recently completed, especially knowing the first was in some manor, funded by its proponents. Let's not loose sight of the simple facts regarding this project. Our environment can no longer withstand one more mega fossil fuel contributor. Can't imagine Washington State would even consider such a project. As a lifelong Washingtonian, I'm proud our state has strived to become a leader amongst all other states in its environmental concerns and actions. To approve this project in any way would be a grave mistake and damage the accomplishments our great state has made in the the fight to safeguard our unique ecosystems and battle with climate change. Jobs created in this state should be for renewable, clean energy only. The proponents arguments for this project are thin at best. They are misleading and do not take into account the long terms effects this plant will have on our state, but more important, our worldwide impact as a whole. Look southward to our neighboring states of Oregon and California this year to witness the devastating effects that this plant would certainly contribute to. I appreciate the opportunity to comment. Thank you.

Larry Maes

Stephen Rolston

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Dallas Windham

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perry harris

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Sajal Kantha

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Linda Wright

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Michelle Hofmann

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lynn nash

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victoria Hall

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Tracy Ouellette

The proposed methanol refinery is not consistent with the state's committment to the absolute need to reduce greenhouse gases in order to preserve our environment for future generations.

The proposed NWIW methanol refinery would cause millions of tons of greenhouse gas pollution each year, for 40 years. Ecology should deny the Shorelines permit for the refinery. Ecology's analysis demonstrated that the project would produce 4.6 million tons of carbon pollution each year, or more. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C.

The SEIS relies on a flawed, speculative analysis to argue that methanol could "displace" dirtier energy. The SEIS speculates on how methanol may compare with future, unsure, alternate sources of pollution in overseas markets. The SEIS makes a false and erroneous comparison with potential future other sources of methanol or olefin production. Rather than engaging in this speculation, Ecology should focus on the real-world, known pollution that will come from the facility rather than NWIW's dubious "displacement" argument.

Burning methanol as fuel would generate millions of tons of pollution each year. In 2018 and 2019, NWIW informed potential investors that methanol from the planned refinery could be burned as fuel overseas, in sharp contrast to claims NWIW made to local and state regulators that the methanol would only be used to manufacture plastic. Now, Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate 5 million tons of pollution each year.

As a physician, I am concerned about the impact of this facility on our health. The Proposed Facility would be devastating to public health in the following ways:

1. Fracking pollutes water systems, and causes physical harm from earthquakes and the devastation of surrounding habitat.
2. The pipeline required to transport fracked gas has a high risk potential for leakage and spills, releasing harmful chemicals into ground and surface water.
3. On-site operation of the facility would pollute the Columbia River and its tributaries with harmful runoff, and contribute to reduced air quality leading to increase instance of asthma and other respiratory illness.

Thank you for your consideration of these issues. Please protect our future!

Sharleen Mehemed

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Elizabeth Casanova

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. While I obviously didn't write the text above, I strongly urge you to reevaluate and deny the methanol factory. We as a state should be leaders in green energy, and do all we can to reduce carbon consumption and pollution. Our future depends on it!

SF Brown

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Katherine Spring

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Michelle Macy

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Norm Conrad

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Its basic assumption that China will use the methanol for plastics is flawed since the Chinese already have ample supplies designated for plastics production. Also the report largely ignores the pollution that would result if plastics are burnt to produce electricity.

Another staggering deficiency is the assumption that China will burn fossil fuels no matter where they come from, that if we don't ship ours to them, they will just purchase them elsewhere. The Chinese are rapidly diminishing their reliance on coal and gas. They are turning to green energy faster than we are.

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Robert layton

Comments on Ecology's review of SEIS for Kalama Methanol plant

I am a retired Aerospace Engineer living in Longview, WA. In my view, little has changed since the original SEIS and The Department of Ecology's review. Looking out of my window at the smoke and fog makes me wonder why there is any debate on whether climate change is occurring. And, why projects like this one is even being considered. We all know this project and its product will increase the release of Methane into the atmosphere. Below is a summary of some Methane/Methanol facts:

1. Methane is 20 to 25 times worse than CO2 in absorbing heat in the atmosphere (per Howarth, et al from Cornell University).
2. Methane emissions are increasing as CO2 is declining.
3. Methane emissions due to fracking are increasing and is approximately 60% higher than the EPA estimates that where overlooked due to emissions occurring during abnormal operating conditions (from Alvarez, et. al).
4. Methanol stays in the atmosphere for 10 to 12 years.

Therefore, the largest effect on climate changes due to increased temperatures in the next 10 to 20 years will be from methane. Nature does not change in nice linear ways as observed by earthquakes: stress builds up and reaches a "trigger point", causing and an earthquake. Likewise, climatic effects can happen in the same way. Rise in temperatures in the next 20 years can hit a trigger point relative to methane releases in the atmosphere currently stored up in the higher latitudes in the permafrost. Already, thermokart lakes are forming due to warming and releasing increasing amounts of methane. This scenario will have a spiraling effect on climate more heat equals more methane released and more methane equals more heat. The SEIS overlooks these types of effects on methane released into the atmosphere.

It appears the SEIS underestimated the release of methane due to fracking. A paper by Sangita Bista at the Murdoch University in Australia states that the GHG emissions resulting from development of Western Australia 5 onshore gas basins using fracking would be equivalent to all the Australian emissions sources combined at 2014 levels each year for 20 years.

The SEIS makes a major assumption. It assumes the current use of coal to process olefin in China will be replaced by methane in the next 10 years. This is a just a wild guess as to what actions will be taken by the Chinese Government and what changes will happen in the marketplace. We all know that the methanol produced in Kalama may also be used for fuel. This fuel will be used to support factories, etc. resulting in more emissions.

The Ecological review has not been complete in my view. It has not addressed the problem of more olefins production and what happens when those plastic products are discarded by the consumer. We all hear about micro particles of plastic beginning to be detected in our fish, water, etc. This is also an environmental challenge.

How can any responsible person or organization approve of another project that will negatively degrade the environment. The rationale for the project is to produce a few construction jobs, that will not last long, and then very few operational jobs? With most of the financial burden being assumed by the citizens of Washington state and the United States in order to develop the manufacturing factory for the Chinese!

Robert L .Layton

David Doering

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FRANCE MORROW

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Meredith Shank

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Pat Gudowski

If this envolves fraking I am totally against it. They did this, among other areas, in Iowa several years ago & my daughter is still buying bottled water for consumption..not from her faucet. It is so damaging to our enviornment & resources as well. I would vote NO. thank for the opportunity to be heard.

Carol Whitehurst

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Teresa Flynn

My husband and myself are residents of Kalama, Wa. Our residence is just uphill from the proposed Methanol refinery. This is a totally inappropriate location for this project small acreage on the banks of the Great Columbia River, would be built on dredge spoils, that would liquify as a result of earthquakes.Thank you, for the work protecting Washingtons Environment. No Kalama Methanol Refinery !
Teresa Flynn Kalama, Wa

Penelope Ward

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Ken Zontek

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Susan Thiel

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Leila Hover

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Eldon Leuning

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Nick Magruder

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Cameron Wilkinson

>> I'm taking this to menace to talk about my support of this project. And my disappointment in the constant change in expectations of these companies that are bringing transitional fuel to the state of Washington. And it seems like every year we continue to make things more extreme for them to meet the requirements to build these projects and we don't look at the science, we just do scare the communities with facts that are not, coming up with facts that are not true. Just false facts that organizations are giving out there. And this project will be a great opportunity for Washington state to produce feedstock, to better clean our climate will bully.

For manufacturing up things we all use every day. Plastic, it's in everything, our clothing, a goes down medical supplies, everything. So I am just more or less as a citizen of Calais County I'm getting very frustrated with setting the bar constantly and the other issues of the production of methanol for the forest fires, things like that. This has nothing to do with this project for forest fires are happening because we have changed regulations on the forest to clean them up. And mother nature is taking care of the problem. I just want to end with that, I support this project. Thank you.

Deena Grossman

>> Thank you very much I am Dena speaking from Portland Oregon, less than 35 miles from Kalama, Washington. Thank you for taking public comments. We can't breathe. This week, the letter to President Trump saying is time to abandon the disastrous course that now envelops us in spoken aspect deliberating the size of action to slow climate change must be taken on a global scale with the U.S. in the league. NWIW, SEIS tries to whitewash the issue of greenhouse gas initiatives exceeding 40 million tons per year of the proposed Kalama methanol refinery. The numbers against the larger enormous imaginary numbers for a plant will elsewhere. Saying if you don't let us build us here our corporation or another one will build a worse polluter elsewhere. The insistent has to be built and they are wrong it does not. NWIW, a Chinese government fossil fuel Corporation would become the single largest greenhouse gas polluter in Washington. Please, people of the Department of ecology, lead us to a future of clean air we can breathe. Cool, clear water, driving forest and healthy communities for your sake and for all of our to learn and grandchildren. These take the path to reducing greenhouse gas pollution and take your own mission statement to heart. Protect, preserve and enhance the environment for current and future generations. Oppose actions which will intensify the environmental segregation of our beloved Pacific Northwest. And deny carbon for building the worlds largest methanol refinery in Kalama, thank you sincerely for your attention.

Diane Dick

>> Thank you I am Diane Dick and a resident and setting the project for years. This would be one of the largest in the world. And told me personally it was because many pollution control centers would be too costly with CR and cheaper to take the electric power from the public grade.

Information in the air discharge permit, this refinery has the capacity to admit over 1 million metric tons of GhD's every year just on the process site. And NWIW states they will mitigate all in-state emissions and first priority will be given to projects in Tellis County, please give us specific examples of the mitigation projects and their ability to sequester read house gases from the atmosphere. The only viable way to remove CO2 from the atmosphere is bike growing trees or crops. According to the EPA greenhouse gas calculator it would take 1,306,000 acres of forest land to remove 1 million tons of this in a year. It only comprises of about seven harm forty six,000 acres. There is no way I and the NWIW will be able to mitigate the infractions and this county or all of Southwest Washington. Demand accountability for a real plan now because you surely won't get voluntary compliance later. Let NWIW one more company that tries to buy its way out of--

Clay Dennis

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The people who feel the need for this project should build that facility in their own back yard not in

the place that people have enjoyed life without pollution for however many years. Better still, build it at Mar-a Lago.

Don Steinke

>> My wife and I are using the same computer and she will testify after me. I am a retired science teacher, 40 years mostly at Vancouver I with the, it had been difficult to get all the states related to a proposal. Maker requires you to prepare a whole EIS that tells us the truth and nothing but the truth. But it gave us only part of the truth the law of speculation. I'm not even sure you read your own EIS. Did you write it? Where the remarks about this placement potentially your own? Or did they come from the proponent? Natural gas industry is the absolute master of deceit and lies. They persuaded us that most plastic is recycled.

Where it is not. They are advertising on TV and Facebook right now about the pathway, their pathway to the clean sustainable future. And all the emissions are accounted for, gases nearly as bad as coal and ethanol is worse. Methanol is the opposite and it is a pollution added product. That are to use the fuel at the source then to add the illusion generated by a methanol plant. The gas industry has known about climate change for decades. What has engaged in the campaign of deception to help sell the products. They have fooled most of the public and elected officials. Pulled the green groups as well. Until we learned about methane leaks in 2014. And out trying to full you with the displacement theory. Don't believe anything they say and get rid of the speculation and the EIS and protect the future and say no to the destruction. Now my wife who is registered to speak.

Elizabeth Shepherd

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Alana Steinke

>> Good afternoon. Name is Alina Starkey I'm a retired RN, this is nothing but business as usual for the last many decades. We knew we had to decrease greenhouse gas emissions from burning fossil fuels in order to help the planet. Now our world is on fire, smoke is choking us making us sick and yet ecology is suggesting that it's okay to release millions of tons of house gases every year from just this one project. SEIS makes assumptions and speculations with no facts to support them.

Not only with this project, sickened local citizens and most likely we will be paying for it from our pension funds. The Chinese would build it and profit from it and our expense. Will they be required to post risk funds since the site would be built on fill in a liquefaction zone once it become a stranded asset, taxpayers will be left with the cleanup. There is no way to mitigate the climate harms for allowing additional fact projects and there is a bumper sticker that says climate change is just another way to burn in Hell. We are certainly getting a taste of that right now. And my eight-year-old grandson Marlon said I'm not having any and humans might even be extinct by then. That made me very sad. Because SEIS is grounded on the theory of displacement used on a speculative economic future. Your decision affects everyone's grandchildren. Please don't amble away their future. Deny this project.

Iris Walsh

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Union Workers Number 48

>> I stated my name is Garth Bachman, at the union workers number 48 in Portland Oregon on, jurisdiction covers Southwest Washington including that geographical works Kalama site.

I would like to endorse this project and this will provide 1,000 construction jobs over a three-year period of time and 200 permanent family wage jobs will be much-needed for the economy of Southwest Washington. And as the ecology report actually shows this facility will reduce greenhouse gas emissions every year. Our members and the community of Southwest Washington need jobs and need to get the economies stimulated and we are unemployed due to COVID, we need this project and this will provide good lasting jobs for many years to come while it's being environmentally from the at the same time. That's what I have. Thank you.

Iris Antman

Thank you my name is Iris dash mac I'm a resident of 30 plus years in Seattle Washington. And for the folks who have spoken in favor of this because of the need for jobs, I hear you. And being able to provide for our families. However we won't have a family if this project goes forth. Climate crisis, climate emergency is here now. And any buildout of any kind of fossil fuel project is the wrong direction and we will know this. And so let's instead turn our resources, creativity, expertise, skills, towards providing clean energy and that's where the efforts should be. Please, do not, put in fewer greenhouse gases into the air is not okay. We need to put-- thank you very much.

Bronwen Evans

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Jan Hydra Fracka Zuckerman

>> All right I am ready. Hello, I'm name Hydra after the mythological creature when one of my heads get knocked off aggro tomorrow heads and growing new heads just like the expansion of the hydraulic fracking operation [laughing] why settle for dash mac energy when they can rely on fracking to get extreme energy. Everyone knows getting gas is hard work and it isn't easy like it used to be. Really expensive, bad for the claimant, messes up the land and the skies but for a limited time only if you executives can rake in the moccasin to 40 years more on the methane gas. So what is the problem? Why shouldn't they bring forth the treasures of the earth? For example drilling, pumping and fracking chemicals releasing into the air and groundwater, permanently poisoning millions of gallons of clean water. I mean what is the big deal?

In the first 20 years in the atmosphere methane is the 86 times more effective, trapping heat than carbon dioxide. Northwest innovation won't leave any money in the ground will they? Just think this is their opportunity to generate up to 5 million tons of additional greenhouse gas pollution every year. According to them our planet can afford to burn up, I mean more gas. That is why I am here to thank you for trusting fossil fuel industry to do the right thing, ignore the science. And forgetting the green light to Northwest innovation works. Thank you.

Dean Webb

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Chris Tauson

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Theresa Rodriguez

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Elijah Cetas

>> Yes I'm a member of the-- by creating millions of good job in renewable economy, the sunrise movement exist to break the false narrative that has been peddled by fossil fuel companies and the myth that we can't have jobs without watching the communities choke in pollution and smoke and burn and climate change driven wildfires. I'm deeply disturbed by the comments from the IVW representative and all those endorsing this for the promise of jobs. About the long-term. Please, think about teacher generations, please, we are choking on smoke and living through a pandemic and both of these crisis have been driven by the radical exploitation of our planet's natural resources. And seeing crop failures, or more wildfires and see more pandemics and we are discussing whether to build a project that would release more than 40 million tons of CO2 for the sake of producing more plastic which already chokes our oceans. The best justification that this company has at that it might offset call power plants years from now. We cannot rely on the false assumptions and reckless financial speculations that fossil fuel companies have shoved down our throats for decades. When right now our communities are suffering and at risk. Think about what money in our emergency services, fire departments, our ports, our clean energy jobs, with that can do in the amenities. Because the fact is we cannot continue to burn fossil fuels. We cannot continue to damage habitat and put the lives of children and grandchildren at risk for corporations in such a short term. I want to close this as Tony a sake in the chemical workers understood we need a just transition for workers. And talk about how we turn the ports into climate resilient working, waterfront, this project is not that. Thank you.

Mark McIntire

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Jean Avery

>> Good afternoon everyone. I am Jean Avery, resident of Vancouver Washington. We have heard components of the NWIW project say that this refinery would be good for jobs couldn't. Why would we invite more pollution into our region for 40 years? According to Sierra Club this would consume more gas than the region z largest cities combine cap making it the largest polluter in the state by 2025. Why should this project reconsidered at all? Especially when mitigation seems vague and minimal. The second SEIS includes more than 100 pages of graphs, tables and data. And yet there are only two pages on significant impacts and mitigation. And appendix mentions voluntary emission reduction, to the extent possible. This is a vague reference to carbon markets also. So questions remain, number one, the worlds of voluntary and to the extent possible imply that NWIW does not receive it is a firm obligation. And number two, I carbon markets does it mean purchasing carbon offsets?

This would not reduce actual emissions. Number three, does ecology have resources to oversee this project? Instead ecology could focus on proactive measures for a clean energy future. Number 4, 40 years is plenty of time to enact mean energy programs. When NWIW claims its operation is less polluting and other sources and assumes other fossil fuel sources. I believe we are on the cost of a clean energy future.

It is time to say goodbye to fossil fuel projects. Please deny this project.

Jessica Zimmerle

>> My name is Jessica Zimmerli and I'm the program and-- in my work I see faith communities across the state who are doing everything that they can make their facilities more efficient and sustainable. Currently in conversation with five congregations looking at becoming net 0 carbon facilities. We are striving to be better stewards of the houses of worship because faith across all spiritual conditions causes us to care for earth and one another. We are doing what we can but sometimes we feel like prophets crying out in the wilderness. Prophets give warnings, they read the signs of the times and call out oppressive systems of power. And assigns of our time are stark.

All you need to do is look outside at the smoke hitting the region. The climate crisis is here and the communities are hurting. Please hear the prophetic try that it's time to move beyond fossil fuels. Current market conditions do not provide justification for investment in 40 years of pollution. If anything, 2020 has shown us that we cannot predict the future. And the only sure thing in this analysis is that this refinery will be a major looter. We don't have time for that. We do have time to change the market. Denying this comma is the first step to doing so. We do not have to way this against other dirty fossil fuel facilities that don't exist. And said based on the stewardship, justice, reflected in our state s shared climate and clean energy goals. We need you to be join us as prophets, pave the path to a low carbon future. Take the moral high road. Do what is right and reject this harmful gas facility.

John Flynn

My name is Don Flynn and I'm a resident of Kalama Washington and I fish in the Colombia River, and I'm adamantly opposed to the construction of the methanol refinery on the shore of the call be a river. Primarily on environmental grounds and secondarily on aesthetic grounds. Negative adverse impacts this project would have on our environment and health is even more critical today considering the catastrophic wildfires we are experiencing in Washington, Oregon and California with the associated loss of life of property. This refinery alone would emit 4.6 million nitric tons of greenhouse gas emissions annually and in addition this refinery would emit 53 tons of toxic and hazardous and chemical pollutants into the air per year along with 62 tons of particular matter. It's imperative we reduce greenhouse gas emissions and toxic air pollution's rather than increase them. The vapor from the tooling towers from which millions of gallons of water will be evaporated would reach between one half to 3/4 of a mile high and 112:45-mile and a half wide. I see myself fishing with family and friends in the shadow of the world's largest methane gas methanol refinery. I urge the Department of ecology to deny any and all permits for this project. Thank you.

JJ L.

>> This methanol refinery would be going 180 ° in the wrong direction. No more fossil fuel infrastructure. We are beyond that time and considering putting this refinery in one of the largest and most treasured rivers in the nation would be beyond responsible. How to say something about mitigation which is usually the quote unquote solutions NICU are talking about that here. The pocket gopher lives of that land and the brace will be annihilated by building this warehouse. By mitigating the process they will cut down a 70-acre forest in hopes gopher will take up residence there well known that the overhead is very finicky taste in the soils and habitat. And lose the 70 acres of trees and see the cooling, stormwater mitigation in the habitat even though no certainty that it will work and it probably won't. In the state of Washington allows this behavior not because it makes sense so that the corporations can continue to have the upper hand. It is business as usual. It mitigates nothing but destroys and keeps destroying. And cancels the voice of the people who decide it's time to stop living as if money was the only thing that mattered. And that those provide the jobs that we are hearing tested fires here say today that we need so badly. We have had enough, do the right thing, no methanol refinery.

Columbia River Keeper

>> Yes my name is Kate Murphy I'm a community organizer with Columbia River keeper. Recent weeks we have witnessed communities gathering together to show support and provide aid for those suffering unimaginable losses. Losses that are the result of unprecedented wildfires, field by ear responsible human activities and a lack of political will to value people over insatiable corporate profits. No one in our region look further than their own window to witness the effects of shortsighted decisions from those in positions of power. And now in the midst of this chaos we are here calling on you. The decision-makers at the Washington Department of ecology to fulfill your mission to protect our shared ecology so that may exist for future generations.

We are at a point in history where your decisions now truly shape the health and safety of the communities in this region and beyond for decades to come. The methanol refinery would worsen the crisis and cause comma just pollution. Urinalysis makes this clear. The project would generate 4.6 million tons of greenhouse gas pollution each year and up to 9.4 million tons of pollution if we assume a higher rate of pain releases during the fracking process. The number goes even higher if we assume all of it is burned as fuel which we know is the intention of request innovation works having advertised this liquid sunshine to investors while simultaneously misleading ecology and the public for years.

Let's see it for what it is.

A massive polluter.

You have been provided everything you need to deny this dangerous proposal.

There is no one who believes that believes will be the largest refinery will reduce greenhouse gas emissions. It's your duty to look at what we now.

This proposal will be a massive polluter and total opposition to Washington's climate goals and healthy future. We deserve better and calling on you to stand up for the people of this region for our environment, for the future. We are counting on you to do the right thing and deny this gas refinery. Take you.

Laurie Black

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Kurt Anagnostu

I was born here, went away to high school and college and law school in California but I have came back to practice law and racy family. I have three sisters and a brother and families that continue to live in Calais County. I have a heartfelt commitment to this community.

And to make Calais County the best place it can be. Personally I have a theory that if I do all I can to improve my community and make it a better place to live and everyone did that same thing, together we could make the world a better place to live. That mindset in 2000 I ran was a listed to run on the city Council. I served cold beers on the Council and the last four of which I was Mayor city of Longview. Following that I ran for Cowlitz PD Commissioner. I can tell you being a lifelong Commissioner of Cowlitz County jobs are crucial. We have a higher unemployment rate generally. Historically it seems we have the first to lose jobs in the last to get them back. However weighing jobs against the environment is no question. I'm sitting here in my office looking out at the haze from the fires. There is no question that the environment takes precedent. The question for me becomes whether the plant will be built somewhere else. And has an insatiable appetite for plastic. Everything is made out of plastic. The computer case, the cell phone, what holds the windows in place as all plastic. And this will be built somewhere else and more polluting, the benefits to our county outweigh that. Thank you.

Allison Mettler

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Kathleen Patton

My name is Kathleen Patton and I am a 20-year resident of Cowlitz County and like many previous speakers I want to underline any imagine ecological unfit from this power plant is based on speculation and many, many assumptions while the facts are that it would become the largest producer of methanol in the world and we need right now the only way we know right now to curve the rage of climate change and the devastation that it brings with fire and flood. Is to keep these fuels in the ground. We do not need to be creating massive amounts of infrastructure for fossil fuel companies to continue to pour pollutants into our environment. We need to put a stop to all of it now. I hope you can hear me. Thank you.

Leonard Meyer

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Brian Odell

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State Representative, 19th District

>> Hello I'm Jim Walsh, a steep representative in Olympia for the nineteenth district, including parts of Cowlitz county but not Kalama. Kalama is our neighbor. And I am encouraged by the department of ecology's draft second supplemental EIS. I encourage people who are speaking on this matter to look at the draft. We have to be consistent and rational. And how we evaluate environmental impacts of industrial projects or really any projects we consider state. In order to see that consistent perspective that we need to look appropriately at this project at the global carbon impacts. What this project will do is improve the global carbon footprint of the industries around the world. It is a net green projects. And that is a good thing not only for the economy of Cowlitz County a good thing for everyone on the globe. And I must say, I'm a little this appointed and some of the overall rhetoric and attacks and comments here. Please stay rational, stay based in science and facts. And read the second supplemental. This is a good project for Cowlitz County, for the globe and for Washington. Thank you.

Boilermakers Union Local 242

>> Thank you my name is Luke law fee, I made business manager Local 242, I support this on many fronts, jobs obviously 1,000 construction jobs over a three-year period. 200 permanent jobs in the community and another 500 indirect jobs. Not to mention 30 to $40 million in the local tax base. Secondly technology produce methanol for natural gas is far better than for coal. Which is what the Chinese are doing without the regulations that we require. Methanol is not going way. I think it is hypocritical as we talk into plastic computers and phones and not to mention the plastic cars we drive down the road. We want these products but not in our backyard. It's always easier to say no rather than just work together to come to a common goal. All of my members are just as concerned about climate change as is everybody on the other side. So on a global level, this project is needed. That's all I have.

Thank you for your time.

Steve Berman

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Wendy Kliment

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Mark Keely

Good afternoon my name is Mark Keeley I've been a resident for four years. My wife and I move to Southwest Washington and fortunate to find a home that shares our core values. We found a quiet acre home on green mountain roads with woods and Riverview. And to develop it with rivers and walking trails was our plan. Including outdoor games, meals on our deck and River walks, and offers local recreation, antique stores and restaurants. This is a beautiful area and we were ready to work hard to make it a lifelong home. About 4.5 years ago we heard a foreign company wanted to build a chemical refinery here in Washington and here in Kalama-[cutting out] in we are not and in industrial area, what possibly could a refinery have in common with our small town? So far me and thousands of other people find it completely incompatible. With 4.6 million tons of carbon pollution spewed out every year. For 40 plus years, all I can see is the damage it will cause to the air, water, soil and everything hold dear about this area. Washington state sets a standard for clean sustainable living. That's why Gov. Ensley could not find good clear conscience to support it. I urge you to reject Northwest innovation works fossil fuel refinery. Let the Evergreen State become the green wash state. Do not allow this permit. To the right thing for the people of Washington who you are charged with protecting. Thank you and next.

Cambria Keely

>> Hello my name is Andrea Healy, I'm in my fourth year av bachelors at Washington University and protesting the refinery for one quarter of my life. Thousands of precious hours day and night on holidays and birthdays to defeating this and telling you this to emphasize we are not here for fun, we are here because we need to ensure that Washington is headed for carbon negative future. And must be extensively considered and respected.

Every time I visit my 93-year-old father, he asked me when I plan to start a family and how many kids I want to raise. I tell him I would like to have 1 or 2 kids in my thirties. I don't tell him is that I'm terrified of what the world will look like in 20 to 30 years. Will my children have to wear a mask every where to decrease the pollutant inhalation and showing photos of a clean healthy Columbia River? Article 5 Section 1 of-- states everyone has the standard of living adequate [Indiscernible] I cannot in good function pass on to my children the burden of spending every day fighting for basic human rights.

We will not allow the consequences of the consumption of the world's largest methanol refinery here, the consequences are unavoidable and Columbia is the GESS River in our region, loosing toxins into the air that is usually clean and healthy. And the greenhouse gases. It is your mission to preserve, protect and enhance ecology and counting on you to quash this fossil fuel project.

We believe we can do other than to enforce a fossil gas dependent economy. I'm here to ask you with utmost earnestness to please deny the permits for the proposed methanol refinery.

Sally Keely

>> Hello, my name is Sally Keeley I'm an educator mother and longtime resident of Kalama, my husband and I own five acres home outside of the city. Have been working actively to stop the refinery for 4.5 years. As a mathematician I would normally provide you with a numerical analysis as I carefully read every page of the SEIS Bible reserve written comments yesterday want to speak for my heart. This is a climate disaster, we cannot afford the 4.6 million metric tons of carbon and report it will create every year for 40 years, we don't have time. We are in a climate emergency. That climate catastrophe is causing loss of life, land and livelihoods right now. You only need to look out the window to see in the global-- these are becoming more common and worsening each year our homes are on fire, the forest are on fire, the planet is on fire. My 18-year-old daughter has come of age during this crisis. If we don't reduce the emissions now she will have a future filled with extreme weather conditions, droughts, wildfires and other poor air all the. All parents want better life for their children. What happens when she wants to have a child? She would be a fantastic nurturing mother. Will she be forced into a vision of going childless not bring a child into a world overwhelmed by climate, pollution driven. How dare we put our children in that predicament. You have the ability to protect the people of Washington State young and old. That is your mission. You have the power to say no, I urge you to reject the shorelines permits for NWIW plant Thank you.

Emily Polanshek

My name is Emily Polanshek, resident of Portland, OR. I am a retired elementary school teacher, not a scientist, but I read science articles related to climate on a regular basis. I write out of deep concern for the livability of our NW region as well as our planet Earth.
From what I have read about selective data provided in the Second SEIS, I recommend that those who weigh our testimony take a step back to consider the big picture.
Although I am pleased to hear that some of those advocating in favor of the Kalama Methanol Project do care about the growing climate crisis, I strongly disagree with their reasoning. Recent science articles are sounding ever-louder alarms about the dangers of continued reliance on fossil fuels. We simply cannot afford to further extraction of fossil fuels if we want a livable planet for ourselves, our children, grandchildren and beyond.
We needed to leave most fossil fuels in the ground and start a national transition to non-carbon-emitting renewables years if not decades ago to avoid the severe storms, droughts, floods and wildfires that we're experiencing more and more frequently now.
Have any of you ever gone on a fad diet? While on the Grapefruit Diet in the ballet phase of my youth, I remember cheating by eating just one Oreo cookie. Then I slid down the slippery slope by erroneously thinking, "I already wreaked my diet so I might as well eat the whole package."
Similarly, just because we have not yet weaned ourselves from fossil fuels, we must NOT continue to invest in new facilities! We must close down existing projects as soon as possible and find alternatives to fossil fuel-based plastics or recycle the plastics already in our environment. We must invest in new energy sources for homes, businesses, transportation and agriculture.
Of course, the Pacific NW can't phase out climate pollution anywhere but in our small corner of North America. However, equally obviously, the more every region does to lower emissions – especially in countries with the highest energy production and consumption - the sooner we'll see a downward trend of the parts per million (ppm) of CO2e in our atmosphere.
As you may know, in May 2020 our world hit a record high of 417 ppm of carbon dioxide as measured at the Mauna Loa Observatory, which has measured CO2 in the atmosphere continually since 1958. Geologists have used ice cores to measure ppm of CO2 at 280 ppm pre-industrial revolution, with only small fluctuations since humans evolved on the planet. Science is telling us to stop generating climate pollution!
Since the Kalama facility would generate around 4.6 million tons of carbon dioxide pollution each year and lock in 40 more years of consumer demand for gas rather than moving away from fossil fuels, I beg you to deny this project. You have all the data you need if you look beyond the distortions provided by the SSEIS.
Please consider the urgency of acting in order to slow the climate crisis and do the right thing. Deny the Kalama Methanol project.
Thank you, Emily Polanshek

Nicholas Heyer

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Washington State Building and Construction Trades Council

>> Thank you my name is Mark Raker the executive secretary of Washington State building and construction trades Council representing approximately 80,000 construction workers here in Washington state. We strongly support this project, permitting of this project. Archly due to the fact that the process which has been followed for approximately seven years now has been extremely thorough. Both sides, the proponents and the opponents of this project, have had many times to weigh in, many public comments and attended many hearings and provided all the data required for proper robust study. Department of ecology has studied and studied and studied it. The outcome is that it will be a net reduction of 6 million metric tons over what would happen if it were not in place. Those are positive changes. I think that the environmental advocacy amenity can take rate pride in making this proposal if it comes to pass, the cleanest methanol manufacturing plants on the planet. That is a net victory. And it has led to many frustrations. And we get that picked this is an emotional argument for all of us. The benefits from my perspective would be jobs. Need the jobs. But on a personal note I have property in Bridgeport. Just last Friday night I stood on the banks of the Columbia watching the wildfires -- and this is not something I see in a photograph, something I live I'm very well aware of it and because both sides have stakes of opposite positions we make progress. We have to make progress. This project makes progress and we need that to Luke forward. I'm about to be a grandfather at the end of October and my granddaughter, she deserves us to make progress and leave her a better plan as to all of our children Thank you.

Ann Dorsey

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Sherry Petersen

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Linda Leonard

>> Thank you very much Linda Leonard I'm a resident of Kalama, make no mistake about it the state of Washington and the world does not need the proposed methanol refinery to be built spirit Northwest innovation works has used the rationale, the facility will cause a net reduction in current greenhouse gas emission levels by forcing Chinese to call methanol facilities off-line. Ecologies analysis, the current global reet house gas emissions would increase substantially if this project were built spirit but perhaps not as substantially as if China's methanol demands were not met by other sources. The analysis of methanol markets for export facilities have impact analysis summary breeds, what would happen if the markets, the KMMEF were not to go into operation? The analysis of methanol supply in China shows there is existing capacity in China to increase methanol production and growing demands. This is expected to be supplied from coal-based methanol, lowest cost producer in China. Additional demand will be met with natural gas-based import which are also low. NWIW's facility is expected to be one of the lowest cost of these producers. But absent Kalama manufacturing and export facility other low-cost natural gas-based exporters would also supply the growing market in China. Thank you.

Mark Urhart

>> Thank you, my name is Mark, we live in the foothills overlooking the Columbia River. We are against this project. We purchased this property so we can enjoy the unobstructed view of the Columbia River and enjoy recreation and dining in the local area how we walk, hike and bicycle and kayak the Columbia River. Most importantly, I'm concerned about the future of my children and grandchildren. It's hard for me to count on my hand why anyone in this area would support a project that would adversely impact their health and overall quality of life. And offset of 40 years of dirty air and water cut noise and landscape pollution, and definite impact on climate change. I grew up in Southern California next to the oilfields and refineries. During my career I was stationed in Texas and observed the stinky and noisy refineries along the coastline. Trust me, we don't want to smell, we don't want the noise and the water and air pollution and the landscape pollution this facility will create. It will be in our backyard. I spent three days reading and dissecting the facts on the entire second supplemental EIS. The voluntary framework mitigation presented in appendix D is laughable.

By using the term in-state, Northwest innovation works is not willing to negate GHG's outside the state of Washington. This includes the fusion of methane and methanol burn and transport to China and as a fuel for the production. This is only one of the many glaring errors I saw and I will put the rest in writing. This project is a climate killer and the only responsible decision is for ecology to deny the shoreline permit. Thank you.

Mary Paterson

>> Yes we can hear you.

>> Great, good afternoon to the washington Department of ecology and everyone hear from the communities. Someday I hope to be on the same side and we are working for green jobs. I am married Patterson, descendent of Scottish, Irish and-- immigrants. My grandfather grew up never knowing his own father who was killed any coal mine accident in Scotland's. Fast-forward 2020, my own daughter is an environmental engineer in California state government. Trying to restrain the fossil fuel industry a which continues to hold us in its tentacles. After more than five generations of fossil fuels, isn't finally time to say no and keep all fossil fuels in the ground were mother nature indeed put them? Two specific points, the first one the impacts of the fossil fuels in the U.S. or China for plastic or for fuel is immorally narrow comparison. In comparison with nobles is essential for any series evaluation. I believe it is missing from this. Second, on the question of leaks and fires during the entire lifecycle of methane, methanol, plastic and fuel, did the authors of the SEIS consult experts at Cornell University?

Did the authors or any of you here today viewed the video of called chasing methane on YouTube, again chasing methane on YouTube or anyone interested. According to Noah, Lake are not 1 or 2 or 3% speculative report but some cases over 10%. Fails to use top-down leak measurements and thank you very much.

Matt Gamel

>> And Q I'm an environmental scientist and we recently moved out from the keys, because the hurricanes was becoming unbearable. As close as everyone knows the West Coast is now on fire. Great place to move. Laura Watson if you have any question about whether this is a change that is good, wake up and smell the shitty air, in a global scientist will tell you we are just starting to feel the effects of climate change. The methanol refinery would release smoke into the air and that doesn't care about boundaries, those would be just about your family and mine. If we don't burn the soil, the process these chemicals that someone else will cut does not make it true or right. If we as a society ever want to move away from fossil fuels, we need to stop subsidizing these and industries with taxpayer money. I understand there's a lot of washer and money behind this project. We all know it is wrong. Even the business behind it knows it's wrong. They just care more about the money in the short term. I beg you as a fellow lover of the state and someone just wanting to raise their family and a beautiful, or just place. Please take a stand and denied this project. Thank you.

Melanie Plaut

>> Hello this is Melanie cloud, today I'm testifying as salmon, I'm only sorry you can't see my lovely fins and tail. The trouble with using humans to tell a story is they freak on climate change.

Let me lay out the facts. Global warming threatens the survival of salmon, dunk salmon die on the water warms above a certain threshold and droughts can leave salmon stranded or exposed to predators and warmer temperatures increase fish diseases. Including toxic algae blooms. Northwest innovation works contents building the methanol plant will not increase global warming. But this flies in the face of fishy logic. They rely on the high speculative notion that coal will continue to be the substrate of choice for plastics production in China and that plastics production will continue to increase unabated for the next 40 years. It makes no sense to put a rosy shine on this by comparing it to the most worst imaginable scenario. Go back to the drawing board, don't be afraid to rely on science over politics and speculation. Wherever we are in this planet we face the climate effects of fossil fuels. We must be aware and share our stories. So pool up your friend, your community, state agencies and other allies in the rough waters. Make them copy and get them pointed into the current. Onward and upstream. Thank you Melanie.

IBEW Local 48, Columbia Pacific Building & Construction Trades Council

my name is Mike urges and I'm a father of two teenage children who spent most of our days at work or school and the call me River. I appreciate the opportunity to be able to give comment on behalf of myself and the thousands of building trades men and women I represent as resident along the construction trades Council. And is this rep for IDW Local 48. I would like to go on record and say that IDW and the rest of the building trades are eating the way into renewable energy and we work with our partners all over the nation and in Washington state on solar, wind and any other options that come up. We are not climate deniers. We are leading the way on this.

That's why we support this project. But going back to the local billing traits and affiliates partnered with Northwest innovations to maximize this investment in the region. Along with that, one of the goals was also to help protect the environment and the beautiful Columbia River we all love and rely on so much. Early on we found the innovation shared the same values and over the last six years have back that up with commitments to 0 liquid discharge and technologies and 100 percent mitigation plan for Washington state. We are very excited about the opportunity to move this project forward and I would say equally excited that we have a project that has helped a new higher standard for the environment and future development along the Columbia River in Washington and Oregon on. With that would urge the Department of ecology to expedite any process left so we can start building this facility and we can start reducing read house gases as soon as possible. Thank you.

Cyan Strategies

>> I run a sustainability insulting firm and Seattle cyan strategies in the former director of the office of sustainability environment. Three years ago many of the environmental unity question global greenhouse gas impacts of the project. And it found the additional analysis was necessary before permitting work that was completed last year and many environmentalists to have additional questions. And determining the comments on that draft warranted additional discussion, climate impacts and that led to the publication of the second supplemental gas. Environmentalists have asked good questions along the way. They asked ecology to analyze what would happen if methanol was used for fuel. The answer is that the project will reduce global department admissions by 6 million metric tons. They asked ecology to increase the upstream method rate, 3%, it will still produce global emissions by 5.5 million metric tons. A 20-year global warming potential, the answer is noble carbon emissions reduced by additional 1.5 million tons. And ask what would happen if the methanol did not displace hundred percent cold methanol. The answer is that the global apartment emissions would be reduced between 2.6 and 7.8 million metric tons. Environmental friends have asked good questions about the climate impacts of this plants. And the port studied the study and now ecology has studied the question and the answers have been the same. This plant will reduce double greenhouse gases by extraordinary amounts. And the latest analysis of the equivalent amount of carbon emissions from the cities of Seattle, Bellevue and Tacoma combine. Now they have been answered is time to take action to address climate change and build-- thank you.

Jennifer Valentine

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Randall Nerwick

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Lauren Murdock

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Mike Reuter

Hello my name is Mike Ruger and I'm speaking here as an individual and not as mayor of Kalama. I am opposed and some of the issues I will speak on now. The Northwest energy and for structure as a real thing, looming energy shortage caused by this resource monster will have the devastating effects on the local and state economy. Over two thirds of all average days demand that gas and Northwest pipeline and 100 µW of clean hydropower combined with 4 million gallons of water all used by one customer. Is unacceptable. This perfectly design weapon to take out all the natural resources at one time. Way to shut down all the coal fire power plants supply firm renewable energy and meet the future needs in order to expand or start a new large energy manufacturing company. Without serious constraints. A 3 to 5-year past history of gas availability in order to study or to prove that there has been 320 million firms available, 247, rendered 65 days a year. And be not one winter day that would be even close to capacity. And also would like to see if the natural gas increase caused by the natural gas to world markets would cause paper mills and large industrial users to use higher carbon footprint opens like biomass oil or other fuel gas prices. It is up to China, not America to use the best way of making future refineries and be a partner for global reductions for future generations.

Thank you very much.

Rachael Hogan

>> Hello my name is Rachel Hogan and eight resident of Seattle, the territory of dash mac people. I had to run for my life, from a place where the drinking water was poisoned, people and animals were being poisoned years after the industry left. I cannot even brush my teeth and it or shower.

I know firsthand the devastation of the Exxon Valdez oil spill.

I know what these things are like firsthand and that's why I am here. And now you don't need to use your imagination to understand the gravity of climate change. Because for most people things maybe just got real. This is exactly what economic totality looks like if Northwest innovation works guess to build. How many of us have lost our jobs? Not all prisoners inside of it are lucky. Our economy already in the toilet. About the draft analysis on the methanol refinery without touching on how damning it would be for water, upstream, on-site and downstream literally and not even adjusting for the low leakage figures by including top-down measurements on the estimates using U.S. locations. This massive refinery is expected to release at least 4.6 million tons of GHGs into the atmosphere each year. And it does not and will not meet the states climate goals. Period. Meanwhile our kids are not having a childhood. They are suffering in every way, this is being framed as a lesser evil or, it is shameful and absolutely sickening. We are counting on you to say no. Reject the permit and allow for the creativity that comes out of necessity for better solutions. Ink you for your time.

Richard Marshall

>> Thank you for giving us the opportunity to speak. This methanol proposal is extraordinarily pessimistic, economic analysis behind the tired fossil fuel argument of better than the alternative as shoddy and speculative. No possible progress in this type of analysis. Ingenuity or creativity and no acknowledgment of technical policy innovations. From a policy standpoint, it is crazy to believe that societies across the globe will not demand cleaner economic processes and less pollution. Looking our own situation. Early this year we had a example of much cleaner air.

Number of people comment about how amazing it was in this past week we literally have a taste of the worst air pollution in the world. People everywhere want cleaner air and demand of the government for less pollution.

From a technology standpoint we can and will do better. Right now renewable energies with a form of new energy in most places in the world. What we have done with renewables is an amazing achievement of human engineered he and hard work applied to process improvement. This methanol postal on the other hand is a last gas effort-- the only thing green about this proposal would be the use of our federally subsidized clean renewable electricity to run the plant. That is our energy and better uses including heating and cooling our homes, hopefully reducing emissions from our cars so we can have inner air. Please analyze this proposal for what it is. An unmitigated fossil fuel export proposal with no hope of captured or sequestered emissions. Please don't rely on pessimistic speculation, relax analytic rigor that has technical advancements and renewable energies and discounts a livable planet and clean air. Thank you

John Svensson

I am opposed to the proposed Methanol Project on the Columbia River, I know it will produce terrific amounts of greenhouse gases. Since I have worked on the water most of my life I will comment on problems from that viewpoint.

I was a commercial fisherman in the Gulf of Alaska for some 20 years, dealing with oil ship navigation problems. I know they are hard to steer and require approximately 5 miles to stop. I am very familiar with how much power it takes to run a diesel powered vessel in different conditions.

Here are my comments:

1. The Panamax ships that will be used have very limited steerage and will require several tug boats to accompany them in the river. The tugs will be required to use close to full power to turn the vessel.. Example - The tugs burn 8 to 20 gallons an hour at idle and at cruising speed- however when they will be trying to position the large vessel it could go as high as 100+ gallons per hour . So in calculating the amount of pollution one needs to consider the amount of fuel burned when docking, positioning, and changing course; not just the 8 to 20 gallons per hour.

2. The possibility of a Panamax vessel running aground and the amount of fuel burned to get them back afloat also needs to be considered. Back in 2017 a 557-foot Panamanian-flagged tanker vessel ran aground on the Columbia River near Skamokawa. There are many other examples, but the point is, it happens. Tying up River traffic is an added problem.

3. I have worked on Fletcher's Ice Island 600 miles north of Point Barrow, Alaska and on the Columbia River, up to Rooster Rock. I was Senior Scientist aboard the USCG Staten Island in the Bering Straits, measuring water quality, temperatures, and current speeds. For some 15 years, I saw good science and some very bad science. The SSEIS has a lot of pertinent facts. The bad science comes in when someone tries to predict what people from a different cultural and political system are going to do half a world away from here, especially when they come to questionable conclusions that seem to meet their objectives.

I thank you for your time involved on this project. I think it's time to stop this massive greenhouse gas emitter.

Sincerely,

Captain John A. Svensson

Kalama resident

Rick Rappaport

Let me see if I have this right, the applicant says Washington state, that plastic demand is so strong, now and for the next 40 years, that if they don't build the 40-year project with Frak gas ink China, China will build using cold by the same time the applicant sends out written information to potential investors telling them they will not produce last take and it is not profitable enough that they will produce fuel. Than the applicant says it's crystal ball shows a 40-year sustained demand for gas plastic at a time when there is as we speak a crushed world opinion and capital to remove plastic substitutes from sustainable resources and not fossil fuels. Then applicant says global emissions will be reduced if that permit is granted to them from the cold plant fire and China. The emissions or coal emissions, how about considering better options over the next order years. Isn't that your mission statement? To protect, preserve and enhance the environment? For current and future veneration's? I do not understand for the life of me you would put yourself into the box where the applicant-- you have the worst greenhouse gas emitter on the planet. That the government of Canada fully known as Northwest innovations-- the greenhouse gas emissions anytime and it can be deadly just to walk outside in Kalama and breathe the air. Because of climate impacts. This is a company that is already straightfaced lie to you about what they are going to do if they talk about on the other side of their mouth and say oh yeah will make plastic just give us the permit. Asked what that plastic market is much less profitable then expert reports circulating in China. Just incinerate any access. Not recycle it. Putting even more emissions into the air. They can't be trusted an downright dangerous.

Lorraine Martinez

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Terrel Aaenson

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Rob Harris

Manufacturing facilities that provides paper and cardboard for all the purchasing being made by Amazon, that is the preferred rate of shopping these days. Not to mention the bulk of the power coming from the coal-fired facility-- which I think everyone will like to see transition to a cleaner, burning fuel. I support of our mental action. I support advancement and transitional fuels and feedstocks and I support the Kalama process and innovation works. We need this in our community, it's a progressive step, we cannot cut off our nose despite our face angle from where we are today 20. And maintain any quality of life, people in Southwest Washington have enjoyed, hunting, fishing, boating, coexisting with industrial and a factoring for the last 90 years. So climate commissioners. The DOE, it's time to approve this project. Give all waited too long.

Rory Cowal

Hello my name is Rory and I live across the Columbia in Portland. I today I am urging you to reject the proposal that would present a great risk to our communities any huge setback in the efforts for greenhouse gas emissions. We need to transfer fossil fuels and not-- by any measure the quality of life in the Pacific West is determined by the health of the land, air and water. Oxygen that we breathe. The food we eat, natural places we go to boost the well-being and spent time with family and friends and none of these things are guaranteed to us or future generations unless we take care of our planet. The methanol guarantees for one thing for people in the U.S. Decades of pollution at extraordinary cost an enormous setback in the region's efforts to contact climate change, for the goals of the department of ecology to protect, preserve and enhance Washington's environment for current and future generations. The state of Washington must transition fossil fuels and begin fighting the climate crisis at the skill that scientists say is necessary. For my family, for your family, for the sake of our legacy to the next generation I am calling on you to reject the methanol refinery and to deny the shorelines permit for the projects. Thank you.

Troy Glennon

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Kathy Mason

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Kristin Blalack

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Ruth Dallas

My name is Ruth Dallas, I'm not a scientist but I'm a nurse and mother and grandmother. I would like to speak from my heart. The dangers of fossil fuel are no longer in question. One does not need to visit the site of an environmental group rate of the imminent dangers of continuing use of fossil fuel. One can read this information on multiple government sites including NASA, the Defense Department as well. It is madness at this point to argue that building one type of fossil fuel Lance is okay because it is not as bad as some other type of fossil fuel. The Department of ecology have the responsibility to protect the environment and you have an awesome power. Give the power to protect your children and mine from the ravages of climate change. I ask you a simple question today. When will you decide that no number of jobs and no increase in your tax base is worth the well-being of our children and grandchildren? When you're grand children ask what you did to protect them and all the people in this client from climate change what will you tell them? Thank you.

Jason Thoennes

Dear Director Watson and Department of Ecology,

Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. I am concerned about climate change and the massive implications of this facility. I also am opposed to the continued proliferation of facilities that create chemicals to make more plastic.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is a mistake for Washington. Northwest Innovation Works cannot be trusted to mitigate the impacts of this fracked gas refinery.

Please deny this project.

Sept Gernez

Hello I'm an organizer your with the CR club. I represent 3.8 million supporters across the country counting on you to deny this project.

The club z mission is to explore, enjoy and protect the planet. This project would destroy the local environment, while massively intervening to global warming and working to stop it. I would like to remind you as others have, of your mission statements. The Department of ecology's mission is to protect, preserve and enhance Washington's land, air and water for current and future generations. Approval of this project would be counter to your mission. Especially frustrated with your displacement here he and the SSEIS, I have a Masters degree in economics and I can tell you any economic analysis is only as good as its assumptions. The scenarios don't assume any human agency to avoid our own demise back and therefore fails to assume self interested rational actors as we like to do an economic theory. Look outside. Our region is burning. There were boats, for love fossil fuels off the coast of California that have nowhere to go. Our world is on the brink of radical social change and you can't predict fossil fuels future without predicting human extinction. We don't need cleaner fossil fuels, we need to stop using fossil fuels period. I for one and working toward a future where my 4-year-old nephew will have an environment to enjoy. And where his kids can go out in the summer without a respirator. Please join me. Fight for a future where our children and their children can survive. It's simple please deny the project.

Sharon Bucher

Hello my name is Dr. Sharon Busher, I practice pediatrics in Vancouver for 35 years and lived in Battleground Washington. I first learned about greenhouse gases global warming, and premed classes in the seventies. It took 20 years to make it to the front page of time magazine. In the early nineties. It is now more than 30 years and we have yet to take adequate steps to address this crisis. It is or fined to me that this project is even being considered all we are in the midst of a climate emergency. In Los Angeles where I grew up, they recently recorded the highest number ever, 121 °, try living in that. I sympathize with you who need jobs who are in the building trades but guess what? The global South will need the buildings will make. To live and leave it, they are coming. We still have rain. We still have water. This project will emit tons of greenhouse gases and it will use up tons of water. It will pollute the water use to Frak the wells. The lateral pipeline will take animals used for domain. Not for the common good but for the profit of the Chinese company. The methanol is likely to be used for making plastic. And this is a world, that is drowning in plastic, which we were told to be recycled for those profiting from its manufacture. In the same way we are being told speculation about how this project will actually lower greenhouse gases which is truly laughable. We need a stable agriculture, livable climate, don't do it. Deny the comments.

Ruth Russell

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Sherry Hession

my name is Sherry Hirsch and I live in Spokane Washington. I am a concern citizen and grandkids that live near Longview, I'm against the project, against Canadian company shipping Frak gas to our state were a Chinese company to use our water to convert it to methanol. And then shipped back to China to make plastic or used for fuel. Or water and air are not for sale.

To make more plastic and bird methanol for Canadian and Chinese companies. Also the fires polluting the air now in Washington states are partly caused by drought in California, Washington and Oregon on. Millions of gallons of water are used for fracking oil. And there are millions of them. And this project would encourage more fracking and make our drought worse. Or fire equals more loss of life, property, unhealthy air and making everything unhealthy. My grandkids play in that water there. And now my granddaughter has trouble breathing. We need to invest in clean energy, I have been taking a poll on how many people are against this project.

I counted so far 51 to 11. 51 against, and please listen to the numbers and deny this project. Thank you.

Lorinda thomas

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Cowlitz Economic Development Council

My name is Ted, I'm the president of the nonprofit-- economic development Council, I have lived in Longview with my wife and children for 20 years. Academic develop my counsel is a membership raised operation since 1979.

Since COVID began we have helped administer over $3.5 million to small business in Cowlitz County. The business open and people employed. Jobs and work our vital. In many ways, job defines who we are. And gives us pride and a sense of purpose in life. This project will provide vital jobs for our local families. Also it is a capital investment made by private sector companies that pay for the services that we all enjoy as part of a society government, infrastructure or sustainable without private sector investment. I can appreciate the intense scrutiny the Department of ecology has put this project through for the last six years. In my 25 years and economic development I have never seen a company be as innovative as this one from 0 liquid discharge, negating GHG's in Washington state, the innovation Works has met and exceeded all environment to hurdles put in front of them. Additionally the report of climate specifically prohibits the use of fuel so I don't even understand why that is part of the survey. Nevertheless I appreciate your time. Thank you very much and let's build this facility.

April Eversole

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Theodora Isongus

Good afternoon, I'm Dr. Theodora s address, environment, health scientist and epidemiologist with over 44 years experience evaluating effects of environmental pollutants. I fear the Washington Department of ecology is not taking science seriously. And a spokesperson for ecology concludes that read house gas emissions would reduce market this plant were operating then if it were not. This conclusion depends on other less efficient plants, seeking operations if this plant were operating. There is no way to know this and it would

Increase gas emissions in order to have a livable future. When there is overwhelming scientific evidence that we must make drastic reductions in greenhouse gas emissions now.

We can't afford to go down this suicidal path. We are assaulted by catastrophic climate disruption causing increased heat, droughts, wildfires, and breathable air, increased illness and death from heat, storms, diseases, no mac of lung disease, aggravated by air pollution, displacing thousands of people and what more of a wake-up call do you need? Please deny the shorelines permit and reject this proposal.

Therese Livella

Like many others I find myself wanting to curl up and cry. I cry for the insatiable inevitable consumption, and all the awful events that have culminated in 2020. I would have my sliding door open all the methanol comments to the sound of windchimes and Words. I would enjoy the trickle of water out on the yard custody there are no birds. There is no win. Toxic smoke-filled air subtle over the region for weeks now. The projected onshore wind and rain did not wash away our sins. The high range test kit I use to maintain the health of my face. Outdoor cat has happily become an indoor cat. I am one of the lucky ones. I still have a home to take refuge in. For now. Given the current limited understanding of mother nature and our fast-changing environment, it is clear that any scientific rejections made in the SEIS should be taken with a grain of salt. Please don't take offense, these are unpredictable times. Due to the current state of the environment, mitigation efforts must be carried out before any permits are issued. And those mitigation efforts must be based on the full lifecycle analysis. Because we all know right now that the Oregon smoke did not stay in Oregon on. And imagine under the current layer of smoke we now have a trapped layer of Northwest innovation Works fine particular matter insisting of heavy metals and percentages. The plan indicates neither party believes negation can be achieved. Because really how can you mitigate an earthquake. How can you mitigate fracking? You don't.

You just live with that.

You live with air you can't breathe, water you can't drink catfish you can't eat, let this be your legacy. Deny permits for innovation works.

Jennifer Brandon

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Tracy Ceravalo

A new fossil fuel facility will help the climates. Seeing this will help the claimant is like saying-- the grave is the one we are digging for ourselves. To put this in perspective the head of research, Exxon, that few people felt the world has entered into a translation away from dependence upon fossil fuels and towards a certain mix of renewable resources that will not pose greenhouse gas accumulation. The only question he said was how fast that would happen. Can you imagine them knowing that we are debating here per meeting in new fossil fuel facility 38 years later. And saying that we are hypocritical for wanting to deny the permit because we use plastic is ridiculous. If Northwest innovation Works was truly innovative, the focus on developing new ways to create plastics with suitable resources and without using a new fossil fuels. I ask that you deny permits for this project once and for all, thank you.

Tina Brakefield

My name is Tina break field, I live in Vancouver and work as a stay-at-home mother to a 3-year-old daughter in run a sustainability law. I've come here today to talk about the refined ability project and how and why against it. Most of what I've written has been talked about and multiple other comments so I will go ahead and skip over those. One thing I will bring up and I always found this very interesting and no one has mentioned this yet. Is that while we are having the wildfires going on here there are at this moment five tropical cyclones that are simultaneously moving through the Atlantic right now. Now one of them, Sally finally hit yesterday the Florida Alabama border and unleashed the inches of rain in about four hours. That is about 30 months worth of rain and four hours. I'm from Austin Texas and I know someone recently came on and spoke about people from the South moving here.

It is happening because I am one of them. I was born in 1979 which was the first year that they did I think a climate change analysis. And for the entirety of my life, I have been watching things change. From when I was a young child until now. I have been dealing with, in Texas, 115 up to 120 ° summers nonstop for years now. People will be leaving that region. Because it will become inhabitable. And lastly I would like to say real quick, some numbers here. Someone mentioned we have a project giving 30 to $40 million in revenue. You know how much damage the fires will do, 130 to 150 billion in losses. So from million 2 billion do the mass. And reject this project and the refinery in the shoreline project for this. Thank you.

Patricia Bryant

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Richard Osmun

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This is NO number 3!

Marylyn Cornwell

My name is Rev. Dr. Marilyn Carmel, I may retired Episcopal priest, scientist and member of ort of earth ministry. A person of faith I believe in a just and sustainable future. And clean air, clearing skies, clean water and abundant water are the birthright of all created beings. That sustainable future is at great risk.

I know a bit about the risk of fossil fuel plants for communities near them. I did my graduate work and self Texas where air and water pollution from oil and chemical plants has devastated human communities and the oceans living creatures. With long-term consequences for all the environmental of a station caused by the gas refined into methanol begins right where it is ran into the ground. I listened to the-- what the land and his family for over 150 years, because of Frank mining his family can no longer use it to drink. Leaks during fracking, transportation, refining it into methanol and then shipping the methanol overseas for youth are linked in a chain of illusion around the neck of the people and creatures of this plan. That was regularly contribute to greenhouse gas pollution. The cry that we cannot breathe becomes even greater if that chain tightens. Is the moral and spiritual obligation to confront the misinformation, speculation and omissions about the environmental effects of ethanol production by NWIW. The environmental cost to the many far outweigh any profit that would be made by the few. I urge you to deny the shoreline permit for the plant. The lives of the most vulnerable among us and those in future generations depend on it. Thank you.

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Chris Chapin

I'm a resident of Washington, a concerned citizen. And I am here to oppose this project. I do want to thank you for your time. To take public comments. And that is really the issue we have here is an issue of time. We don't have time to be screwing around with fossil fuel projects anymore. Now is the time to invest in clean energy, now is the time to rebuild our environment, now is the time to get rid of artisan ship and come together and work towards a solution. Now I understand the communities where this project will be built, need jobs and need work. I'm very sympathetic to that. I believe every person has a right to a dignified life. And what I think we can do instead is we can look towards other projects. We can look towards renewable energy projects. You know the obvious ones. Solar, wind. There is no stuff being developed, waves offshore. Capturing energy from the water and there is other types of energy are not electricity. We have destroyed 30% of arable soil on this planet. We need to start rebuilding ecosystems. We need to restart holding the bio diversity. These are projects that Northwest innovation would be more than capable of doing an awesome job. They have the manpower, they have the machines. And they have the knowledge. So I urge them to look towards other solutions. Thank you.

Bryant Mullin

Thank you name is Ryan Mullen, I may Local 26 member, 27-year member. I work in the building trades as construction electrician, wireman, I've worked on many of these industrial projects. Nuclear power houses, dams, all of these kind of things. Mills, these are good jobs. This job is environmental friendly, I've heard a lot of talk on here about how it is not. The science shows that it is. I was to talk about some green jobs. There is a windfarm being built right now in Lewis County. And there was opposition to that. That is a green job. Deposition was for whatever reason. But that is a green job. And we need to move this project forward and I'm in support of this project. We need to get this, that economy going. That community going. And I want to thank you for your time. And thank everyone for their comments.

JH Kelly

Hello my name is Mason Evans, I'm the president of JH Kelly, road union construction firm headquartered in Longview Washington. I value environment and support actions that reduce double greenhouse gases particularly use of transitional feedstocks and new manufacturing technologies. I support the methanol project because it brings much-needed jobs to Cowlitz County, the features that benefit the local environment such as ultralow emissions technology and equipment to mitigate for Washington air emissions. Must import lien the project reduces global greenhouse gases. After reviewing the supplemental EIS feel it a methodology to review the project.

For these reasons I ask the department of ecology to accept the conclusions and issues the shoreline and other necessary permits for the ethanol facility. Thank you.

Gail Dominick

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Betsy Kraus

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Lisa Georgette

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Sierra Club

Hello there my name is Tori and I'm an organizer with Sierra Club. This past week I've actually been replaying in my mind the first moments I learned about how dire the crisis became back when I was in college. And the-- pandemic them back to my dorm room where my roommate was here. I told her it this will be wild, you are going to be wearing gas mask for the time we are 50. That was nine years ago. I'm now 28 in my career is this. Trying to convince decision-makers to stop digging a hole for us when the facts are in our face. Now I am wearing a gas mask to the grocery store and to be honest it feels increasingly more like a dark comedy skit. Were people will spend the science so they can keep the business as usual. And we are putting the personal incidents of sight. This SEIS continues to use low estimates. And proportion of gas emitted-- only 4.6%, for underreported leaks in Canada. SEIS to be revised to the scenario in the high scenario would be 3% to capture the range of attentional upstream proportion of the projects emissions. Because the truth is that gas leaks all over the place. Significantly. Methane in this game is estimated at every stage of extraction, transport and aggression including Canadian progression. And describing the extensive field research in the investigation yields multiple issues including chronic under counting emissions gas wells. Little to no government oversight. Direct venting of. Methane an ongoing leakage from defect wells and reported in the watershed--

Mary Lou Dickerson

Hello this is retired state represented Mary Lou Dickerson, I lived in Seattle in the past two weeks my fellow residents have been choking on smoke caused by the fires pick these are directly related to climate change as has been noted by the governors of Washington and Oregon on. I care about the siding of this plant because I love the Northwest. I don't want it to be unnecessarily harmed by the huge influx of greenhouse gases that will result from the refinery. The analysis demonstrates refinery will cause 4.6 million tons of carbon pollution each year for 40 years. This all feeds into climate change. And in the face of Washington's displayed of mandated climate goals and I should know I helped write them. And the displacement argument in over a 40-year period in history tells us how markets fluctuate from that. And especially over a period of 40 years. There is no good way to accurately predict what they will be. Climate change and most likely-- instead of this plant we must more vigorously focus on green energy. Wind, solar, etc. Right now. We can do this if we use the same level of the energy and focus on creating green energy. That we are currently using and finding a vaccine for COVID-19. It is every bit as important. I urge you to deny the refinery and shoreline permit. It's the right thing to do. Thank you very much.

Richard Miescher

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Vic Leatzow

Good afternoon-- community since Kalama was founded. [[Background interference [fire radio]] this project would increase the budget and reduce the fire rate and increase the ability to upgrade on staffing. Which we have not done since 2002. We have greatly been involved with-- and looking at the plans for the facility. And as we are industrial based community with-- chemical facilities it uses pressure in the process but not pressure in the stories.

And safety precautions and safety systems in place with all the codes. And different than what the other industrial partners have. With that being said, we ask that this has been looked at three different times now and to move forward with this project and we hope that ecology takes out the emotion and looks at the facts. And moves forward with allowing the permits to be issued. Thank you.

Susan Schwartz

Okay this project a violation of the greenhouse gas reduction that we in the legislature and state of Washington has been working on. I look outside and what is going on with the weather and all the people out there that live in the homes, they are homeless and in the southeast they are losing their homes and what is going on down there. And it is all based on this. And this would increase the state greenhouse gas emissions to almost 1 million GHG's a year and making it one of the states largest emitters of greenhouse gases. I think that is wrong. Work okay I am done now.

Tom Luce

Hello this is Tom, I'm a resident of Cowlitz County, this will displace globally tons of gas of greenhouse emissions. On top of it it will mitigate for everything that happens in this state. I think it is important when we listen to the arguments in favor and against this project. That we come not from a place of not in my backyard but we are one part of a global community. What we are experiencing this week is a direct and even if you get all the greenhouse gas emissions in the state down to 0 we would be impacted by the global markets. That is not to say we should not do our part in Washington state. Northwest innovation is doing its part. But I think we need to realize we are all consumers of materials. Far beyond just plastic and I think that Northwest innovation works should be commended. For the efforts they made around mitigation in the state. And I think the department and the support is thorough, rigorous and comprehensive. In it comes to its analysis of the global markets and the displacement theories underlying report. Thank you so much.

John Thompson

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Sandra Herald

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Felicity Hohenshelt

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Mary Ellen Smith

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a future for our sacred earth that will sustain all life. To do that we must stop the use of fossil fuels and invest in renewable energy. We should not and must not contribute to the pollution of our waters and air by the use of fracked gas to make methanol which will be shipped overseas for the production of more plastics. This makes no sense and quite frankly is morally wrong.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms Mary Ellen Smith
7526 27th Ave NE Seattle, WA 98115-4630
maryellensmith75@gmail.com

Janice Banks

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Framces DeMarco

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Karen Williams

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PJ McDaniel

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Matt Brzezinski

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Jennifer Corrigan

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Lois Hanson

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Kathie Takush

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Neilia Pierson

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Jim Thompson

Thanks for the warning. We will be selling our house next year. Partly because of fire danger, pollution, and now lowering property values. You know Arne Mortenson the Republican running for commissioner is doing the same thing.

Laura Ray

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Theresa Cowger

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Linda Leonard

The proverb "Charity begins at home" expresses the overriding demand to take care of one's family, before caring for others.

This beloved state of Washington is home, the clean water and air we breathe, the Columbia River, the surrounding mountains and streams are for all to enjoy.

Northwest Innovation Works' proposed fracked gas to methanol refinery would cause millions of tons of greenhouse gas pollution each year for 40 years. This project would cause a massive amount of climate pollution, a staggering 4.6 million tons of CO2e every year for forty years making it one of Washington State's most significant sources of climate changing pollution and use more fracked gas than all of this state's gas-fired power plants combined.

This level of pollution is inconsistent with achieving our climate goals, protecting Washington's Shorelines and charting a path to keep global temperature rise below 2 degrees Celsius.

The SSEIS analysis has significant issues.
1. It relies on hypothetical future displacement of coal. The unrealistic assumption that Northwest Innovation Works' methanol refinery would prevent coal based competitors from producing more methanol in the future is a farce.
2. Feeding more low-cost methanol into global markets would increase demand and consumption of methanol. Basic economics is supply and demand. The SSEIS assumes that changes in supply will have no effect on price and therefore, methanol consumption is fixed.
3. The only way to accurately capture methane leakage is to use satellite based top down methodology, why is this scientifically accounting for methane leakage dismissed?

The evident in this SSEIS demonstrates that Department of Ecology should deny NWIW's proposal to build and operate this dangerous fracked gas to methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

I urge DOE to honor its mission to "Protect, preserve and enhance the environment for current and future generations. Please deny the permit.

Kathleen Martin

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Stephen Sachs

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John Keefe

Dear Sirs:

As a Washington state tax payer I wish to oppose the development of the Kalama Methanol plant proposal. My reading recently on the project informs me that much of its output is to create products for export to China. I do not feel the risk to our environment is worth benefiting a country we are presently in a low key trade war with.

I am further offended by the knowledge that significant property will need to be appropriated by the extension of pipelines to this facility that will negatively affect my fellow taxpayers' rights. If it was to create end products that this country genuinely needs, (besides jobs), it might be a risk worth considering but not otherwise.

We are able to produce this product domestically in sufficient quantities, indeed excess quantity and do not need to help the Chinese produce more of it. Let them open their markets more to our products, before selling them materials to produce and sell into our end markets.

In closing I would state that this project seems to be at odds with our Pacific NW identity and will have negative consequences to Washington state that will more than offset those benefits the project theorizes it might provide. I feel you are burdening the taxpayer with a project that could become obsolete or problematic in a few years and we should not be required to support, either on a state or federal level, this project in any way.

Respectfully submitted:

John Keefe

Barclay Hauber

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Betsey Thoennes

Dear Director Watson and Department of Ecology,

Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. I am concerned about climate change and the massive implications of this facility. I also am opposed to the continued proliferation of facilities that create chemicals to make more plastic.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is a mistake for Washington. Northwest Innovation Works cannot be trusted to mitigate the impacts of this fracked gas refinery.

Please deny this project.

Hoa P

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Natalie LaBerge

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Please deny this project.

Sincerely,

Natalie LaBerge

Martha Taylor

Dear Director Watson and Department of Ecology,
I am very concerned about the environmental and climate change implications of the proposed Methano Refinery in Kalama. I believe our society needs to move away from huge fossil fuel projects that perpetuate the use of single-use plastics that degrade our environment when they end up in the oceans. Promoting this refinery is not in the best interests of the citizens of Washington.

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Kaitlyn Welzen

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Please deny this project.

Yours sincerely,
Kaitlyn Welzen

Marilyn Miller

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Carolyn Eden

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Jackie Jeffers

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Sue Thompson

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Please deny this project.

Shelly Ackerman

Dear Director Watson and Department of Ecology,

The citizens of WA, the US and the world are standing up to plastics that are finding their way into our water ways and leaching into our drinking water. Plastics take forever to breakdown. In fact, they really don't break down fully. I write to plead to your heart and longterm thinking brain, to reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. I am concerned about the future for my children and future grandchildren, about climate change and the massive implications of this facility. I also am opposed to the continued proliferation of facilities that create chemicals to make more plastic.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is a mistake for Washington. Northwest Innovation Works cannot be trusted to mitigate the impacts of this fracked gas refinery.

Please deny this project.

Shirlee Tan

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Brian Snouffer

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Cheryl Wheeler

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Julie Masura

Dear Director Watson and Department of Ecology,

Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. I am concerned about climate change and the massive implications of this facility. I also am opposed to the continued proliferation of facilities that create chemicals to make more plastic.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is a mistake for Washington. Northwest Innovation Works cannot be trusted to mitigate the impacts of this fracked gas refinery.

Please deny this project.

Betti Johnson

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Please deny this project.

Marian Fish

Do I understand correctly that the ghg emissions charts you're explaining so carefully tonight are crediting NWI for not using coal? Thanks

Marian Fish

Paul Desjardins

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Judy Romano

Kalama's Fracked Gas Methanol Refinery would be a terrible mistake on a worldwide level

What caused the recent odd weather in the Pacific Northwest? NOAA, meteorologists and the governors of Washington, Oregon, and California agree that it is global warming that is causing temperatures to soar around the world and sparking these fires.

Global warming is primarily fueled by atmospheric carbon from fossil fuels. The Kalama Methanol Refinery will be the largest GHG emitter in Washington, it is dependent on fracked gas, one of the worst fossil fuels, particularly because it leaks methane. Methane is 80 times stronger in GHG's than Carbon Dioxide (Co2). Listen to the scientists and our governors who are calling for a halt to new carbon emitting fossil fuel projects and move to renewable energy - for a livable world for our children. Stop the Methanol Refinery project and help us have a greener future.

Kalama Methanol Refinery is a mistake, and our fires are not the trees fault.

Please do not let this refinery go forward.

Our children and grandchildren thank you

Judy VanderMaten

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Kirsten Hiett

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judith cohen

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Andrew Feldman

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Tania Maxfield

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Linda Luke

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Janet Nace

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Linda Zaugg

With Washington state working hard to reduce greenhouse gas emissions and to become carbon neutral, this project works in exactly the wrong direction. The danger to the Columbia River from leaks and the increase in demand for natural gas, which we need to stop using altogether, combine to make this project unconscionable. No to permitting this project!

Kimberly Wiley

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Mary Adams

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Sandra Herald

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priscilla martinez

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Laura Wagner

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Cynthia Strid

9/30/20
To: DOE
From: Cyndi Strid

Re: Northwest Innovation Works, LLC. proposal to develop and operate a natural gas-to-methanol production plant and storage facilities on approximately 90 acres at the Port of Kalama.

I recently visited Kalama and the Port public park, which was alongside the Columbia River. It was filled with families enjoying the river and access to a playground for their children.

The community of Kalama and the State of Washington are at undue risk of secondary health risks caused by the emissions from this gas to methane facility -- that includes diesel particulate air pollution that are reported to exceed WA state's acceptable levels by five times. We must identify the levels of ammonia, carbon monoxide, and nitrogen dioxide and their risks to the Kalama community and the communities upwind and downwind of this plant.

The WA legislature has adopted limits to reduce the state's greenhouse gas emissions in the years' ahead, with the first goal to reduce GHG emissions to 1990 levels by 2020, AND by 2030 to reduce our GHG emissions to 45% below 1990 levels. The WA DOE ABSOLUTELY SHOULD NOT ALLOW THIS PLANT TO BE BUILD IN THE STATE or REGION, AS IT WILL ONLY CREATE GREATER RISK FOR WARMING TEMPERATURES LOCALLY AND UNACCEPTABLE INCREASES IN THE STATES GHG EMISSIONS! WE MUST REMAIN COMMITTED TO THESE OBJECTIVES SET BY OUR LEGISLATURE!!

We must tell these polluters they are wasting their time on such proposals. These companies must be held responsible and MUST show decisively that their activities do not cause harm to the state of Washington's goal to reach their 2030 GHG targets.

Excessive GHG cause warming air temperatures which then increase the temperatures of local bodies of water, like the Columbia River, which is the home to extensive salmon runs. How are NW Innovation Works PROTECTING SALMON RUNS?

Northwest Innovation Works must be held accountable for documenting there is no risk for WA and NW salmon runs as a result of this methanol plant. The state has spent nearly a billion dollars to protect these runs for our native peoples and the local citizens over the past 30 years, and one company does not have the right to destroy the native salmon fisheries industry.

It is A STATEMENT OF NEGLIGENCE AND DISREGARD FOR HUMAN LIFE AND THE LIFE OF LOCAL SPECIES IN OUR STATE to be adding MORE GHG at this time.

Rejecting this proposal is SMART and will save Washingtonians millions of dollars; we do not have funds to fight more forest fires as the result of rising GHG , causing more local droughts and water shortages for the forestry and agriculture community.

The seismic risk our state expects in the next 50 years cannot be ignored by this applicant. We must demand a REAL plan guaranteeing the 72,000,000 gallons of flammable methanol stored on soil will not liquefy in the 6-7.5 earthquake predicted for our region. THIS IS TOO RISKY TO APPROVE!

It is essential DOE addresses these concerns and tells this company the risks do not balance the needs of our state and community for a healthy lives and jobs.

Don't be fooled by their attempts to sell us on all the jobs this plant will create. It is time we demand truly innovative planning for our FOSSIL FUEL FREE FUTURE using sustainable, energy sources like wind and solar, which are already much cheaper and safer and will offer safe and better wage jobs than a Polluting MONSTER like this plant.

Politely tell NW Innovation Works... NO this plant will not be built in Kalama and should not be built anywhere. Advise them to put their investment into R& D for innovation that really changes the way we live and work in our state. We don't want more forest fires, their pollution, and jobs that make people sick. Cold water is essential for salmon to survive and this proposal puts salmon and all the species that depend on Salmon at risk.

NASA has published data showing our GHG levels are the highest they have ever been during human life on this planet . If we ignore their warning, in favor of short-term monetary gains... a livable planet is looking more uncertain every year. In 2019, 11,000 climate scientists, with the lead researcher from Oregon State University, have signed a document demanding we the citizens and governments of the U.S. take the climate disaster and high level of GHG seriously otherwise life on this planet will be seriously in question.

STOP this unnecessary methanol production IMMEDIATELY.

Submitted with deep concern for life on this planet,
Cyndi Strid , White Salmon Washington resident
cyndiaction@gmail.com

Jan Ellis

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Cynthia Volk

We have lived in Kalama for 40 years and own a home and acreage on Cloverdale Road. I feel that building this plant in Kalama will be a huge negative impact on the sale price of our home that we have worked our entire lives for and will need in retirement. We do not need to sell and/or subsidize any plant in the United States not owned by our country. I do not believe that the Chinese are being truthful as to their intentions and statements made to their investors are proof of this. Our port has done a wonderful job in Kalama and we can be very proud of the efforts that they have made, but this is not their finest hour. I hope that these last few minutes have not been a waste of time and that you are seriously taking what I say into consideration.
Cynthia Volk

William Golding

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Gwen Gilchrist

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Diane McCutcheon

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Bridget Irons

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Dr Henrich

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Jeanne Longley

I am submitting my daughter Laurie Solomon's comments as I could not say it better. Please do not ruin our environment for financial gain! Jeanne Longley, PhD, Portland Oregon

Hello,

Here is a copy of my statement to the Department of Ecology, just in case you're interested.
The link to submit your comment is at the end, should you decide to do so.
My name is Laurie Solomon. I have been going camping and fishing since I was old enough to walk and talk. I have been an acupuncturist in Clark County since 2001. I have never gone to China; I realized in the 90's that colleagues who go there for Chinese herbs, or to study with acupuncturists there, usually have upper respiratory tract problems for at least a month after they return. As a former cigarette smoker, I have never considered visiting the country where my career ostensibly originated; Throughout China, the skies are gray with Industrial Air Pollution, with Beijing reportedly filled with pay-phone like stations for people to get a few minutes of Oxygen in these booths, after depositing a few coins.

It is not a surprise that companies supported by the Chinese companies, are spending so much to convince citizens and regulators in this country to continue to supply their country with Fracked Gas. Fracked Gas is extremely harmful to the environment, along with pipelines, releasing greenhouse gases, fossil fuel spills and leaks, burning methanol as fuel in China, and the endless stream of single-use plastics.

Another consideration for me is the extreme amount of both Fracked Gas and Electricity predicted to be used by this Methanol Refinery! It seems obvious that the cost of these two commodities would go sky-high for Washington residents because we'd be competing with the Refinery for them! But many seem willing to destroy our peaceful, healthy environment, where fishing has already become less productive due to climate change, to allow transport of extracted gas through certain-to-leak pipelines passing through our state; to allow enormous amounts of Greenhouse Gas Emissions to pollute our state's air; and then to voluntarily pay more (due to high demand) for the Natural Gas, Water, and Electricity that we currently pay relatively little to use. It doesn't make any sense. And it seems very unlikely that China would give up some of its coal-powered refineries just because we in Washington decide to allow the construction of the biggest fracked-gas-to-methanol refinery in the world. There are currently wind-generating machines sitting unused in China because the conversion from coal to wind-power is too difficult for each municipality to justify building.

It is heart-breaking to realize that this proposed atrocity on the Mighty Columbia River is all about jobs, port rent receipts, tax revenue, high profits for a foreign developer, and, if truth-be-told, bribes behind-the-scenes. This is not the long-term vision needed for future generations. We, as a human species need to act now to save our planet. Subsidized fossil fuel extraction and usage is devastating this world. Now's the time to make the switch to green, renewable energy. Our state is supposed to be all about that! Cowlitz County's citizens could be put to work building light-rail or a high-speed magnetic-levitation train along the I-5 corridor from Portland to Seattle, for instance! Retraining to build solar power and use the existing pipelines to transport water are other examples of good jobs!

I hope that we can continue to count on Governor Inslee, who claims concern for the Climate Crisis, along with Laura Watson and her Department of Ecology Team, to lead the way by rejecting another Fossil Fuel Disaster. Neither Indigenous Peoples of Canada nor citizens of Kalama should be expected reside in "sacrifice zones."

Thank you for your consideration of my comment.

Jo Hebberger

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Dustin Sevilla

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Theresa DeLuca

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Martin Fisher

I am writing to urge you to stop the proposed methanol refinery at Kalama from moving forward.

The State of Washington and Governor Inslee have pledged to move away from reliance on fossil fuels, and toward clean sources of energy, in order to combat climate change. Fighting climate change is a serious policy priority of the state government, and this methanol refinery would be a move in opposition to that worthy commitment, as the refinery would cause millions of tons of greenhouse gas pollution every year.

Further, the EIS is flawed and cannot be relied upon as a sound analysis of the environmental impact of this project. It speculates on how methanol may compare with future, unsure, alternate sources of pollution in overseas markets. The SEIS makes a false and erroneous comparison with potential future other sources of methanol or olefin production. Rather than engaging in this speculation, Ecology should focus on the real-world, known pollution that will come from the facility rather than NWIW's dubious "displacement" argument.

The pipeline that would be required for this project is also likely to be a further source of pollution, potential leaks, environmental damage, and damage to the communities in which it runs.

Finally, I am extremely concerned about pollution to the Columbia River if this project moves forward. Not only does this cause long-term damage to the ecology of the region as a whole, and threaten the habitats of important species, but it also is a threat to the Native American communities who especially are reliant upon the river for salmon fishing.

Please deny the permit for this project.

Deborah Lipman

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Chris Roberts

As a Kalama, Washington, American, and world citizen, I am vehemently against the proposed methanol plant. Despite what what written in the thoroughly debunked "independent" study funded by Northwest Innovation Works, it is plainly obvious that there are only economic benefits to a methanol plant and not a single ecological or environmental one. From the destruction of riparian areas, to the use of precious water and electricity, to the use of chemical derived from fracking, to greenhouse emissions, to the planet's need to reduce its plastic consumption, to Northwest Innovation Works' intent to also sell the methanol as a greenhouse gas-emitting fuel, there is absolutely no reason to approve this project. It is a money grab, and nothing else.

Environmental impacts occur at both fine and coarse scales, and both need addressed in any EIS. This methanol plant is a bad idea.

Sam Rich

Not interested in having another dying industry's products potentially contaminate our land. Please refuse it as 1) It's not a necessity, and 2) it's potential longterm downside for the environment outweighs any potential short-term benefits to people.

K K

Department of Ecology,
I am urging you to DENY THE PERMIT needed for Chinese government-owned methanol producer, Northwest Innovation Works to proceed with building the methanol plant in Kalama. Earlier this year, Sec. of State Mike Pompeo warned state governors to be wary of China's strategic intention to influence U.S. lawmakers and citizens and that China's Communist Party has infiltrated various levels of America's infrastructure and is working to destroy the values of the United States. Pompeo warned that Chinese Communist party officials are cultivating relationships with local politicians.

Washington State Rep. Richard DeBolt is the Director of External Relations with NWIW. He earns at least $120,000 annually according to state records. It is completely inappropriate and UNETHICAL for him to be promoting the methanol plant when he votes and works on the state budgets that also fund the Department of Ecology.

"We can't ignore China's actions and strategic intentions," Pompeo said while addressing the National Governors Association winter meeting. "The Chinese government has been methodical in the way it's analyzed our system...it's assessed our vulnerabilities and it's decided to exploit our freedoms, to gain an advantage over us at the federal level, the state level and the local level."

Please align your permit decision making with Governor Inslee who reversed his stance in May of 2019 after initially saying the plant would reduce greenhouse gasses and produce cleaner energy. "We want to be consistent to that spirit of progress. Therefore, I cannot in good conscience support continued construction of a liquefied natural gas plant in Tacoma or a methanol production facility in Kalama," Inslee said after signing a bill banning fracking for oil and natural gas in Washington State.

Approval of the Kalama methanol plant permit does NOT SUPPORT Governor Inslee's 10 year 100% Clean Energy for America Plan. Please shut this down.

P Beck

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Barbara Brock

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Art Hanson

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The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

I strongly urge you to keep communities safe and keep Washington on track to meet the goals for reducing climate pollution.

However, you MUST do MUCH more. We MUST keep ALL climate-changing fossil fuels IN THE

GROUND! We MUST achieve 100% clean, renewable energy by 2030.

Tom Samuels

NWIW initially claimed the methanol would only be used for plastic production and vehemently denied the methanol would be used as fuel. But then their investor marketing materials leaked showing the methanol would be used for fuel, yet they still pinky-swore to the public it wouldn't be. Now they have secured transportation for the methanol using ships that, wait for it, burn methanol as fuel. But it won't be this methanol fueling the ship, it will be some other methanol! Trust us! Who are you going to believe, NWIW or your lying eyes? /s
Folks, if despite all of NWIW's naked deceit you still support polluting our region and wasting our resources to ultimately FUEL CHINA'S NAVY, at best you're as short-sighted as the day is long, at worst, you're an un-American traitor who values currency over country. The NWIW proposal must be rejected, and no shoreline permit should be granted.

Lori McKole

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David Chaney

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Dolly Sutherland

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Judy LeBlanc

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I am a parent and grandparent and have grave concern about what kind of world I will be leaving for them as well as all other people.
In order to slow the chances of cataclysmic results of climate change all new infrastructure supporting the production and refining of fossil fuels needs to end and our efforts need to focus on the production and use of renewal energy. Anything short of this is irresponsible and short sighted. Please recognize the negative impact this plant will have on people and our planet and deny permits for it to move forward.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Judy LeBlanc
6244 1st Ave NW Seattle, WA 98107-2009
Jvleblanc@gmail.com

Lorraine Johnson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Please, please think of the future and the livable of it when you make these decisions.

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Sincerely,
Ms. Lorraine Johnson
13716 Lake City Way NE Seattle, WA 98125-2600
lorraine.d.johnson@gmail.com

Gretchen Metz

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Jan Ruud

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

During my twenty years as pastor of a lutheran congregation in Tacoma, I have sought opportunities to stand with those who are the most vulnerable in our community, including human beings, fish and wildlife, and the fragile creation around us. I am especially mindful of the great harm and offense this proposed project represents to our sisters and bothers of the Puyallup Tribe of Indians. In my advocacy with them, I have also listened to scientists in my congregation who have helped me understand the devastating effects of fracked gas overall and reject the false claims that it represents our best option.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Jan Ruud
1309 N 7th St Tacoma, WA 98403-1404
Jruud@smlutheran.org

Anonymous Anonymous

Our coast is on fire. No. Just, no. Stop. Short term profits can no longer be prioritized over long term environmental impact - that thing that is gonna harm profits later, and lives now. Short term gains should never have been the priority. Enough is enough, no means no.

Marianne Petersen-Ries

Hopefully this extension of licensure of the methanol plant will NOT be approved. With all the global warming and our forests going up in flames, this does not seem appropriate. NPR reported this facility of having a fire. They put it out with sand, but, when the Fire Department came, they locked the gates and would not allow them on the property...this facility seems to be corrupt to me. We need more overwatch for facilities like these. Lives depend on it, children, parents, everyone deserves clean air and a good life. Thank you for listening.

Wendy Zieve

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Our children deserve a future in a clean environment and a safe planet.

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Sincerely,
Wendy Zieve
546 Walnut St Edmonds, WA 98020-3604
wzieve@gmail.com

Wakil David Matthews

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We no longer have the luxury (if we truly ever did) of ignoring the fact that our human impact on the earth is destroying our planet and selling our children's future. As people of faith we condemn this irresponsible and unthinkable destruction and ask that you do all in your power to stop it.

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Sincerely,
Rev. WAKIL DAVID MATTHEWS
546 Walnut St Apt 102 Edmonds, WA 98020-3604
drmatthewsusa@gmail.com

Carla Merkow

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

The climate crisis is here and we need to take bold steps to prevent further harm to the land and ourselves!

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Sincerely,
Carla Merkow
6448 129th Pl SE Bellevue, WA 98006-4047
carlamerkow@gmail.com

Susan MacGregor

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Sincerely,
Ms. Susan MacGregor
16911 NE 95th St Redmond, WA 98052-3748
seesue@gmail.com

Erik LaRue

Dear WA Department of Ecology,

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Sincerely,
Mr. Erik LaRue
17598 Maiben Rd Burlington, WA 98233-9670
pacific2626@gmail.com

Helen Pacheco

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

As a state, Washington has made a great commitment to green renewable energy as a way to fight the climate change emergency currently threatening the lives and livelihoods of all Earth citizens. As WA state citizens, my family has personally committed to the role of green renewable energy by participating in the energy buy back program with our solar panels on the house and owning two electric vehicles. This project completely negates the progress and commitment of thousands of fellow citizens who are making their voices heard with this type of choice. We need more renewable green energy projects that will fuel economic and ecological success in this state instead of huge polluters constructed for the benefit of a few profiteers making big money from the sale of toxic energy overseas.

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Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Helen Pacheco
1809 Edmonds Way SE Renton, WA 98058-4614
helenmrenton@msn.com

Kristi Weir

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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Kristi Weir
4639 133rd Ave SE Bellevue, WA 98006-2139
khweir@hotmail.com

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Laura Huddlestone

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Kelsey King

I am submitting a comment on the Kalama methanol plant Supplemental EIS.

We cannot fight climate change by creating new investments in fossil fuels. Natural gas is as natural as oil, but in not a sustainable fuel.
Here are reasons that make us think the supplemental EIS is faulty.

Deception, Deflection, and Lies from the Gas Industry

1. They call it "Natural" Gas. That is salesmanship, like inferring that Greenland is Green.

2. Twenty cities in California, and ten cities on the east coast are developing policies to require new construction to be all electric. The fossil gas industry is fighting back with a massive campaign on TV and FB promoting gas cookstoves, ignoring the fact that gas cookstoves can make the air inside a home more polluted than the law would allow the outside air next to a powerplant.

3. They say gas burns cleaner, but they ignore the fact that a neighborhood with all electric heat is even cleaner.

4. They promote gas heat but none of the vented fumes from water heaters and furnaces are treated for NOx before discharge. Meanwhile, we have spent billions to remove NOx from gas power plants and auto exhaust.

5. They promote renewable or biogas, as though we had the ability to provide more than just the 5% of what they would actually need.

6. They say that gas power plants produce only 50% of the CO2 emissions as coal power plants, but ignore the methane that leaks before the gas reaches the burner tip.

7. They treat LNG with the same green-brush, but liquefied natural gas is worse because of all the energy needed for the liquefaction process.

8. They've deflected by having us speculate that if the Kalama Methanol Plant is built, that the global emissions would be less, but people are waking up everywhere, even in China and we must not make it harder for them by approving this project.

9. The plastics industry is part of the oil and gas industry and they sponsor recycling campaigns to make us think that most plastic would be recycled, but the majority is buried or burned as trash.

10. The fertilizer industry is part of the gas industry and they point their fingers at dairy gas, to deflect attention from the greater emissions from the fertilizer plants.

Market Forecasts

The EIS speculates on the global markets for methanol. We believe that the proponent advocated heavily for that speculation to be included.

Back in the 70's, all the electric utilities forecast that there would be a 300% growth in demand by this time. They were starting nuclear plants like crazy around here. Their forecasts were far overblown.

Thanks to our friend Lloyd Marbet, only one of the 21 proposed nuclear power plants is operating now, and renewables plus batteries could close it, for less cost than keeping it running.

It is not possible to predict market conditions for methanol or plastic. The resistance movement is everywhere, even in China. Many places (including Washington, by 2022) have banned various forms of plastic and after China cooked up this proposal in 2008, China became the world's leader in wind, solar, electric buses and cars. The Chinese have the strictest emissions standards for automobiles in the world. They could not forecast that in 2008.

Displacement Speculation

The basic argument of the proponents, is that, if we don't build this methanol plant, then China will build something that produces more CO2, for the same product.

That's like saying, "If we don't sell nuclear weapons to North Korea, then someone else with less oversight, will.

The Unions representing the Building Trades

We believe in unions; Don was a member of one for his entire teaching career.

When speakers who represent the building trades talk, it is important to realize that they represent the unions, but not most of the workers in the building trades.

In general, the developer of a large energy project will sign a contract with the construction unions, promising union jobs in exchange for turning out members to speak in support of a project.

The policy of the National Building Trade Unions is to support all large energy projects, Period.

Why is that? Generally, the companies that install rooftop solar are not union, and those projects are small in comparison to a major energy project.

All those speaking in favor of the project, are assuming the EIS is accurate. No, the EIS is guessing.

EIS Omissions

The Department of Ecology said: "Let us know what we omitted."

They omitted methane leaks from abandoned gas wells.

According to Bloomberg:

Gas companies are abandoning their wells, leaving them to leak methane forever.

Just one orphaned site in California could have emitted 30 tons of methane and there are millions more like it.

It would be good for Ecology to hear that often!!!!!!!

https://www.bloomberg.com/news/features/2020-09-17/abandoned-gas-wells-are-left-to-spew-methane-for-eternity?utm_source=url_link&fbclid=IwAR2IZicvXTRm0jluzdnPfdE4m1iQ8b6ZXU4cArXgPekpcImnX9CNsHHER0M

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Maureen Lawther

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Deena T. Grossman

Dear WA Dept. of Ecology,
Please deny all permits to NWIW for the Kalama methanol refinery. If built it will emit 4.6 million tons of greenhouse gas per year every year for forty years. This is absolutely unacceptable. WA State and Governor Inslee are committed to reducing greenhouse gas emission and slowing climate change. Please don't allow this monstrosity to be built by the Chinese government. It will degrade the air, water and environment in the Pacific Northwest. Please rule against any and all permits to build.
Thank you for caring for the future of our earth, our children and grandchildren.
Sincerely yours,
Deena T. Grossman

Christopher McElroy

See attached PDF for comment.

Comment on the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

Christopher McElroy

The Kalama Manufacturing and Marine Export Facility (KMMEF) has a planned lifetime of 40 years, and the Second Supplemental EIS (SSEIS) takes this into account when calculating its lifetime effect on the environment. While lifecycle analyses are the current standard, they are not typically relative. For example, Apple doesn't report the lifecycle impact of its iPhones compared to other popular phones. If other phones are worse that doesn't mean that Apple's phones have a *negative* effect on emissions. Apple is responsible for its own emissions, and its phones' emissions by extension. By comparing the output of the proposed KMMEF to other current or hypothetical plants based on predicted methanol markets over the next 40 years, the Department of Ecology has created a misleading, unproductive, and highly questionable report.

The state of Washington is responsible for its greenhouse gas emissions, not those of other countries around the world. However, by highlighting the relative emissions of the KMMEF over its absolute emissions, this logic is broken. The SSEIS states explicitly that "if KMMEF sells 3.6 MMT per year to China, then the emissions for 3.6 MMT of methanol produced under alternate cases would be replaced with the emissions from the KMMEF-produced methanol each year" (page 50). This idea completely dismisses the effects of supply and demand on the size of markets, while implying that Washington residents are responsible for those hypothetical emissions just as much as the emissions from the KMMEF. This relative analysis does not make economic or environmental sense, and it should be revised to highlight the expected lifetime emissions of the KMMEF, not the relative ones.

40 years is a long time. The SSEIS assumes that "global methanol demand increases over the next 40 years" (page 50). This is a reckless assumption that is based on the current state of the industry without taking into account the larger sociopolitical and environmental state of the world. No regard is made for the requirements that are already beginning to be imposed by the Paris Agreement and other efforts to limit warming to 1.5 or 2.0 degrees Celsius. As one specific example, China recently promised to be carbon neutral by 2060. Such a goal does not square with a rapidly growing methanol industry—*unless they are outsourcing their emissions to America with plants like the KMMEF.* Promises to be carbon neutral or close to it in the next 20-40 years are growing rapidly, and are likely to only increase in extremity over the next 40 years. This leaves the future of methanol highly uncertain, and makes any study (including the SSEIS) that relies primarily on strong assumptions about the methanol industry in this time period extremely unreliable at best. If a relative report is required, any EIS should make clear the large uncertainty present in the future of the industry, and integrate these uncertainties directly into their predictions. A much more factual and good faith solution to this issue would be to avoid comparison all together, and report only on the lifecycle emissions of the KMMEF.

There are glaring issues with the SSEIS. I urge the Department of Ecology to reconsider the assumptions this Environmental Impact Statement is based on, and revise its methodology and reporting to reflect that. Arguing that the KMMEF will have a net positive effect on the environment requires ignoring obvious economic and environmental realities. You can do better.

Serge Gubelman

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

James Taylor

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Kelly Jensvold

The Kalama Methanol Refinery must not be built.

Creating any new fossil fuel project is a bad idea. To say that creating the world's largest methanol refinery on the Columbia River is a terrible and dangerous idea is a gross under statement.

NW Innovation Works has been causing deception:

First of all, new fossil fuel infrastructures aren't innovative and NWIW is not from the Northwest, it's a Chinese company.

The Sightlight Institute says the project backers have been contradicting themselves whether the final product would be used for fuel or plastics. (Neither are environmentally conscious or innovative or a worthy investments considering the consequences locally and globally.)

Despite mainstream green-washing, methane/natural gas isn't clean, it's just another fossil fuel. In fact, Methane is a super pollutant. The IPCC recently reported that methane may be as much as 86x more potent at climate disruption than carbon dioxide in the first 20 years in the atmosphere.

Backers of the project say the project will reduce emissions. When the whole supply chain is considered, from drill site to consumption half across the world, it's clear this project won't reduce emission, it will result in a substantial increase.

Backers say that tax payers won't receive the bill. That's false too.

Lastly, one shouldn't believe everything pro-fossil fuel parties and profiteers of fossil fuel projects say about fossil fuel projects being environmentally beneficial or in the public's interest.

You must listen to those who are motivated to support the greater good, not those that are in it for themselves. Don't fall for NW Innovation Work's green-washing or trickery.

Moving forward on any new fossil fuel project is the wrong decision, especially this one.

This project is no different than any other past fossil fuel project proposal that has died in the Pacific Northwest.

This project must not move forward.

Virginia Davis

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Megan Faber

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Amanda Collins

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Martin Adams

Please deny this project your approval. None of the uses of methanol should be encouraged. "Some may be used as fuel". Fuel should be biofuel, not methane based.
We recently banned plastic bags and learned recently that plastics are not recycled as much as purported. Most can be made from corn oil.
Please encourage leaving the gas and oil in the ground by denying this development.

Kenneth Zirinsky

Re: Kalama Manufacturing and Marine Export Facility Second Supplemental EIS (SSEIS)

I am a retired physician and I live in Tacoma, WA. I would like to address the potential effects of the chemicals utilized and produced by the Kalama manufacturing facility on the health of the local community and urge you to deny the proposal to build and operate the methanol manufacturing facility by rejecting the Shoreline Conditional Use Permit.

Please note that I was unable to find text in any section of the SSEIS that addressed the direct health effects (toxicity) of methanol and other organic chemicals naturally present in the natural gas used to produce methanol.

Toxic effects of methanol include blindness, seizures, and kidney failure. (1,2)

Once in the body, methanol is metabolized into formaldehyde. (3)
The toxic effects of formaldehyde include cancer of the nasal passages and lung cancer. (4)

Benzene is a natural constituent of natural gas (5) and natural gas will be utilized to produce methanol at the Kalama manufacturing facility.

Long-term exposure to benzene can cause blood cancers such as leukemia. (6)

In summary, I urge you to consider the toxic effects of acute accidental and chronic long-term low level exposure to methanol and natural gas and to deny the proposal to build and operate the Kalama methanol manufacturing facility by rejecting the Shoreline Conditional Use Permit.

References:

1. https://www.epa.gov/sites/production/files/2016-09/documents/methanol.pdf

2. https://www.cdc.gov/niosh/ershdb/emergencyresponsecard_29750029.html#:~:text=INGESTION EXPOSURE:,consciousness including coma, and seizure.

3. https://pubmed.ncbi.nlm.nih.gov/20021153/

4. https://www.epa.gov/sites/production/files/2016-09/documents/formaldehyde.pdf

5. https://echa.europa.eu/documents/10162/13641/annex_1_rac_opinion_adopted_rimv_en.pdf/3c44ffe7-61c4-440e-befb-e9a08d38362d#:~:text=Benzene is a volatile liquid that exists as a natural,motor fuels and natural gas.

6. https://www.acmt.net/cgi/page.cgi/_zine.html/Ask_A_Toxicologist/What_are_the_effects_of_exposure_to_benzene_

Vince l

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Mandy Lill

My name is Mandy Lill. I am a proud resident of Kalama who lives a mile away from the proposed site, and I support the NWIW Methanol facility 100%. Here are some of the many reasons I support this project:

• Jobs. The construction of the facility will provide 1,000 jobs to local workers. While these jobs may be temporary, they will bring a much needed boost to the area and give these construction workers a couple years' worth of work. When the plant opens up, it will provide 200 permanent family wage jobs. I hear people argue that these jobs will not be given to locals and I would like to know where they are getting that information from? I think it is an insult to our community that the nay-sayers think we don't have anyone qualified. The jobs provided will not just be engineering or operator positions (of which there are a multitude of people in our county that can fill that need). What about the administrative positions they will need to fill? Accountants, administrative assistants, marketing, IT, human resources, office managers. Then there are the indirect jobs this will create. Will someone get to fulfill their dream of starting a deli to help feed these workers on their lunch breaks? How about your neighbor who just graduated with a business degree and wants to start her own coffee shop in close proximity to the plant so the workers have easy access to a cup-of-joe. Maybe a new employee of the plant, who was previously unemployed, will now need childcare. This is just a tiny sample of the jobs that will help give strength to our wonderful community.
• Zero liquid discharge in our river. NWIW has committed to eliminating all water discharge into the Columbia River.
• Local partnerships. NWIW and Lower Columbia College have partnered together to create a program that will train 40 local people to work at the methanol facility. 20 of those people will be local high school graduates. The other 20 people will be people with disabilities, veterans, people who are unemployed, and others who are facing some sort of barriers in the work force.
• It provides something we need. Methanol is in so many things we all use every day. It was used to make your carpet, siding, flooring, furniture, pet products, flat irons, the containers your makeup comes in, your computers & cell phones, kayaks, windshield wiper fluid, reusable water bottles, clothing, those paddles at the hospital that may save your life someday. If I listed everything, my letter would be endless.
• Taxes. This plant will bring a HUGE tax boost to our area. If it was already built, our new schools would be paid for and not with a new tax on the residents. It will also provide much needed funding to our fire department.

People continue to ask why we can't do some other kind of project that is "green" for the environment. One example widely used is wind energy. Wind energy is great idea and we should continue to embrace it. I'm not sure that people realize it takes methanol to create those wind blades. Also wind blades do not last forever, they have a life span of 20 years but many are removed after just 10 so they can be replaced with larger and stronger designs. When it comes time to replace them the old blades are not recyclable, therefor they are filling up landfills at an unprecedented rate. There is a landfill in Casper Wyoming that is home to 870 old blades. 8,000 blades will be removed in each of the next 4 years in the United States. According to NPR, over 720,000 tons of blade material will be disposed of over the next 20 years in the U.S. Do you want these buried in your backyard?

Methanol is simply supply and demand. Consumers demand products that are made with methanol. As long as we continue to use these products, we will need methanol. Let's build this plant in the most environmentally rigorous area of the U.S. where we know it will be built properly, will be the most efficient, and where our community will enjoy the financial benefits.

Thank you, Mandy Lill

Tika Bordelon

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Tika Bordelon
1400 Hubbell Pl Seattle, WA 98101-1965
tikab1@gmail.com

Jennifer Brodie

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I am concerned about the justification for this plant being that it is less awful than other fracking operations. To me it seems that it is time to turn to other ways of producing energy and jobs.

Would you want to eat something just a little moldy rather than totally off?

Wouldn't it be better to have a fresh food.

I concur with the opinions expressed below.

Jennifer Brodie

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Sincerely,
Jennifer Brodie
40 Green Meadows Dr Sequim, WA 98382-8261
brodiejennifer@hotmail.com

Derek Benedict

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Sincerely,
Mr. Derek Benedict
709 212th Pl SW Lynnwood, WA 98036-8606
dsbened@frontier.com

Peter Fels

PETER FELS
5121 NW FRANKLIN STREET
VANCOUVER WA 98663
TELEPHONE: 360-737-3154 CELL: 360-609-1655
PLFELS@GMAIL.COM

October 1, 2020

Washington Department of Ecology
(submitted via on-line comment portal)

RE: Kalama Manufacturing and Marine Export Facility -- Supplemental Comments

Dear Ecology:

I oppose the permit application of NWIW for the KMMEF. You should deny the application. These comments supplement my comments submitted earlier.

As I previously stated, I am an ordinary citizen with two children and two grandchildren and I am very concerned about the future of our earth's environment for their sake. I am also concerned for the future of all other citizens of our planet.

I am submitting this additional comment because I was only recently able to obtain a copy of the Cowlitz County Superior Court's Order Affirming in Part and Reversing in Part the Shorelines Hearings Board Order Dated September 15, 2017 ("Order"), issued and filed by Judge Warning on July 12, 2018.

The Order states that "Ecology must review the SEIS and determine whether, or not, the Permits must be modified, conditioned, or denied based on the analysis in that document." (Order, p. 5, line 23.) You required the Second SEIS because you determined the FEIS and SEIS were inadequate. Essentially, that requirement was a decision that the permits should be conditioned on completion of the additional analysis you requested in the SSEIS.

It is still your obligation, therefore, to determine whether the Shoreline Conditional Use Permit and the Shoreline Substantial Development Permit you previously approved should be modified, denied or conditioned based on the SSEIS.

As noted in the SSEIS, in 2019 you recommended statewide reduction goals for GHG emission limits including reducing overall emissions of GHGs in the state to 1990 levels by 2020, by 2035 to 45% below 1990 levels, and by 2050 to 95% below 1990 levels pursuant to RCW chapter 70.235.

It is clear from the SSEIS that emissions from KMMEF will never result in any reduction in in-state GHGs for the next 40 years. At best, even assuming KMMEF is able to mitigate all of its in-state emissions, it will do nothing to meet Ecology's emissions guidelines. To the extent KMMEF does

not mitigate all emissions with in-state mitigation measures, it will make it that much harder for the state to meet its overall emission reduction targets.

As I noted previously, KMMEF promises to mitigate all its emissions, but does not identify any existing mitigation measures. Whether it can and will actually fulfill its promises is yet to be proven.

In your order requiring the SSEIS, you asked for "evidence showing how the project would impact other sources of methanol..."

Again, as I noted in my first comments, the SSEIS continues to rely on speculation about the impact of KMMEF on other sources of methanol, speculation which is internally inconsistent because of its assumptions that KMMEF methanol will replace other sources of methanol even though those sources, produced from coal, will be cheaper, and even though producers of more expensive methanol are likely to reduce their prices to be able to stay in the market. Speculation and unfounded economic projections are not "evidence".

You have given KMMEF at least 3 bites at the apple of proving its case that the permits will not harm Washington's shoreline or air-shed. It has failed each time. It continues to offer unproven and unsubstantiated projections.

Because KMMEF has not shown and cannot show it can meet the requirements of Washington's GHG emission reduction goals, it is time to deny both permits.

Washington citizens rely on the Department of Ecology to protect us and our environment from pollution, consistent with state laws. The future livability of our state and our climate depend on every jurisdiction doing its job to reduce global GHG emissions consistent with the IPCC findings.

For the sake of everybody's children and grandchildren I hope you will deny this permit.

Thank you for your consideration,

/s/
Peter Fels

PETER FELS
5121 NW FRANKLIN STREET
VANCOUVER WA 98663
TELEPHONE: 360-737-3154 CELL: 360-609-1655
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October 2, 2020

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(submitted via on-line comment portal)

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It is clear from the SSEIS that emissions from KMMEF will never result in any reduction in *in-state* GHGs for the next 40 years. At best, even assuming KMMEF is able to mitigate all of its in-state emissions, it will do nothing to meet Ecology's emissions guidelines. To the extent KMMEF does not mitigate all emissions with in-state mitigation measures, it will make it that much harder for the state to meet its overall emission reduction targets.

As I noted previously, KMMEF promises to mitigate all its emissions, but does not identify any existing mitigation measures. Whether it can and will actually fulfill its promises is yet to be proven.

In your order requiring the SSEIS, you asked for "evidence showing how the project would impact other sources of methanol…"

Again, as I noted in my first comments, the SSEIS continues to rely on speculation about the impact of KMMEF on other sources of methanol, speculation which is internally inconsistent because of its assumptions that KMMEF methanol will replace other sources of methanol even though those sources, produced from coal, will be cheaper, and even though producers of more expensive methanol are likely to reduce their prices to be able to stay in the market. Speculation and unfounded economic projections are not "evidence".

You have given KMMEF at least 3 bites at the apple of proving its case that the permits will not harm Washington's shoreline or air-shed. It has failed each time. It continues to offer unproven and unsubstantiated projections.

Because KMMEF has not shown and cannot show it can meet the requirements of Washington's GHG emission reduction goals, it is time to deny both permits.

Washington citizens rely on the Department of Ecology to protect us and our environment from pollution, consistent with state laws. The future livability of our state and our climate depend on every jurisdiction doing its job to reduce global GHG emissions consistent with the IPCC findings.

For the sake of everybody's children and grandchildren I hope you will deny this permit.

Thank you for your consideration,

/s/
Peter Fels

Janet Thompson

See attached letter.

Rich Doenges re: NWIW SSEIS
Washington Department of Ecology October 2, 2020
Southwest Regional Office
P.O. Box 47775

RE: Second Supplemental EIS for the Kalama Manufacturing and Marine Export Facility

Dear Mr. Doenges,

Thank you for undertaking the Second Supplemental Environment Impact Statement to provide additional information about Greenhouse Gas Emissions (GHG) for the Northwest Innovation Works: Kalama Manufacturing and Marine Export Facility. Based upon this information, I am opposed to the Shoreline Conditional Use Permit for this project and recommend that the conditional use permit be denied. It is the wrong project at the wrong time.

The proposed Methanol Refinery entails the use millions of gallons of water from the Columbia River daily, pollutes the air with cancer-causing toxins, has the potential to explode during an earthquake and necessitates the expansion of the pipeline infrastructure in the State to feed the NWIW refinery. The environmental impacts of this proposed project are not limited to just Washington State and the Columbia River. The 4.6 million metric tons of carbon dioxide equivalent released annually adds significantly to the greenhouse gasses world-wide. Instead, we should seek to reduce those emissions and not add another manufacturing plant to the methanol industry. Worldwide, there are 90 plants with a combined production of 110 million metric tons (36.6 billion gallons or 138 billion liters of Methanol). To combat global climate change, the demand for methanol needs to decrease. This refinery, which Northwest Innovation Works claims will be the world's largest, would consume a stunning amount of fracked gas just to operate--320 million cubic feet per day, to be exact. The annualized amount of fracked gas consumed is 116,800,000,000 billion cubic ft. Along the I-5 corridor, the refinery requires a massive new pipeline down the entire length of our state. Over the decades, the citizens of Washington have strongly opposed the building of new pipelines. All of the above issues pose significant dangers to nearby communities, especially in this part of the country, which is known for earthquakes. The level of fracked gas used and the corresponding GHGs' released are profoundly inconsistent with Washington State's climate goals.

I am also quite concerned about the affects on the Columbia River resulting from the extraordinary amount of water to be removed from the Columbia. We have spent millions and millions of dollars over the last 3 decades to restore salmon populations in the River, which remains a work in progress. The citizens of Washington have clearly made a long term investment to salmon recovery. This recovery would be put at great risk, and the investment we have made would be thrown away with the added impacts of this refinery. The money invested in salmon recovery is jeopardized by the increasingly rapid climate changes. We cannot have this investment go for naught. The health of the orca whales and the Salish Sea are dependent upon the Columbia River. The world's largest methanol refinery would profoundly diminish the entire ecosystem. Additionally, the shipping traffic in this area of the Columbia would increase and further degrade the riverine ecosystem. Instead, the State of Washington needs to maintain

and enhance, if possible, the biodiversity of this ecosystem and reduce the environmental stressors current usages cause. It is my belief; we have maxed out the resilience of the Columbia River ecosystem.

The predicted demand, which underpins why this export facility is needed, assumes the continuation of current conditions. We know, however, that climate change is happening, and we know that we need coordinated action to reduce GHG in order to slow down the rate of climate change. Moreover, this project removes incentives for transitioning markets away from plastics, other fossil fuel based products and clean energy generation. Perhaps most importantly the project is inconsistent with Washington State's climate goals.

We are at a tipping point with Climate Change. The increased length of droughts, larger more intense fires, and increased number and severity of weather systems cannot be ignored. Over the last 5 years, we have experience poorer air quality as a result of large forest fires in British Columbia, Washington, Oregon and California. These fires are not one offs; they are happening annually and maybe the new normal, which is a terrifying thought. Just this last month, for example, we experienced the worst air quality along the corridor from Olympia to Seattle, with the air quality index ranging from 220 to 276. Portland had an air quality index of 500 at one point. This summer the Chelan fire further degraded the biodiversity of the East Cascades. The Oregon and California fires are the worst ever, and Seattle is expecting additional smoke to decrease air quality further. The economic impacts of climate change are immeasurable.

Northwest Innovation Works - Kalama Manufacturing and Marine Export Facility needs to be categorically denied. The environmental damage cannot be mitigated and certainly not with the vague wording currently in the environmental documents developed for this project. Washington citizens should not be bearing these risks. We are not protecting Washington's Shorelines by allowing this project to be built. In this case, "No Action" will better protect the river shoreline and is the correct choice for this project.

Thus, I urge Department of Ecology to deny the Shoreline Conditional Use permit.

Thank you for the opportunity to comment on the SSEIS.

Best Regards

Janet Thompson
11331 Alton Ave NE
Seattle, WA 98125
206-365-0057

LARRY JOHNSON

The recent news that China has declared a net zero footprint over the next 40 years has remarkably diminished the profit incentive for building the future Superfund site, a.k.a. the Kalama Manufacturing and Marine Export Facility.

Please reject the permit for this project.

Nancy Hausauer

Dear Director Watson and Department of Ecology:

I am writing to ask you in the strongest possible terms not to allow Northwest Innovation Works (NWIW) to build the world's largest fracked gas-to-methanol refinery in Kalama, harming our climate in general and Kalama specifically. We (Washington) should vigorously reject NWIW's proposal. They care nothing at all for our beautiful state and its citizens and are only seeking to profit for themselves at great cost to us.

NWIW misled your agency and the public about the purpose and impact of the refinery. I urge the Dept. of Ecology to dismiss NWIW's deceptive claims and accurately account for the project's upstream and downstream climate pollution.

For Kalama and for our climate in general, the risk of building this monstrosity is simply too large. Please keep our communities safe and healthy, and keep Washington on track to meet our goals for reducing climate pollution. Don't cave in and let NWIW play Washington for a fool.

I strongly urge you to do the right thing and stop this dirty, dangerous fossil fuel export project. It gives Kalama and our state nothing of real substance, but costs us greatly. It's a good deal for NWIW--but a bad deal for Washington.

Sincerely,

Nancy Hausauer
Long-time resident of Tacoma, WA

Deborah Bancroft

In section 3.4.5 Economic analysis, the report's authors posit that "more economic analysis [than what was provided in the First SEIS] was needed to adequately address stakeholder concerns" but then they shrink from doing so: "scenarios with substantially different global policies (fossilfuel/plastics phase outs or bans for example) are too uncertain to include in this analysis." We are living in a rapidly deteriorating global climate and should not be ignoring citizens' demands for clean energy sources. To do so goes against our state's legislative goals established 30 years ago.

I call upon you to serve Washingtonians by denying the CUP for this project on the grounds of the overall environmental danger to our area. Of course the project presents some "benefits" but do not be blinded by the hype. Jobs are important and it is understandable that many in the building trades are lobbying for them. Sadly, there would be many more applicants than the relatively low number of actual jobs. The Department of Ecology's mandate is to protect the environment not to protect jobs. I trust some of you at Ecology are familiar with the controversies over siting the Satsop nuclear plants and how some workers there did make very good money only to have the projects shut down because they were too costly. The "benefits" of building this Kalama Methanol plant will accrue primarily to the corporate entities behind the project and not to workers in SW Washington and certainly not to local residents and taxpayers. The risks to our environment are burdensome to this and future generations of wild and human life and must not be dismissed as uncertain. The project will be a massive greenhouse gas emitter and is in stark opposition to our legislative goals of net zero emissions by 2050.

Please deny the project and save Kalama and the rest of us from this climate calamity in the making.

Thank you for your attention.

Kristin Edmark

Please add a background section to the SSEIS regarding Climate goals of Washington State and other jurisdictions. The SSEIS should clearly state that:
1) In spring, 2020, the Washington State legislature accelerated its emissions reductions goals to 45% below 1990 levels by 2030.
http://lawfilesext.leg.wa.gov/biennium/2019-20/Pdf/Bills/Session Laws/House/2311-S2.SL.pdf#page=1
As more people are personally impacted by climate change and the costs to state and local governments increase with increased climate related disasters, goals are expected to become more rigorous.
2) There is likely to be a new Federal Administration committed to climate goals. A new federal administration will work internationally to establish goals and decrease emissions. These steps would likely conflict with the increased extraction needed to provide fossil fuels to the refinery.
3) Local jurisdictions are increasingly making climate Action Plans and adding ordinances to decrease emissions. For example, already 20 cities in California, and 10 cities on the east coast are developing policies to require new construction to be all electric. Many cities in Washington are moving in that direction. For example, Bellingham's Climate Action Plan has set the goal to further reduce municipal greenhouse gas emissions to 85% below 2000 levels by 2030.
4) Given that the refinery would produce 4.6 million tons of carbon dioxide/year, this one project would be equal to around 5 percent of the state's total climate emissions from all other activities combined. In the State of Washington, greenhouse gas levels are expected to increase by 1% if this methanol refinery is built.

It is very important that the Kalama methanol refinery does not conflict with major State goals and the goals of other jurisdictions. Please include these goals in the background section of the SSEIS.

Tara Ohta

I'm writing to urge the Department of Ecology to reject the proposed Northwest Innovation Works methanol refinery and to deny the Shorelines Permit for the project. I care about this because I love our beautiful Earth and want future generations to be able to know it as I have been blessed to do. I want my children and grandchildren to be able to live their lives safe from the effects of air and water pollution and climate change, which cannot happen unless we reject fossil fuels now and embrace renewables. The proposed refinery would move us toward climate catastrophe rather than toward the low-carbon future we must achieve if we are to save life on Earth as we know it. Please, please reject this methanol refinery!

Deborah Kaye

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Paul Eisenberg

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Fred Suter

Department of Ecology - thank you for extending the comment period. We just learned that China announced it would achieve a peak in carbon dioxide emissions in less than 10 years and be carbon neutral before 2060.

This reduces significantly the draft SSEIS GHG emissions the Kalama Methanol Refinery is projected to avoid by assuming it will replace Chinese production of methanol utilizing coal fired power with Kalama's production of methanol utilizing natural gas.

This assumption is no longer valid. We're being told China's announcement will have significant impact on oil and coal consumption, and in turn, the GHG emissions projected in this SSEIS.

I urge you to take this latest development into account and furnish decision makers with accurate information on this project's impact to the State of Washington.

Sincerely,

Fred Suter

Lisa Critchlow

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Margaret Bone, MD

Dear Department of Ecology People,

As almost everyone agrees, we are already in deep trouble with accelerating climate change. Just with this recent spate of wildfires, researchers at University of Washington and at Stanford estimated 200 excess deaths in Washington due to smoky air last month, (https://www.kuow.org/stories/wildfire-smoke-may-have-contributed-to-nearly-200-deaths-in-washington-this-month), while hurricanes ravage communities, and ice and "permafrost" melt. The first thing to do when you find yourself in a deep hole is to stop digging. Committing ourselves to 40 more years of fossil fuel pollution and risk of catastrophic accidents is tantamount to digging ourselves a deeper grave.

Having listened to one of the hearings, many of the points in my mind have been made, and I want to emphasize a few.

Increasing carbon pollution is deeply racist, as people of color and in general poor communities are sacrificed with shorter lifespans from a whole host of negative health effects.

I still think, even in this Second Supplemental EIS, the methane leakage estimates are too low, and leaking from abandoned wells needs to be considered as well. (e.g. Fractracker Alliance March 29, 2019 by Kyle Ferrar, MPH) This demonstrates the long term leaking from abandoned wells, even from under sidewalks in downtown LA.

The assumption clung to by supporters of the project, no doubt including well-intentioned community members, that this project will contribute less to climate change than the alternatives, specifically coal, as illustrated in one of the graphs in this EIS, is deeply flawed.

We should not assume that China will just use coal if we don't send them natural gas. There is substantial opposition all over the world to the development of coal resources. According to the Environmental Law Alliance Worldwide, "local advocates [who] helped halt coal-fired power plants in Egypt, India, Kenya, Senegal, South Africa, Sri Lanka and Thailand; shelved proposed coal mines in Brazil, the Philipines and Poland, and shuttered a coal mine in Chile." (ELAW Advocate, Autumn 2020) As you know, the economics of renewable energy sources and storage are improving rapidly, and in many areas is already cheaper than fossil fuels, and China has just announced it will reach peak emissions by 2030 and be carbon neutral by 2060. We should be supporting, not subverting that effort.

One of the major arguments made by fossil fuel project proponents is that it is 'better to have fossil fuel production here where we have good environmental laws'. This naive and insulting, similar to initially blaming the 737-Max crashes on 'those poorly trained pilots from other countries'.

This ignores not only the trauma to Indigenous communities subject to destruction of their territories, rape and murder of their populations by workers in man-camps, and the abysmal record of leaks and explosions from transport of natural gas.

As for plastics, they are a menace to our environment, so any amount of olefin is a negative also. To the argument that we need plastics for many of the things we use every day, there is active research on alternatives and I don't believe that research will take 40 years. In the meantime, there is an abundance of plastic that can be reclaimed.

Writing you from a place of deep grief as places I spent a lot of time in as a kid have burned this week, I implore you to reject this shortsighted, dangerous and destructive proposal.

Sincerely,
Margaret W. Bone, MD

Elijah Cetas

Greetings,
My name is Elijah Cetas, I live in Portland, Oregon, and organize with Sunrise movement.

As a young person, a conservationist and a fisherman, I strongly oppose this project.

Alone, the risks and impacts to endangered salmon and steelhead runs of the Columbia river make it a nonstarter.

I understand why Ecology has included an assessment of whether Kalama might displace coal plants in China. Global greenhouse gas mitigation is complicated. But what i fail to understand is why this was the only future scenario that Ecology explored. What led this agency to ignore and not assess other potential futures that might not include releasing 40-million tons of added CO2? As a young person who will face the impacts of the climate crisis throughout my lifetime, it is deeply important to me to acknowledge that this project would emit the equivalent to 8.6 million new vehicles on the road, or 10 new coal fired power plants. Longterm projects cannot ignore immediate impacts.

One likely and dismal future Ecology might have explored is one where global plastic production increases. China continues to produce methanol from coal, while new pipelines are built to supply Kalama Methanol. New plastic facilities open in the U.S and abroad. The plastic industry - an investment haven for fossil fuel companies intent on maintaining fossil fuel profits in spite of climate change - this industry continues to undercut sustainable alternatives and choke our oceans with debris. Meanwhile, under this future scenario, we in the pacific northwest still see the price of gas in our homes driven up by this project's monopolistic control of regional gas supply lines.

Then again, the opposite eventuality could occur. At much cost to the local ecosystems and our clean water, let's say this facility is built and operates for five years. Then, before the coal plants go down in china, a climate disaster, another pandemic, a spate of wildfires, or a plastic alternative emerges, driving down demand for fracked gas while the global supply becomes glutted. Eventually the Kalama Methanol project closes, after a short lifespan of wasted greenhouse gas emissions. Meanwhile, we are left to clean up the mess. And for what?

This is of course exactly what we are witnessing with the oil industry during the Covid-19 pandemic. Flotillas of oil storage vessels are currently waiting off our coasts, while global demand stagnates. Fracking fields have been abandoned, wellheads are improperly closed and leaking methane, and the companies responsible are avoiding cleaning them up.

Why is Ecology propping up the straw man argument of a foreign company, intent on using out of state workers and fanciful financial speculations to degrade our local resources and imperil our communities health and safety in order to extract profit for a multinational corporation and its foreign bank accounts?

What would it look like for Ecology to take our the immediacy of the climate crisis seriously, and analyze other likely scenarios? Perhaps even imagining the greenhouse gas benefits of not building

this plant, and instead investing in renewable energy, in environmental restoration, and deconstruction and retrofitting jobs that help prevent disaster from the Cascadia earthquake. This work of community resiliency isn't going away in our lifetimes. Yet when a project like Kalama Methanol is proposed, we have to fight that much harder to see climate resilient investments in lieu of fossil fuel projects.

Facing these complexities, Ecology must return to its mission: protect the health of local lands and communities. Reject this project and demonstrate the many good reasons to use our waterways and ports for other purposes.

Thank you,

Elijah Cetas

er.cetas@gmail.com
10049 Se 36th Ave. Milwaukie, OR 97222

Vicki Bucklin

I believe Kalama and Our River Are Being Threatened by Corporate Greed

If you haven't heard of "Cancer Alley" please look it up before you decide it's a good idea to build the LARGEST METHANOL PLANT IN THE WORLD, right in our neighborhood.

I live on Puget Island and my family supports the following groups:
Wildlife Center of the North Coast
Portland Audubon Society
Columbia Riverkeepers
Columbia Land Trust

Every single ONE of these groups are steadfastly AGAINST the approval of the proposed Kalama Methanol project.

Why? Because for the past 20 to 30 years they've done their best to mitigate & prevent exactly the kind of pollution this project is guaranteed to cast upon our environment.

It's a known fact that this proposed methanol facility will produce substantial increases of pollution in our AIR, our RIVERS, and all along the pipelines and railways that carry the inbound raw materials.

Profiteers tell us they'll maintain "acceptable levels" of ongoing emissions which are known to contain carcinogenic pollutants. To those of us who care about our children & grandchildren, THERE ARE NO ACCEPTABLE LEVELS!

China wants US to build this plant right here, right now, because CURRENTLY, it is the cheapest way for them to obtain raw materials to make plastic. China HAS resources to make methanol. This option is simply less expensive right NOW.

Please go online and look at Webcams in China. The smog levels you'll see are shocking.

SHOULD we export our NON-renewable US natural resources to China? Are we doing the right thing by providing them with more US fossil fuels?

We can regulate LOCAL pollution, but once we ship our methanol overseas, we sacrifice our rights to control it's use. However, we can't escape the same biosphere.

What will happen once we've made this deal, and then the price of oil, or the temperament of our relationship with China, have changed? Be assured, over time these things WILL change.

What will happen to this behemoth of a plant after an earthquake, a catastrophic spill, or any other disaster?

What will happen to the plant's production when fossil fuel extraction, fracking, or fuel

transportation methods are outlawed in those zones we DON'T control?

And indeed, what happens when our US raw materials have been depleted, and China still has their own?

We need clean jobs that are sustainable beyond the next 50 years, not projects that may become obsolete in the next 5 to15 years.

The real push for this project is driven by nothing more than the expectation of huge corporate profits. We're being offered around 1000 jobs during construction, and then LESS than 200 permanent future jobs for Kalama.

It isn't worth the cost. It's just like ANY deal with the devil...

The greatest known personal health risks, reduced property values, and environmental damages WILL be borne by our local families, NOT the corporations seeking to profit.

The greatest beneficiaries of this project will BE those corporations, NOT the workers, and not your families or mine.

As a resident if the Lower Columbia River, and a citizen who has worked hard to keep it pristine, I feel that this methanol project is a VERY bad idea.

In the interest of our community's health and environment, we must STOP this project.

JoANN Zugel

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

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CS Dragonwyck

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Roger Sherman

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Nancy Helget

I'm writing to urge the Department of Ecology to deny the NWIW permits. I've made two previous comments. I'm submitting another comment because new evidence about China's future intent to reduce GHG emissions is relevant to both of my prior comments.

My first prior comment asked the Department of Ecology to deny the NWIW permits because GHG emissions attributable to the facility are significant and NWIW's proposed mitigation plan won't reduce GHG emissions in Washington. Operation of the NWIW facility will assure the state won't meet the statutorily required GHG emission reduction, even assuming every NWIW mitigation effort offsets other Washington GHG emissions. An offset does not achieve a reduction. NWIW's GHG emissions will make statutory reduction requirements much more difficult to achieve.

My second prior comment asked the Department of Ecology to deny the NWIW permits because the SSEIS conclusion relies on a speculative assumption. The SSEIS relies on the assumption the NWIW facility will "... prevent utilization of other more polluting processes, particularly in China." SSEIS 3.5.1.4.

As reported in Steven Lee Myers' Sept. 23rd New York Times article, China's Xi Jinping has recently pledged to make China carbon neutral by 2060. China's carbon neutrality goal invalidates the SSEIS assumptions that NWIW methanol will supplant China's more polluting methanol sources.

If China intends to become carbon neutral by 2060, it will be pursuing ways to reduce and/or eliminate all GHG emissions over the NWIW project life. That includes reducing or eliminating GHG emissions from methanol. China's reduction of methanol use could leave NWIW producing a significant GHG pollutant that doesn't have a market in China. If China isn't buying NWIW methanol, the NWIW facility won't "... prevent utilization of other more polluting processes, particularly in China." The SSEIS assumption is speculative at best and the Department shouldn't rely on it to grant NWIW permits that will result in significant GHG emissions.

The new information about China's intent to be carbon neutral by 2060 also calls into question NWIW's representations about its ability to mitigate its Washington emissions. If a polluter as large as China is reducing GHG emissions, there may be fewer opportunities for NWIW to mitigate its Washington GHG emissions. Although NWIW assures it will look to mitigate Washington GHG emissions first, there's no assurance it can or will do that. NWIW may have to look globally for mitigation opportunities.

The SSEIS has no specifics about any current or future available mitigation sources, in Washington or elsewhere. Although China's GHG reduction efforts could have a significant effect on NWIW's opportunities to mitigate, the SSEIS doesn't sufficiently address this issue. Instead, the SSEIS allows NWIW to make the unsupported and unspecific representation it will mitigate all of its GHG emissions.

While it's true that cynics could dismiss China's announcement as a public relations effort and argue China has no intent to be carbon neutral by 2060, the announcement makes it clear just how

unsupported the SSEIS assumption is. China's announcement makes it clear no one, certainly not NWIW or the Department of Ecology, can predict what China will do now or for the next 40 years.

It's worth repeating. The NWIW GHG emissions, if allowed, will be "significant". The Department of Ecology shouldn't rely on speculation or erroneous assumptions to support granting any permit for a facility that will produce significant GHG emissions. Our state is actively pursuing a policy that will reduce, not increase GHG emissions. The NWIW facility is inconsistent with that policy. I urge you to protect Washingtonians and deny NWIW's permits.

Thank you for considering my comments.

Carol McMahon

It is irresponsible to construct a mammoth methanol facility that will endanger our planet and destroy the ecology of southwest Washington and northern Oregon. I have uploaded a copy of the resolution passed by the Washington State Democratic Central Committee in 2017 opposing this facility. Much like the LNG facility in Tacoma, little consideration for the safety and well being of tribes and nearby population as well as the environment have been given. The resolution supports the state Party Environmental platform.

Key elements of the attached resolution call attention to our state's commitment to support the Paris Climate Accords, that this proposed facility would be the largest in the world drawing 5 million gallons of water daily from the Columbia and Kalama aquifers and produce more than all gas fired power plants in Washington combined.

Further, the resolution identifies the site as high risk of liquefaction, and tanker traffic is expected to harm endangered salmon and whales (a keystone species in our ecological system) through fish strikes - a common problem in sea traffic lanes.

Finally, the facility will not produce substantial benefit locally or nationally, with few permanent low-wage jobs. I encourage you to consider this resolution in your decision, and deny the construction of the Kalama Methanol Facility.

Resolution In Opposition to the Kalama Methanol Facility

WHEREAS a mammoth, foreign-owned methanol facility has been proposed for construction on the east bank of the Columbia River in Kalama, Washington;

WHEREAS the Washington State Democratic Party Platform calls for "immediate aggressive action to minimize climate change, as global climate change is the foremost threat to survival of Earth as we know it," and Governor Inslee has affirmed his commitment to supporting the Paris Climate Accords;

WHEREAS the proposed Kalama Facility would be the largest methanol facility in the world, drawing 5,000,000 gallons of water daily from the Columbia and Kalama River aquifers and utilizing 320 million cubic feet of natural gas daily – more than all other gas-fired power plants in Washington combined;

WHEREAS 72 million gallons of flammable methanol would be stored on local soil that has a moderate to high risk of liquefying in an earthquake;

WHEREAS three to six tankers a month would be needed every month to haul methanol to China for use in manufacturing plastics there, an increase in ship traffic that would harm endangered salmon that are already stressed and produce ship strikes likely to kill or harm whales near the mouth of the Columbia;

WHEREAS the facility would emit more than a million tons of climate pollution per year as part of the manufacturing process, and shipping its output to Asia would generate hundreds of thousands of tons of additional climate pollution per year, while the methane emitted by fracking and pipeline transport to supply the facility would make greenhouse gas emissions rise even further;

WHEREAS at a time when we need to phase out reliance on fossil fuels and transition to clean energy, the project would encourage new gas drilling and fracking;

WHEREAS the proposed facility would not replace <u>any</u> coal-based methanol in China;

WHEREAS private property and historic cemetery land would be seized to make way for the three-mile long gas pipeline needed by the Kalama Facility; and

WHEREAS the proposed facility would produce no substantial domestic benefit, either locally or nationally, with only a few permanent low-wage jobs not necessarily filled from local communities;

THEREFORE BE IT RESOLVED that the Washington State Democratic Central Committee firmly oppose construction of the proposed Kalama Methanol Facility, and urge the Governor and the State of Washington to reject it forthwith.

Submitted by the Environment and Climate Caucus on 9/9/17.

The Resolutions Committee recommended that the resolution be sent to the floor.

The Washington State Democratic Central Committee passed the resolution.

William Insley

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Rayna Holtz

My comments fall into two categories. First I look at the issue of greenhouse gas emissions that this study so wonderfully examined with considerable care and research, to see the greenhouse gas emissions results of various scenarios depending on whether the Kalama Manufacturing and Marine Export Facility (KMMEF) is built, versus results if it is not built. Second, I look at the context for this study, and for the Washington State governor's and legislature's 2020 progress on charting an effective path to comply with guidelines framed by the world's experts (Paris Climate Accords, International Panel (IPPC ??). In both cases, I look at not only market forces, but at forces increasingly being mustered to counter market pressures with regulations and incentives that prioritize environmental health and the long term survival of human and other species over market trends driven by profit incentives.

A. The depth and breadth of this SSEIS is impressive, as is the broad range of possibilities it must contend with. It suffers from errors, omissions, assumptions.
1. One unknown is how the methanol will be used. We do know that Northwest Innovation Works (NWIW), which is Chinese backed, told the Port of Kalama that the Kalama plant would primarily sell its methanol to markets for olefins in Asia, but when presenting the project to potential funders it emphasized profits from selling the methanol for use as fuel. This behavior does not inspire confidence, and does warn that NWIW will be manipulative to achieve a for-profit goal rather than speak out of a confirmed set of ethical guidelines incorporated into the operations of its business. (Why should we assume that NWIW will follow through with its promised voluntary mitigation plan?)
2. To try to account for the uncertainty about intended uses, the range of models in the SSEIS includes both fuel use and MTO (methanol to olefins), but looking at Fig 3.5.3 on p.65 we see that the Chinese use of methanol for fuel quintupled from 2006 to 2016 and it continues to rise. Why do we assume the use of fuel will not overtake the use for olefins? Beyond this example the number and combination of variables far exceeds the capability of meaningful modeling. While we do not know precisely what the methanol will be used for, we do know that it will add GHGs to our overtaxed atmosphere starting in just a couple of years and continuing for 40 years, including the most critical next two decades when we must reduce GHGs.
3. It is facile to want to partially justify the permitting of a facility that uses fossil fuels, emits GHGs in bringing its raw materials to its site, emits more in producing its product, and still more while conveying its product to Asia merely because it produces just slightly fewer emissions than other producers of its product!!
4. This report uses the IPCC4 100-year GWP values to calculate CO2e, despite the fact that this chart was subsequently updated to more accurately reflect the significantly enormous GWP of methane in its first 20 years. On p. 90 it even says: "GWP values are periodically updated to reflect current science regarding the energy properties of GHGs and their lifetimes in the atmosphere." Thus the report should be using the most accurate and current GWP values, which are found in the IPCC's fifth Assessment Report's 20-year GWP. The reason it gives for using the IPCC4 100-year GWP is that they are, "The most commonly used GWP values," no doubt because they have been around longest!!! This will certainly bias all the results to minimize the GWP of all the methane emissions. It doesn't matter nearly so much what the total GWP will be over the next 100 years as what it is going to be between now and 2040.
5. The calculations of upstream emissions are not well presented, but seem to minimize the problem

of methane escape at extraction sites. This has been described in National Geographic: "Scientists have measured big increases in the amount of methane, the powerful global warming gas, entering the atmosphere over the last decade." The evidence: "The chemical signature of methane released from fracking is found in the atmosphere, pointing to shale gas operations as the culprit." (Robert Howarth, an ecologist at Cornell University and author of the study published Aug 14 in the journal Biogeosciences.)
6. The problem of emissions from pipeline leaks all along the way is not mentioned. Pipelines are made of lengths of pipe connected together by joints. Over time, joints fail, as surrounding earth is disturbed by a wide variety of impacts, or by earthquakes. Not only does this add to our burden of greenhouse gases, it adds threats to the health and safety of communities, rivers, and other ecosystems due to contamination and fire hazard. (Example: "On June 10, 1999, a gasoline pipeline operated by Olympic Pipeline Company exploded in Bellingham, Washington's Whatcom Falls Park." -from Wikipedia)
7. As the Department of Ecology News Release of Sept. 2 states, "The project would increase greenhouse gas emissions within Washington state by almost one million metric tons of carbon dioxide equivalent a year." And because the report uses the AR4 100-year GWP this under-reports the CO2e for whatever portion of this happens to be methane, so we need to multiply that figure by 86. Not helpful when our 2009 goal bring our emissions down to 1990 levels by the end of 2020 has failed completely, and instead our emissions have increased by about 8 percent!!! What part of NO MORE EMISSIONS do we not understand?
8. This report does not consider the possibility that yet cleaner processes may soon make the Kalama technology with its "ultra-low emissions" obsolete. One possibility is producing methanol from the carbon dioxide in the atmosphere! ("Carbon dioxide-to-methanol process improved by catalyst," Science Daily, June 28, 2018, Penn State).
9. There is no mitigation that can adequately compensate for adding GHGs to earth's atmosphere at this time in history. Is it OK to just add a little oxygen to a raging house fire?

B. The context for this permitting process is not average. This is a precedent-setting moment, when every person and every life form on the planet is facing a crisis with a magnitude as great as the one that destroyed the dinosaurs. We cannot behave as though it's business as usual, and the best-written set of justifications and excuses wins a work-around to avoid the rules.
1. RCW70A says, under Intent◆2020 c 79: "(3) The longer we delay in taking definitive action to reduce greenhouse gas emissions, the greater the threat posed by climate change to current and future generations, and the more costly it will be to protect and maintain our communities against the impacts of climate change. Unchecked, climate change will bring ever more drastic decline to the health and prosperity of future generations, particularly for the most vulnerable communities."
A new methanol plant in Washington would hinder the difficult task that is so urgent right now: to turn our GHG emissions around. With every passing month, more damage is done because of the effects of climate change, and some of the processes unleashed by global warming are actually accelerating its damage and speed (for example: the thawing of tundra is releasing additional methane that had been sequestered in the frozen tundra!) Climate change is increasing in momentum, so that some damages we can still hope to avert by reducing GHGs this year, will become inevitable if we wait to act until next year.
2. The United States has until recently enjoyed one of the most stable democracies in the world, with time-honored institutions that enabled us to have the rule of law to protect our human rights and welfare. But we have not shouldered the responsibilities that come with our extensive privileges and wealth. According to the Center for Climate and Energy Solutions, the United States leads the

world in Per Capita Greenhouse Gas Emissions, with over 18 tons of CO2 equivalent per person in 2017. Russia follows with a bit more than 15, then Japan with a bit less than 10, and the European Union is at about 8. The U.S. is responsible for 25% of the cumulative emissions of GHGs from 1751-2017, followed by the EU at about 22%. It's high time to step up. No simple for-profit venture, the possibility of initiating a successful new corporate enterprise, can take priority over this existential necessity.

3. Department of Ecology's Perry Lund states in his letter of October 9, 2019, to Dr. E. Elaine Placido, Cowlitz County, that "By law, Ecology must review all CUPs for compliance with the following: 1) The Shoreline Management Act (RCW 90.58)." In RCW 90.58.020, in "Legislative findings♦State policy enunciated♦Use preference," the third paragraph lists seven uses of state shorelines to guide the development of master programs for shorelines, "in the following order of preference which: (1) Recognize and protect the statewide interest over local interest; (2) Preserve the natural character of the shoreline; (3) Result in long term over short term benefit; (4) Protect the resources and ecology of the shoreline. . ."

Although a Kalama methanol plant may bring jobs and an economic boost to the local folks, the broader statewide interest will be better served with less GHGs and a healthier shoreline. The long term benefit will be much better served by NOT siting an enormous methanol plant where it can jeopardize "the resources and ecology of the shoreline."

This shoreline is closely associated with the magnificent Columbia River estuary, and its health and water quality can affect large communities of marine life both locally and downstream, extending to shorelines north and south along the Washington and Oregon coasts. Further, this ecosystem lies at a critical bottleneck for a majority of Washington's vital salmon runs, which travel from the Pacific Ocean back up the Columbia to numerous feeder rivers draining both the eastern Cascades and the western Rockies, spanning all of eastern Washington and part of British Columbia. These waters must be protected for the sake of innumerable beleaguered salmon stocks that have already been decimated by dams and premature melting of snowpack causing excessive warming of spawning streams that consequently cannot hold adequate oxygen to keep spawning salmon alive. On these salmon runs depend not only fisheries that have supported indigenous fisheries since time immemorial, and more recent commercial and recreational fisheries, but also the iconic Southern Resident Killer Whales of Puget Sound, now unable to find sufficient forage year-round to sustain healthy reproductive adults. It is unwise to allow any more dangers to further transform one of their key habitats into a gauntlet beset with hazards.

RCW 90.58.020 also states, "Uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline." There is no industrial plant that is immune to accidents. The siting of a large methanol facility in such a sensitive shoreline with the potential to cause lethal harm to so many already struggling species with both extremely high economic value and incomparable iconic northwest significance poses unacceptable risks of the sort this law warns against.

In summary, the backdrop of climate change against which this methanol plant is proposed, dwarfs all other considerations with its multiple threats and exigencies. We must look at this decision with eyes wide open, and make a decision that will help slow the unraveling of the planetary systems on which biological life depends. Deny the conditional use permit.

Sincerely,
Rayna Holtz

Jim Bain

9/20/20
Department of Ecology-WA state

I am a Cowlitz County Planning Commissioner, writing as a private citizen.

I urge you to do everything in your department's power to see that all state permits are issued for the KALAMA NWIW project.
It does the state harm to continually DELAY a decision on a project that meets the CURRENT laws and standards- not what some WISHED were in place.

Thank you, Jim Bain

Laura Gibbons

This would be an environmental disaster, both in the short term and as the use of carbon-based fuel accelerates climate change. Please please please don't be steam-rolled by industry or fooled by promises of short-term economic benefits. As the department of Ecology, thing big, protect me, and reject the facility.

patrick BOOT

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PHIL RITTER

I oppose approval of this project because the cumulative methane emissions created at the wellhead, in transit and at the proposed facility will exacerbate the damages of global warming. The end product of the chemicals produced at the proposed facility will be used to create plastics which cannot be recycled and will end up in the oceans and in human and animal tissue. In addition, if this facility is approved and constructed it will have to be shut down before the end of its useful life to achieve compliance with emissions restrictions to be imposed in the future in accordance with international agreements, and at that point it is highly likely that the government will have to compensate the owners for the remaining undepreciated book value of the asset.

Laurie Dils

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Judy Silverstein

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Joseph Yencich

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Cortney Marabetta

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stephanie smith

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Jane Nicolai

Dear Department of Ecology,

The current EIS compares the proposed Kalama methanol facility with one that doesn't exist, comparing make-believe numbers against the stated 4.6 million tons of climate pollution every year for forty years this facility would produce. Compare it to NOT building the site and you will find the real numbers represented here.
Add the destruction of building the pipeline, the damage of eminent domaine, the eye-watering, cancer causing pollutants up and down the Columbia River, and INCREASED POLLUTION AT EVERY STEP OF THE PROCESS it is your duty (and mission statement) to deny this permit.

marilee dea

Kalama Methanol Terminal

My name is Marilee Dea, I am a public health Pediatric Nurse Practitioner. I coordinated pediatric prevention programs for Multnomah County, including the Lead and Asthma prevention programs.

We found that folks that live near air polluting industrial plants busy diesel truck roadways had a much higher rate, 40 % higher rate of asthma episodes. Why, because of visible and invisible gas, smoke, dust is being inhaled- especially diesel fine particulate matter in an irritant to the lungs.

The Kalama methanol refinery, the largest methanol refinery in the world, will have mile high plumes releasing carbon monoxide, nitrogen oxide, sulfur dioxide, volatile organic compounds and fine particulate matter. Methanol, itself is highly flammable and toxic to humans and animals. People living near this plant will be at higher risk for asthma because the visible and invisible irritating chemicals are inhaled.
.

How many of you have seen a severe asthma attack or have friends or family with asthma? It is scary, this is what is happening- when the irritant or allergent is inhaled~ causes airway swelling, mucous, chest muscle tighten and the airway narrows, it can get so tight it is difficult to get air in or out of the lungs, hence wheezing and coughing occurs to force air in and out. You can't speak in full sentences, you get confused and need to sit or stand to breath- your face begins to turn blue. What should you do? Get their restrictive clothes off, run for the inhaler, and emergency meds if they have them. Have them the take long slow deep breaths and pray they get better and prepare to get to a hospital. I have had a friend die at the beach because he was too far from a hospital. Is this the life you want in Kalama- especially in the summer when it is hot, smoggy or when forest fire smog rolls in.

mary n

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Holly Cooper

NO! I do not want to live near a plant like this . 90 acres taking away from wildlife and destroying our planet. NO!

Lori Bright

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Judy Arielle Fiestal

I am a 71 year old retired teacher from Portland, Oregon and now living in Ferndale, Washington. My sons and my grandchildren live in Portland, Lake Forest Park in Washington and Ferndale. What happens in Kalama affects us all.

What is the legacy do you imagine for yourselves? Are you wanting to be responsible to make a decision that will bring our environment to the brink of collapse or would you rather be part of the group of leaders that will look at reality and bring us to a future that our children and grandchildren can live in?

We have all experienced the smoke of the west burning this past month. Some worst than others. In Portland what used to be for us a lovely clear and warm summer month turned into a toxic stew for us to breathe. 250 miles north it was not as lethal but hazardous to our health to be outside. Your decision in regards to the proposed Kalama Methanol Refinery will define the world that we will live in.

Washington makes claims of wanting to meet climate goals that will turn around the course our civilization is taking. Approving a dinosaur aged methanol refinery plant that will produce 4.6 million tons of carbon pollution or more each year is not consistent with healing our planet. It is not consistent in protecting Washington shorelines, not consistent in protecting the health of our communities with good air quality, and is not consistent with keeping global temperature rise below 2 degrees C. In short it is not consistent with supporting our planet with life as we know it and love.

And for what are you willing to sacrifice so much? So that Northwest Innovation Works can continue to profit from the degradation of our environment? So that the destructive practice of fracked gas that lays waste the area from which it's extracted continues? So that we can help China produce more plastic that is polluting our oceans and our environment at a frightening rate? So that we will continue to produce more carbon than all the gas-fired power plants in Washigton combined?

Some say it's for jobs. We need government leaders who can look to the future to expand our alternative energy sector to create jobs that will help our society and not be hurtful to our environment. It is long past time that we have leaders who are willing to press forward on a new course for healing. Are you those leaders?

I urge the Department of Ecology to reject the methanol refinery and to deny the Shorelines Permit for this project.

Sincerely,
Judy Arielle Fiestal
Portland, Oregon and Ferndale, Washington
judyarielle@gmail.com

Diane Dick

2020 10 04 Comment #5

Washington State Department of Ecology
Olympia, Washington
Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.
Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.
The greenhouse gas emissions from KMMEF marine dock operations are not examined in the DSSEIS and need to be evaluated and added to total project emissions.
The KMMEF marine dock is integral to this refinery project, otherwise we could just refer to it as the NWIW refinery project. However, GHG emissions, from dock operations have not been examined in this draft SSEIS or in the first supplemental environmental impact statement.
The first SEIS simply deferred discussion of marine dock GHGs, different from methanol vessel transport or process emissions, to what was included in the FEIS.
The FEIS states-
"The proposed marine terminal would accommodate the oceangoing vessels that would transport methanol to destination ports. It would also be designed to accommodate other vessel types and, when not in use for loading methanol, would be made available for use as a lay berth where vessels could moor while waiting to use other Port berths or for other purposes." 2.1

"The proposed project also incorporates the use of shore power for the marine terminal. Shore power allows ships to "plug into" electrical power sources on shore. Turning off ship auxiliary engines at berth would reduce ship diesel emissions and result in GHG emission reductions, depending on the source of electric power from the grid. GHG emission reductions from shore power have not been calculated for the proposed project, but studies completed in other locations show reductions of from 25 percent to 50 percent (EPA 2017)." p. 3-35&36

"Marine Terminal Alternatives
The Marine Terminal Alternatives would both result in the same potential impacts to energy and natural resources and are assessed together.
Both Marine Terminal Alternatives would generate demand for electricity for lighting, loading equipment, and the operations shack and dockworker shelter. They would also generate demand for electricity from the use of shore power (also known as "cold-ironing"). Both Marine Terminal Alternative would generate a peak electrical demand of approximately 3 megawatts (accounting for both methanol loading activities and the use of shore power by vessels serving the methanol manufacturing facility and lay berth vessels), and an estimated annual electricity use of approximately 11,000 megawatt-hours based on preliminary engineering estimates. This electricity demand would be negligible compared to the approximately 5 million megawatt-hours of energy sales by the Cowlitz PUD in 2013.

Therefore, the operation of the Marine Terminal Alternatives would not result in significant adverse impacts to energy and natural resources." P. 7-7 & 8

In the analysis of purchased power only power associated with methanol process is examined, not that from shore power required by vessels at berth, estimated to be 72 visits from Panamax methanol tankers and up to 12 other vessels using the dock as lay berth per year. (I will note this area of the river recently acquired additional stern buoys, meaning additional vessels under their own power awaiting berth will be emitting GHGs and air pollutants in the region.)

Looking just at shore power (aka cold-ironing or shore to ship power) use from vessels at berth, the preliminary estimate of 11,000 MW hours annually is likely lowballed. Per EPA GHG calculator this low amount of electricity generates 7,777 metric tons of CO2e. This is more than other GHG emitting activities analyzed in both SEISs.

The peak electrical demand of about 3 megawatts is also of dubious credibility. The first shore power installed at a terminal for tankers in 2009 at Port of Long Beach had a capacity of 8 MW.

"What is claimed to be the world's first oil tanker terminal equipped with shore power to eliminate air emissions from berthed vessels was unveiled this week.
Pier T at the Port of Long Beach, used by BP America affiliate Alaska Tanker Co, has been equipped with a BP shore power installation, which can deliver up to 8 MW at 6,660 v."
http://www.tankeroperator.com/news/first-tanker-cold-ironing-facility-opened/1231.aspx

The Port of Boston commissioned a study to evaluate shore power requirements for various vessels and found power demands ranging from 3.36 MW to 13 MW.
"One Container vessel requires as much power as the largest Logan Airport Terminal (3.36 Megawatts).
Significant peak power demand on electrical grid. Just one cruise ship (Queen Mary 2) requires electrical demand equal to all required power to service all Logan Airport Terminals (13 Megawatts)."
Massport Shore-to-Ship Power Study August 5, 2016
https://globalmaritimehub.com/wp-content/uploads/attach_770.pdf

More recently the California Air Resources Board is determining regulations for emissions from ocean-going vessels at berth. In a lengthy report the following was stated about tanker vessels, "On average, a tanker's auxiliary boiler can require one to several thousand kW of power during pumping operations, while auxiliary power load consumption for regular hotelling operations generally ranges between 700 kW to 1,000 kW per hour (Appendix H). Hotelling times for tankers transporting crude oil range between 5 to 173 hours per visit I-29 5. and the average berthing time for a product tanker is around 48 hours." p. I-29, State of California AIR RESOURCES BOARD PUBLIC HEARING TO CONSIDER THE PROPOSED CONTROL MEASURE FOR OCEAN-GOING VESSELS AT BERTH STAFF REPORT: INITIAL STATEMENT OF REASONS DATE OF RELEASE: OCTOBER 15, 2019 SCHEDULED FOR CONSIDERATION: DECEMBER 5, 2019
https://ww3.arb.ca.gov/regact/2019/ogvatberth2019/isor.pdf

I strongly urge you to review the above CARB report. California is suggesting stricter regulation of vessel emissions at berth from ports with more than 20 ocean-going vessel calls per year.

'CARB staff's proposal to further reduce emissions from ocean-going vessels would require emissions control requirements at any port or independent marine terminal exceeding a specific visit activity threshold. If a port or marine terminal surpasses the 20 visit threshold, they must submit a plan to CARB by the end of the following calendar year describing how they will control emissions from the vessel activity at their facility." P. ES-15
This one new Kalama dock would receive four times the vessel traffic under the California regulation requiring stronger emission controls.

The FEIS statement the Marine Terminal Alternatives are not significantly impactful is false. Please rectify the serious omission of greenhouse gas analysis from vessels at berth at the proposed KMMEF marine dock in the second supplemental EIS.

Thank you,

Diane L. Dick
Longview

Jean M. Avery

As we've seen in 2020, our lives can be drastically changed in a matter of a few months. Accordingly, it is unrealistic to predict what may happen within the coming forty years. As the Dept. of Ecology considers the proposed NWIW project, I strongly urge consideration of the following what-if scenarios:

1. What if the renewable energy sector continues to grow, and Kalama, WA is left with a stranded asset that perpetuates the outmoded fossil fuel legacy?

2. What if a cleaner project is proposed for Kalama's port, but it has already committed to NWIW's methanol plant?

3. What if China moves forward with low-carbon goals (as Pres. Xi recently pledged to do) and China no longer meets its energy needs with fossil fuels, as now assumed?

4. What if financial trends favor investments in low-carbon technologies, as some ESG funds project?

5. What if political tensions increase between the U.S. and China and a hostile adversary controls a key port on Washington's coastline?

6. What if water becomes increasingly scarce, but we continue to give it away for NWIW's project and profit?

7. What if NWIW's jobs are filled with specialized workers from outside the area, instead of workers in Cowlitz County?

8. What if new workers moving to the Kalama area add to the demand for housing, thus raising housing costs for current residents?

9. What if recovery of SW Washington to its pre-NWIW status takes decades? (Think: we're just now 40 years after the Mount St. Helens eruption.)

10. What if Washington's natural resources are depleted, at a high environmental cost with questionable gain?

11. What if we really have a chance to reduce global warming and we miss our opportunity? ("Drawdown" researchers present data-driven strategies that could lead the transition to a renewable, clean-energy future. See https://drawdown.org.)

Please consider these possible ramifications before deciding on this project and its consequences. Please deny the permits for the NWIW refinery.

Kathryn Rose

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Geoff Wilson

We live in Anytime of active climate change. All and resources that are potentially hazardous to the environment need to be reconsidered strongly. Methane Yes a particularly harm Gas to the environment. For this reason I am strongly opposed to all Matthew producing products at this time.

Rhonda Hunter

As a former career employee of Ecology, I know the agency works hard for the greater good and adherence to clear science. Our Washington State fire seasons are growing far worse as the climate crisis accelerates. This proposed Methanol Facility in Kalama will only increase that acceleration, not slow it down. Please deny and REJECT this dangerous project.

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Nina Le Baron

I feel that it important to protect the salmon, the orcas, the state, and the planet. Do you? We need to stop using fossil fuels NOW. Switch to non-polluting renewable energy NOW. We have GOBAL WARMING< FIRES ALL OVER THE COUNTRY!!!!!! STOP!!!!!!!!!!

Deirdre Morris

Please do not do this . Thank you

Donald Greenberg

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Robin and Tom, MD Donnelly

The Kalama refinery is a bad idea for Washington and the earth. Climate change is catching up to us and we need to set a better example for China and the world.
Plus we don't need MORE big ships causing sound pollution for our Orca or creating a possible oil spill decimating our beaches, marine life and waters. Say NO!

Tracy Ceravolo

The SSEIS makes the huge assumption that China will continue down the path of using coal unless NWIW brings new methanol online, in which case it will replace that amount of coal with methanol. This is an absurd assumption. China wants to reduce their greenhouse gas emissions, so they will look for a way to do that. Coal doesn't make sense any more. Renewable energy sources are less costly than coal, so perhaps you should look at methanol coming from Kalama vs. wind turbines, solar, geothermal, or even some emerging technology that uses wave or tidal energy. To say that continuing to drill new wells and frack gas to help the climate is completely incorrect and insulting.

We have known about Global Warming for more than 4 decades. It would be criminal to allow the permits to build this facility which will contribute to the Climate Crisis and harm our future!

Susan Schenkel

How is it possible that eminent domain can be used to benefit a foreign company, especially one from a country that is often considered a rival to the United States? Pipelines would run across lands that will be seized through eminent domain all to benefit a Chinese company. How is this possible? How is this to the public benefit? Not only is this for a Chinese company, but adding more fossil fuels to our atmosphere actually does NOT benefit anyone globally except for the few people who are profiting off of fossil fuel extraction and use. I'm sure the Chinese people would also rather have a clean, renewable source of energy locally than having methanol shipped from abroad, adding to Climate Change worldwide.

Deny these permits, because you are the last line of defense on this. We must stop using fossil fuels and pretending that it doesn't matter. It matters!!!

Patricia Hansen

This is a very bad idea and an environmental tragedy in the making. It is a great source of pollution and a hazard to the Orcas as well.

Fred Greef

The upstream methane releases from fracking cannot be regulated due to the Dick Cheney Loophole. This proposal will result in a huge increase in fracking due to the overseas methanol market in China. The methanol is not needed in this state or even this country. There is no mitigation proposed for the vast methane releases. These releases may be worse than suggested in the conservative SEIS estimate. A worst case number should be used instead since the actual amount is unknown and cannot be regulated.

The downstream CO2 releases from methanol used as fuel instead of plastic should also be looked at as worst case, since China cannot be regulated either. No mitigation is offered in the EIS for the potentially huge significant global warming impacts set in motion by this proposal. This is more gas and more fracking than is used by all of the Northwest's biggest cities combined. If approved Washington State is directly responsible for these emissions that have not been addressed by any type of enforceable mitigation in the SEIS.

The local Washington State air quality impacts to the population of Longview were also not well addressed. The added daily diesel emissions from barges and tug boats on the Columbia River as well as the daily new methanol plant emissions directly upwind of nearby Longview will result in more deaths among the elderly and those with compromised respiratory health. The air quality in Longview, especially along the River and train tracks already causes documented health and death concerns. The cumulative effects of these 2 new sources of air pollution were not well documented in the SIES for the already compromised Longview airshed. These impacts are worse than those in Kalama where the existing air quality is better. Since these impacts are largely unknown and affect many more people than just Kalama and can actually be calculated, they should be considered significant until such calculations are conducted. Ecology has the expertise to monitor existing air quality in riverside longview residences, schools, and nursing homes. The existing air quality concerns along the riverside communities in Longview should be documented. The cumulative effects of the new impacts should be modeled by Ecology's air quality scientists and added to the existing air quality impacts before any conclusions can be made about the significance of the local air quality impacts of this proposal.

Kathryn Keiser

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Carol Rolf

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Monte Martin

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Janet Hurt

Dear Director Watson and Department of Ecology:
I have looked at information in support of this project (and in support of methane in general) and it just does not make sense to me. Basically, the argument seems to be that this project will decrease greenhouse gasses, because if it's not built, then WORSE projects will be. This seems ridiculous. Our choice in this SHOULD NOT be about choosing the "lesser polluter" – this is simply not good enough in our current era of climate change.

I do not understand why any entity, private or public, is investing in technology that is at all fossil-fuel based, that adds ANY pollution or greenhouse gasses to the environment at all. We cannot afford to put any greenhouse gasses into the environment. Mitigation or "lesser of two evils" seems like a very shortsighted "solution" to dangerous impacts on the environment.

We – all of us, private and public entities – should be investing in, researching, building, creating systems that truly do not create any pollution or environmental damage. No fracking. No fossil fuels. No more methane. No capitalizing on global markets that are contributing to pollution and waste in any way. There must be other options. We are smarter than that. Tremendous human effort goes into short-sighted, profit-making energy and product production. Tremendous effort has gone into trying to convince us that this Kalama project will reduce pollution and environmental impact. This looks misleading to me. I realize this is a very complex situation, with many global players and systems involved. Still, this does not seem to be a sustainable solution to current and future pollution mitigation. Future generations depend on us to be smarter than that. I do not support any use of public funds for this project, and I want private entities to be to be held truly accountable and thinking way, way smarter about the bigger picture of what is going on with global warming and pollution. This project looks to me like it actually has long-term, negative consequences and dangerous, harmful environmental impacts.

Deborah Hoskinson

I OPPOSE the development and operation of a natural gas-to-methanol production plant and storage facilities on approximately 90 acres at the Port of Kalama due to the impact it will have on orca whales, other whales, salmon and all Pacific NW marine life! Humans must value marine life and animal life on this planet as much as we value human life. Thank you for your serious consideration of this critical matter.

Kristine Bruckner

A summary of the global greenhouse gas situation states that the proposed Kalama methanol refinery WOULD increase greenhouse gasses in the state of Washington (particularly near the location of the methanol refinery), and COULD decrease greenhouse gasses globally. You are the agency that is charged with protecting the ecology of the State of Washington, and there are some grave risks associated with this wager.

1. In order for the argument in favor of the refinery to hold, current facilities overseas would need to either close or clean up their emissions. There is, however, no control built in to assure this would actually happen. The Kalama refinery could simply increase the production of methanol as the demand grows ever larger. There is actually no way to know or assure what the outcome would be. And there are not strong reasons for optimism.
2. There are few countries whose governments have a worse record of trustworthiness and keeping promises than China. There is a reason the US is concerned about TIKTOK, Huawai and other companies for lack of transparency. China is a very high risk partner in a business that endangers the local environment. Not only would the logic of this enterprise depend on closing of facilities abroad, but the refinery itself would be owned by, and largely run by Chinese nationals. There is no stake for them in the air and water, nor the health of the local population.
3. Please protect us. This refinery would certainly bring down the quality of the air in southwest Washington. Suffering through the hazardous smoke of a few weeks ago was a powerful and grim reminder of what diminished air quality does to breathing and the ability to live in a reasonably healthy manner. Find another way to lower global greenhouse gasses--not an idealistic vision that certainly diminishes or even sacrifices the health of the local population for a possible theoretical goal.

Wendy Emerson

When climate chaos is all around us and literally thick in the air in the form of smoke from wildfires worsened by global heating, it is amazing that this project has not been summarily canceled. What more evidence do people need to see the insanity of promoting projects such as this--that will continue to belch carbon pollution for 40 years--in a time when we should be phasing out existing plants instead of endeavoring to build new ones.

Don Steinke

How can you say you took a hard look at the projects impacts, when you subcontract that work to someone else who assumed the validity of the claims made by NWIW.
The DSSEIS attempts to predict the future—and that prediction is pessimistic and just an assumption:
assuming China will not change its policy, no economic events, regulatory changes (such as China just announced) or technological breakthroughs will materially alter the way methanol is consumed or produced (such as in California with it new 50% recycled content law) during the next 40 years.

Continuing down our current trajectory of rampant fossil fuel consumption would be disastrous for our planet and civilization. NWIW shrugs and says: this "how the world actually works." That's fatalistic.

The DSSEIS' cynical guess about the next 40 years of human history does not constitute the "hard look" that SEPA requires. SEPA mandates a hard look at those impacts of a proposal that are reasonably foreseeable—no less, and no more.

Jim Fisher

I am against approval of this project for the following reasons:

1. The draft EIS assumes that up to 40% of the methanol production could end up used as fuel in (China) and thereby produce substantially more greenhouse gases. However, previous presentations by NWIW for stockholders indicated that up to 95% or more of the production could be used for fuel. Given the demonstrated lack of credibility of the future owner, the Chinese Government, DOE's decisions should be based on worst-case scenarios for global greenhouse gas emissions from methanol produced by this project.

2. The draft EIS is misleading when trying to compare global market supply/demand scenarios and global greenhouse gas emissions with and without the subject project in place. This evaluation is highly speculative and based on far too general assumptions concerning how and where China might resource alternative methanol supplies other than Kalama. WDOE has no control or actual data on where or what such alternative sources might exist outside of WA state, and therefore should not attempt to base a decision on such speculation. However, WDOE should emphasize the worst-case potential of this project to create adverse greenhouse gases globally, irrespective of any other alternative sources, and any subjective mitigation of GHG emissions from unknown sources in the world.

3. As stated above, this project will be owned and directed by the Chinese Government, which has a reputation of being untrustworthy and manipulative in their business dealings with the U.S. and other countries. This makes all of the data and project information they have provided through NWIW and other sources under their control highly suspect. As such, WDOE should be extremely wary and conservative in their final judgement and decisions, and disapprove of this project.

Thank you for this opportunity to provide comments.

Jim Fisher, CPEA, CHMM

Katherine Nelson

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Suzanne Thornton

Washington Department of Ecology
I am a 79 year old woman who lives in Portland Oregon. During this world wide pandemic we have more time to look closely at what is going on around us. Among many I live on this North American plate in the United States of America in the state of Oregon and in the region of the Northwest. So I am a citizen on many levels.
I understand the petroleum industry wants to use our Columbia River corridor as storage, refinery and transportation out to China and elsewhere.
Northwest Innovation Works, NWIW wants to build the world's largest refinery on the Columbia River in the town of Kalama. They will need to use millions of gallons of water connecting from the Columbia River every day.
Now I could stop here to object to this idea. It would be enough to stop this Kalama Methanol refinery construction.
But finding the company NWIW has not been forthcoming in meeting the Environmental Impact Statement, EIS standards set by the state of Washington is concerning. They have neglected to include the pollution of fracked gas in all of its stages in getting to the proposed refinery. The actual methanol refinery itself would cause millions of tons of greenhouse gas pollution every year of its production. How long do they expect the plant to run?
40 years is the proposal.
Is this the future we want to leave?
Please reject this Kalama methanol refinery project.
It is wrong on so many levels.

Sincerely,
Suzanne Thornton
10/5/2020

Dennis Colombo

When attempting to predict future global GHG emissions how about factoring in the displacement of some fossil fuel energy sources with clean energy sources such as solar and wind? I think that is a more likely scenario than the chances that China will replace coal with Kalama methanol and would probably result in Kalama adding a much greater share of GHG and other pollutants to the atmosphere. Therefore, I urge that the Dept. of Ecology deny this permit.

Montana Pulido

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

NJ Morgan

Today I write as not only a concerned citizen-voter, Pacific Northwest resident, and parent-grandparent - but also as a former educator.
Analyses and data show that this proposed project is neither financially wise nor environmentally solid.
Please - take the lead through clear rejection of the project, with thorough explanation to the public about the myriad drawbacks and questions.
Respectfully,
Nancy Morgan

Brian Garrison

Creation of plastics is one of the downstream products of the proposed methanol plant. The EIS does not account for the long-lasting and widespread environmental impacts of plastics.

Many plastics are embedded in products as one of many materials and not readily recyclable. Even when plastics could be easily recycled, rates are very low (30% in Europe, 9% in the US, see Scientific American article, "Solving Microplastic Pollution..." attached). Which means large quantities of the downstream products created from this methanol refinery would become part of the growing solid waste heaps.

Plastics made from fossil fuels do not readily break down. The resulting waste may sometimes degrade and crumble, but still continue to pollute as microplastics. These microplastics are a threat to human and animal health. The World Health Organization's (WHO) 2019 report, "Microplastics in freshwaters and drinking water: Critical review and assessment of data quality" (see attached) and the related information sheet (see attached) speak to the harms of microplastics. For example, "The potential hazards associated with microplastics come in three forms: physical particles, chemicals and microbial pathogens as part of biofilms." Though the facility offers hope through efficiency, We don't need efficient means of making plastics, we need materials that do not widely and permanently infest our clean water systems. For more on the effects to wildlife and humans, see the 2020 article from the International Journal of Environmental Research and Public Health and the other Scientific American article, "From Fish to Humans..." (attached).

Though it's possible to filter microplastics from water, we put human health at risk by becoming dependent on complex purification systems. Allowing plastics and microplastic pollution to proliferate also overlooks individuals and communities that do not have easy access to filtered water. Furthermore, the current systems in place are not keeping drinking water humans safe from microplastics. According to the same report, "Microplastics are ubiquitous in the environment and have been detected in a broad range of concentrations in marine water, wastewater, fresh water, food, air and drinking-water, both bottled and tap water." This EIS offers no means to mitigate the resulting pollution that would arise from the plastics manufactured using the facility's methanol.

To continue building infrastructure that pollutes in this manner is irresponsible and reckless. The plan for this facility fails to consider the impact on human health caused by the downstream plastic products. As a species, our survival depends on us making a hard transition away from "business as usual" and toward fundamentally different manufacturing systems. We cannot say that predicted demand is a sufficient reason to create supply, or we become trapped in a self-fulfilling prophecy. If you place a bowl of sugar in front of a baby, they will eat it (predicted demand causes the consumer to take the supply). If you teach responsible eating habits, then unhealthy behaviors and the appetite for sugar can be kept in check (demand for one product becomes demand for healthier alternatives).

By offering a readily available supply of plastic and the methanol that creates it, this facility enables business-as-usual, allows the continued pollution of our basic life-sustaining resources (water), and threatens human lives. I urge you to reject the proposed project.

In addition to the PDFs attached, articles cited are retrievable through the following links:

Scientific American, From Fish to Humans...
https://www.scientificamerican.com/article/from-fish-to-humans-a-microplastic-invasion-may-be-taking-a-toll/

Scientific American, Solving Microplastics Pollution...
https://www.scientificamerican.com/article/solving-microplastic-pollution-means-reducing-recycling-mdash-and-fundamental-rethinking1/'

WHO report
https://www.sciencedirect.com/science/article/pii/S0043135419301794

WHO information sheet
https://www.who.int/water_sanitation_health/water-quality/guidelines/microplastics-in-dw-information-sheet/en/

International Journal of Environmental Research and Public Health, A Detailed Review Study on Potential Effects of Microplastics and Additives of Concern on Human Health
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7068600/

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Review

Microplastics in freshwaters and drinking water: Critical review and assessment of data quality

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ABSTRACT

Microplastics have recently been detected in drinking water as well as in drinking water sources. This presence has triggered discussions on possible implications for human health. However, there have been questions regarding the quality of these occurrence studies since there are no standard sampling, extraction and identification methods for microplastics. Accordingly, we assessed the quality of fifty studies researching microplastics in drinking water and in its major freshwater sources. This includes an assessment of microplastic occurrence data from river and lake water, groundwater, tap water and bottled drinking water. Studies of occurrence in wastewater were also reviewed. We review and propose best practices to sample, extract and detect microplastics and provide a quantitative quality assessment of studies reporting microplastic concentrations. Further, we summarize the findings related to microplastic concentrations, polymer types and particle shapes. Microplastics are frequently present in freshwaters and drinking water, and number concentrations spanned ten orders of magnitude (1×10^{-2} to 10^{8} #/m^{3}) across individual samples and water types. However, only four out of 50 studies received positive scores for all proposed quality criteria, implying there is a significant need to improve quality assurance of microplastic sampling and analysis in water samples. The order in globally detected polymers in these studies is PE ≈ PP > PS > PVC > PET, which probably reflects the global plastic demand and a higher tendency for PVC and PET to settle as a result of their higher densities. Fragments, fibres, film, foam and pellets were the most frequently reported shapes. We conclude that more high quality data is needed on the occurrence of microplastics in drinking water, to better understand potential exposure and to inform human health risk assessments.
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Contents

1. Introduction 411
2. Methods 412
 2.1. Literature search 412
 2.2. Quantitative quality assessment 412
 2.3. Study characteristics 412
3. Results and discussion 412
 3.1. Quality assessment of studies reporting data on microplastics in water samples 412
  3.1.1. Sampling methods 412
  3.1.2. Sample size 413

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3.1.3. Sample processing and storage 413
3.1.4. Laboratory preparation 414
3.1.5. Clean air conditions 414
3.1.6. Negative controls 414
3.1.7. Positive controls 414
3.1.8. Sample treatment 415
3.1.9. Polymer identification 415
3.1.10. Overall reliability of method aspects and studies 415
3.1.11. Implications of quality criteria and reliability of studies for human health risk assessment 417
3.2. Microplastics in freshwater 417
3.2.1. Global microplastic concentrations in different water types 417
3.2.2. Microplastic shapes in global freshwaters 419
3.2.3. Polymer types reported in global studies on freshwater microplastics 419
3.2.4. Sizes of microplastic particles 420
4. Conclusions 420
Declarations of interest 420
Conflicts of interest 420
Author agreement 420
Disclaimer 420
Acknowledgment 420
Supplementary data 420
References 420

1. Introduction

Microplastics are generally characterised as water-insoluble, solid polymer particles that are ≤5 mm in size (Bergmann et al., 2015). A formal definition for the lower size boundary does not exist, but particles below 1 μm are usually referred to as nanoplastics rather than microplastic (Koelmans et al., 2015). Although microplastics are often detected in the environment, the risks they pose are debated and largely unknown. One key challenge in assessing the risks of microplastics to humans and the environment relates to the variability of the physical and chemical properties, composition and concentration of the particles. Further, microplastics in the environment are difficult to identify and standardized methods do not exist (Mintenig et al., 2018). The dominant source of microplastics often is the fragmentation of larger plastics or product wear, however the rate of fragmentation under natural conditions is unknown (Eerkes-Medrano and Thompson, 2018). These challenges and unknowns hamper the prospective assessment of exposure and risk (Koelmans et al., 2017). In this uncertain field, regulatory efforts to examine microplastic safety have been raised (SAM, 2018a, b).

The presence of microplastics has been reported for air samples, food and drinking water (EFSA, 2016; Gasperi et al., 2018; Lusher et al., 2017; Van Cauwenberghe and Janssen, 2014; Wright and Kelly, 2017; Yang et al., 2015) and recently, the implications of microplastics for human health have been reviewed (Wright and Kelly, 2017). Although microplastic exposure via ingestion or inhalation could occur, the human health effects are still unknown. If inhaled or ingested, limited data from animal studies suggest that microplastics may accumulate and cause particle toxicity by inducing an immune response (Deng et al., 2017; Gasperi et al., 2018). Chemical toxicity could occur due to leaching of plastic-associated chemicals (additives as well as adsorbed toxins) (Diepens and Koelmans, 2018; SAPEA, 2019). Such effects are likely to be dose-dependent, however knowledge of exposure levels is currently lacking. Furthermore, biofilms growing on microplastics may be a source of microbial pathogens (GESAMP, 2016). Hence, although there are potential chemical, particle and microbial hazards associated with microplastics, current exposure levels, including through drinking water need to be assessed first.

The ubiquity of microplastics of all sizes in surface water, groundwater and wastewater (SAPEA, 2019), has raised the question if pollution of drinking water occurs. To date, there is only a limited number of studies that address this issue and they indeed reported the presence of microplastics in tap water and bottled water (Kosuth et al., 2018; Mason et al., 2018; Mintenig et al., 2019b; Schymanski et al., 2018). Some of these studies triggered a great deal of attention in the scientific community as well as the media, putting the issue of human exposure to microplastics via drinking water high on the agenda of public health agencies worldwide. More broadly, ensuring safe drinking water is high on the political agenda, with a dedicated target on safe and affordable drinking water under the Sustainable Development Goals (SDG 6) (WHO and UNICEF, 2017).

To date, about 50 studies exist that provide concentration data for microplastics in drinking water or its freshwater sources, i.e., surface water and groundwater, as well as (indirectly) wastewater. These studies provide data for specific types of water, but methods of sampling, isolating, purifying and identifying microplastics vary enormously among studies. A systematic review of methodologies used and study characteristics is currently lacking. There are several scoping reviews that emphasise the relevance of microplastics in freshwaters (Eerkes-Medrano and Thompson, 2018; Li et al., 2018; Wagner et al., 2014) or that specifically discuss processes or models in freshwaters (Kooi et al., 2018). We are aware of only a limited number of reviews that touch upon methodologies and concentration data (Eerkes-Medrano and Thompson, 2018; Li et al., 2018).

Besides variation in methodologies used and concentrations reported, existing studies are likely to vary with respect to the level of quality assurance deployed. The quality of microplastic research has been debated recently (Burton, 2017; Connors et al., 2017; Koelmans et al., 2016) and has been quantitatively assessed for studies on microplastic ingestion by biota (Hermsen et al., 2018). However, a critical review of studies reporting concentration data in freshwater and drinking water, which also evaluates the quality of applied sampling methods, microplastic extraction and identification steps, is currently lacking.

For chemical risk assessments in a regulatory context, quality criteria have been set in order to be able to evaluate the reliability of data from toxicological studies (Kase et al., 2016; Klimisch et al.,

1997; Schneider et al., 2009). Such criteria contribute to the harmonization of the hazard and risk assessments of chemicals across different regulatory frameworks. Recently, Hermsen et al. proposed a weight-of-evidence scoring method for studies of microplastic ingestion by marine biota (Hermsen et al., 2018). This method defined minimum quality criteria for various aspects of the analytical procedure, such as sampling, sample treatment, use of controls and polymer identification. It assigns a score for each aspect and provides a total reliability score for data reported in a study. Such a method can also be developed for the analysis of microplastics in freshwater samples, and can be applied to quantify the relative reliability of reported concentration data.

The aim of the present paper is to critically review the available literature on microplastics in drinking water and its freshwater sources, from a quality assurance perspective and by using a quantitative approach. Wastewater studies were also assessed as these are discharged into the environment. Further aims are to review data on concentration, polymer type, shape and size distribution data across studies. Guidance is provided to improve the quality of future occurrence studies.

Our paper is organised as follows. We first present the key areas that should be assessed to determine the reliability of studies. These areas are presented in separate sections and are: sampling method, sample size, sample processing and storage, laboratory preparation and clean air conditions, negative controls, positive controls, sample treatment and polymer identification. For each of these areas we discuss quality assurance aspects, considerations for scoring, and present the assessment scores for each of these criteria. Subsequently, the combined overall reliability scores are discussed, followed by a discussion on implications for human health risk assessments. In the section thereafter we discuss the outcomes of the reviewed studies. An overview of the concentrations, shapes and polymer types measured is provided and trends are discussed with respect to sample type, location or system characteristics. Finally, we provide recommendations to improve the analysis of microplastics in water samples and summarize the key conclusions.

2. Methods

2.1. Literature search

Fifty-five records from fifty studies reporting microplastic concentrations in drinking water (2 tap, 3 bottled water) or its freshwater sources (1 groundwater, 30 surface water, 18 wastewater) were reviewed. Some studies reported data on microplastics in more than one water type. Most papers were retrieved from the Scopus database. Search strings used were *microplastic AND (bottle OR surface OR tap OR wastewater OR groundwater).* Three studies were from the grey i.e. not peer-reviewed literature and were found via Google searches, using the same or similar key word combinations. Searches were performed until August 2018. Only those studies that reported original concentration data were reviewed.

2.2. Quantitative quality assessment

The reliability of data in studies was evaluated based on criteria originally developed for microplastic in biota samples by Hermsen et al. (2018), and surface water samples by Mintenig et al. (2019a, in prep.). The present approach further refines the method to different categories of water samples, including tap or bottled drinking water, surface water, groundwater and wastewater. The method uses nine crucial criteria, which are detailed below. Criteria relate to those that are common in analytical chemistry, such as reproducibility of described methods, precision, accuracy and sensitivity, which together determine the robustness of an applied method. Reproducibility does not imply that another researcher would obtain the same result, which is due to the variability in conditions inherent to nature. Reproducibility in the context of analytical chemistry refers to minimizing the contribution of random or systematic error to the total observed variability. For each criterion a value of 2 (reliable), 1 (reliable to a limited extent) or 0 (unreliable) is assigned. A 'Total Accumulated Score' (TAS) is calculated by adding scores for individual criteria (maximum 18 points) (Tables 1, S2, S3). For data to be considered sufficiently reliable, a study should preferably have no 'zero' values for any of the individual scores (Hermsen et al., 2018).

2.3. Study characteristics

For each study the following characteristics were summarized in tabular form (Table S1): Reference, Country (area), Source (water type), Treatment applied (for wastewater treatment plants (WWTP) or drinking water treatment plants (DWTP), bottled and tap water), Sampling date, Size/shape (of microplastics detected), Polymer types (of microplastics detected), Chemicals (analysed on microplastic), Value (of microplastics detected in water sample), Quality assurance applied (detection limit, positive controls, negative controls), Sampling method, Analysis method, Comments. Raw concentration data were pooled per water type: WWTP influent, WWTP effluent, lake, river, canal, groundwater, untreated and treated tap water, and bottled water, and analysed for means, ranges and significance of differences among the water types. As data were not normally distributed, the differences were assessed with the Mann-Whitney-Wilcoxon test with Bonferroni correction.

3. Results and discussion

3.1. Quality assessment of studies reporting data on microplastics in water samples

In this section, methodological aspects are reviewed in subsections and the final total quality scores are presented and discussed. Following Hermsen et al. (2018), for each aspect, scoring criteria are provided and each criterion is explained and justified (Table S2). Such a score based, quantitative evaluation does not result in an absolute judgment but is an indicator of the reliability of these studies for monitoring purposes and to inform risk assessments of microplastics in the drinking water supply chain. The quality criteria provided here are considered adequate for the present assessment, yet may develop over time with increased experience in sampling and analysing microplastics and better understanding of global concentrations. Here we review the general trends; for details on specific studies the reader is referred to Tables S1 and S3.

3.1.1. Sampling methods

Sampling methods were reviewed to understand the variety of approaches utilized, to assess whether sampling was described in sufficient detail, and to be able to define quality assessment criteria for sampling (Tables S1 and S2). Surface water is sampled by pumping, trawling or filling bottles or buckets, followed by sieving to isolate particles of the desired size range (Table S1) (Li et al., 2018). For wastewater, samples are either grabbed with bottles, pumped directly or collected with automatic composite samplers, then sieved, whereas tap and bottled water are directly sieved. Residues in nets or sieves are typically flushed into glass or metal jars or bottles. To obtain a maximum score of 2, the date, location and materials used should be reported. Specific further criteria were defined for wastewater, surface water, untreated and treated

tap water and bottled water. For wastewater, the applied treatment type should be mentioned as this can impact the microplastic concentrations and should be considered when assessing retention or removal efficiencies of individual technologies. For the same reason, this should be done when taking samples on DWTPs. For surface water, the depth of sampling should be reported, as this may affect concentration (Kooi et al., 2018). For tap water, when the aim is to assess concentration in general, running the tap before sampling is recommended (e.g. 1 min) in order to avoid incidental contamination from air (Wesch et al., 2017), unless it is specifically mentioned that the aim is to measure the first portion of the water, e.g., the first glass. Furthermore, flowrate and source of tap water (e.g., storage tank, groundwater, surface water) should be reported, as this may be relevant for data interpretation. For the same reason, for bottled drinking water, the source, batch production lot and bottled water type (sparkling vs still water) should be specified. To maximize particle recovery from the bottle, the sample should be shaken before filtration and the emptied bottle should be flushed three times with filtered water. A score of 1 was assigned if a study provided a subset of the required characteristics (e.g. date, location), but is still fairly reproducible. About half of the studies score 2 on this criterion whereas only three studies score 0.

3.1.2. Sample size

Different factors were considered when recommending an optimum water volume to be sampled. For microplastics, the limit of detection can be seen as the methods' capability of reliably detecting at least one particle with statistical rigor. A sample volume that is too low reduces the chance of finding particles, reduces the power of a study and increases the margin of error. This means that detection limits benefit from large sample volumes. Similar approaches i.e. sufficient sample size are used when analysing chemicals in environmental matrices (Einax et al., 2004). However, for samples with particles, samples should be small enough to prevent clogging of filters or sieves. This means that recommendations for sample sizes will differ for different water types. Because the actual concentration cannot be predicted, occurrence of non-detects or filter clogging can never be fully prevented.

Detection limits also depend on the particle size range aimed for in a study. Various studies have shown that smaller particles are more abundant (Cabernard et al., 2018), implying that smaller sample volumes are required when exclusively examining small microplastics that are analytically challenging to detect (e.g., <100–300 μm). However, if such a study would also aim to detect larger microplastics accurately, a large volume would still be required. Establishing sample volume recommendations for studies primarily aiming for larger (roughly > 300 μm) microplastics, should consider both expected microplastic concentrations for a given water type and practical considerations. Most studies reviewed belong to this category that aimed to detect also larger microplastics. In surface water, > 300 μm microplastic concentrations span a wide range of concentrations; roughly 1×10^{-3} to 10 particles per litre (Fig. 1). Because of the low concentrations and ease of obtaining large volumes from surface waters, we set 500 L as a minimum sample volume for surface water. However, given the often very low particle number concentrations in some lakes and rivers, a volume greater than 500 L is recommended for remote locations.

For tap water (range 1×10^{-4} to 100 particles per litre), a greater sample volume is proposed compared to surface water. We advise a minimum volume of 1000 L, because of the concentrations that can be very low (Mintenig et al., 2019b), uncertainties with the representativeness of this range given the low number of studies identified, and ease of sample collection. For bottled water, there were also a limited number of studies available. Yet they all demonstrate presence of at least several particles per litre, such that even a minimum of 1 L would be defensible in case a 1 L bottle would be the study unit and only very small particles (<100 μm) would be targeted. However, the study unit in such studies is often the brand or production lot, and also larger particles are targeted, in which case we recommend to sample >10 L for a more representative result. As bottled water usually is provided in volumes smaller than 10 L, this would imply the need to either analyse multiple bottles or to treat the total volume of multiple bottles as one sample. For WWTP influents where concentrations of particles are expected to be higher (Fig. 1), a sample volume of 1 L is considered sufficient. For WWTP effluent, a sample volume greater than 500 L is recommended, or a reported clogging of the sieve e.g. (Carr et al., 2016; Mintenig et al., 2017; Vollertsen and Hansen, 2017; Ziajahromi et al., 2017). These volumes mentioned would lead to roughly 5 to 500 particles detected, which is considered sufficiently representative if the detection limit would be 1 particle as mentioned above. Use of these volumes would receive a maximum score of 2. However in some cases lower volumes have been used with good reason and may still yield fair results. In these cases a score of 1 is assigned (Table S2). Studies that explicitly aim for only smaller particles can use smaller volumes as long as detection limits are met, and still receive the maximum score.

3.1.3. Sample processing and storage

For the transfer of a primary sample (e.g. material in a net or sieve) to a storage bottle, or for preservation or storage of samples before reaching the laboratory, certain criteria need to be met. Some studies rinse jars, bottles or other materials with targeted water e.g. (Kosuth et al., 2018; Talvitie et al., 2015). However, particles from that rinsing water could easily stick to surfaces and remain, which thus would lead to contamination of the actual sample. Ideally, sample containers should be rinsed in the laboratory with filtered water before bringing them to the field. In general, samples should be stored shortly after sampling and further handling avoided before arriving in the laboratory. When sampling, use of plastic materials should be avoided as much as possible to again minimize contamination. Many studies use a fixative like ethanol, formalin or methyl aldehyde (Anderson et al., 2017; Baldwin et al., 2016; Eriksen et al., 2013; Fischer et al., 2016; Mason et al., 2016a; Su et al., 2016; Wang et al., 2018; Xiong et al., 2018; Zhang et al. 2015, 2017). However, the effects of the fixative on different types of plastic should be evaluated before application, or studies should report evidence from the literature (Hermsen et al., 2018). Ethanol and formalin for instance, have been shown not to affect polymer characteristics (Courtene-Jones et al., 2017). Some of the studies reviewed here used volunteers for sampling and sample processing (Christiansen, 2018; Kosuth et al., 2018). Citizen science (CS) approaches have been used in environmental monitoring and are increasingly being used in research on plastic debris (Liboiron et al., 2016; Syberg et al., 2018). It has been argued that this may improve risk perception within society and therefore improve the foundation for timely and efficient societal measures (Syberg et al., 2018). There is also an economic incentive to collect data with volunteers rather than by paid professionals, and some monitoring research would even be impracticable if data were not collected by volunteers (Brett, 2017). However, concerns with respect to the quality of CS have been raised, and validation studies have shown that the reliability of CS based data is highly uncertain (Brett, 2017). Other than for macroplastics, quality assurance for sampling and sample processing of microplastics is technically demanding and the error rate can be expected to be higher for volunteers than for professionals. Since no CS validation studies for microplastics sampling and analysis exist to date, it is not clear to what extent the quality of data is affected by having some of the crucial steps performed by non-professionals. Therefore, as scientific quality

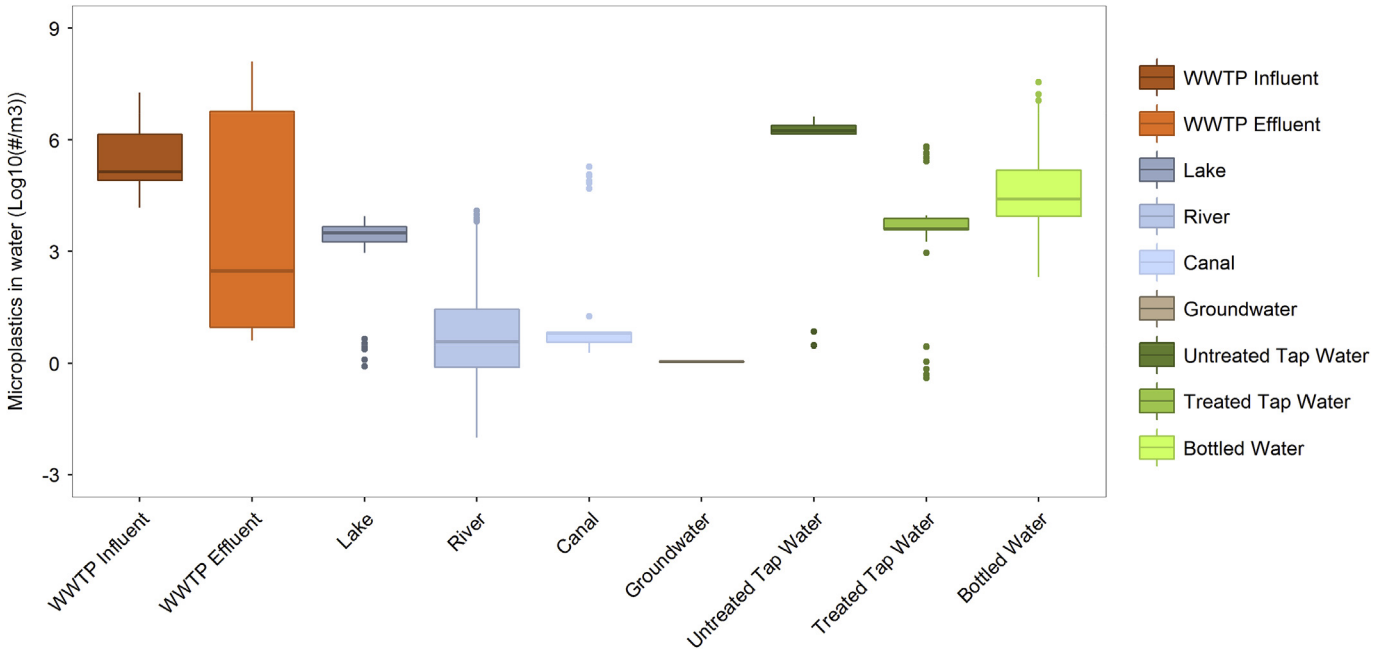

Fig. 1. Box and whisker plot showing median and variation in microplastic number concentrations in individual samples taken from different water types. Data relate to individual samples unless only means were reported, in which case the mean value was taken into account n times, with n being the number of samples which the mean was based on. References included: (Estahbanati and Fahrenfeld, 2016; Faure et al., 2015; Fischer et al., 2016; Hoellein et al., 2017; Kosuth et al., 2018; Leslie et al., 2017; Magnusson and Norén, 2014; Mason et al. 2016a, 2018; McCormick et al. 2014, 2016; Michielssen et al., 2016; Mintenig et al., 2019b; Oβmann et al., 2018; Pivokonsky et al., 2018; Rodrigues et al., 2018; Schymanski et al., 2018; Simon et al., 2018; Talvitie et al. 2015, 2017a, 2017b; Vollertsen and Hansen, 2017; Wang et al. 2017, 2018; Ziajahromi et al., 2017), with n = 27. For statistical significances of differences among water types, see Table S4.

assurance is the primary perspective of this paper, use of volunteers for major parts of the sampling work was considered less reliable, leading to a score of 1 in case of validation of the adequacy of the protocols, and 0 in all other cases for this criterion.

3.1.4. Laboratory preparation

Contamination of samples due to airborne polymer particles and fibres has been described as a major problem in microplastic analysis (Hermsen et al. 2017, 2018; Torre et al., 2016; Vandermeersch et al., 2015; Wesch et al., 2016). Therefore, to avoid contamination and prior to actual sample preparation and analysis, certain measures need to be taken. These include avoiding synthetic components in clothing, wearing of cotton lab coats, and pre-rinsing and cleaning of all materials used as well as laboratory (bench, laminar flow cabinet) surfaces. If precautions were not fully reported but sufficient blanks (i.e., three blanks, see section 'negative controls' below) were included to keep track of background contamination, then a score of 1 was assigned (Table S2).

3.1.5. Clean air conditions

To avoid contamination with airborne microplastic particles or fibres, sample handling should be performed in a laminar flow cabinet or in a clean air laboratory to receive the maximum score (Hermsen et al., 2018). Recent studies are increasingly using such conditions (Mason et al., 2018; Oβmann et al., 2018; Schymanski et al., 2018; Wang et al., 2018; Zhang et al., 2017). In case clean air conditions were not used but covering of samples and sufficient blanks were reported, a score of 1 was assigned (Cable et al., 2017; Dris et al. 2015, 2018b; Miller et al., 2017; Mintenig et al., 2019b; Pivokonsky et al., 2018).

3.1.6. Negative controls

To verify and correct for contamination or to demonstrate absence of contamination, replicated ($n \geq 3$) procedural blanks need to be analysed. All reviewed studies reported particles counts; if the variability of contamination was quantified, and if it was clearly indicated that actual sample results were corrected for blank values, a score of 2 was assigned. Some precautions are less reliable but still provide some useful information on the level of contamination, like the filtration of air, or the sole examination of petri dishes/soaked papers placed next to the samples (Cable et al., 2017; Dris et al. 2015, 2018b; Estahbanati and Fahrenfeld, 2016; Hendrickson et al., 2018; Lares et al., 2018; Mani et al., 2015; McCormick et al., 2016; Rodrigues et al., 2018; Simon et al., 2018; Ziajahromi et al., 2017). If these precautions were taken, a score of 1 was assigned.

3.1.7. Positive controls

Losses of particles may occur during various steps of sampling, sample preparation and analysis and it is recommended to quantify losses using positive controls. Estahbanati and Fahrenfeld (2016) assessed particle losses during sampling with nets, by adding plastic particles in distilled water. Subsequent sample handling in the laboratory often includes complex steps to remove organic matter from samples (see 'sample treatment' below), particularly from WWTP influent or effluent or surface waters. To verify a sufficiently high recovery of particles during filtration, digestion, transfer and analytical identification steps, representative replicated positive controls ($n \geq 3$) should be performed (Hermsen et al., 2018). If recoveries are low yet reproducible, the reported counts should be corrected for this incomplete recovery. Positive controls should be conducted for the targeted microplastics, covering different size classes and polymer types. Microplastic sizes span a wide range and it cannot be assumed that recoveries are constant across the range of sizes and polymer types. In practice, it is important to at least use small enough microplastics as controls, as these are more difficult to recover. In some cases, larger microplastics still require separate controls, especially when different

methods are applied. For instance, the method used by Mason et al. (2018) for particles smaller than 100 μm was different from that for particles larger than 100 μm, whereas positive controls were only performed for the smaller particles. Only three studies provided full data on positive controls (Simon et al., 2018; Vollertsen and Hansen, 2017; Wang et al., 2018) and received maximum scores, indicating that it is not yet a very common practice. Other studies conducted positive controls but with no or insufficient replicates (Di and Wang, 2018; Dyachenko et al., 2017; Hendrickson et al., 2018), or only for one step in the analysis (Rodrigues et al., 2018), or for part of the targeted size range (Mason et al., 2018) and received a score of 1.

3.1.8. Sample treatment

To assure the quality of visual inspection and subsequent polymer identification, which is especially critical for <300 μm particles and to enable the usage of more advanced identification techniques (see section 'polymer identification'), a sample digestion step should be performed for surface and WWTP water samples in order to score 2 points. Tap and bottled water do not require a digestion step and thus were always assigned 2 points on this criterion. Digestion should be done under conditions that do not affect the microplastics weights, counts or shapes. In the context of biota analysis, use of potassium hydroxide (KOH) or enzymes has been demonstrated to be acceptable (Catarino et al., 2016; Cole et al., 2014; Kühn et al., 2017; Munno et al., 2018). The reviewed studies here commonly used hydrogen peroxide (H_2O_2) which is known to affect some polymers (Hurley et al., 2018). However its effects have been demonstrated to be minimal within an exposure of 48 h (Löder et al., 2017) and was therefore deemed acceptable. Several studies kept the temperature around 35–45 °C, e.g. by using a cooling or ice bath (Simon et al., 2018), however sometimes higher temperatures up to 75 °C (Anderson et al., 2017; Baldwin et al., 2016; Estahbanati and Fahrenfeld, 2016; Hendrickson et al., 2018; Hoellein et al., 2017; Pivokonsky et al., 2018) or even 80 °C were used in some of the digestion steps (Vermaire et al., 2017), or even 90 °C for drying (Estahbanati and Fahrenfeld, 2016; Hendrickson et al., 2018; Ziajahromi et al., 2017). Effects of temperature in combination with various digestion chemicals were studied by Munno et al. (2018). Based on comparison of data on polymer mass losses during heating and digestion, the authors concluded it was best to stay below 60 °C. We set 50 °C as the safe upper limit, and as a criterion to assign a maximum score as a precautionary measure and since many of the reviewed studies were below 50 °C. Digestion without such considerations of mass losses was assigned a score of 1. A score of 1 was also assigned for surface water when it was reported to be very clear and clean even without digestion applied. Furthermore, studies that did not apply digestion but explicitly were aiming for the detection of ≥300 μm particles only, were assigned a score of 1 (Hermsen et al., 2018).

3.1.9. Polymer identification

To assure reliable assessment of plastic particles, the polymer identity needs to be confirmed, preferably by using (micro) FTIR or Raman spectroscopy, pyrolysis-GCMS or TGA-GCMS techniques (Hermsen et al., 2018; Löder and Gerdts, 2015; Mintenig et al., 2018). Although subsampling should be avoided, these techniques are so laborious that representative sub-sampling is often required. Best practice for subsampling and subsequent polymer identification will differ for different microplastic size classes and technologies applied (Mintenig et al., 2018). The manual sorting and subsequent identification of microplastics has a bias compared to the identification of particles enriched on filters with FTIR or Raman microscopy (i.e., avoid missing transparent or small particles), and is therefore discouraged when analysing particles <300 μm. For manually sorted particles, following Hermsen et al. (2018), we argue that analysis of all particles is feasible and therefore recommended if the numbers of pre-sorted particles *per study* are <100. For particle numbers >100, 50% should be identified, with a minimum of 100 particles. If polymer identities are reported on a *per sample* basis, we also advise to analyse all particles found, however with a minimum of 50. This minimum is considered reasonable to represent the variety of particle shapes and polymer types in environmental samples. Anyway, for such hand-picked representative subsets, studies generally still should describe how representativeness was assured. For smaller microplastics and when applying FTIR or Raman microscopy, the representativeness of subsampling (the area of a filter that was measured) is relatively easy to assess. Particularly when coupling a focal plane array detector to the microscope, many more particles (especially the small and transparent particles) can be assessed in one analysis. Although measurement times can be long, at least 25% of the filter needs to be analysed (Mintenig et al., 2017; Redondo-Hasselerharm et al., 2018). If these criteria for number of particles and/or percentage of the filter are met, a score of 2 is assigned. If polymers were identified for a too low number of particles or on a smaller part of the filter, a score of 1 was assigned. Also, if SEM-EDS or - EDX was applied to distinguish polymers from non-polymeric materials (Anderson et al., 2017; Cable et al., 2017; Mason et al., 2016b; Su et al., 2016), a score of 1 was assigned

3.1.10. Overall reliability of method aspects and studies

For each study, we assessed against all quality criteria and calculated a total accumulated score (TAS) (Table S3). Whereas the maximum achievable TAS score is 18, average (min − max) TAS scores were 13.7 (13–14) for bottled water, 11.5 (8–15) for treated tap water, 12.5 (11–14) for DWTP water, 7.9 (4–15) for surface water, and 7.3 (3–13) for waste water studies, respectively (Table 1). This ranking in average scores for the different water types probably reflects the relative ease of analysing these different water types. For instance, bottled and tap water require no digestion, which means that 2 points were always assigned to the sample digestion criteria. It should be noted though that the number of studies examining DWTP and treated tap water (each n = 2), and bottled water studies (n = 3) was very low, rendering the averages to be less rigorous. On average, studies were assigned roughly half (8.41/18) of the maximum score for data quality, a result which is very similar to the average score assigned to studies reporting data on ingestion of microplastic by biota (Hermsen et al., 2018).

Only four studies received non-zero scores for all criteria. These were the study on surface water by (Wang et al. 2018) (TAS = 15), the study on bottled water by Mason et al. (2018) (TAS = 14), and two studies on wastewater by Ziajahromi et al. (2017) (TAS = 12) and Hendrickson et al. (2018) (TAS = 11). For the ranking of such non-zero studies, a multiplied score X can be calculated (Hermsen et al., 2018), followed by a ^{2}Log X transformation in order to obtain a linear scale for a maximum score of 9. This would lead to a score of 6 for the data provided by Wang et al. (2018), a score of 5 for the data provided by Mason et al. (2018), a score of 3 by Ziajahromi et al. (2017), and a score of 2 for the data provided by Hendrickson et al. (2018). These four studies were published in the years 2017 or 2018, which may reflect recent progress in the quality of applied methods to analyse microplastics in environmental samples. With only four studies having all non-zero scores, it can be concluded that the majority of the reviewed studies (46 studies or 92%) cannot be considered fully complete or reliable on at least one crucial aspect of quality assurance. This does not mean that studies may not be useable or important as a more specific consideration of scores and study outcomes in hindsight, can still make a study very well fit for certain research questions.

Table 1
Overview of individual and accumulated scores[a] of papers reporting microplastic concentrations in surface water and drinking water.

Author	Type	Sampling methods	Sample size	Sample processing and storage	Lab preparation	Clean air conditions	Negative controls	Positive controls	Sample treatment	Polymer ID	Total Accumulated Score[b] (TAS, max = 18)
Mason et al. (2018)	**Bottle**	1	2	2	1	2	2	1	2	1	**14**
Schymanski et al. (2018)	**Bottle**	1	1	2	2	2	2	0	2	2	**14**
Oβmann et al. (2018)	**Bottle**	1	1	2	2	2	2	0	2	1	**13**
Mintenig et al. (2019b)	**Tap**	2	2	2	2	1	2	0	2	2	**15**
Kosuth et al. (2018)	**Tap**	0	0	0	2	2	2	0	2	0	**8**
Mintenig et al. (2019b)	**DWTP**	2	1	2	2	1	2	0	2	2	**14**
Pivokonsky et al. (2018)	**DWTP**	1	1	2	1	1	2	0	1	2	**11**
Mintenig et al. (2019b)	**Ground**	2	1	2	2	1	2	0	2	2	**14**
Wang et al. (2018)	**Surface**	2	1	1	2	2	2	2	2	1	**15**
Hendrickson et al. (2018)	**Surface**	2	1	2	1	1	1	1	1	1	**11**
Di and Wang (2018)	**Surface**	2	0	2	2	0	0	1	2	1	**10**
Mani et al. (2015)	**Surface**	2	2	1	1	1	1	0	1	1	**10**
Wang et al. (2017)	**Surface**	1	0	1	2	1	2	0	2	1	**10**
Baldwin et al. (2016)	**Surface**	2	1	1	1	1	2	0	1	0	**9**
Cable et al. (2017)	**Surface**	2	1	1	1	1	1	0	1	1	**9**
Dris et al. (2018a)	**Surface**	2	2	0	1	1	1	0	1	1	**9**
Lares et al. (2018)	**Surface**	1	0	1	2	1	2	0	1	1	**9**
Rodrigues et al. (2018)	**Surface**	2	2	1	1	0	1	0	1	1	**9**
Su et al. (2016)	**Surface**	2	1	1	1	1	1	0	1	1	**9**
Zhang et al. (2017)	**Surface**	2	1	1	1	2	0	0	0	2	**9**
Dris et al. (2015)	**Surface**	2	1	2	1	1	1	0	0	0	**8**
Estahbanati and Fahrenfeld (2016)	**Surface**	2	2	1	0	0	1	1	1	0	**8**
Hoellein et al. (2017)	**Surface**	2	1	2	0	0	1	0	1	1	**8**
Mason et al. (2016b)	**Surface**	2	1	1	0	0	2	0	1	1	**8**
Sighicelli et al. (2018)	**Surface**	2	2	1	0	0	0	0	2	1	**8**
Vermaire et al. (2017)	**Surface**	2	1	2	0	0	2	0	1	0	**8**
Xiong et al. (2018)	**Surface**	2	1	0	1	1	1	0	1	1	**8**
Anderson et al. (2017)	**Surface**	2	1	1	0	0	1	0	1	1	**7**
Faure et al. (2015)	**Surface**	1	2	1	1	0	0	0	1	1	**7**
McCormick et al. (2016)	**Surface**	1	1	1	0	0	2	0	1	1	**7**
Miller et al. (2017)	**Surface**	1	0	1	1	1	2	0	0	1	**7**
McCormick et al. (2014)	**Surface**	1	1	1	0	0	2	0	1	0	**6**
Fischer et al. (2016)	**Surface**	2	1	1	0	0	0	0	1	0	**5**
Free et al. (2014)	**Surface**	2	1	1	0	0	0	0	1	0	**5**
Lahens et al. (2018)	**Surface**	1	1	1	0	0	0	0	1	1	**5**
Leslie et al. (2017)	**Surface**	1	0	2	0	1	1	0	0	0	**5**
Eriksen et al. (2013)	**Surface**	2	1	1	0	0	0	0	0	0	**4**
Zhang et al. (2015)	**Surface**	2	1	0	0	0	0	0	0	1	**4**
Mintenig et al. (2017)	**WWTP**	2	2	2	1	1	2	0	1	2	**13**
Ziajahromi et al. (2017)	**WWTP**	2	2	1	1	1	1	1	1	2	**12**
Simon et al. (2018)	**WWTP**	1	1	0	1	1	2	2	2	1	**11**
Lares et al. (2018)	**WWTP**	2	0	1	2	1	2	0	1	1	**10**
Talvitie et al. (2017a)	**WWTP**	2	1	1	1	1	2	0	0	2	**10**
Murphy et al. (2016)	**WWTP**	1	1	2	2	1	1	0	0	1	**9**
Mason et al. (2016a)	**WWTP**	2	2	1	0	0	2	0	1	0	**8**
Vollertsen and Hansen (2017)	**WWTP**	0	2	1	0	0	0	2	1	1	**7**
Carr et al. (2016)	**WWTP**	2	2	1	0	0	0	0	0	1	**6**
Magnusson and Norén (2014)	**WWTP**	2	2	1	0	0	0	0	0	1	**6**
Michielssen et al. (2016)	**WWTP**	2	1	2	0	0	1	0	0	0	**6**
Talvitie et al. (2017b)	**WWTP**	2	0	1	0	0	2	0	0	1	**6**
Vermaire et al. (2017)	**WWTP**	1	0	2	0	0	2	0	1	0	**6**
Dyachenko et al. (2017)	**WWTP**	1	0	1	0	0	0	1	1	1	**5**
Leslie et al. (2017)	**WWTP**	1	0	2	0	1	1	0	0	0	**5**

Table 1 (*continued*)

Author	Type	Sampling methods	Sample size	Sample processing and storage	Lab preparation	Clean air conditions	Negative controls	Positive controls	Sample treatment	Polymer ID	Total Accumulated Score[b] (TAS, max = 18)
Dris et al. (2015)	**WWTP**	1	0	0	1	1	1	0	0	0	**4**
Talvitie et al. (2015)	**WWTP**	2	1	0	0	0	1	0	0	0	**4**
Browne et al. (2011)	**WWTP**	0	0	1	0	0	0	0	0	2	**3**
Average		**1.57**	**1.02**	**1.20**	**0.77**	**0.64**	**1.18**	**0.21**	**0.93**	**0.89**	**8.41**

[a] For the scoring criteria, the reader is referred to Table S2.
[b] TAS values are underlined when all underlying scores are non-zero.

Besides insights in methodological differences among individual studies, the scores allow for a cross comparison of reliability differences per criterion (Table 1) (Hermsen et al., 2018). Average scores per criterion were all lower than 2, which means there is room for improvement of quality assurance in this field of research. The average scores per criterion across 55 records were lower than 1 for the criteria *sample treatment* (0.93), *polymer identification* (0.89), *laboratory preparation* (0.77), *clean air conditions* (0.64), and *positive controls* (0.21). Therefore, significant improvements are needed especially for these five out of nine quality aspects. Our analysis further illustrates that besides actual quality assurance, also full reportage of method details is important, to assure traceability and reproducibility of data. Reporting is a quality aspect in itself and some studies may have scored higher had they been reported better. In this respect we recommend to also include detection limits in terms of number and mass concentrations, but also in terms of minimum and maximum detectable particles sizes inherent to the applied methodology.

3.1.11. Implications of quality criteria and reliability of studies for human health risk assessment

Human health risks depend on exposure and it is well known that drinking water is an uptake pathway for microplastics. Consequently, quality in the analysis of microplastics in drinking water and its sources is very relevant to accurately assess risks to human health.

In this respect it should be mentioned that the proposed criteria are related to concentrations in the water, which however may not fully correlate with exposure. For instance, we recommended running the tap before sampling to avoid contamination of the first portion of water, to assure reproducibility of results and further, because many consumers would do this anyway. However, others may not do this and addressing this variability may be relevant for exposure assessment. Exposure to microplastics may also depend on the level of shaking of a bottle before drinking, whereas our criteria recommend shaking in order to maximize the chance that all particles are measured, and to assure reproducibility of the analysis. Exposure in drinking water can additionally be influenced by direct contamination of drinking water through contact with air, but to better understand contamination that is coming directly from the water supply and to support comparability and reproduciblity, we recommend procedures to prevent airborne contamination. Finally, exposure to microplastics would also include uptake via inhalation or food (Wright and Kelly, 2017), which is not covered in this paper that only addresses drinking water and its sources.

The fact that high quality data are limited also has implications for human health risk assessment, which considers both exposure as well as health effects. Only four out of 50 studies (which were published in 2017 and 2018) were of such a level of reliability (i.e. having no zero scores) that they could be used confidently for an exposure assessment. Importantly, of these four studies, the recent study on microplastic particles in bottled drinking water (Mason et al., 2018) would be highly relevant for human health risk assessment, based on the criteria used here, although the study only had maximum scores in 5 out of 9 criteria. Therefore, this uncertainty in the overall exposure data precludes the ability to conduct a robust risk assessment, whether related to particle toxicity, chemical toxicity or microbial toxicity. We therefore conclude that more high quality data is needed on the occurrence of microplastics in drinking water to more confidently assess potential exposure, as a critical piece for understanding the potential human health risks.

3.2. Microplastics in freshwater

3.2.1. Global microplastic concentrations in different water types

We reviewed the available literature on microplastics in drinking water, fresh water and wastewater. Monitoring has been conducted in multiple locations in Asia, Australia, Europe and North America. A selection of studies reporting particle number concentrations were used for a further analysis (Figs. 1 and 4), if they reported means and/or raw data on a volume basis. These microplastic concentrations, reported as number of particles, spanned ten orders of magnitude (1×10^{-2} to 10^{8} #/m^3) across all individual samples and water types, also when excluding wastewaters (Fig. 1). The number of microplastic particles in samples per water type was statistically different ($p < 0.05$) for all pairwise comparisons of water types, except for the comparisons between ground water and all other water types, WWTP effluent versus (untreated) DWTP and tap water, and WWTP influent versus (untreated) DWTP water (Fig. 1, Table S4). As these concentration data relate to numbers, they do not distinguish between particle size, shape or material type; differences that will be discussed in the sections below. Studies often do not mention a lower nor an upper size limit, or only mention the targeted size class. The data include particles *reported* as microplastics, that is, we did not take out suspect non-polymer particles as identified either by authors themselves or based on our quality assessment discussed above. The range for 50% of the data per water type (the boxes in Fig. 1) is 1–2 orders of magnitude, and quite similar for influent, effluent, lake, river and bottled water data. For canal and tap water only a few studies were available, which may have caused the variation to be much smaller. For bottled water, the number of studies was also low (Mason et al., 2018; Oβmann et al., 2018; Schymanski et al., 2018), however there were many samples (bottled water brands) for this water type available in these studies. The median concentrations per water type vary over four orders of magnitude.

Some general patterns exist in the concentration data (Fig. 1). Surface waters have the lowest concentrations of all water types, with, bottled water closer to the higher end. The lower concentrations observed in surface water, particularly compared to drinking water, is likely attributed to the fact that most surface water studies targeted only larger particles whereas smaller particles are more abundant (Cabernard et al., 2018). WWTP influent shows the highest concentrations based on the median and

interquartile range of reported concentrations (Fig. 1) although WWTP studies generally did not monitor small particles. The high concentrations therefore reflect direct domestic inputs and inputs from those diffuse land-based sources that are routed via waste water. WWTP effluent has a lower median compared to WWTP influent, which probably reflects the retention of microplastics in WWTPs. Similarly, untreated tap water has higher concentrations than treated tap water. Concentrations in bottled water are higher than in tap water, which may reflect the higher influx of airborne particles in the factories, which are inherently more locked in, wear

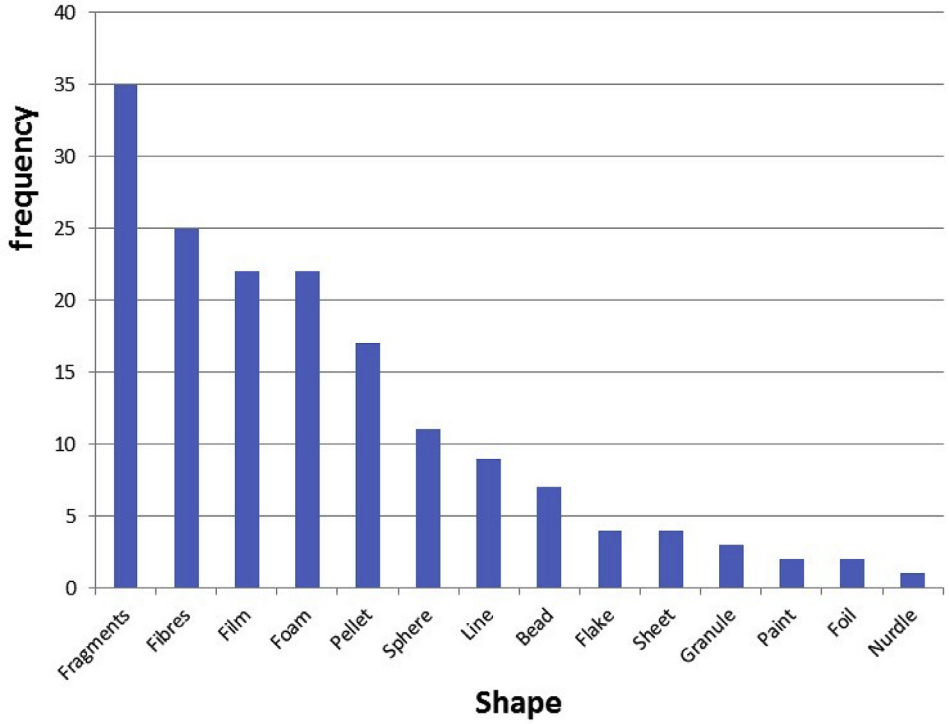

Fig. 2. Number of studies reporting a particular shape of microplastic particles (from a total of 55 records).

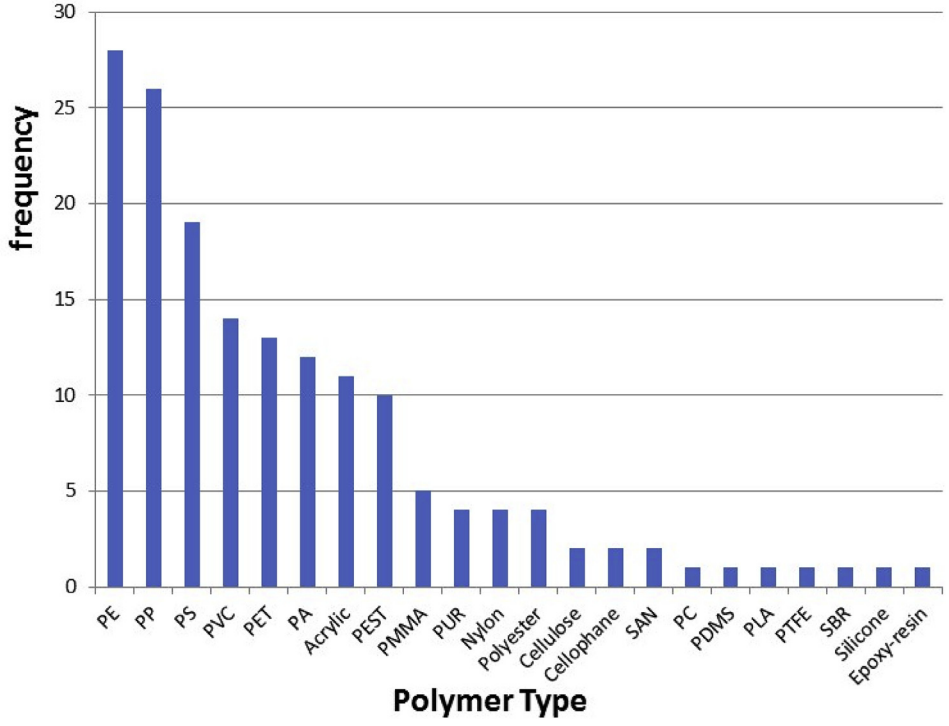

Fig. 3. Number of studies reporting a particular polymer type of microplastic particles (32 out of 55 records reported polymer type).

from caps or bottle walls after production, or the fact that these studies also included smaller sized particles. For instance, Schymanski et al. (2018) used Raman microscopy and was thus able to identify down to > 5 μm, which also explains the high number concentrations. The general trends observed here (Fig. 1) still remain when only the studies that received highest quality scores are taken into account (Fig. S1). Still, the generalities listed here should be interpreted with caution given the low number of bottled water (n=3), treated tap water (n = 2), (untreated) DWTP water (n = 2) and ground water studies (1), although as noted earlier, there were many bottled water samples available in the limited number of studies.

3.2.2. Microplastic shapes in global freshwaters

Microplastics of different shapes were reported. Several factors limit a potential quantitative analysis of reported data on the relative abundance of shapes among water types. First, many studies typically only analysed shapes of a subset of all isolated particles and it is not clear how representative these subsets were when it comes to particle shape. Second, studies targeted different size ranges which also limits their comparability. For instance, fibres are typically small (Cole, 2016), so easily missed when trawling. Third, studies differed in the extent their water samples were representative of the studied water systems or water type, which in turn is affected by spatial and temporal variability. Fourth, although some particles' shapes were quite well-defined and thus interpreted similarly across studies, some others are more ambiguous, like nurdle, pellet, pre-production pellet, sphere, resin or granule. Nevertheless, we can provide a relatively robust view of the relative importance of particle shapes by showing the frequency of shapes observed across studies (Fig. 2). The reviewed studies (n = 50) reported (in the order of decreasing reporting frequency): fragment, fibre, film, foam, pellet, sphere, line, bead, flake, sheet, granule, paint, foil and nurdle (Fig. 2). We argue that this order also reflects a relative order of importance of shapes, that is, the most frequent shapes detected in a high number of locations globally, as the reviewed studies concerned many different locations on the globe.

3.2.3. Polymer types reported in global studies on freshwater microplastics

For 32 out of 55 records, polymer types were assessed. Similar to particle shape as discussed above, and rather than discussing relative abundances per study, we consider the relative frequency of reported polymer types observed in water types on a global level. Often, relative abundances per study are not provided, or may not be considered accurate due to limited or biased subsets of particles used for the polymer identification. Most frequently observed polymer types across studies and records are PE ≈ PP > PS > PVC > PET, with

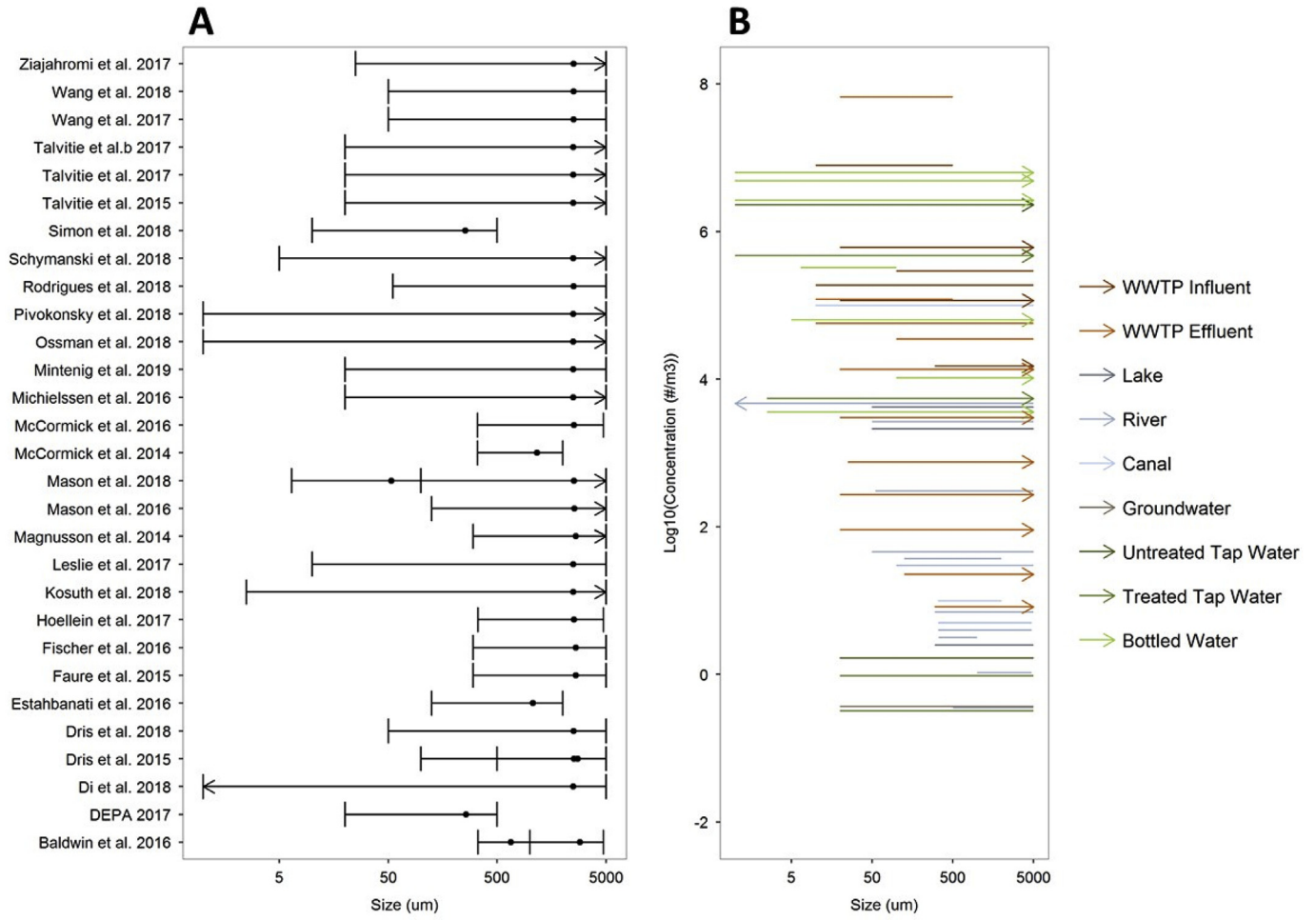

Fig. 4. Size ranges used (A) and number concentrations per size range reported (B) in studies on microplastics in drinking, surface and waste waters (referenced in Fig. 1). Arrows indicate that no upper or lower size limit was specified, in which case values of 5 mm or 1 μm were assigned, respectively. Panel A: Size ranges per study are ordered alphabetically per author name. Data points represent the average of the size range. Panel B: reported concentrations as a function of size range. Colours of arrows (Panel B) correspond to colours of the box and whiskers in Fig. 1. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

Acrylic or acrylic-related compounds, PA, PEST and PMMA reported in five or more records (Fig. 3). The order of the five most abundant polymers can be roughly explained by two factors; global plastic demand and polymer density (Andrady, 2011; Bond et al., 2018). Global plastic demand would cause an order of PE > PP > PVC > PET > PS (Bond et al., 2018; Geyer et al., 2017). However, whereas PE and PP have densities below 1 g/cm^3 and are buoyant and PS has a density close to that of water, PVC and PET have densities of 1.3–1.7 g/cm^3. Therefore, a relatively high degree of settling could explain the lower abundances of PVC and PET in the surface water samples mostly assessed here. Specific subsets, i.e. Lakes/Rivers versus WWTP samples were checked for differences in relative abundances of polymer types, but no such differences were found. For a more detailed analysis of polymers reported in studies, the reader is referred to Table S1, which provides all observed polymers on an individual record basis. Recently, Bond et al. (2018) provided a review of polymer abundance data across environmental compartments in Europe, including 3 surface water and 5 WWTP studies. Instead of providing the reporting incidence across a large number of global studies, they averaged relative abundances reported across these 8 European studies, yet found the same order of abundances for the 5 most dominant polymers.

3.2.4. Sizes of microplastic particles

Studies generally did not report sizes or size distributions relating to individual particles, which precludes a meta-analysis of particle size across studies. However size classes were reported (Table S1) as well as the number of particles observed per size class. Still, this does not allow for a meaningful quantitative analysis, because the size bins vary widely across studies (Fig. 4A). Furthermore, often lower or upper size limits are not specified so that it is not clear to what size class reported number concentrations actually relate. Instead of plotting the reported size ranges across studies (Fig. 4A), reported ranges can be plotted against mean particle number concentrations (Fig. 4B). The latter graph clearly shows that studies aiming for smaller particles, like some of the bottled water and tap water studies, generally find the higher particle number concentrations.

4. Conclusions

We conclude that based on the limited number of high quality studies identified, standardization of microplastic analysis in water is needed. Quality assurance criteria that require the most improvements are sample treatment, polymer identification, laboratory preparation, clean air conditions and positive controls. In addition to ensuring that individual studies are of higher quality in order to achieve more confidence in study findings, standardized methods will allow reproducibility and comparability of results and will lead to the quality of data that are needed to conduct risk assessments. Among water types, reported microplastic concentrations differed widely, but the fact that studies target different size classes contributes to this variability. Despite the quality limitations, our analysis confirmed that microplastic is frequently present in freshwaters and drinking water. There is a high need to improve the analysis of very small microplastics, and to identify them in different water samples. Fragments, fibers, film, foam and pellets were the most frequently found microplastic shapes in surface water samples. Relative abundance of polymer types found across studies reflected plastic production and polymer densities. Conclusions on size comparisons among studies and water types are difficult to draw due to the aforementioned differences in targeted particle sizes. More studies are needed to better understand occurrence, shape, polymer types, and particle sizes, particularly for the small plastic particles.

Declarations of interest

None.

Conflicts of interest

There is no conflict of interest.

Author agreement

AAK and JDF designed the study. NHMN, EH, MK, SM and AAK performed the study. AAK wrote the article. NHMN, EH, MK, SM and JDF commented on draft versions of the article. All authors have approved the final article.

Disclaimer

The authors alone are responsible for the views expressed in this publication and they do not necessarily represent the views, decisions or policies of the World Health Organization.

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Appendix A. Supplementary data

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World Health Organization

Microplastics in drinking-water

Key messages

- Microplastics are ubiquitous in the environment and have been detected in a broad range of concentrations in marine water, wastewater, fresh water, food, air and drinking-water, both bottled and tap water. The data on the occurrence of microplastics in drinking-water are limited at present, with few fully reliable studies using different methods and tools to sample and analyse microplastic particles.
- The potential hazards associated with microplastics come in three forms: physical particles, chemicals and microbial pathogens as part of biofilms. Based on the limited evidence available, chemicals and biofilms associated with microplastics in drinking-water pose a low concern for human health. Although there is insufficient information to draw firm conclusions on the toxicity related to the physical hazard of plastic particles, particularly for the nano size particles, no reliable information suggests it is a concern.
- Limited evidence suggests that key sources of microplastic pollution in fresh water sources are terrestrial run-off and wastewater effluent. However, optimized wastewater (and drinking-water) treatment can effectively remove most microplastics from the effluent. For the significant proportion of the population that is not covered by adequate sewage treatment, microbial pathogens and other chemicals will be a greater human health concern than microplastics.

Recommendations

- **Water suppliers and regulators** should continue to prioritize removing microbial pathogens and chemicals from drinking-water that are known significant risks to human health. As part of water safety planning, water suppliers should ensure that control measures are effective, including optimizing water treatment processes for particle removal and microbial safety, which will incidentally improve the removal of microplastic particles. Routine monitoring of microplastics in drinking-water is not necessary at this time.
- To better assess the human health risks and inform management actions, **researchers** should undertake targeted, well-designed and quality-controlled investigative studies to better understand the occurrence of microplastics in the water cycle and in drinking-water throughout the water supply chain, the sources of microplastic pollution and the uptake, fate and health effects of microplastics under relevant exposure scenarios.
- Irrespective of any human health risks posed by exposure to microplastics in drinking-water, measures should be taken by **policy makers and the public** to better manage plastics and reduce the use of plastics where possible, to minimize plastics released into the environment because these actions can confer other benefits to the environment and human well-being.

Key questions and answers

What are microplastics?

As a category, microplastics encompass a wide range of materials composed of different substances, with different densities, chemical compositions, shapes and sizes. There is no scientifically-agreed definition of microplastics, although they are frequently defined as plastic particles <5 mm in length. However, this is a rather arbitrary definition and is of limited value in the context of drinking-water since particles at the upper end of the size range are unlikely to be found in treated drinking-water. A subset of microplastics <1 µm in length are often referred to as nanoplastics.

How do microplastics get into drinking-water?

Microplastics may enter drinking-water sources in a number of ways: from surface run-off (e.g. after a rain event), to wastewater effluent (both treated and untreated), combined sewer overflows, industrial effluent, degraded plastic waste and atmospheric deposition. Surface run-off and wastewater effluent are recognized as the two main sources, but better data are required to quantify the sources and associate them with more specific plastic waste streams. Plastic bottles and caps that are used in bottled water may also be sources of microplastics in drinking-water.

How much microplastic has been found in drinking-water and drinking-water sources?

In freshwater studies, reported microplastic particle counts ranged from around 0 to 1000 particles/L. Only nine studies were identified that measured microplastics in drinking-water; these studies reported particle counts in individual samples from 0 to 10 000 particles/L and mean values from 10^{-3} to 1000 particles/L. A comparison of the data between fresh water and drinking-water studies should not be made because in most cases freshwater studies targeted larger particles, using filter sizes that were an order of magnitude larger than those used in drinking-water studies.

What kinds of microplastics are being found?

In fresh water a wide variety of particle shapes have been found while the polymers most frequently detected roughly correlates with plastic production volumes. In drinking-water, fragments and fibres were the predominant particle shapes and polyethylene terephthalate and polypropylene were the polymers most detected.

Can these studies be trusted?

A WHO-commissioned study concluded that most of these studies are not fully reliable because their methods lacked sufficient quality control. Results should therefore be interpreted with caution. The quality control areas requiring the most improvement included sample treatment, polymer identification, laboratory preparation, clean air conditions and positive controls. For example, in two drinking-water studies and for a subset of smaller particles in a third study, no spectroscopic analysis was conducted to confirm that the particles identified were plastic. Four of the 52 studies that scored highest for quality were published in 2017 and 2018, indicating some improvements in quality control.

What are the potential threats posed by microplastics in drinking-water?

The potential hazards associated with microplastics come in three forms: physical particles, chemicals and microbial pathogens that are part of biofilms. Particles may cause impacts in the body, depending on a range of physicochemical properties of the particle, including size, surface area and shape. However, the fate, transport and health impacts of microplastics following ingestion are not well studied, with no human studies on ingested microplastics. Although plastic polymers are generally considered to be of low toxicity, plastics and microplastics can contain unbound monomers and additives. Hydrophobic chemicals in the environment, including persistent organic pollutants, may also sorb to the plastic particle. Biofilms in drinking-water are formed when microorganisms grow on drinking-water distribution systems and other surfaces. Most microorganisms that are part of biofilms are non-pathogenic. However, some biofilms can include pathogens such as *Pseudomonas aeruginosa*, *Legionella* spp., non-tuberculosis *Mycobacterium* spp. and *Naegleria fowleri*.

The health risk from microplastics in drinking-water is a function of both hazard (potential to cause adverse effects) and exposure (dose). The same substance can have different effects at different doses, which depends on how much of the substance a person is exposed to and may also depend on the route by which the exposure occurs, e.g. ingestion, inhalation or injection. The risks associated with each hazard class are further described below.

What is the human health risk of ingesting microplastic particles through drinking-water?

Although there is insufficient information to draw firm conclusions on the toxicity of plastic particles and particularly the nano size particles, no reliable information suggests it is a concern. Studies on absorption indicate that microplastics >150 µm are likely to be excreted directly through faeces. Uptake of smaller particles is expected to be limited, although absorption and distribution of very small microplastic particles including nanoplastics may be higher. Toxicology studies in rats and mice reported some impacts including inflammation of the liver. However, these few studies are of questionable reliability and relevance, with findings reported at very high exposures that would not occur in drinking-water.

What is the human health risk from chemicals associated with microplastics in drinking-water?

Risk assessments have been conducted for many chemicals to determine the level at which no or limited adverse effects should occur (toxicological point of departure, POD). To assess health risks of chemicals associated with microplastics, a margin of exposure (MOE) assessment was conducted for the chemicals that have been detected in microplastics, are of toxicological concern and have adequate or accepted toxicological PODs. Since there are several orders of magnitude difference between estimated intakes from a very conservative exposure scenario and the PODs, chemicals associated with microplastics in drinking-water are a low concern.

What is the human health risk associated with biofilms that attach to microplastics in drinking-water?

Biofilms associated with microplastics are considered a low health concern considering the relative concentration of microplastics compared to other particles that pathogens can adhere to in fresh water. For microplastics that are not removed during drinking-water treatment, the relative significance of microplastic-associated biofilms is still likely negligible due to the larger mass of drinking-water distribution systems and their subsequent ability to support more biofilms, compared to microplastics. Disinfection, including in distribution systems can inactivate pathogens and control their growth.

How do the risks from microplastics stack up against other potential risks to drinking-water?

Microbial pathogens represent the most significant public health threat in drinking-water. In 2016, 485 000 diarrhoeal related deaths were attributed to microbially-contaminated drinking-water (Prüss-Ustün, 2019) and it is estimated that 2 billion people are drinking faecally contaminated water (WHO, UNICEF, 2017).

A significant source of faecal contamination in drinking-water is inadequately or untreated wastewater. About 20% of wastewater collected in sewers does not undergo at least secondary treatment and an even higher proportion of people lack access to sewage connections or other appropriate systems for collecting and treating wastewater. Therefore, although wastewater effluent is recognized as a key source of microplastic pollution in freshwater, pathogens and other chemicals associated with the lack of effective sewage treatment are of greater concern. By addressing the bigger problem of exposure to faecally contaminated water, communities can simultaneously address the smaller concern related to microplastics.

How can microplastics be removed from drinking-water?

Wastewater and drinking-water treatment systems—where they exist and are optimized—are considered highly effective in removing particles of similar characteristics and sizes as microplastics. According to available data, wastewater treatment can effectively remove more than 90% of microplastics from wastewater with the highest removals from tertiary treatment such as filtration. Drinking-water treatment has proven effective in removing far more particles of smaller size and at far higher concentrations than those of microplastics. Conventional treatment, when optimized to produce treated water of low turbidity, can remove particles smaller than a micrometre. Advanced treatment can remove even smaller particle; for example, nanofiltration can remove particles >0.001 µm while ultrafiltration can remove particles >0.01 µm.

Based on the conclusions of the report, should any actions be taken to minimize microplastic pollution in drinking-water? If so, what actions should be taken?

Irrespective of any human health risks posed by microplastics in drinking-water, policy-makers and the public should take action to minimize plastics released into the environment, since these actions will confer multiple other benefits for the environment and human well-being. Actions could include reducing the use of plastics where possible, improving recycling programmes, reducing littering, improving circular solutions and decreasing industrial waste inputs into the environment. Care must be taken, however, to select mitigating actions that do not create new problems.

Based on the conclusions of the report, what actions should be taken by water suppliers and drinking-water regulators?

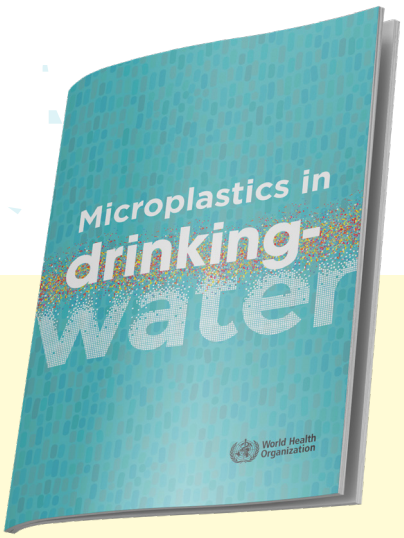
Water suppliers and regulators should continue to prioritize the removal of microorganisms and chemicals in drinking-water that pose a public health concern. As part of water safety planning, water suppliers should ensure that control measures are effective and should optimize water treatment processes for particle removal and microbial safety, which will incidentally improve the removal of microplastic particles. Routine monitoring of microplastics in drinking-water is not recommended at this time, as there is no evidence to indicate a human health concern.

What further research is needed?

A number of research gaps need to be filled to better assess the risk of microplastics in drinking-water and inform management actions. Targeted, well-designed and quality-controlled investigative studies should be carried out to better understand microplastics occurrence throughout the water supply chain, including the numbers, shapes, sizes, composition and sources of microplastics and to better characterize the effectiveness of water treatment. Research is also needed to understand the significance of treatment-related waste streams as contributors of microplastics to the environment. Quality-assured toxicological data are needed on the most common forms of plastic particles relevant for human health risk assessment. Further, a better understanding on the uptake and fate of microplastics and nanoplastics following ingestion is needed. Finally, given that humans can be exposed to microplastics through a variety of environmental media, including food and air, a better understanding of overall exposure to microplastics from the broader environment is needed.

Where will WHO direct its future research on the human-health effects of microplastics in the environment?

Given that humans can be exposed to microplastics through a variety of environmental media, WHO has initiated a broader assessment of microplastics in the environment. A future report will characterize the potential human health risks due to total microplastic exposure from the environment, including through food and air.



This information sheet summarizes key findings, recommendations and conclusions from the WHO technical report, Microplastics in drinking-water (WHO, 2019).

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ENVIRONMENT

Solving Microplastic Pollution Means Reducing, Recycling—and Fundamental Rethinking

New practices, and new chemistries, are needed to end the scourge

By Andrea Thompson on November 12, 2018



Rubbish left stranded by the tide on the River Thames. Credit: Anthony John West *Getty Images*

This is the third of a three-part series that examines our growing understanding of the scope and impacts of microplastics pollution.

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At several locations around London last winter and spring, researchers stalked the streets counting the number of discarded plastic water bottles they encountered, as if tallying species across a coral reef.

Their aim was to see if a new initiative to enlist businesses where people can refill empty bottles with tap water was making a dent in the trash littering the pavement, says marine biologist Heather Koldewey, who oversaw the research. Bottled water use has doubled in the U.K. in the past 15 years. And notably, plastic bottles are abundant along the banks of the River Thames, which carries them out to sea as they gradually break down into ever smaller fragments, tainting the river and the ocean with microplastics that can invade every level of the food chain.

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Scientists have found these tiny bits of degraded plastic—along with fibers shed from synthetic fabric, and microbeads from cosmetics—lurking throughout the oceans, lakes, soil and even the air. Creatures from plankton to earthworms to humans are eating them, posing a potentially serious health threat to animals and ecosystems. The problem is only expected to balloon as plastic production increases exponentially—from a mere two million metric tons annually in 1950 to more than 300 million metric tons today, and a projected 33 billion metric tons each year by 2050.



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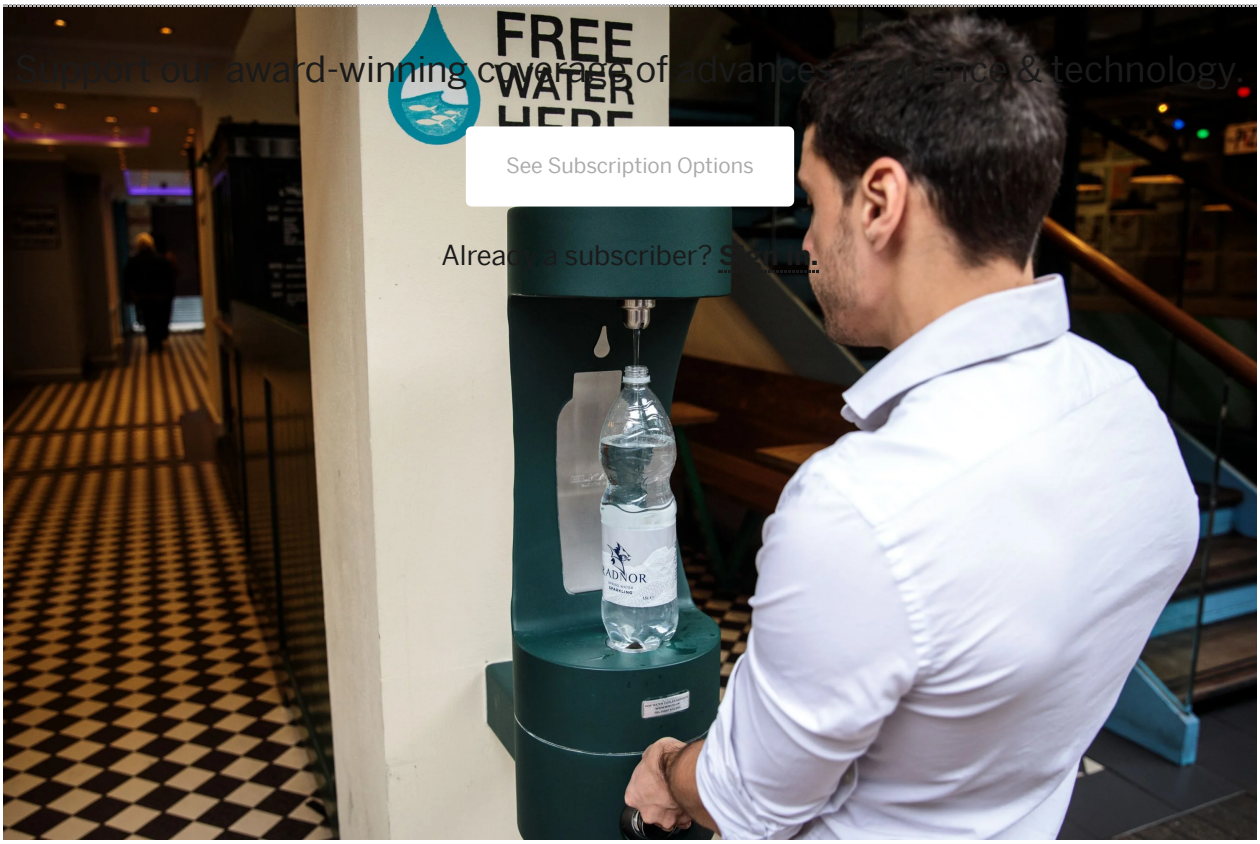

A man refills a plastic bottle at a new public water fountain in London, England. Credit: Jack Taylor *Getty Images*

To get the microplastics problem under control, the world has to take three primary steps, those who study the issue say. In the short term society needs to significantly curtail unnecessary single-use plastic items such as water bottles, plastic shopping bags, straws and utensils. In the medium term governments need to strengthen garbage collection and recycling systems to prevent waste from leaking into the environment between the trash can and the landfill, and to improve recycling rates. In the long run scientists need to devise ways to break plastic down into its most basic units, which can be rebuilt into new plastics or other materials. “There’s definitely no single solution,” says Koldewey, of the Zoological Society of London and a National Geographic Fellow.

REDUCE AND RECYCLE

An attractive, low-hanging target for tackling microplastic pollution is the drink bottles, utensils and bags that are called single-use plastics. Because they are used for convenience, not necessity, they are easier to do without, and the polymers used to make

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becoming an increasingly popular way of curtailing their use, and limited evidence indicates they do reduce debris. But as Koldewey and others point out, governments that impose bans need to consider: whether such measures are cost-effective; what the environmental impacts of alternatives are; and what roadblocks such as, in the case of bottled water, a lack of places to fill up a reusable bottle might hamper the effectiveness of a ban.

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Koldewey's own campaign to reduce the use of bottled water in London, called #OneLess, studied possible locations for placing refilling kiosks that would get the most use, such as public transportation hubs. The group also conducted surveys that found most residents would prefer to get water from the tap but were uncomfortable asking stores or restaurants for a free refill. The initiative to sign up businesses that would allow people to refill their bottles was aimed at overcoming that reluctance. Addressing such potential barriers is crucial to changing people's habits, Koldewey says.



Recycled product is displayed at a recycling facility in Ontario, Canada. Credit: James MacDonald *Getty Images*

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Reducing single-use plastics will help the environment because the packaging sector more broadly is the biggest user of plastic polymers. But plastic, including some of the same polymers found in single-use packaging, is also used in construction, electronics and fabrics. The latter are the sou ch are proving to be one of the most ubiquitous forms of microplastic pollution. Scientists are concerned that focusing on single-use plastics will obscure more systemic issues around plastic that need to be addressed. “It’s a super-useful first step,” says Martin Wagner, an ecotoxicologist at Norwegian University of Science and Technology. “What I’m afraid of is that that will be it.”

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His worry is well founded. In Europe only 30 percent of plastic is recycled, whereas in the U.S. it is a measly 9 percent. “Our waste management systems are good, our use of them is pretty lousy,” Koldewey says. The need to expand recycling capacity in places like the U.S. is becoming acute now that China—which has imported 45 percent of all plastic waste intended for recycling since 1992—has closed its doors, leaving many Western countries with nowhere but the landfill to ship their discarded plastic.

One key aspect of improving recycling, some experts say, is designing products so they are easier to recycle. Plastic is typically recycled by shredding it, melting it down and molding it into new plastics. But other chemicals added to improve product flexibility or durability, or to simply add color, make it difficult to recycle and reduce the quality of recycled plastics. “We’re taking some of what are potentially our most recyclable polymers and rendering them unrecyclable because of inadequate or inappropriate thought at the design stage,” says Richard Thompson, a marine biologist at the University of Plymouth. As an example of a potential remedy, he cites Japan, where all polyethylene terephthalate (PET), used in plastic bottles, is transparent. Clear PET is much easier to recycle than when coloring is added in. “It’s possible to do it,” he says.

RETHINKING PLASTIC AND RECYCLING

Curtailing the use of plastic and improving recycling and waste systems would put a

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recyclable and some will still likely make their way into rivers, soil and seas. In the long term some scientists think changing the very nature of the material and the methods of recycling it could be the ultimate solution to the plastic problem. “We need a much more fundamental change in our appr

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For years materials scientists have been trying to create plastics that will biodegrade. Today plastic that is labeled biodegradable can actually only be broken down in specialized facilities that heat it to high temperatures. “In an aquatic environment, in your backyard compost pile, that’s not going anywhere,” says Sherri Mason, a professor of chemistry at the State University of New York at Fredonia.

There is a fundamental tension to creating truly biodegradable plastic, because a polymer that will completely degrade into carbon, oxygen and other elements in a lake or soil would not be particularly useful as packaging, say for keeping food on a shelf for months. “There’s a central problem around what we want versus what’s realistic,” says Andrew Dove, a chemist at the University of Birmingham. Thompson thinks biodegradable plastic may need to be confined to products only needed for a short time that are then discarded, such as burger wrappers at sports stadiums or utensils at fast-food restaurants.

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What Dove and a growing number of materials scientists envision to reshape our relationship with all plastics is to move from physically recycling plastics by grinding them up to chemically dismantling them to weed out all the impurities that taint recycled plastic. Such a method would take a PET bottle, for example, and break it down into its most basic molecules, separating out added chemicals to provide the building blocks to remake virgin polymers. In this way plastic would become its own perpetual

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not just chemically broken down). “With some plastics, there’s no reason why you can’t infinitely recycle,” Dove says. “People just haven’t looked at it. It’s not been considered something that’s important.”

For the polymers that cannot be unraveled into their most basic molecules, Dove thinks it should be possible to at least chemically break them up into other small molecules that could be used for different purposes, such as fuel or pharmaceuticals. Ideally, scientists would devise chemical reactions that did not require too many harsh compounds and are not too expensive. That would give value to the plastic waste that currently has no, or very little, value. Currently, “it’s much cheaper to burn them or to throw them away in landfills, and that’s the core of the issue,” Wagner says.

Making discarded plastic valuable could also provide incentive for cleaning up the plastic waste already in the environment. “If we can create something high-value from cheap plastic waste, there might be an economic argument to go and dredge this out of the ocean,” Dove says. “We’re a long way from that, but that’s what we’d like to achieve.”

A few scientists have already begun to look at ways to clean up some of the microplastic waste, which could remain in the environment for at least several hundred years. Cleanup is difficult because the plastic particles are small and varied in nature, and the ecosystems in which they are embedded are vast. Researchers have found enzymes and bacteria that can break down certain types of plastic, but they need to figure out how these might be deployed without any potential negative side effects, such as producing greenhouse gases. Agroecologist Esperanza Huerta Lwanga, of Wageningen University in the Netherlands and the College of the Southern Frontier in Mexico, for example, hopes to test whether earthworms that possess plastic-munching bacteria in their guts might be able to remediate soil littered with plastic from the burning of trash.

While those methods are being developed, cutting off the flow of plastic is key. Doable steps need to be taken now. “The bottom line,” Thompson says, “really is that all of this [pollution] is avoidable.”

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Part 1: Earth Has a Hidden Plastic Problem—Scientists Are Hunting It Down

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Part 2: From Fish to Humans, a *May Be Taking a Toll*

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ENVIRONMENT

From Fish to Humans, A Microplastic Invasion May Be Taking a Toll

Tiny bits of plastic have seeped into soil, fish and air, posing a threat to animal and human health

By Andrea Thompson on September 4, 2018



A Rainbow Runner in the North Pacific Gyre that had ingested 18 pieces of plastic (2008). Credit: Dr. Marcus Eriksen *Gyres Institute*

This is the second of a three-part series that examines our growing understanding of the scope and impacts of microplastics pollution.

Mark Browne had a suspicion. He hoped the samples of dried blood taken from a blue mussel and placed under a special microscope would tell him if he was correct. As a fuzzy, three-dimensional image of the mussel's blood cells appeared, there they were, right in the middle—tiny specks of plastic.

Whereas photos of sea turtles eating plastic bags have become the poster child of the environmental harm wrought by humanity's plastic waste, research like Browne's illustrates the scope of the problem is far larger than the trash we can see. Tiny pieces of degraded plastic, synthetic fibers and plastic beads, collectively called microplastics, have turned up in every corner of the planet—from Florida beach sands to Arctic sea ice, from farm fields to urban air.

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Their size—from about five millimeters, or the size of a grain of rice, down to microscopic—means they can be ingested by a wide range of creatures, from the plankton that form the basis of the marine food chain to humans. As Browne's 2008 study was one of the first to demonstrate, those plastic particles don't always pass harmlessly through the body. The finding "was one of those sort of bittersweet moments," the ecotoxicologist at the University of New South Wales in Sydney says. "You're pleased that some prediction you've made has come true—but then you're devastated" because of the potentially profound ecological implications.



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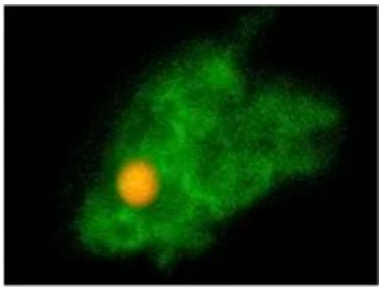

A particle of plastic in the blood cell of a blue mussel. Credit: Dr. Mark Anthony Browne

Ingested microplastic particles can physically damage organs and leach hazardous chemicals—from the hormone-disrupting bisphenol A (BPA) to pesticides—that can compromise immune function and stymie growth and reproduction. Both microplastics and these chemicals may accumulate up the food chain, potentially impacting whole ecosystems, including the health of soils in which we grow our food. Microplastics in the water we drink and the air we breathe can also hit humans directly.

Browne is one of dozens of scientists trying to sort out exactly what this widespread, motley assortment of microplastics pollution might be doing to animals and ecosystems. Tantalizing evidence is emerging, from the impaired reproduction of fish to altered soil microbe communities. As researchers accumulate more data, “we start realizing we’re just at the tip of the iceberg with the problem,” Browne says.

A THREAT TO ORGANS AND BLOODSTREAM

When Browne experimented with blue mussels back in 2008, many researchers thought animals would just excrete any microplastics they ate, like “unnatural fiber,” as Browne called it—but he wasn’t so sure. He tested the idea by placing mussels in water tanks spiked with fluorescent-tagged microplastic particles smaller than a human red blood cell, then moved them into clean water. For six weeks he harvested the shellfish to see if they had cleared the microplastics. “We actually ran out of mussels,” Browne says. The particles “were still in them at the end of those trials.”

The mere presence of microplastics in fish, earthworms and other species is unsettling, but the real harm is done if microplastics linger—especially if they move out of the gut and into the bloodstream and other organs. Scientists including Browne have observed

signs of physical damage, such as inflammation, caused by particles jabbing and rubbing against organ walls. Researchers have also found signs ingested microplastics can leach hazardous chemicals, both those added to polymers during production and environmental pollutants like pesticides that are attracted to the surface of plastic, leading to health effects such as liver damage. Marco Vighi, an ecotoxicologist at the IMDEA Water Institute in Spain, is one of several researchers running tests to see what types of pollutants different polymers pick up and whether they are released into the freshwater and terrestrial animals that eat them. The amount of microplastics in lakes and soils could rival the more than 15 trillion tons of particles thought to be floating in the ocean's surface alone.

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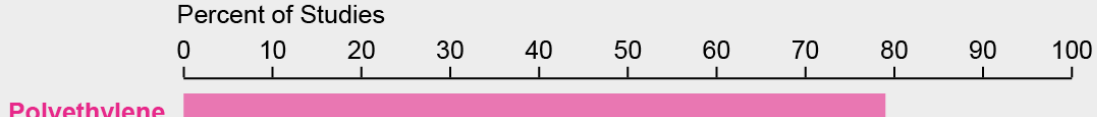
Plastics Permeate the Planet

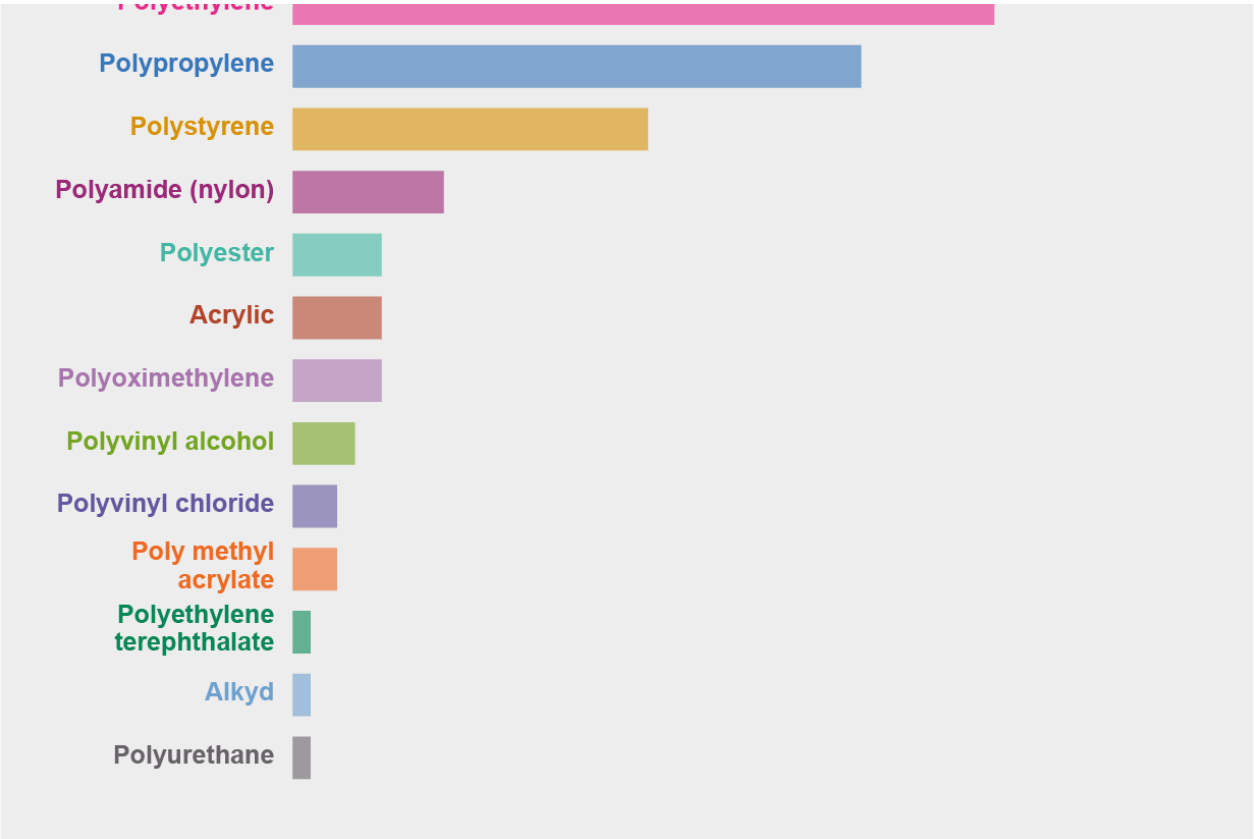
Plastic polymers and the added chemicals that make them more durable and flexible have been used in thousands of combinations, found in everything from clothing to electronics to paint. One of the biggest categories is single-use packaging, such as plastic grocery bags and soft drink bottles. This prevalence is reflected in the polymers that show up most commonly in the microplastic debris found in the environment.

Common Polymers and Ways They Are Used



How Often Polymers Are Found in Marine Microplastic Debris





Credit: Amanda Montañez; Source: "Sources, Fate and Effects of Microplastics in the Marine Environment: A Global Assessment," edited by Peter J. Kershaw, (IMO/FAO/UNESCO-IOC/UNIDO/WMO/IAEA/UN/UNEP/UNDP Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection), GESAMP Reports and Studies, No. 90; 2015

What matters most is whether these physical and chemical impacts ultimately affect an organism's growth, reproduction or susceptibility to illness. In a surprising study published in March, not only did fish exposed to microplastics reproduce less but their offspring, who weren't directly exposed to plastic particles, also had fewer young, suggesting the effects can linger into subsequent generations. Some organisms such as freshwater crustaceans called amphipods haven't yet exhibited any ill effects, perhaps because they can handle natural indigestible material like bits of rock, says Martin Wagner, an ecotoxicologist at Norwegian University of Science and Technology, who studied them. And some species have shown toxic effects from microplastics exposure from certain types of plastic, but not others, says Chelsea Rochman, a microplastics researcher at the University of Toronto.

Most work on microplastic impacts has been done in the lab for short stints, with only a single type of plastic, often with larger particles than some species tend to eat, and at higher concentrations than are found in the environment. The studies "won't tell us about long-term ecological consequences happening at low concentrations," Wagner

says. He is one of several researchers starting to bridge that gap by matching animals to the polymers and pollutants they are most likely to encounter and incorporating the intricacies of the real world where microplastics "won't be the only stressor," Wagner says. Microplastics could be a last straw for species subject to pressures as chemical pollutants, overfishing and climate change. "It's just damn complicated," Wagner says.

INVITING CHAOS

Messy, real-world conditions are the goal on the green lawn of a botanical garden in Frankfurt, Germany. A row of small, identical ponds stretch across the grass, exposed to the elements. Wagner spiked each one with different microplastic particles—some virgin polymers, some contaminated with pollutants—to see how freshwater insects and zooplankton fare. Although Wagner hasn't yet observed any overt impacts, he is investigating whether certain organisms exhibit more subtle signs of harm, which could have a ripple effect throughout an ecosystem's food web.

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Such cascading impacts could happen even when individual species don't seem to suffer. Browne's mussels showed no short-term ill effects but he worries their accumulated microplastics could be transferred to animals that eat them. "They might not be so kind to the other organisms," he says.



Mesocosm pools at Goethe University in Frankfurt am Main, Germany, where Martin Wagner and his colleagues study the impacts of microplastics on different animals in semirealistic conditions. Credit: Martin Wagner

Like Wagner, Browne is venturing farther out into the real world. He has several freezers' worth of fish and other organisms plucked from Sydney Harbor that he will examine for ingested microplastics. His team will be linking those to the routes by which microplastics might be entering the harbor and looking for signs of ecological damage such as changes in population size. The approach means animals can behave normally and are exposed to typical environmental conditions such tides and storms, as well as a host of other stressors such as changing ocean temperatures and industrial pollutants. "We want a chaotic system because if something can cause an impact in that chaotic system, above those other stresses, we know that we really, really need to be worried about it," Browne says.

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Matthias Rillig, a plant ecologist at Free University of Berlin, has shown how microplastics can affect organisms by altering their environments. In a recent study he co-authored, soil laden with polyester microfibers was much fluffier, retained more moisture and seemed to affect the activity of microbes that are crucial to the soil nutrient cycle. The finding is an early but concerning one, given that farmers around the world apply microfiber-rich treated sewage sludge as fertilizer to agricultural land. Rillig is also one of several scientists looking to see how microfibers in soils might be affecting crop growth.

FULL CIRCLE

Microplastics may threaten people more directly. A study published in April found particles and microfibers in packaged sea salt, beer, bottled water and tap water, making it virtually certain we are ingesting microplastics. In bottled beverages microplastics could be infiltrating during the bottling process; microfibers could be falling from the atmosphere into the reservoirs that supply tap water. Even for researchers steeped in the field, “it still comes as a shock,” Rochman says. “It just shows that the mismanagement of our waste is coming back to us.”

Because it is unethical to intentionally feed doses of microplastic particles to humans, some researchers, like Browne, have turned to medical studies that use particles to deliver precise amounts of drugs to specific areas of the body to get a better sense of how easily microplastics might move through humans. If particles are small enough, they might migrate through the body and potentially accumulate in places like the bloodstream. A study of hamsters injected with microplastics suggests such particles can lead to blood clots.



A close-up of one of the mesocosm pools, where insects and other species under study live among the plants and sediment they would in the real world to get a better understanding of how microplastics might affect them in their natural habitat. Credit: Martin Wagner

Humans could also be inhaling microfibers as they fall from the sky—everywhere from the heart of Paris to the remote Arctic. Small airborne particles are known to lodge deep in the lungs where they can cause various diseases, including cancer. Factory workers who handle nylon and polyester have shown evidence of lung irritation and reduced capacity (although not cancer), but they are exposed to much higher levels than the average person. Stephanie Wright, a research associate at King's College London, is trying to better understand how much microfiber humans are actually exposed to and whether airborne microplastics might penetrate the lungs. She is also teaming up with the university's toxicology unit to examine their lung tissue collection for signs of microfibers and related damage.

Some scientists say the focus on microplastics in humans might be missing a larger point: People are continually exposed to plastic food and beverage containers, which

could be a much bigger source of at least the chemicals added to plastics such as the endocrine disruptor BPA. The potential exposure to microplastics hasn't stopped Rochman from eating seafood, however. "To the best of my knowledge the benefits outweigh the costs," she says. It could be that, as with many pollutants, there is a threshold beyond which microplastics become toxic to humans or other species. "We just need to try to understand what that threshold is," she notes.

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Experts say the sheer ubiquity of the contaminant combined with the harm that has already been observed is enough for humanity to start to clean up its act. "There are always questions to be answered," Rochman says, but we have reached the point where "it's enough information to act toward solutions."

Part 3: Solving Microplastic Pollution Means Reducing, Recycling—And Fundamental Rethinking

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A Detailed Review Study on Potential Effects of Microplastics and Additives of Concern on Human Health

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Abstract: The distribution and abundance of microplastics into the world are so extensive that many scientists use them as key indicators of the recent and contemporary period defining a new historical epoch: The Plasticene. However, the implications of microplastics are not yet thoroughly understood. There is considerable complexity involved to understand their impact due to different physical–chemical properties that make microplastics multifaceted stressors. If, on the one hand, microplastics carry toxic chemicals in the ecosystems, thus serving as vectors of transport, they are themselves, on the other hand, a cocktail of hazardous chemicals that are added voluntarily during their production as additives to increase polymer properties and prolong their life. To date, there is a considerable lack of knowledge on the major additives of concern that are used in the plastic industry, on their fate once microplastics dispose into the environment, and on their consequent effects on human health when associated with micro and nanoplastics. The present study emphasizes the most toxic and dangerous chemical substances that are contained in all plastic products to describe the effects and implications of these hazardous chemicals on human health, providing a detailed overview of studies that have investigated their abundance on microplastics. In the present work, we conducted a capillary review of the literature on micro and nanoplastic exposure pathways and their potential risk to human health to summarize current knowledge with the intention of better focus future research in this area and fill knowledge gaps.

Keywords: microplastics; additives; human health; nanoplastics

1. The Plasticene

In the last 70 years, we have abetted an increasing growth in the worldwide plastics production, which has consequently spread into the environment to such a point that we can say to live in a plastic world [1,2]. These synthetic polymers are environmental pollutants themselves and act as vectors of transport of various kind of chemicals [3], but they are also considered valid indicators of the recent and contemporary period, generally after the middle of the 20th century [4].

Nowadays, microplastic particles have been ubiquitously detected in a broad range of shapes, polymers, sizes and concentrations in the environments of marine water, freshwater [5], agroecosystems [6], atmosphere [7], food [8] and drinking-water [9], biota [10], and other remote locations [11].

They can be as thin as small veils and be carried away by the wind from miles away, or they can be hard and compact like rocks [12].

Their worldwide distribution is so vast that many scientists use it as a key geological indicator of the Anthropocene [4].

Plastic materials can be used as stratigraphic markers in the archaeological field by considering them as recent and precise indicators of earth deposits.

Some authors identify the period from 1945 onwards as a moment of a significant increase in plastics deposition, to the point that they have used this stratigraphic marker as an excellent indicator [13].

Figure 1 shows a famous picture taken by Spanish students during a university trip. In the photo, the flood level river in the canyon bed is well-recorded thanks to the deposition of plastic micro-fragments that by now have been well-mixed with the sedimentary curly making up the canyon.

We found a similar situation in Southern Italy; indeed, in Figures 2 and 3, it is possible to observe that plastics were even used to fill the road surface, probably to obtain a double advantage: no disposal costs for materials and no costs for the use of suitable materials (excavated rocks).



Figure 1. Appearance of the deposition and stratification of plastic materials in a Spanish canyon (Source: [16]).



Figure 2. Layering of plastic materials in an area of Southern Italy.



Figure 3. Detail of the plastic stratigraphy.

According to the layers, once accumulated and stratified, the sediment, which consists of fragments of various plastic sizes, can have a good conservation potential that is comparable to that one of recalcitrant organic fossils. Such synthetic fossil-based materials are so abundant and widespread on Earth that we can consider them "technofossils" as they will constitute a perennial proof of the existence of humans on Earth [4] to the point of being able to define this historical epoch as the Plasticene [14,15].

2. Plastics and Co-Contaminants

Microplastics (MPs) are defined by [17] as "synthetic solid particles or polymeric matrices, with regular or irregular shape and with size ranging from 1 μm to 5 mm, of either primary or secondary manufacturing origin, which are insoluble in water.".

A key concern of microplastics pollution is whether they represent a risk to ecosystems and human health. However, there is much uncertainty associated with this issue. Data on the exposure and effect levels of microplastics are therefore required to evaluate the risk of microplastics to environments and human health. The adverse effects on organisms that are exposed to microplastics can be separated into two categories: physical effects and chemical effects. The former is related to the particle size, shape, and concentration of microplastics, and the latter is related to hazardous chemicals that are associated with microplastics. Though data on microplastic exposure levels in environments and organisms have rapidly increased in recent decades, limited information is available on the chemicals that are associated with microplastics.

Microplastics can contain two types of chemicals: (i) additives and polymeric raw materials (e.g., monomers or oligomers) originating from the plastics, and (ii) chemicals absorbed from the surrounding ambience.

Additives are chemicals intentionally added during plastic production to give plastic qualities like color and transparency and to enhance the performance of plastic products to improve both the resistance to degradation by ozone, temperature, light radiation, mold, bacteria and humidity, and mechanical, thermal and electrical resistance [18].

They include inert or reinforcing fillers, plasticizers, antioxidants, UV stabilizers, lubricants, dyes and flame-retardants [18].

Among the charges, wood and rock flour, clay, kaolin, graphite, glass fibers, cotton flakes, jute or linen, cellulose pulp, etc. are used [18]. According to the definitions proposed by the American Society for Testing and Materials (ASTM-D-883), inert fillers are materials that are used to modify the strength, working and flow properties, and shrinkage of plastics, while the reinforcing ones, also called fillers, are defined as those with some strength properties that are significantly superior to those of the base resin [19]. These fillers (such as carbon black in rubber), which are mixed in with the polymer, result in an interface volume that is generated at the filler-resin contact surface. It is the superior properties of this interface layer that obtain increased modulus and mechanical properties such as impact strength or tensile strength in the composite polymer. As the effect is surface-related, the smaller particle sizes of fillers generally yield a better reinforcing effect. There are clays, silica, glass, chalk, talc, asbestos, alumina, rutile, carbon black, and carbon nanotubes [20].

Plasticizers are complex chemical products that have low vapor pressure, are insoluble in liquids, are chemically stable, and which are inserted between molecular chains to reduce their forces of physical attraction and increase their mobility, workability or distensibility. In this way, the flexibility and plasticity of a resin that is processed and the impact resistance of the product during use are increased [21].

Because plastics are particularly sensitive to the degrading action of light, UV radiation and heat, the stabilizers, have the function of preventing the thermal decomposition during the processing, as well as the oxidation and the consequent breaking of the polymeric chains (using phenols and aromatic amines). They mainly consist of organic or inorganic cadmium, barium, or lead salts [22].

Soluble or insoluble dyes are organic or inorganic substances in the form of fine powders that give the polymer the desired color; the soluble dyes maintain the transparency of the plastic, while the insoluble ones (pigments) cover it to make it opaque. Many inorganic pigments contain heavy metals, while organic pigments include various chromophoric families like azo pigments, phthalocyanine pigments, anthraquinone chromophores, and various other chromophores [23].

Lubricants and anti-adhesives are substances that facilitate the processing of plastic materials, improving their flow characteristics. They consist of calcium or magnesium stearates [24].

Flame retardants have the function of cooling or protecting a material in the event of a fire by preventing the oxidation of flammable gases or by forming a layer of ash. They are products that contain, for example, chlorine and bromine, which release by the action of the flame; phosphorus, which favours the transformation into coal; and aluminium hydroxide, which generates water vapour and CO_2 at 200 °C [24].

The additives, in almost all cases, are not chemically bound to the plastic polymer; only some flame retardants are polymerized with plastic molecules, becoming part of the polymeric chain [18].

Though these additives improve the properties of polymeric products, many of them are toxic, and their potential for the contamination of soil, air and water is high [18]. Studies on their impact on aquatic organisms with which they come into contact through macro and microplastics ingestion are still ongoing [25,26].

The combination of various kind of polymers of different sizes and shapes that are joined to the action of a large amount of additives that originate from plastics results in a cocktail of contaminants that not only alter the nature of plastic but can leach into the air, water, food, and, potentially, human body tissue during their use or their disposal, thus exposing us to several chemicals together.

2.1. Additives of Concern

Many substances that are classified as hazardous according to the EU regulation on classification and labelling [27] are present in everyday products as regular ingredients.

The toxicity of a substance is its ability to cause harmful effects. These effects can strike a single cell, a group of cells, an organ system, or the entire body. Chemicals that are considered most harmful are those that cause cancer, mutations to DNA, have toxic reproductive effects, are recalcitrant into the environment, are capable of building up in the food chain or bodies, and other harmful properties, such as disrupting hormones [28,29]. The internal organs that are most commonly affected are the liver, the kidneys, the heart, the nervous system (including the brain) and the reproductive system [29,30].

Among these chemicals, many routinely used to make plastics are dangerous. Bisphenol A (BPA), phthalates, as well as some of the brominated flame retardants, that are used to make household products and food packaging, have been proven to be endocrine disruptors that can damage human health if ingested or inhaled [30].

Endocrine-disrupting chemicals (EDCs), identified as substances that are exogenous to the human or animal organism, have hormonal activity that alters the homeostasis of the endocrine system, so they are of particular concern. These compounds interfere with the development of the endocrine system and affect the functioning of organs that respond to hormonal signals. The endocrinal and reproductive effects of endocrine disruptors may be a consequence of their ability to: (a) mimic natural hormones, (b) antagonize their action, (c) alter their pattern of synthesis and metabolism, or (d) modify the expressions of specific receptors [31–33].

Recent science has associated EDCs with various diseases and conditions, such as hormonal cancers (breast, prostate, testes), reproductive problems (genital malformations, infertility), metabolic disorders (diabetes, obesity), asthma, and neurodevelopmental conditions (learning disorders, autism spectrum disorders). Alongside the already shown scientific evidence, concern exists because of the rising levels of many diseases in Europe and worldwide. Additionally, the public is widely exposed to these chemicals from various sources [30].

2.1.1. BPA

BPA is a carbon-based synthetic compound with formula $C_{15}H_{16}O_2$ and a structure that contains two 4-hydroxyphenyl groups, which give to it a mild phenolic odor. It was first synthesized in the 1890s by the condensation of acetone with two equivalents of phenol [33].

BPA is a common plasticizer that is used in industry, especially in polycarbonate plastics manufacturing processes and food packaging [34,35].

BPA-based polycarbonate plastics are robust and stable because they can endure exposure to high temperatures and sustain high-impact collisions. These characteristics make them valuable as components of safety equipment and food packaging as they withstand heating in microwave ovens. Because it is a component of epoxy resins in protective coatings, such as the insides of aluminum and metal cans (as well as the lid closures of glass jars and bottles), BPA helps to extend the shelf life of food and beverage products [35,36]. Even if the compound is highly persistent, its instability within plastic products facilitates leaching, thus reporting a high prevalence in aquatic environments, particularly in landfill leachates [37,38].

In the early 1930s, Dodds and Lawson discovered that BPA was estrogenic [39], and, recently, the General Court of the EU confirmed that it is a 'substance of serious concern' for its hormonal disrupting properties on the human body. The Court upheld a previous decision by the European Chemicals Agency (ECHA) to identify the substances that are used in the manufacture of plastic products such as water bottles, food containers and receipts. It has been confirmed in several studies to be associated with obesity, cardiovascular disease, reproductive disorder, and breast cancer [30,40–42], and so it has gained increasing attention over the last decade, especially in terms of human safety. The contamination of food from BPA has been estimated to be responsible for 12,404 cases of childhood obesity and 33,863 cases of newly incident coronary heart disease in 2008. Another study estimated that BPA in

food contact materials and thermal paper was likely responsible for 42,400 obese four-year-olds in Europe (with health costs of 1.54 billion euros per year) [30]. It is still under discussion if microplastics are relevant pollutant vectors for uptake into organisms in comparison to further uptake pathways, e.g., via water or sediment particles, even if studies regarding the level of bisphenol A adhered on microplastics surface are very limited.

The first study that investigated the presence of BPA on microplastics sampled from the remote, open ocean and urban beaches from America and Europe, reported concentrations ranging from 1 to 729.9 ng/g [42]. In most locations, including urban coasts, only trace concentrations (<1 ng/g) of BPA were detected. Due to its lower hydrophobicity (log n-Octanol/Water Partition Coefficient (Kow) = 3.40), the sorption of significant concentrations of BPA to marine plastics is unlikely. Indeed, in plastic fragments from remote coasts (730 ng/g) and open ocean fragments (283 ng/g), sporadic high concentrations of BPA were detected. Its utilization explains these higher BPA concentrations because it is a component of the plastic products and an additive. Indeed, BPA is a constituent monomer of polycarbonate plastic and epoxy resin and unreacted monomers in the plastics and resin and, degradation products from the polymers, can leach to the environment. Moreover, BPA is also used as additive to some plastics, and the leaching of BPA from commercial plastic products and dumped plastics can occur [42].

In the study of [43], the authors analyzed how the presence of non-suspended microplastics (polyamide particles (PA), which aggregated at the water surface or settled) modifies the acute effects of the environmental pollutant BPA on freshwater zooplankton (*Daphnia magna*). Daphnids are exposed to PA particles and BPA alone in a first step, and they are combined in a second step with a fixed concentration of PA and varying concentrations of BPA. All BPA concentrations used in the experiment greatly exceeded concentrations of the BPA that has been detected in rivers and lakes. The concentration of the PA particles used was also above the expected values in freshwater environments. There were two possible uptake pathways for BPA included in the experiments: direct uptake by BPA that was dissolved in water and vector-based uptake by the ingestion of PA particles that were loaded with BPA. The immobilization of daphnids was analyzed as an experimental endpoint to directly determine the influence of microplastics on pollutant toxicity. The results showed grazing by daphnids on settled PA particles from the bottom of the test beakers with high uptake rates that ensured the availability of PA particles, which could then potentially act as vectors for BPA. The analytical measurements showed that PA particles alone did not induce adverse effects, while the effects of BPA alone followed a typical dose-dependent manner. The sorption of BPA to PA particles before exposure led to a reduction of BPA in the aqueous phase. The combination of BPA and PA led to decreased immobilization, although the daphnids ingested PA particles that were loaded with BPA. These results showed the lower BPA body burden of daphnids in the presence of PA particles.

Another study [44] evaluated the retention of polyvinyl chloride (PVC) microplastics in sewage sludge during wastewater treatment. A model-based analysis indicated that PVC microplastics influenced the methane production from the anaerobic digestion of waste-activated sludge (WAS).

The presence of PVC microplastics (1-mm 20, 40, and 60 particles/g) inhibited methane production from WAS during anaerobic digestion to 90.6 ± 0.3%, 80.5 ± 0.1%, and 75.8 ± 0.2% of the control, respectively. Bisphenol A (BPA) leaching from PVC microplastics was the primary reason for the decreased methane production, causing significant (p = 0.037, 0.01, and 0.004) inhibitory effects on the hydrolysis–acidification process. The results of relevant enzyme activities also confirmed this.

2.1.2. Phthalates

Phthalates are esters of phthalic acid (1,2-benzene dicarboxylic acid) on which there are two carbon chains of different lengths. Phthalates are a class of compounds that are produced in high quantities; they are the largest class of synthetic chemicals when considering production volume [45]. The authors of [46] reported that approximately 6,000,000 t/year phthalates are produced throughout the world. This production has remained quite constant for the past 20 years.

Their primary use is as plasticizers that are added to basic plastic material to impart specific qualities such as flexibility, pliability, and elasticity to plastic polymers [47].

They are colorless, odorless, oily liquids with low volatility and low water solubility [48]. Some phthalates have proven to be of concern due to their adverse effects to humans and ecosystems. Indeed, many phthalates are documented endocrine disruptors, and they are suspected of being endocrine disruptors, of affecting the reproduction of human beings, animals, or o being carcinogenic [49–51].

The problem is enhanced by the fact that several phthalates have similar modes of action, and that the overall risk, therefore, could increase when people and the environment are exposed to the different phthalates. Therefore, it is necessary to take the possible combination effects as a result of exposure to other phthalates and other substances into account [52]. There are many different types of phthalates, and there are indications that these do not have the same effects on the environment and human health.

Since 2007, there has been a ban in the EU on di(2-Ethylhexyl) phthalate (DEHP), dibutyl phthalate (DBP) and butyl-benzyl-phthalate (BBP) in all toys and childcare articles in concentrations above 0.1% (entry 51 of Annex XVII of the Regulation of the European Union (REACH) [53], as well as bans on diisononyl phthalate (DINP), diisodecyl phthalate (DIDP) and di-n-octyl phthalate (DNOP) in toys and childcare articles that can be placed in the mouth in concentrations above 0.1% [52,53]. DEHP is classified as reprotoxic category two and as T (toxic), while DBP is well-documented as having toxic effects on reproduction, as well as prenatal and postnatal development, in animals, and it is classified as reprotoxic category 3, as T (toxic), and as N (dangerous for the environment) [54]. DBP and diethyl phthalate (DEP) are the most widely used phthalates in medicinal products, even if toxicological effects have been observed in animals; as it cannot be ruled out that these findings have clinical relevance, the European Medicines Agency (EMA) is in the process of preparing limits for the use of DBP in medicines. Furthermore, the agency will probably also establish limits for the use of DEP and polyvinyl acetate phthalate (PVAP) in medicines [52].

Because of the potential risk of DEHP and DBP [55–58] and the potential hazard of the other phthalates, this group is considered as a hazard category [59].

With the publication of the new regulation [60] (EU) No. 2018/2005, which modifies Annex XVII of the REACH, the European Commission reinforces the limitations that are related to the presence of some phthalates in consumer products.

Limits on the presence of some phthalates were already present in the European legislation for the protection of consumers, but they were limited to "childcare articles," that is "intended to reconcile the sleep or relaxation of children, their hygiene and their nutrients chin or sucking; " these include teats, pacifiers, baby bottles, food containers and cutlery for children, and teethers for babies.

The new regulation extends the limitation to the following four phthalates (DEHP, DBP, BBP, and diisobutyl phthalate (DIBP)) also to other product and user groups. In particular, these four phthalates cannot be present in an amount higher than 0.1% of the plastic material (the limit applies to the sum, not only to the single phthalates) or in any article realized (in whole or in part) in a plasticized material—that is, in one or more of the following six materials:

- polyvinyl chloride (PVC),
- polyvinylidene chloride (PVDC),
- polyvinyl acetate (PVA),
- polyurethanes
- any other polymer (including polymeric foams and rubber) except silicone rubber and natural latex coatings;
- surface coatings, non-slip coatings, finishing products, decals, prints;
- adhesives, sealants, inks and paints.

The limitations provided by the regulation will come into force from 7 July 2020, but with some exceptions, as specified in Annex I of the regulation.

The consultation of the European Union rapid alert system for product safety (RAPEX) showed that in 14 years (from 2005 to 2018), 1591 cases of harmful phthalates were reported in various products (of which about the 89% of Chinese origin), mostly toys 94% [61]. In 2018 alone, there were 206 reported cases of toys that contained harmful phthalates [62].

If we then consider the cases that were related to food containers (detected by the Rapid Alert System for Food and Feed (RASFF), which is similar to RAPEX but reserved for the food sector), we find that from 2007 to 2018, there were as many as 108 cases of phthalate-contamination in food containers, an issue which came with the risk of ingestion through food products [63].

A study conducted in 2011 in Harbin and Shanghai (China) [64] analyzed the presence of nine phthalate esters in eight categories of foodstuffs. DEHP was the primary compound that was found in most of the food samples, with concentrations that ranged from below the limit of quantification (LOQ) to 762 ng/g wet weight.

Among the more frequently mentioned endocrine disruptors (EDCs), phthalates are of particular concern due to their ubiquity and to the higher levels found in the environment compared to other EDCs [65–68]. The detection of phthalates in purely domestic wastewater (the waste of plastic households) has also highlighted the leaching of phthalates from plastic during use into the environment [67–69].

Due to the high octanol–water partition coefficients, the strong sorption of phthalate esters (PAEs) by soil and sediment organic matters, biochar, and other carbonaceous sorbents has been reported [70,71]. However, the sorption behavior of PAEs on microplastics has not been studied systematically. Considering the hydrophobic surface of microplastics, they may have high sorption capacity for PAEs, which may pose a high environmental threat [72].

Recently, the authors of [73] investigated the sorption behavior of two PAEs, diethyl phthalate (DEP) and dibutyl phthalate (DBP), on three types of microplastics with particle sizes of less than 75 µm (PVC: polyvinyl chloride; PE: polyethene; and PS: polystyrene), and they demonstrated that hydrophobic interaction governed the partition mechanism. The sorption of the two PAEs on the three microplastics followed the order of PS > PE > PVC. For each kind of microplastics, the sorption of DBP was almost 100 times higher than that of DEP, demonstrating that the hydrophobic interaction dominated the partition. The results indicated too that the physical properties of microplastics did not play an essential role in their sorption behaviors. Moreover, on the one hand, solution pH (in the range of 2.0–7.0) and natural organic matter had no significant impact on the PAEs' sorption by microplastics, thus indicating that microplastics could accumulate hazardous PAEs in different aquatic environments. On the other hand, the presence of NaCl (0–600 mM) and CaCl2 (0–300 mM) enhanced the sorption of both DEP and DBP on microplastics because of the salting-out effect.

The authors of [74] investigated organophosphorus esters (OPEs) and phthalic acid esters (PAEs) in beached microplastics that were collected from 28 coastal beaches of the Bohai and the Yellow Sea in north China. The analyzed microplastics included polyethene (PE) pellets and fragments, polypropylene (PP) flakes and fragments, and polystyrene (PS) foams. Tris-(2-chloroethyl)-phosphate (TCEP), tris (1-chloro-2-propyl) phosphate (TCPP), and di-(2-ethylhexyl) phthalate (DEHP) were the three most predominant compounds found. The maximum Σ4 OPEs concentration found was 84,595.9 ng/g^{-1}, almost three orders of magnitude higher than the maximum Σ9 PAEs concentration observed. The PP flakes and PS foams contained the highest concentrations of the additives in contrast to the PE pellets, which contained the lowest concentrations. Moreover, the authors found that the spatial differences and compositional variation of the additives among the different microplastics suggested different origins and residence times in the coastal environment. These differences indicated that the characteristics of chemical additives might be a useful approach when tracing sources of microplastics in the environment.

2.1.3. Heavy Metals

Heavy metals are natural elements that have a relatively high atomic mass and a rather high density compared to water. Commonly, a density of at least 5 g/cm^{-3} defines a heavy metal and differentiates it from other "light" metals. Other, broader definitions for "heavy metals" require an atomic mass higher than 23 or an atomic number exceeding 20 [75–77]. However, these definitions are confusing and misleading due to the fact that they cause the inclusion of non-metals.

Therefore, some authors [78] have suggested that is better define "heavy metals" when referring to (1) transition elements; (2) rare earth elements, which can be subdivided into the lanthanides and the actinides, including La and Ac themselves; and (3) a heterogeneous group including the metal Bi, the elements that form amphoteric oxides (Al, Ga, In, Tl, Sn, Pb, Sb and Po), and the metalloids Ge, As and Te.

Even though heavy metals are naturally present in our environment (e.g., in the atmosphere, lithosphere, hydrosphere, and biosphere), their environmental contamination and their exposure to humans have mainly originated from various anthropogenic activities [77].

One of their primary uses is as additives in polymer products (e.g., colorants, flame-retardants, fillers, and stabilizers) (Table 1) during the production process to increase the properties of plastics.

Antimony oxide, aluminum oxide, and zinc borate are, for example, well-known flame retardants, as well as compounds that contain Cl and Br [18].

Metals such as Zn, Pb, Cr, Co, Cd and Ti are instead used as inorganic pigment-based colorants [22,79]; among these, colorants that contain cadmium and lead are used for all kinds of colored polymers, lending a coloration that goes from yellow to red. Chromium is mostly used for polymers such as PVC, polyethene and polypropylene, whereas cobalt acetate is used in blue paints, particularly in the production of bottles that are made of polyethene terephthalate.

Additionally, the presence of Ti in plastic products works as a TiO_2 indicator that is used both as a white pigment and as a UV stabilizer [80–82].

As part of the additives category, the stabilizers are generally used to prevent plastic degradation due to high temperatures, UV radiation, oxygen, and other kinds of atmospheric agents in order to lengthen product life. Among them, we again find compounds based on lead and cadmium, antimony trioxide and compounds based on Sn, which are mostly used in the making of doors and windows made of polyvinyl chloride.

Finally, although synthetic polymers are usually resistant to microbial attacks, some microorganisms can use some additives as sources of energy in the presence of water. This phenomenon can be prevented by adding, during the production of the polymer, biocides such as As, Sb and Sn [22].

According to the United States Environmental Protection Agency (USEPA) and the International Agency for Research on Cancer (IARC), arsenic, cadmium, chromium, lead and mercury are classified as "known" or "probable" human carcinogens based on evidences of epidemiological and experimental studies that have shown a correlation between exposure to those elements and cancer incidence on humans and animals [83].

Their toxicity depends on many different factors like dosage, how the subject is exposed to the element, and chemical species, as well as age, sex, genetics and the nutritional state of the exposed subject. A high concentration of heavy metals causes cellular and tissue damage, leading to a variety of adverse effects and human diseases [84–89]. Among metals, Al, Sb, As, Ba, Cd, Cr (II), Co, Cu, Pb, Hg, Ni, Se, Sn and V are defined metal–estrogens showing high affinity to estrogen receptors because they can mimic estrogen activation; for this reason, they are considered harmful and potentially linked with breast cancer [89–91].

Table 1. Main use of heavy metals as additives in polymer products and their effects on human health.

Heavy Metals	Additives	Type of Polymers	Effects on Human Health	References
Antimony (Sb)	Flame retardants and biocides	Various plastics	Metal–estrogen; breast cancer	[18,22,90]
Aluminum (Al)	Stabilizers, inorganic pigments and flame retardants.	PBT, PET, PE, PVC	Metal–estrogen; breast cancer	[18,22,90]
Zinc (Zn)	Heat stabilizers, flame retardants, anti-slip agents and inorganic pigments.	PVC, PE, PP	-	[18,22]
Bromine (Br)	Flame retardants	PBT, PE, PS, PP	Apoptosis and genotoxicity	[18,88]
Cadmium (Cd)	Heat stabilizers, UV stabilizers and inorganic pigments	PVC	Changes in metabolism of calcium, phosphorus and bone; osteomalacia and bone fractures in postmenopausal women; lipid peroxidation and in the promotion of carcinogenesis; cellular apoptosis; DNA methylation.	[18,22,77,79,92,93]
Copper (Cu)	Biocides	-	Formation of reactive oxygen species (ROS); inducing DNA strand breaks and oxidation.	[18,22,77]
Mercury (Hg)	Biocides	PU	Mutagen or carcinogen; induction of the disruption of DNA molecular structure and brain damage.	[11,22,77,95]
Arsenic (As)	Biocides	PVC, LDPE and polyesters	Congenital disabilities; Carcinogen: lung, skin, liver, bladder, kidneys; gastrointestinal damage; death.	[18,22,93]
Tin (Sn)	UV stabilizers and biocides	PU foam and PVC	Metal–estrogen; breast cancer; skin rashes; stomach complaints; nausea; vomiting, diarrhea; abdominal pain; headache and palpitations; potential clastogen.	[18,22,87,90]
Lead (Pb)	Heat stabilizers, UV stabilizers and inorganic pigments	PVC and all types of plastics, where red pigments are used	Anemia (less Hb); hypertension; miscarriages; disruption of nervous Systems; brain damage; infertility; oxidative stress and cell damage.	[18,22,77,79,90,93]
Titanium (Ti)	UV stabilizers and inorganic pigments	PVC	Cytotoxicity on human epithelial lung and colon cells.	[18,80,94]
Cobalt (Co)	Inorganic pigments	PET bottles	Formation of reactive oxygen species (ROS); neurological (e.g., hearing and visual impairment); cardiovascular and endocrine deficits.	[22,77,86]
Chrome (Cr)	Inorganic pigments	PVC, PE, PP	Allergic reactions to the body; nasal septum ulcer; severe cardiovascular, respiratory, hematological, gastrointestinal, renal, hepatic, and neurological effects and possibly death.	[77,79]
Barium (Ba)	Inorganic pigments and UV stabilizers	PVC	Metal–estrogen, breast cancer; cardiovascular and kidney diseases; metabolic, neurological, and mental disorders	[18,22,85,90]
Manganese (Mn)	Inorganic pigments	-	Neurodegenerative disorder	[18,84]

Cadmium has been suggested to take part in the promotion of cellular apoptosis and DNA methylation, in providing oxidative stress, in causing damage to DNA, in increasing bone fractures in postmenopausal women, and in lipid peroxidation [77,92,93].

Titanium oxide, for example, which is used as an additive in many plastics products, has been shown to generate cytotoxicity on human epithelial lung and colon cells [94]. Lead is responsible for a variety of consequences on human health such as affecting the DNA reparation system, producing ROS (reactive oxygen species), modifying the genes that are responsible for the cellular tumor regulation, and various effects on the central nervous system, including the damage of motor and cognitive functions, convulsions, coma, and death. Arsenic contamination could cause cancer to the urinary bladder, lungs, liver and kidneys. As for mercury, it affects two target organs: the central nervous system and the kidney. The toxicity of the elemental mercury is due to mercuric mercury. Inflated elemental mercury vapors promptly pass through the blood–brain barrier, and the consequent oxidation in mercuric mercury starts a connection with brain macromolecules [95].

The exposure of living organisms to such inorganic pollutants is ever increasing if we consider the interactions of microplastics, vectors themselves of metals, with biota [3,96].

Though polymers were considered to be inert towards metals in the past [97], great attention has recently been paid to better understanding the interaction between heavy metals and microplastics [98–108].

In this regard, earlies studies such as [98] investigated the ability of virgin and aged microplastics to adsorb metals. Plastic production pellets were collected from beaches and sediment flats of south-west England and revealed variable concentrations of trace metals (Cr, Co, Ni, Cu, Zn, Cd and Pb) that, in some cases, exceeded the concentrations that were reported for local estuarine sediments. The same authors studied the rates and mechanisms of metals that were associated with virgin and beached polyethene pellets in a laboratory-scale experiment. Trace metals were shown to adsorb to both virgin and beached pellets but with a higher rate on aged pellets. Presumably, metal adsorption proceeds through interactions between divalent cations (e.g., Cu^{2+}, Cd^{2+}, and Pb^{2+}) and oxyanions (e.g., $Cr_2O_4^{2-}$) with charged or polar regions of the plastic surface (effected by imperfections and the presence of charged contaminants and additives, for example), and via non-specific interactions between neutral metalorganic complexes and the hydrophobic surface of the bulk plastic medium. Aged beached pellets accumulate trace metals to a significantly greater extent, with equilibrium partition coefficients ranging from about 4 mL/g^{-1} (Co) to 220 mL/g^{-1} (Cr). Its reactivity is enhanced by changes to the polymer itself, as well as the presence of biofilms and chemical precipitates that enhance the critical role of plastic as a vehicle for the transport of metals in the marine environment.

In the study of [101], the authors examined, over the 14 days of the experiment, the adsorption of two heavy metals, copper (Cu) and zinc (Zn), that were leached from an antifouling paint to virgin polystyrene (PS) beads and aged polyvinyl chloride (PVC) fragments in seawater. They demonstrated that heavy metals were released from the antifouling paint to the water, and both microplastic types adsorbed the two heavy metals. The adsorption of Cu was significantly higher in PVC fragments than in PS, probably due to higher surface area and polarity of PVC. The concentrations of Cu and Zn increased significantly on PVC and PS throughout the experiment except for Zn on PS.

However, the absorption/desorption processes that can occur naturally in the environment are quite complex and present a high variability [109]. Indeed, several factors and variables can influence the interaction between metals and microplastics, such as the alteration of the plastic surface exposed to atmospheric agents, the increased roughness of aged particles compared to virgin materials, and the faster decomposition of darker particles [5]. All these components accelerate the degradation processes of microplastics, creating anionic and active sites that increase the interaction of particles with heavy metals [110].

Other significant variables to be considered responsible for increasing the interaction between microplastics and inorganic pollutants are related to pH, salinity variations, photo-oxidative erosion, the formation of biogenic biofilm, enhanced polymer polarity and plastic porosity [98,99,109,111,112].

The authors of [111] observed the Pb absorption capacity on nanoplastics (particles that are unintentionally produced within the size range from 1 to 1000 nm [113]) that were produced from microplastics that were collected on a beach exposed to the North Atlantic Gyre. Lead (II) adsorption kinetics, isotherm, and pH-edge analyses were carried out. The sorption reached a steady-state after around 200 min. The maximum sorption capacity varied between 97% and 78.5% for both tested Pb concentrations. Chemical reactions controlled lead (II) adsorption kinetics with the nanoplastics surface and to a lesser extent by intraparticle diffusion. Adsorption isotherm modelling demonstrated that nanoplastics were strong adsorbents that were equivalent to hydrous ferric oxides such as ferrihydrite. The adsorption was dependent on pH in response to the Pb(II) adsorption by the oxygenated binding sites that were developed on the account of the surface UV oxidation under environmental conditions. They could be able to compete with Fe or humic colloids for Pb binding, due to their amounts and specific areas, becoming efficient vectors of Pb and probably of many other metals.

Therefore, microplastics, once spread into the environment, with their load of intrinsic (additives) and extrinsic (environmental) heavy metals, can be conveyed into the food web to reach aquatic organisms [114–119] and then humans [120–122].

In this regard, the study of [123] pointed out the potential ability of metals that are present on marine microplastics in determining the co-selection of antibiotic-resistant human pathogens, representing a severe threat to humans that are exposed to the marine environment or even to seafood. Metals such as mercury, lead, zinc, copper and cadmium are accumulating to critical concentration in the environment and triggering the co-selection of antibiotic resistance in bacteria. In the marine environment, persistent pollutants like microplastics are recognized as a vector for the proliferation of metal/antibiotics, and human pathogens and horizontal gene transference between the phylogenetically distinct microbes that are present on microplastics are much faster than free-living microbes. Therefore, microplastics are an emerging global health threat [112].

However, studies on the impact of microplastics on human health are all in the early stages and need to be further developed [117,124].

2.1.4. Flame-Retardants

Flame retardants (FRs) are chemical compounds (Figure 4) that are capable of raising the flashpoint of the materials in which they are added. The main function of these molecules is, therefore, to prevent fires [125]. Flame retardants are divided into reactive and additive flame retardants according to their use. On the one hand, reactive chemicals are covalently bonded to polymers and are therefore less likely to reach the environment until the product is decomposed or burnt. The additive compounds, on the other hand, are only mixed with or dissolved in the material and can more easily migrate out of the product. Recently, over one hundred and forty types of flame retardants were counted, of which approximately seventy were found to belong to the brominated flame retardant (BFR) category. A first classification can be made based on their chemical nature—that is, organic or inorganic flame retardants:

- **Inorganic Flame Retardants:**

  Antimony Trioxide
  Aluminum Hydroxide

- **Organic Flame Retardants:**

  Tris (2,3-dibromopropyl) phosphate
  Short-chain chlorinated paraffin (10–13 carbon atoms) (SCCPs)
  Medium-chain chlorinated paraffin (14–17 carbon atoms) (MCCPs)
  Long-chain chlorinated paraffin (> 18 carbon atoms) (LCCPs)
  Polybrominated diphenyl (PBB)
  Polybrominated diphenyl Ethers (PBDEs)

Hexabromocyclododecanes (HBrCDs)
Tetrabromobisphenol_A (TBrBP_A)

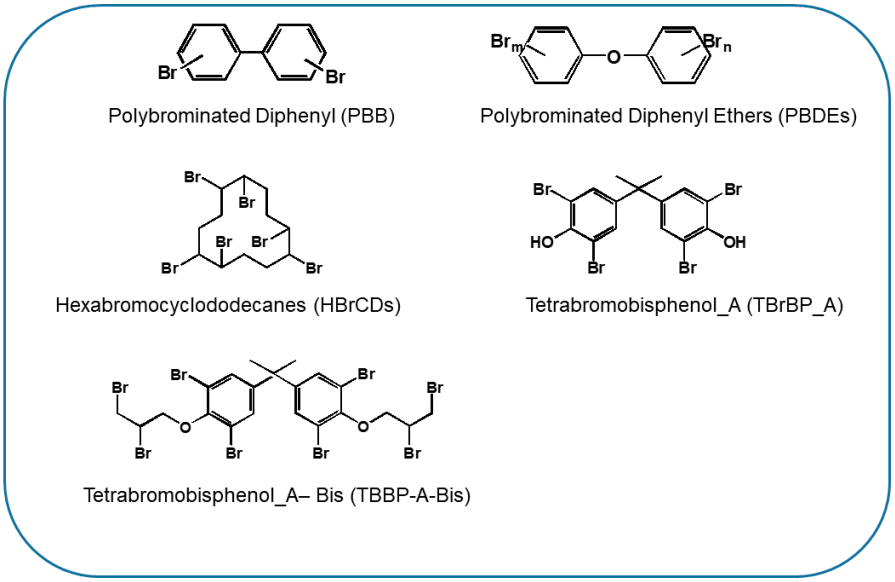

Figure 4. Chemical structure of some classes of halogenated flame retardants.

Inorganic flame retardants act through different chemical and physical mechanisms [126]. With the application of heat, they can release water, they can release fire retardant gases that suffocate the flames, or, in other cases, they can form a protective film that protects the material in which they are inserted. Most often, inorganic flame retardants are used as adjuvants of organic ones. This is the case of antimony trioxide, which is used together with brominated flame retardants and acts as a catalyst in the decomposition reactions of BFRs [127]. Phosphorus-based flame retardants act in the solid phase [128]. With the application of heat, they form a polymer of phosphoric acid that carbonizes the material, blocking the pyrolysis process [128]. Though with some difference, the mechanism of action of organic flame retardants is the same. With the application of heat, they decompose even before the matrix that contains them, thus preventing the formation of flammable gases. In more detail, the halogens that are released by said molecules can react with the radicals H and OH, removing them from the chain reactions that are triggered during the combustion processes [129]. The critical factor that determines the goodness of the preventive action of these additives is their thermal stability, within the material that hosts them. If a retardant decomposes or evaporates too above or below the combustion temperature of the host material, its action will be ineffective. The brominated flame retardants decompose at a temperature of approximately 50 °C below the combustion temperature of the matrices to which they are inserted, therefore making them particularly useful for fire prevention [130].

The use of chemical additives to make materials fireproof is not a recent phenomenon. The ancient Egyptians used hydrated potassium aluminum sulphate ($KAl(SO_4)_2 12H_2O$) to treat wood [131]. Following, Gay Lussac described a technique to protect theatre fabrics from fire through treatments with mixes of ammonium phosphate, ammonium chloride, and borax [132]. Today, the main fields of use of flame retardants concern the production of electrical materials, electronic materials, construction, textiles and transport (Figure 5). The massive growth in the production of plastic polymers has led to a substantial increase in the production of flame retardants. For example, in 1965, only 10% of bromine was used for the production of brominated flame retardants; this percentage became 40% in 1996 [133]. The global production of BFRs (as in the sum of Europe, Asia and the United States) increased from 106,000 metric tons in 1989 to 2,035,000 metric tons in 1999 [134].

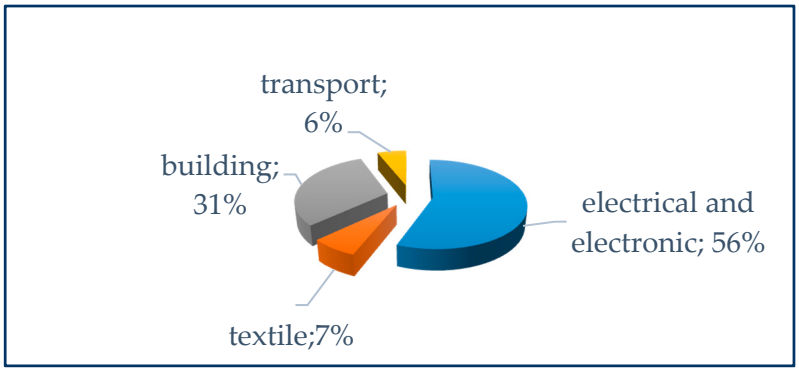

Figure 5. Greater fields of use of brominated flame retardants (BFRs) (Source data: [135]).

The high concentrations of FRs that are found in plastic products are because these molecules (distinctly lipophilic) not only adsorb onto the surface of plastics and microplastics but also are present inside them because they are added as additives during the plastic production process [135].

Given the chemical inertia and marked lipophilicity of flame retardants, it is easy to intuit their rapid bioaccumulation. Different concentrations of PBDEs have been detected in various matrices including human milk, article glaciers, domestic dust, and, obviously, in sludge that is derived from water purification plants [136]. The considerable accumulation in this sludge deserves special attention if one thinks of the common practice of reusing it as an organic soil improver in agriculture. Another widespread practice of sludge disposal is its incineration. Several authors have already shown that the incomplete combustion of PBDEs leads to the formation of highly toxic species such as polybromodibenzofuranes (PBDF) and polybromodibenzodioxins (PBDD) [137]. In this regard, BFRs have been classified as "persisting organic pollutants" (POPs). The risk assessment made by the European community has shown that some of these molecules are toxic, suspected to be carcinogenic, and actively act on the endocrine system (endocrine disruptor).

Regarding PBDEs, the European community has banned the use of pentaBDE and octaBDE. This ban is because they are classified as toxic for reproduction [138]. DecaBDE will not be classified as a dangerous substance according to the European Directive 67/548/EEC because it is not toxic to human health or the environment. Several papers [139] have highlighted the immunotoxic effect of tetrabromobisphenol A (TBBP_A). Regarding HBrCDs, there is evidence [140] that they interfere with thyroid hormones.

Just like many other hydrophobic contaminants, evidence of attachment of PBDEs onto microplastics from marine environment has been highlighted in recent years [42,141,142], and the assimilation of these pollutants by organisms that ingest microplastics is highly probable [141,143,144]. Different levels of PBDE concentrations on microplastic samples have been observed based on polymer type and local anthropogenic activities. For example, the study of [42] underlined the presence of a much higher concentration of total-PBDEs that were analyzed on PP microplastics (9909 ng/g) than on PE samples (0.3 ng/g), with the most significant values being reported in open seas areas compared to remote locations. BDE-209 is one common PBDE congener that usually occurs in very high concentrations, and its low diffusion coefficient in LDPE implies a consideration when taking into account the risk that is posed by microplastic particle ingestion by marine organisms [42].

Indeed, amphipods have demonstrated the ability to assimilate PBDEs that are derived from microplastics and have shown a greater uptake for higher-brominated congeners (BDE-154 and -153 compared to BDE-28 and -47) [143]. In the cited study, amphipods (*Allorchestes compressa*) that were exposed to microplastics that were isolated from a commercial facial cleansing soap ingested ≤45 particles per animal and evacuated them within 36 h. Amphipods were exposed to polybrominated diphenyl ether (PBDEs) congeners (BDE-28, -47, -99, -100, -153, -154, and -183) in the presence or absence of microplastics. The results demonstrated that PBDEs that were derived from microplastics

could be assimilated into the tissue of a marine amphipod. Microplastics reduced PBDE uptake compared to controls, but they caused a greater proportional uptake of higher-brominated congeners such as BDE-154 and -153, as compared to BDE-28 and -47. The study demonstrated that microplastics could transfer PBDEs into a marine organism by acting as a vector for the assimilation of POPs into marine organisms; thus, they pose a risk of contaminating aquatic food chains.

Another study [145] analyzed the feed of a typical commercial fish, the seabass, based on their absorption of microplastic-containing contaminants (PCBs and PBDEs). The study investigated how combinations of halogenated contaminants and microplastics that are associated with feed can alter toxicokinetics in European seabass and therefore affect the fish. Microplastic particles (2%) were added to the feed either with sorbed contaminants or as a mixture of clean microplastics and chemical contaminants, and they were then compared to a feed that contained contaminants without microplastics. For the contaminated microplastic diet, the accumulation of polychlorinated biphenyls (PCBs) and brominated flame retardants (BFRs) in fish were significantly higher, increasing up to 40 days of accumulation and then reversing to values that were comparable to the other diets at the end of accumulation.

The significant gene expression results of the liver (cyp1a, il1β, and gstα) after 40 days of exposure indicated that microplastics might indeed worsen the toxic effects (liver metabolism, immune system, oxidative stress) of some chemical contaminants that are sorbed to microplastics.

Moreover, on the one hand, at the end of the accumulation period, microplastics increased the bioavailability of the sorbed contaminants, showing a quadratic accumulation of all the 12 contaminants that were present on the microplastics. On the other hand, the metabolism of BDE99 to BDE47 (by debromination) in seabass was rather fast, and unlike other pollutants, this metabolism was unaffected by the presence of microplastics.

3. Effects of Micro and Nanoplastics on Human Health

A recent report from the "World Health Organization" [146] emphasized the ubiquitous microplastics presence in the environment and aroused great concern regarding the exposition and effects of nano and microplastics on human health [122,147–150]. One of the major nano and microplastic entry points into the human system is represented by the ingestion of contaminated food [8,151–153]. In a recent study conducted by [154], 0.44 MPs/g of nano and microplastics were found in sugar, 0.11 MPs/g were found in salt, 0.03 MPs/g were found in alcohol, and 0.09 MPs/g were found in bottled water. Humans could also assume an estimated intake of 80 g per day of microplastics via plants (fruits and vegetable) that accumulate MPs through uptake from polluted soil [155].

The presence of microplastics in marine species for human consumption (fish, bivalves and crustaceans) is now well-known [156]. As an example, in *Mytilus edulis* and *Mytilus galloprovincialis* of five European countries, the microplastic number has been found to fluctuate from 3 to 5 fibers per 10 g of mussels [116].

Therefore, following exposure via diet, uptake in humans is plausible, as evidenced by the capacity for synthetic particles smaller than 150 µm to cross the gastrointestinal epithelium in mammalian bodies, which causes systemic exposure. However, scientists speculate that only 0.3% of these particles are expected to be absorbed, while a lower fraction (0.1%) that contains particles that are bigger than 10 µm should be capable of reaching both organs and cellular membranes and passing through the blood–brain barrier and placenta [117]. Exposure concentrations are predicted to be low, although data about micro and nanoplastics into the environment are still limited due to the analytical and technical complications to extract, characterize, and quantify them from environmental matrices [157].

Once ingested, particles smaller than 2.5 µm can enter the gastrointestinal tract (Figure 6) through endocytosis by M cells (specialized epithelial cells of the mucosa-associated lymphoid tissues) of Peyer's patches. M cells transport particles from the intestinal lumen to the mucosal lymphoid tissues or through the paracellular persorption. Persorption consists of mechanical kneading of solid particles through gaps that are located in the single-layer epithelium at the villus tips of the gastrointestinal

tract (desquamation zones) and into the circulatory system. The resulting toxicity is via inflammation due to the persistent nature of microplastics, as well as their unique properties such as hydrophobicity and chemical composition, and it is supposed to have an accumulative effect that is dependent on dose [151]. This assumption, regarding levels of microplastics in men at a gastro-intestinal level, was further confirmed by the finding of microplastics into human stools: Twenty plastic particles, mostly PE and PP (ranging in size between 5 and 500 mm), were found for every 10 g of stool [158,159]. Indeed, the human excretory system should be responsible for removing up to 90% of micro and nanoplastics ingested [156].

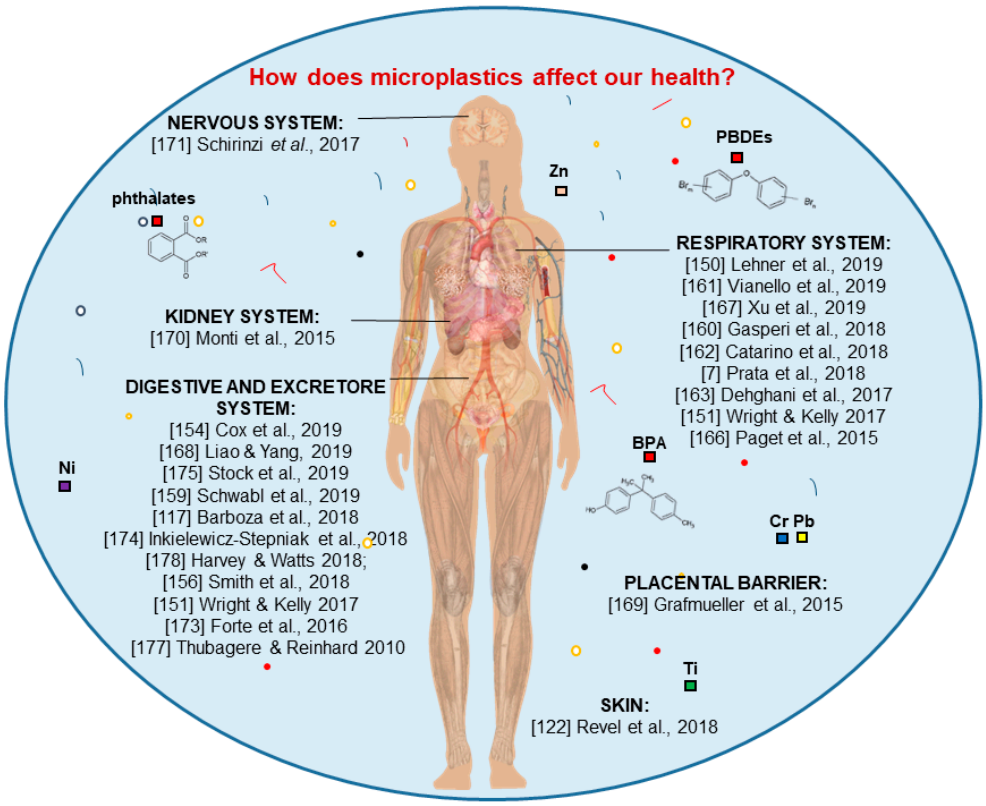

Figure 6. Overview of scientific studies focused on the effects of micro and nanoplastics on human health. Colored squares represent pollutants (organic and inorganic) that could be present in environmental matrices (free or associated with micro and nanoplastics) and that could enter into the human body through different entry routes.

Another microplastics entry point to the human body is the aerial one (Figure 6) through inhalation [160,161]. The authors of [162] showed how the ingestion of synthetic fibers from mussel consumption is less than that of the ones that are inhaled from domestic dust during the same meal. The authors of [151] reported finding 18 fibers and four fragments/L of rain during precipitation events. Microplastics are carried by the wind or from atmospheric depositions and could also result from the erosion of agricultural and fertilized lands, dried sludges, and products from wastewater treatment, synthetic clothes fabric, industrial emissions, road-dust, marine aerosol. This spread could lead to respiratory distress, cytotoxic and inflammatory effects, and autoimmune diseases in men [7,128,131,135,163–165]. Moreover, the human lung has a quite wide alveolation surface of ca. 150 m^2, with a very thin tissue barrier that is smaller than 1 µm and which could allow nanoparticles to penetrate the bloodstream and all human body [150]. Polystyrene particles of the size 50 nm have led to genotoxic and cytotoxic effects on pulmonary epithelial cells and macrophages (Calu-3 and THP-1) [166]. More widely, the response to inhaled particles, depending on differences on individual

metabolism and susceptibility, may be expressed as immediate bronchial reactions (asthma-like), diffuse interstitial fibrosis and granulomas with fiber inclusions (extrinsic allergic alveolitis, chronic pneumonia), inflammatory and fibrotic changes in the bronchial and peribronchial tissue (chronic bronchitis), and interalveolar septa lesions (pneumothorax) [7]. For example, similar effects have been registered in workers of the textile industry in close contact to nylon, polyester, polyolefin and acrylic fibers. The low deterioration of microfibers has been found in patients suffering from pulmonary cancer as a confirmation of the bio-persistence of these synthetic particles. In addition to bio-persistence, fiber size has an impact in their toxicity [151]; for example, fibers of 15-20 µm cannot be successfully removed from macrophages to the lungs. Additionally, in [167], the toxicity of smaller-sized polystyrene nanoparticles (25 nm in diameter), which induced lower cell viability, cell cycle arrest in the S phase, the transcription of the activated inflammatory gene, and changed protein expression that was associated with the cell cycle and pro-apoptosis, was demonstrated. Not to be overlooked is the potential transmission of microorganisms through the microplastics that are present in the air. By attaching to microplastic surfaces in order to be protected from UV radiations, microorganisms could reach the lung and become another threat of infections to human health [7].

The last exposure pathway of microplastics to the human body could be skin contact (Figure 6) through water while washing or while using scrubs and cosmetics that contain micro and nanoplastics.

However, the penetration of the corneous layer is limited to particles lower than 100 nm, so it is unlikely that microplastics absorption could occur through the skin; on the contrary, nanoplastics absorption is more probable [122].

Though plastic is considered an inert material, there is a broad range of properties that characterize microplastics, such as size, shape, chemical composition, and hydrophobicity, that could cause harm and influence the cytotoxicity of particles to cells and tissues [151].

The increased surface area/volume ratio of microplastics, combined with their hydrophobicity, translates to a high affinity to a broad range of hydrophobic and persistent organic pollutants, antibiotics, and heavy metals that could be introduced in the human body by microplastics uptake.

In regard to heavy metals, an in-vitro study was conducted about chromium (Cr) absorption/desorption behavior in the human digestive system considering non-degradable MP types (polyethene (PE), polypropylene (PP), polyvinylchloride (PVC), and polystyrene (PS)) and degradable MPs (polylactic, PLA). The results showed the ability to release Cr (VI) and Cr (III) from MPs into the digestive-gastric phase thanks to stomach acid conditions that stimulated the process [168].

The interactions between microplastics/nanoplastics and other human organs are still being tested, but their possible effects can be assessed based on human absorption models of nanomaterials that are produced by various industrial production processes. In the studies of [169,170], the ability of nanoparticles in polystyrene to cross the placental barrier and the primary human renal cortical epithelial (HRCE) cells was demonstrated.

The use of metal nanoparticles (NPs) (AgNP and AuNP, ZrO_2NPs, CeO_2NPs, TiO_2NPs, and Al_2O_3NPs), carbon nanomaterials (C60 fullerene, graphene) and polyethene (PE) and polystyrene (PS) microplastics has demonstrated that cytotoxic effects are induced on T98G and HeLa cell lines (human brain and epithelial cells) [171]. Additionally, the use of polypropylene (PP) particles has shown different but harmful effects on various cell lines, based on the size (~20 µm and 25–200 µm) and the different concentrations used in the various tests. Therefore, the interaction of microplastics with humans can produce cytotoxicity, hypersensitivity, unwanted immune responses, and acute responses like hemolysis, thus representing a potential risk to human health [172].

Recent in-vitro studies about effects of plastics on the human body have mostly used engineered nanoplastics that can influence their absorption and also the translocation and production of ROS due to their dimension, charge and shape [148,150,173–176]. In fact, in the study [174], the interaction between positively-charged nanoparticles of polystyrene (60 nm) and the secretion film of the gastrointestinal epithelium (first physical barrier after digestion) was analyzed. Nanoplastics showed a strong ability to interact with the secretion film, to influence cellular vitality, and to induce apoptosis in the intestinal

epithelial cell lines LS174T, HT-29 and Caco-2. Those cytotoxic effects were already observed in the study of [177], which was carried out on adenocarcinoma colon–rectal human differentiated cells, Caco-2, by using polystyrene nanoparticles of 20 and 40 nm.

4. Conclusions

The intake of microplastics by humans is by now quite evident. The entry point may be through ingestion (through contaminated food or via trophic transfer), through inhalation, or through skin contact.

Following the intake of microplastics into the human body, their fate and effects are still controversial and not well known. Only microplastics smaller than 20 µm should be able to penetrate organs, and those with a size of about 10 µm should be able to access all organs, cross cell membranes, cross the blood–brain barrier, and enter the placenta, assuming that a distribution of particles in secondary tissues, such as the liver, muscles, and the brain is possible. Not enough information is available to fully understand the implications of microplastics for human health; however, effects may potentially be due to their physical properties (size, shape, and length), chemical properties (presence of additives and polymer type), concentration, or microbial biofilm growth.

How toxic chemicals adsorb/desorb onto/from microplastics is not well known, but plausible mechanisms include hydrophobic interactions, pH variations, the ageing of particles, and polymer composition. Furthermore, not enough studies have fully explained the primary sources of pollutants that are present on microplastics and whether their origin is extrinsic from the surrounding ambient space, intrinsic from the plastic itself, or, more probably, from a combination of both and from a continuous and dynamic process of absorption and desorption that is related to the spread of the particles into the environment and to their consequent exposure to weathering.

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Diane Meisenhelter

I am writing to you to urge the Ecology Department to deny the Shorelines permit for the NWIW Kalama methanol refinery.]Your own analysis has shown that the project could produce up to 4.6 million tons of carbon pollution annually for decades to come which is totally not in line with Washington's climate goals and more importantly will contribute immensely to global warming making it more difficult to keep temperature's from rising to catastrophic levels. Instead of focusing on this real-world known pollution that will come from the facility, the SEIS relies on a flawed, speculative analysis claiming that methanol might replace dirtier energy sources, be burned overseas(which still contributes to global warming) or "only" be used to manufacture plastics (which has a whole other set of horrific environmental consequences that the SEIS does not adequately address). Ecology should not use these specious attempts and contortions to speculate on lower levels of actual pollution but instead should focus on helping to create a true low-carbon future that we so desperately need to mitigate the worst effects of climate chaos that are already becoming so visible in the Pacific NW and around the country. Instead the Ecology Department needs to be working towards a different type of alternative instead of promoting a false choice between various fossil fuel evils-- a future with both energy and transportation not relying on high-carbon fossil fuels but on the types of low-carbon solutions currently being developed. Your speculations could have focused on this instead of those described above, but really speculations have no place in real life or death decisions like this.

Ecology should decide based on the real, assured, climate catastrophe pollution that will occur from fracking gas, producing and refining methanol, and burning or using methanol to make plastics as well as the other environmental impacts of these actions. NWIW provides few if any details on the actual "voluntary" mitigation actions they might take or how they will ensure "full-mitigation" as claimed. Few descriptions of the actual processes, projects or measures to address the gigantic impacts from the greenhouse gasses that will be emitted are provided.

Finally, the SEIS continues to use low estimates of methane leakage as opposed to relying on the most recent, thorough, comprehensive analyses that have been done of actual leakage rates in British Columbia, Alberta, and the United States using top-down as well as bottom-up methodologies.

Please deny the permits for this problematic and potentially life-threatening project, our children and grandchildren's will thank-you.

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Please deny the permits for this problematic and potentially life-threatening project, our children and grandchildren's will thank-you.

Eileen Fromer

I'm actually surprised that the Department of Ecology continues to rationalize how the Kalama Methanol Refinery will cut greenhouse gasses and prevent greenhouse gas emissions by setting up a 'straw man' - the use of coal for fuel - that methanol might replace. We are in the midst of a climate crisis and this is no time to continue emitting methane gasses.

I urge you to deny the Kalama SEIS.

Jared Howe

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Jared Howe
4107 Martin Luther King Jr Way S Seattle, WA 98108-1684
jaredchowe@gmail.com

Jennifer Calvert

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. There is every reason not to let this project go forward and absolutely no reason, apart from capitalism and making money, to allow it to go forward.

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Sincerely,
Ms Jennifer Calvert
1318 S Mica Park Dr Spokane Valley, WA 99206-3122
jennifercalvert@comcast.net

Frank Handler

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Please, please have the courage to do the right thing and not permit this plant.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Frank Handler
33 Trafalgar Dr Port Townsend, WA 98368-2517
frankh2@me.com

Barbara Jo Blair

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. We need to protect and restore the waters in our state and work toward the survival of endangered Chinook Salmon and Southern Resident Orcas. The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate. Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience. You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

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Barbara Jo Blair

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Sincerely,
Mrs. Barbara Jo Blair
294 Sunset Blvd Port Townsend, WA 98368-8912
barbarablair@me.com

Joy Garrison

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Sincerely,
Joy Garrison
5601 California Ave SW Apt 402 Seattle, WA 98136-1544
joyfgarrison@yahoo.com

Barbara Reid

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

What do we want our answer to be, when our great-grandchildren ask what we were doing in the 2020s? "Well, honey, I sold your hills and rivers, animals and water quality so people could have more plastic."

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Sincerely,
Barbara Reid
7814 Greenwood Ave N Apt 305 Seattle, WA 98103-4665
Louburdreid@gmail.com

Lynn Regelin

Comments for committee hearing on
Kalama Manufacturing & Marine Export Facility

I have been following development of the Kalama Manufacturing & Marine Export Facility since 2018. More recently I've also been following public announcements of other methanol production facilities in other regions of the world. The proposed Kalama facility will produce 10,000 metric tonnes of methanol daily. In just the last eight months, construction of five methanol plants have been announced or begun operations in countries around the world with production totaling more than 3 times the Kalama figure.

- 5,225 mtpd from natural gas in Turkmenistan
- 5,479 mtpd from coal in Indonesia
- 6,600 mtpd from coal in China
- 7,000 mtpd natural gas in Iran
- 7,200 mtpd from coal in China
- A total of 31,704 new tonnes of methanol to be produced each day worldwide. And that's just since January.

The swell of methanol production worldwide is evidence that—contrary to wishes expressed before this committee—the world's demand for fossil-sourced methanol isn't going anywhere but up. As long as we want dashboards in our cars, cases for our computers and TVs, carpeting under our feet, upholstery on our furniture, and clothes on our backs, we unavoidably want methanol.

Many listeners are taking notes of this committee proceedings. Look at the pen in your hand. Unless you bought a very expensive one, that pen has a plastic body and a plastic ink cartridge. That pen started as methanol, as do a thousand other products we handle throughout the year. To vilify the production of methanol—to say we don't want, don't need it, or that it must somehow just go away—is naïve. As a technological society, methanol will be with us for generations.

But what we can do, and what we must do, is use our technology to ameliorate the climate damaging, greenhouse gas co-product of methanol production. The proposed Kalama facility does this like none other in the world.

The planet doesn't care where greenhouse gasses emanate. The atmosphere doesn't look to see where the carbon dioxide is released and say, "I'm going to punish you there." Climate change doesn't happen in the sky over Washington, or China or Turkmenistan. It happens everywhere. That's why it's "global warming." Greenhouse gases are evenly dispersed throughout the atmosphere everywhere. It's not the location of emission that matters, it's the cumulative amount from everywhere.

The five newly announced methanol plants will be constructed in countries with far less emissions regulations and climate protection than in the United States, perhaps none at all. Greenhouse gas emissions from these foreign-built facilities will be 6, or 10, or 12 million tonnes per year greater than from the conscientiously conceived and technologically superior Kalama facility.

Rather than seeing the Kalama Manufacturing & Marine Export Facility as a detriment, we can and should hold it up as a exemplar to the world. In an era when then United States is tragically, embarrassingly backing away from our commitment to international climate protection, America's Pacific Northwest, the State of Washington, and the City of Kalama can proudly say, look at us, look at how we're doing it. Follow our lead.

Thank you for your attention.

Lisa Harrington

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Lisa Harrington
211 Home Town Dr Kelso, WA 98626-8702
lmbharrington@gmail.com

Columbia Riverkeeper

Director Watson, Heather, and Rich,

I've pasted below our quick policy thoughts on the displacement theory presented in the Kalama methanol EIS. We will submit technical comments, but I wanted to distill and highlight this policy concern. We appreciated the chance to discuss this with Rich, Stu, and others. Hope everyone is staying safe.

Kalama methanol: Washington should not adopt a dangerous new climate policy

The draft SSEIS for the world's largest fracked gas-to-methanol refinery could back Washington into a dangerous new climate policy: the displacement theory.

Northwest Innovation Works suggests that building a new refinery, which will emit 4.6 million tons of carbon pollution per year, is good for our climate because gas-derived methanol will displace coal-derived methanol. Consultants hired by the Department of Ecology repeated the displacement theory in the draft SSEIS. Washington should reject the displacement theory as unreliable and contrary to the state's rational, hopeful climate policies. Here's why:

1. Fracked gas is not the answer

This goes without saying: fracked gas is not a bridge fuel. The real comparison is not coal versus gas, but fracked gas versus clean energy and fuels.

2. The displacement theory takes a bleak view of humanity

To justify the displacement theory, the SSEIS assumes that society will have no technological advances in clean energy or fuels, the Paris Climate Accords will fail, and China will do nothing to meet its pledge to be carbon neutral by 2060. In other words, the world will give up on stopping climate change. Washington should reject this bleak and dangerous outlook. We rely on Washington's audacity to tackle the climate crisis and provide hope for the future.

3. Washington has already rejected the displacement theory

Any fossil fuel developer can fabricate worse alternatives. Backers of the Millennium coal terminal in Longview claimed their coal would displace dirtier coal in Asia. Tesoro claimed its "lower-carbon Bakken crude" in Vancouver would displace dirtier oil. Washington leaders did not take the bait. Why? Displacement is speculative and unenforceable. And, most importantly, our climate cannot afford to lock in fossil fuel infrastructure for the next 50 years. If Washington adopts the displacement theory for Kalama methanol, this creates a precedent that invites new fossil fuel projects.

4. Where are the electric cars?

The SSEIS presents a false choice: is a gas-derived or coal-derived fuel better? The consultants

ignore electric vehicles and other technologies that compete with methanol. Does Washington want to lock in fossil fuels that will directly compete with clean technologies?

5. Choose a brighter future

The displacement theory is antithetical to everything our state is working to accomplish. Washington is innovating new technologies and fighting for new policies. We are creating positive change, not passively accepting a dark future. These words from Governor Inslee give us hope:

"I cannot in good conscience support continued construction of a liquefied natural gas plant in Tacoma or a methanol production facility in Kalama."

"I decided that on my final day on Earth, I want to be able to look at my three grandchildren and tell them that I did everything humanly possible to save them from this enormous cataclysm of the climate crisis."

Recommendation: Do not adopt the displacement theory in the Kalama methanol final EIS. Acknowledge in the final EIS that changes in technology, regulations, and trade policies will occur over the next 40 years so the "no changes" assumption underlying the displacement theory is unreliable and incorrect.

Brett VandenHeuvel (he/him) | Executive Director | Columbia Riverkeeper
Get inspired by the last 20 years of impactful work in solidarity with local and regional heroes of our movement.

Kasey Schultz

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Sincerely,
Kasey Shultz
8413 Fremont Ave N Seattle, WA 98103-4338
kdotc30@gmail.com

Cornelia Teed

Dear WA Department of Ecology,

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Sincerely,
Ms Cornelia Teed
1201 13th St Unit 201 Bellingham, WA 98225-7154
joteed2000@yahoo.com

Sharon Wilson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Our actions up to this point have been causing a serious decline in the health of ecosystems upon which all of us depend; we must change our course to build a livable future for humans and other living beings.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Ms. Sharon Wilson
3240 NE 96th St Seattle, WA 98115-2528
thuja8@comcast.net

Brian Green

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

This proposal does neither.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Mr. Brian Green
1606 15th Ave Seattle, WA 98122-4050
greenbh@comcast.net

Karol Long

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Judith Rollins

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Deborah Fexis

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Julie Glover

When fully analyzing greenhouse gas emissions from the proposed Kalama methanol facility, looking at impacts from upstream emissions (such as the greenhouse gases that escape from natural gas wells and pipelines), direct and indirect emissions produced at the facility itself and downstream emissions from transporting the methanol to its intended destination in China, it is VERY CLEAR that Northwest Innovation Works SHOULD NOT develop and operate a natural gas-to-methanol production plant and storage facilities on approximately 90 acres at the Port of Kalama. LOOK FOLKS, THIS WHOLE PROJECT IS JUST TOO DANGEROUS! FORGET ABOUT IT, PLEASE PLEASE PLEASE!!!!

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

The elected officials so welcomed this refinery because most of them get their information from the local newspaper and do not have the time to get all the facts.

The sales pitch that NWIW to the leadership and the citizens was awe-inspiring. It would fix all of their concerns and problems that Cowlitz County had. Thousands of jobs, millions in the tax coffers, job training, heck- it even would be great for the environment. They were fed the propaganda sent out by the newspaper. If it was good, it was front-page news; it was buried later in the story if it was bad. If it was awful, the information wasn't even printed.

The following news stories were never printed in the local paper. Most of these articles and events were only brought to the surface by investigations by people and organizations who care for the environment and their friends' and neighbors' health and well-being.

Not one word was mentioned about BP, the co-partner with CAS that were the original backers of NW Innovation Works, and how they pulled out years ago. This should have been an eye-opening event, but not a blurb. After BP's pullout, another investor of NWIW was The Noble Group. The Noble Group Ltd was embroiled in an accounting fraud controversy scheme and was delisted from the Singapore Stock Exchange, nothing in the news to these warning signs.

The locals were never informed why NWIW pulled out of Tacoma and how the same concerns that stopped that project should have stopped this one. There wasn't any news of how NWIW dropped out of their lease at Port Westward and now on the waiting list for another property and will occupy a site only if the zoning changes to allow heavy industry from farming.

Why did so much of the Cowlitz County Cares Act fund money go to Pan Pacific Energy, the parent company of NWIW? Why did it need hundreds of thousands of dollars to survive? Are they really backed by the Chinese government and a large investment group?

So many people that were surprised when I informed them about the $2 billion Department of Energy loan that NW Innovation Works is applying for and for the taxpayers are the ones who would underwrite the entire project. They never heard anything about it, and when they did, they asked why?

Then it was the $143 million in local and state tax breaks that they fought for in Olympia. Nothing about how the higher taxes and jobs promised will only be realized if they build a second phase.

I never heard anything about the people at NWIW? Did they ever build or worked at a methanol refinery, and what was their experience?

Why are there so many current and former elected officials working for them even though they have never made dollar one? There needs to be a story on the amount of money being spent on pushing this project.

Then there is the methanol for fuel debate; the story was just brushed aside after the spokesman for NWIW stated to the reporter that it was just "confusion" on its use, even though the company had a PowerPoint presentation in 2018 shown to Satori Partners Inc., a U.S.-based investment group, discussing using methanol as a fuel for industries and transportation and Wu Lebin, chairman of CASH, the main backer of the Kalama project, has said that the fuel will be burned as feedstock for fuel and industries.

And in the article:

Controversial Kalama Methanol Plant May Be Misleading Public, Regulators
By Molly Solomon (OPB)
Vancouver, Wash. April 19, 2019 9:30 p.m.
NW Innovation Works also sponsored a two-day workshop at Stanford University in 2017 on methanol production titled "Opportunities and Challenges for Methanol as a Global Liquid Energy Carrier." Conference reading materials fail even to mention using methanol to create olefins or plastics, again downplaying a point that is a central talking point when the company talks about its plans for the Kalama facility.

Below is a list of names and the companies at the "informational workshop" sponsored by NWIW. Notice how many energy carriers and gas companies are listed.

The Department of Ecology needs to call these people or write and ask them if they were informed that the conference was just for information or was it for investments in methanol production as fuel, as the workshop title so clearly stated.

Last Name First Name Company

Alvarado Marc I H S
Alvarez Jacob Stanford University
Ashok Venkatesan Consul General of India, San Francisco
Ayoub Paul Shell
Baroni Claudia Stanford University
Bartholomeusz Brian Stanford University
Beck Arik Stanford University
Berggren Mark Methanol Market Services (MMSA)
Blumreiter Julie ClearFlame Engines
Bracy Dennis Clean Energy Forum
Bromberg Leslie MIT
Bush Vann Gas Technology
Cameron Doug US-China Green Fund
Cameron Chris Stanford University
Caputo Kent NW Innovations
Cargnello Matteo Stanford University
Chang Dennis Stanford University
Cohn Dan MIT
Dankner Gil Dor Chemicals
Dankworth David Exxon Mobil

Dar Dorit Dor Group
Dolan Gregory Methanol Institute
Donohue Mark Stanford University
Duan River Chinese Academy of Sciences Holdings
Edwards Chris Stanford University
Friedmann Julio LLNL
Fyffe John Stanford University
Godley Murray NW Innovations
Goeppert Alain USC
Goodman Emmett Stanford University
Hu Zhongbo University of Chinese Academy of Sciences
Ishiyama Eilchi MOL
Jackson Michael Fuel Freedom Foundation/ MDJ Research
Janda Amber Stanford University
Jin Xianyang Geely
Johnson Bernard ClearFlame Engines, Inc
Jojarth Christine Stanford University
Kevin Ramnarine Fmr. Energy Minister, Trinidad and Tobago
Knapp Kurtis Fornaxtek
Korin Anne IAGS
Lamoureaux James IGP Methanol
Leland Amelia Stanford University
Li Peng Stone Peak Partners
Lian Ming CECC
Lyubovsky Max Department of Energy
Majumdar Arun Stanford University
McMullan Jason Exxon Mobil
Mengesha Firehiwot DOE
Miller Brent 7 Energy
Mitchell Reginald Stanford University
Nitopi Stephanie Stanford University
Obrecht Nicolas Total
Olive Nathaniel Stanford University
Otterman Geoff Independent
Parsan Neil World Bank
Ravikumar Arvind Stanford University
Ritts Brad Stanford University
Roda-Stuart Daniel Stanford University
Rogers David Stanford University
Rongere Francois PG&E
Rudd Kevin Asia Society
Rudd Nicholas Glenelg Advisory Services Limited
Sappin Edward NW Innovations
Shih Choon Fong University of Chinese Academy of Sciences; Chinese Academy of Sciences Holdings
Simbeck Dale SFA Pacific
Spormann Alfred Stanford University
Stauft Daniel 7 Energy

Stauft Tim 7 Energy
Stokes Harry Project Gaia
Stollenwerk Stephan Innogy SE
Sun Yuhan Shanghai Advanced Research Institute, CAS
Sun Philip CASIM
Verser Dan Fornaxtek
Wang Hai Stanford University
Wang Jingfan Stanford University
Wang Michael Argonne National Laboratory
Wang Yong Pacific Northwest National Laboratory/Washington State University
Wentz Karly Stone Peak Partners
Wittrig Steve Kinetic Emergy
Wong Hsien Xiong NW Innovations
Wu Lebin Chinese Academy of Sciences Holdings
Wu Liheng Stanford University
Wuebben Paul Carbon Recycling International
Xiao Xin Institute of Process Engineering, Chineses Academy of Sciences
Yang An-Chih Stanford University
Zhang Mike CECC & NWIW
Zhang Simon CECC
Zhang Tao Chinese Academy of Sciences
Zhang Xiaofeng US-China Green Energy Council
Zheng Xiaolin Stanford University
Zhou Annie US-China Green Fund
Zoback Mark Stanford University

If it weren't for the environmental groups like the River Keepers, we would have welcomed them in and only learned many years later that we were entirely in the dark.

I will repeat this because it is crucial in this study. How can every environmental group be so wrong when it comes to this refinery? Is the methanol's sales pitch that convincing?

Jennifer Vinnard

Thank you for extending the comment period, it's very much appreciated. As Dept of Ecology, I realize that it's your job to look at the science and data, the proven deceptions and issues about things like jobs, property values dropping, taxpayers dollars funding a foreign government owned company, etc..doesn't weigh on your decision, but what should, is that this project was brought to Washington officials under the pretence that 100% of the methanol created was going to be used for olefin's, absolutely no fuel, yet their PowerPoint presentation to investors makes it extremely clear that fuel use is their objective, not to mention ads about China producing 10,000 (to start) methanol fueled cars, their new "investor", who just happens to build methanol fueled shipping tankers, fuel is the goal. With the new DSSEIS, you calculated ghg emissions for up to 40% being burned as fuel, why would you not calculate 100%, or even 75%, given that they roped investors with 25 of 26 pages all about fuel uses? In order to be a truly transparent and fair assessment, we deserve to know the ghg emissions for every possible scenario, not just lowballed figure's.

It is also very troubling the amount of assumptions and speculations this projects approval appears to be being based upon! With absolutely zero proof to back up claims that this refinery would displace coal use in China, in fact, proof of the opposite exists, like China's economic 5yr plan to build coal power plants in each province by 2023...the "carbon neutral" by 2060 pledge, which doesn't mean a reduction of ghg emissions, rather they'll try to emit the same amount of "good" to "bad"..so they can keep pumping out high ghg emissions and give the appearance of helping the environment, the $6.7 billion approved just last year for new coal mining sites, coal consumption continuously increasing as does their coal import demands..the reality is that China cannot afford hundreds of billions to retrofit all the existing coal burning homes, industries and businesses, you're assuming they'll reduce consumption when all they've done is increase it..speculating just doesn't make sense. Especially since even in Washington, the coal power plant in Eastern WA that was slated to close, is looking like it's going to be purchased by a Montana company, who intends to use loopholes to run the plant indefinitely..ghg reduction would be fantastic, but too many people don't care about the effects and will do whatever they can to make money, regardless of whose expense it comes at.

Living in Washington our whole lives, there's no place else my husband and I would rather live. We love the outdoors, our lush green forests and fish filled rivers, which is why we moved to Kalama, the area we grew up enjoying and couldn't wait to move to, living just a few miles from the proposed site, we will have a steady stream of dangerous chemicals pushed up the canyon to our home, that we would be breathing into our lungs, and that would destroy our dream we've worked so hard for. Of those who support it or stand to profit, most don't live here, or don't live close enough to be as affected. They don't want it built in their towns, but throwing us under the bus is just fine, why should they care, it doesn't hurt their health or property's, they're motivated by greed, not what's best for our town, our economy, our environment, our state, our country, or our planet. Please don't let assumptions and speculations determine our future for the next 40 years...this is not what Washington state needs..we need businesses that won't destroy us. We are praying that you deny the permit, for all our sake, the consequences are not worth any amount of money! Thank you for your time, the Vinnard family, Kalama.

Kristin Edmark

Please omit from the SSEIS and leave out all reference to displacement of other fuels by methanol produced at the methanol refinery. There is no evidence that any facility would be displaced.
Please omit from the SSEIS and leave out all reference to 40% of the methanol use as fuel. While interesting at this point in time, fuel use is dynamic.
These economic models are too speculative and so uncertain that the margin of error is too great to be considered. The time period is too long when experience shows not only the rapid change in economic conditions in the world. World leaders recognize that we need to accelerate change in fuel consumption.

These economic models are too uncertain because:
1) We cannot predict China's energy needs or uses. Conflicting messages have been made public. At the United Nations, 9/20/20, President Xi Jinping pledged that China's carbon emission will decline beginning in 2030 and that China will be carbon neutral before 2060. Source:
https://gcaptain.com/china-pledges-to-be-carbon-neutral-by-2060/?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed:Gcaptain (gCaptain.com)&goal=0_f50174ef03-c7996e9511-169978253&mc_cid=c7996e9511&mc_eid=033cdd1d41 and (https://www.nytimes.com/2020/09/23/world/asia/china-climate-change.html) This would signal rapid decrease in the need for fossil fuels. China signed the Paris Climate agreement and is a world leader in carbon free energy technology, wind, solar, electric buses and cars. The Chinese have the strictest emissions standards for automobiles in the world. Yet on the other hand, there is much evidence that China is increasing control of world fossil fuel sources as evidenced by the Belt and Road initiative, new pipelines, the purchase of energy rights around the world like Canada and Australia while, at the same time, preserving its own fossil fuel reserves. Furthermore, it would be imprudent and naive to trust official statements by the Chinese government.

2) Countries and jurisdictions are moving off fossil fuels. There is too much uncertainty to predict over 40 years China's demand for fossil fuels. Would methanol displace wind energy if cheaper? Currently, China imports fossil fuels because it is cheaper than exploiting their own reserves and helps them dominate world energy supply.
Many countries have goals to decrease or eliminate fossil fuels use. It is likely the US will have such goals soon. Many states like Washington have fossil fuel reduction and elimination goals. As do many cities in Washington like Bellingham. Twenty cities in California, and ten cities on the east coast are developing policies to require new construction to be all electric. Energy use and technology is quickly changing; the economic models included in the SSEIS become misleading and useless as energy use quickly changes.
3) Countries and jurisdictions are moving away from plastics. Many countries, states and cities (including Washington, by 2022) have banned various forms of plastic.
4) The present situation does not predict the future. It cannot be said with any certainty that if we don't build this methanol plant, then China will build something that produces more CO2, for the same product. Demand and supply are far too uncertain.

5) The relations between China and US are not certain. Recently, we have seen conflicts regarding patents. Recently, the US has pulled out of important international agreements causing countries to distrust the US and leaving a void for Chinese leadership. As China supplants the US in some areas, there could be more conflict over 40 years. Chinese own rights to some Canadian drilling fields. NWIW is controlled indirectly by the Chinese government. Adding the methanol refinery to Chinese control seems unwise. The US should be monitoring contracts and agreements. We may not want Chinese controlled vessels coming up the Columbia.

6) Climate change is predicted to cause stress and possible collapse of governments and societies around the planet as well as significant numbers of climate refugees. With the refinery, climate change will progress more rapidly increasing government instability and creating a situation where conflict between the US and China is more likely. Increasing climate change makes the economic models used in the SSEIS less likely.

The economic models included in the SSEIS should be removed because the SSEIS is largely a scientific study. Baseless assumptions are needed for both of the economic model of methanol replacing dirtier production methods and the model that a certain percentage of the methanol will be used as fuel. These assumptions are far too speculative in our quickly changing world over such a long period of time. Please leave out of the SSEIS every reference to methanol displacing other fuels and every reference dealing with a certain amount of methanol being used as fuel in China.

Thank you.
PS. The methanol refinery affects me personally. My daughter in law's family lost a beloved home last month to Oregon fire. Pandemics increase with global warming, etc

L Burchard

The proposed Kalama methanol plant would be a disaster for the health and well-being of Washingtonians. As we grapple with the impacts of climate change, with the entire state under hazardous amounts of smog for much of September, it is reckless to consider building one of the largest methanol plants in the world here in our state. Methane, which will be leaked from the facility and in transport, is many more times potent than carbon dioxide as a greenhouse gas. The facility would use more water per day than the entire city of Portland. As a physician, it is inconceivable that we would undergo this endeavor during a time in which population health has been under such assault, from unprecedented pandemics to massive wildfires caused by greenhouse gas emissions.

This project will harm human health.

Debby Felnagle

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. I am deeply troubled about the short sightedness of those companies who are willing to put profit over the health of the planet and our progeny. As humans, we are blessed with the ability to adapt (that's why we're still here but the dinosaurs aren't). For the love of Creation and each other, let's put our intelligence and innovation into solutions that help this planet recover from the damage already done and move towards a sustainable future.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Debby Felnagle
1618 S Wilton Rd Tacoma, WA 98465-1035
tomdebbyfelnagle@harbornet.com

Mary Belshaw

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

I am invested in a low carbon future that includes less cheap plastics and a move away from fossil fuels. The Kalama methanol refinery will increase both. Building this, the world's largest methanol refinery, will make it easier to increase the world's cheap plastics and will not move us away from fossil fuels.

Accidents happen, they always do. Climate warming methane leakages will happen, as happened in the 2018 blowout at a gas well in Ohio. We value our clean air and our clean water and lament that both are becoming more scarce. We value a healthy environment for our children and grandchildren. We need to look beyond today and build a cleaner world, not continue the track we are on.

Please HEED THE SCIENCE and reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. Thank you.

Sincerely,
Mary S. Belshaw
17439 95th Pl. SW
Vashon, WA 98070

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
mary s belshaw
17439 95th Pl SW Vashon, WA 98070-4902
msbelshaw@gmail.com

Mary Doherty

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Fracked g is dangerous to the earth, the community,the natural and human life we need for future generation of families, fish, life for any and all forms!! Look to the NorthEast yo see danger of fracking!!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mary Doherty
441 Hillcrest St Port Angeles, WA 98362-3718
mmdoherty441@gmail.com

Jean Tryon

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. This blessed earth is almost dead because we are poor stewards. It does not have to end like this, if we NOW refuse to pollute it further. Please do not contribute to its demise: no fracking!! Leave the planet for your children and grandchildren.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Jean Tryon
7125 Fauntleroy Way SW Seattle, WA 98136-2008
jctryon2@gmail.com

Rosemary Sikes

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Rosemary Sikes
1709 Gise St Port Townsend, WA 98368-6015
ptrose53@gmail.com

Mary Fraser

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive
Please do not allow the Kalama fracked gas to methanol plant to be built. It would endanger health of people many miles from it and would contribute to more climate change.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mary Fraser
628 Birch Ave Richland, WA 99352-3674
mary.fraser222@gmail.com

Dikka Ballantine

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dikka Ballantine
424 N 40th St Seattle, WA 98103-7713
strawberrella@yahoo.com

Margaret Botch

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.
For me "safe for all to thrive" I truly mean all people and other living beings with whom we share this earth.
My faith is calling me to consider people and other living beings who live in our beautiful state of Washington and beyond.
It calls me to make life, better not worse, as I understand the proposed refinery in Kalama will do.
Please, I urge you, do not allow plans this proposed Methanol Refinery to move ahead. It will not benefit, but will cause harm
that will not be worth our short-term and narrow hopes.

Thank you for considering this message. May God bless you and your work.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Margaret Botch
1008 E Boone Ave Spokane, WA 99202-2012
mbotchsp@aol.com

Clayton Hamill

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We need to stop destroying our planet! We must be good stewards for future generations!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Clayton Hamill
7549 30th Ave SW Seattle, WA 98126-3326
clayhamill@gmail.com

Theresa Espana

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

We have more plastic pollution than we know what to do with so we don't need to invest in producing more of.

We need to look at renewable forms of energy, ways to address climate change, and build a safer world for the next generations.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Theresa Espana
20615 11th Ave W Lynnwood, WA 98036-8715
paetle@yahoo.com

John Alder

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

NO OIL/ NO NUCLEAR

ONLY SOLAR/WIND/ELECTRIC

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. john alder
E618 Spokane, WA 99207
jralder@comcast.net

Julieann Palumbo

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Julieann Palumbo
1019 Kitsap St Port Orchard, WA 98366-5234
juliepalumbo@me.com

Stevi Hamill

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

The evidence against continuing and expanding our use of fossil fuels, especially when fracking is involved, is massive. It is clear that fracking and the use of fossil fuels are not sustainable for continuing to have a planet that can sustain healthy, thriving life.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Stevi Hamill
7549 30th Ave SW Seattle, WA 98126-3326
stevihamill@gmail.com

L Detering

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.
We do not need more fracked gas! Washington does not want the pollution. We need clean energy!
We do not need to pollute our state to ship energy to other countries. Companies making a profit off of fracked gas are not paying the real cost to the earth the air & the water.
We DO NOT NEED IT or Want It!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
L. Detering
18201 NE 27th St Redmond, WA 98052-5946
ladetering@yahoo.com

Sharon Cox

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

in order to halt climate change we must end fracking.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Sharon Cox
638 Kirkland Way Apt 4 Kirkland, WA 98033-3953
cox.sharonm@gmail.com

Jenny England

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mrs. Jenny england
4730 Lost Creek Ln Bellingham, WA 98229-2574
jennyengland77@gmail.com

Joelle Pretty

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Joelle Pretty
4621 51st Ave S Seattle, WA 98118-1465
joellepretty@gmail.com

Marilyn Mayers

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We need to transition to clean energy as quickly as possible. Building out more fossil fuel infrastructure would lock us into higher carbon emissions and pollution which we desperately need to avoid if we are to secure a decent future for our children. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

NW Innovation Works is pushing for this despite widespread community opposition and the adverse environmental impact constructing this facility would cause. I urge you to reject any methanol refinery in Kalama or elsewhere in our state. Do no grant a Shorelines Permit for them to pursue this grossly immoral project. Thank you!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Dr. Marilyn Mayers

1907 161st Ave NE Bellevue, WA 98008-2514
mayersmarilyn@gmail.com

Daniel Peterson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. I speak on behalf of many who think this proposal is bad--bad for our environment, bad for our future, bad for people, and ultimately--insofar as it perpetuates the assumption that fossil fuels are a sound, long-term investment--bad for our economy.

Please do not do this!

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Sincerely,
Daniel Peterson
209 W Mcgraw St Seattle, WA 98119-2647
danpeterson40@hotmail.com

Amy Aspell

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

God created a beautiful, perfectly balanced Earth home for us and it is our responsibility to preserve this gorgeous planet in order to preserve our own lives. STOP DESTROYING OUR PLANET FOR PERSONAL PROFIT!!! You too will die when you have destroyed the balance necessary to live.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Sincerely,
Rev. Amy Aspell
11469 Kallgren Rd NE Bainbridge Island, WA 98110-3320
aspella@comcast.net

Anna Nelson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

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Sincerely,
Anna Nelson
12563 B Densmore Ave N Seattle, WA 98133-7730
anna.kristine.nelson@gmail.com

Kristin Follmer

The proposed Kalama methanol plant is bad news. We must think bigger than just the Kalama community.

As we grapple with the impacts of climate change, with the entire state under hazardous amounts of smog for much of September, it is reckless to consider building one of the largest methanol plants in the world here in our state. Methane, which will be leaked from the facility and in transport, is many more times potent than carbon dioxide as a greenhouse gas. The facility would use more water per day than the entire city of Portland. It is inconceivable that we would undergo this endeavor during a time in which population health has been under such assault, from unprecedented pandemics to massive wildfires caused by greenhouse gas emissions.

Leslie Spurling

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We are called to be stewards of the earth and all within it, not compulsive consumers, stripping it bare. We have and are developing renewable, non-polluting sources of energy and we need to stop using these dirty sources. As we move away from them, new jobs in the new technology will develop. Just as in the horse and buggy days as the world converted to coal and oil, some jobs will disappear, some will change, some will be born. We need to move forward with this new conversion, as quickly as possible.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Leslie Spurling
1210 N 152nd St Shoreline, WA 98133-6209
lesliespurling@yahoo.com

Susan Haywood

The last thing we need in the Pacific Northwest is a project that will worsen the climate chaos, endanger the Columbia River, and harm a community. This project does all of these things.

This project will create air pollution in the extreme. The beauty and value of our region will suffer. LNG and methanol are extremely volatile and are harming our world all along the production line.

Transporting these fossil fuel products is dangerous. Oil trains have exploded, once in the Columbia River Gorge, and the pipelines that carry LNG have leaked into our water supplies. Water is basic to life. Making plastic is not.

Industries and citizens in Washington will suffer if this refinery is built in Kalama. Other entities have made investments in the area, and their needs and wishes should come first. Short-term thinking is a not a solution for long-term well-being.

Bonnie McKinlay

In 1899, Commissioner Charles H. Duell of the U.S. Patent Office stated that "everything that can be invented has been invented". It appears that after more than 12 decades laden with miraculous inventions, the Commissioner was incorrect. Also incorrect is the assumption that "everything good for Kalama is and will continue to be methanol".
We now experience, and await further, green energy alternatives to fossil fuels.
Dept of Ecology is well aware of current and continued climate realities. NWIW's promotion of methanol and the future viability of the Kalama Manufacturing & Marine Export Facility is inconsistent with the planet's climate condition and the positive direction of clean energy sources. I urge the Washington State Dept of Ecology to go beyond the faulty standard set by Commissioner Duell by denying NWIW's methanol misdirection.

Diana Gordon

The amount of greenhouse gases that would be released every year from the proposed Kalama methanol refinery make it unacceptable in a year that has seen considerable climate chaos.

Here in the West, we have been plagued by our continuing drought. Droughts have always been a natural part of our landscape, but climate change has transformed a 'normal' drought into a megadrought. The 19 years from 2000-2018 was the driest period since the late 1500's as ascertained by hydrological modeling and new 1200-year tree-ring reconstructions of summer soil moisture reported in the journal Science (April, 2020). With the moisture sucked out of the soil by extreme dryness and vegetation stressed, forests and other areas are sitting ducks for fires, especially during high wind events.

We know most of the factors that cause climate change and we must act urgently to curb anthropogenic greenhouse gas emission. Methane is an efficient driver of climate change because it is quite good at trapping heat in the earth's atmosphere. In fact, it is about 84 times more effective at this than CO2.

We are faced with the sobering statistic that global methane concentrations rose from 722 parts per billion before the industrial era to 1866 ppb by 2019, the highest in 800,000 years. We also know that the Kalama methanol refinery will add at least 4.6 million tons of methane a year to that.

Unlike Vegas, what happens in Kalama will not stay in Kalama. Our methane will add yet more to the global total with the staggering results that we are already witnessing. The climate has warmed about 1 degree C and the effects are devastating now, in real time.

This project is rife with uncertainty. Will they actually use this methanol as olefins for plastic or repurpose it for fuel which produces even more GHG's? Will the Port use the refinery as an anchor project and require yet another pipeline to supply all its gas needs? Will they require so much of Washington's gas that other industries will be hampered? How many jobs will actually materialize from this destructive project - we know that most refineries require specialized job skills that few in Kalama will possess?
Will this project prevent the Port from developing a more sustainable economic plan with a variety of smaller businesses that will provide a more stable and less risky base?

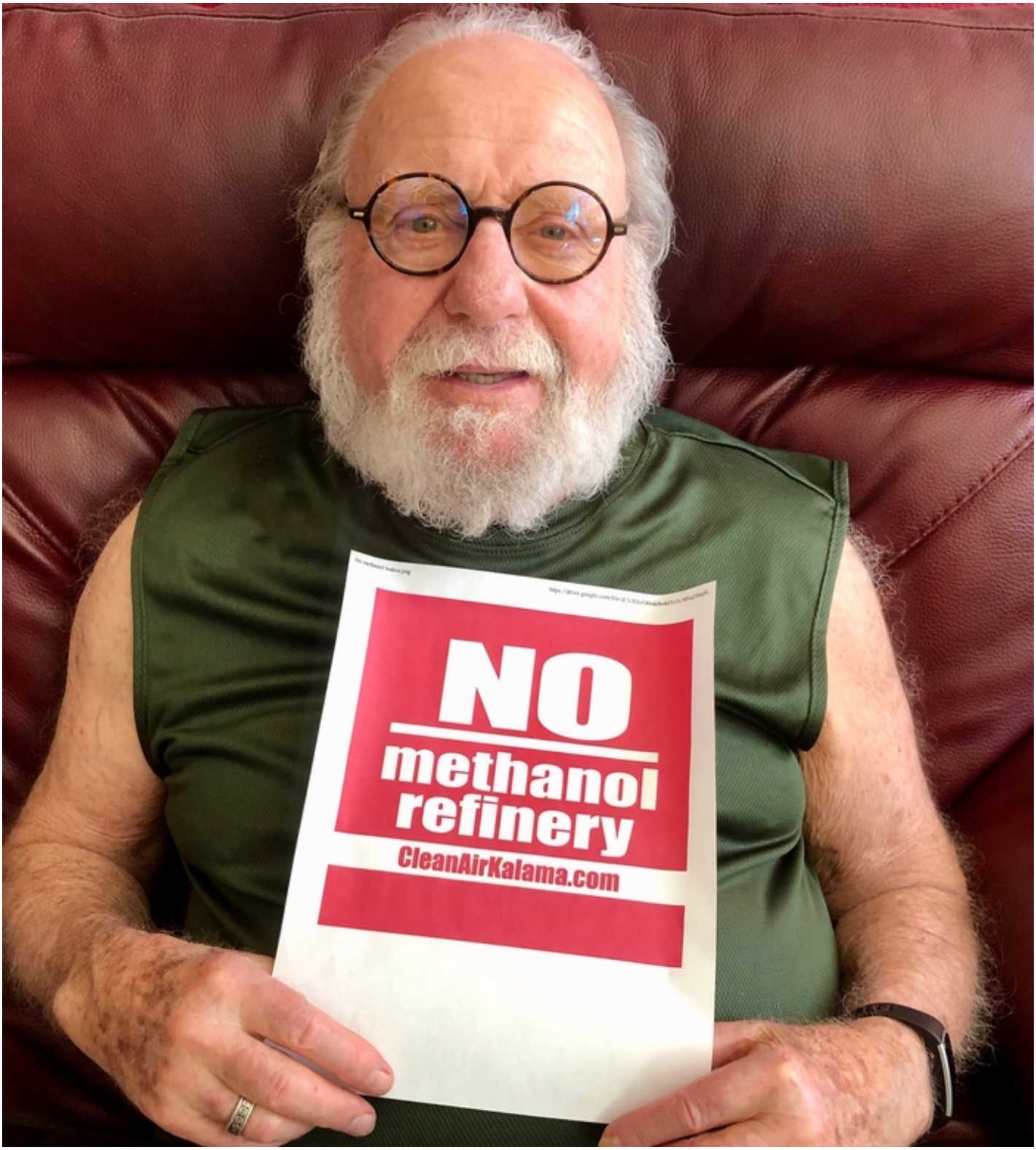
I cannot see anything in this refinery that will truly benefit Washington. Please deny the Shoreline Permit and let us move on to a viable and more sustainable future.

Mark Keely

Port of Kalama's determination to marry the shell company NWIW to Washington State is a disastrous greenwashing disguise. This refinery proposal will never pan out for the people of Cowlitz County and POK knows it. They are just using this latest project to try to get the 3.1 mile lateral pipeline in so that they lock us into 40 more years of fracked gas infrastructure and consumption. If they cared about jobs, they would have moved to a viable project on that 90-acres years ago. If they cared about climate, they would have moved to a viable green proposal years ago. DON'T BE FOOLED, Dept. of Ecology. You are being sold a line of BS. NWIW and the POK are throwing you red herrings that deprive the people of actual opportunities and bring to a standstill any potential sustainable businesses. DENY Kalama methanol. We must do better NOW.

Howard Shapiro

The methanol refinery must be stopped. NO Kalama Methanol Refinery, it is poison to the Columbia and the Pacific NW.


NO
methanol
refinery
CleanAirKalama.com

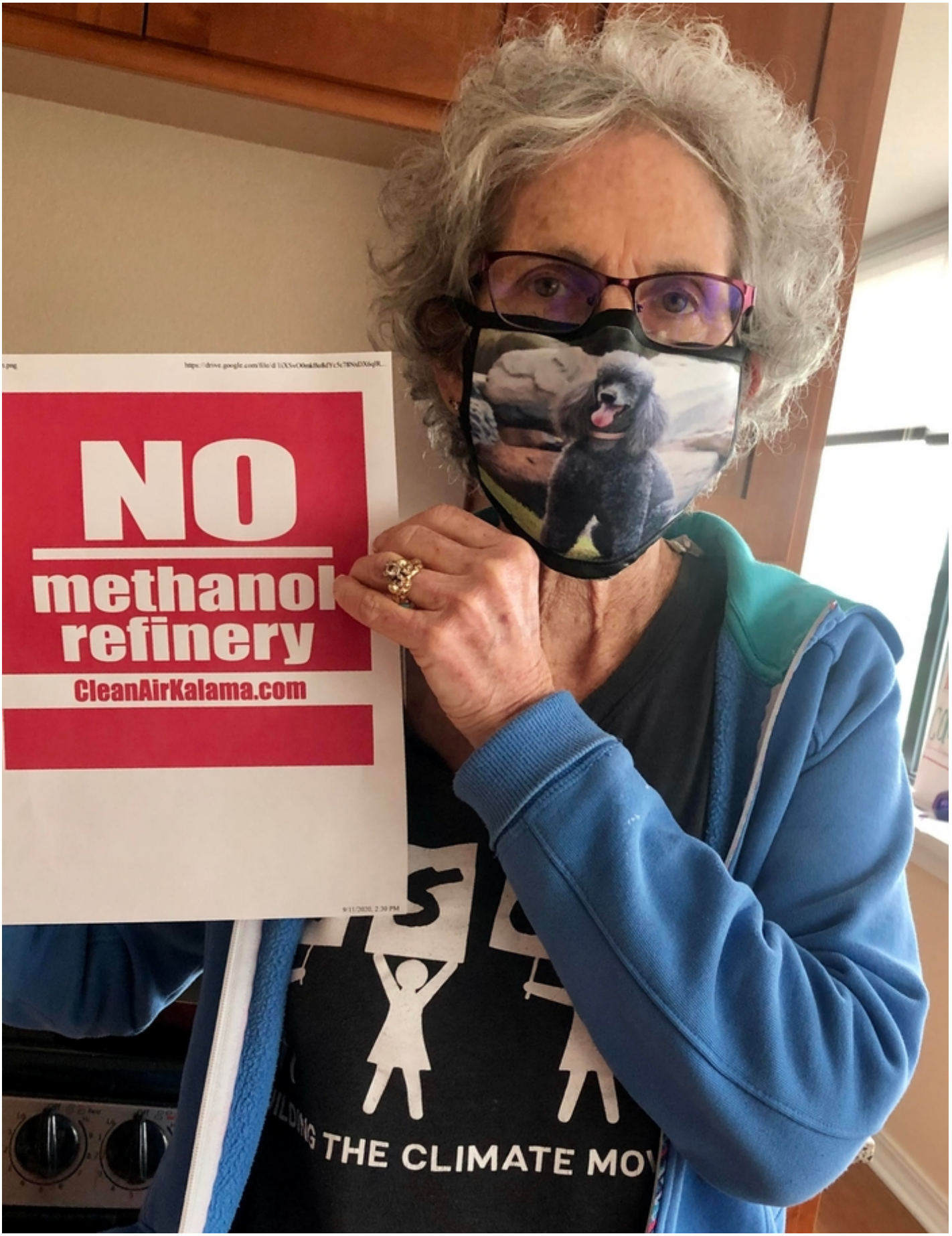
Howard Shapiro

NO Kalama Methanol Refinery because our important natural resource will be further polluted. Fracking gas is a danger to our climate, a pipeline across Washington will with ruin air and water resources and will exacerbate our climate catastrophe.


NO
methanol
refinery
CleanAirKalama.com

Alice Shapiro

No methanol refinery, please! We are rapidly depleting the purity of our air and water. Also, there are so many climate catastrophes currently happening--fires, unseasonably hot weather, hurricanes, tropical storms, poor air quality, and many more, that will only increase due to methanol released into our atmosphere. The time to stop is long past due!!!


NO
methanol
refinery
CleanAirKalama.com
THE CLIMATE MO

Alice Shapiro

Our future is at stake. I am an old woman. My own health is at risk, as is my husband's. And, more importantly, the health and well being of my precious family, young, middle-aged, and old, is at stake--as is the future for all species here and to come. NO refinery--no more damage to our already compromised, endangered planet.





Coquette Shapiro

All species are important and must be protected. NO methanol refinery. We must not upset the delicate balance of climate, water, air and the entire web of life!



Linda Leonard

The greatest crisis we face as a civilization is climate change which is driven by the burning of fossil fuels. We are at a tipping point; the warming of the planet is causing the accelerated melting of the Greenland and Antarctic ice sheets.

The effects we are seeing are catastrophic, setting records.
1. The highest temperature ever recorded on earth in Death Valley during August 2020 was 130 degrees.
2. The worst wildfire season in history on the West Coast.
3. The East Coast is experiencing twice the number of tropical storms than normal.

The SSEIS analysis shows that current global greenhouse emissions for the state of Washington would increase substantially if this project were built. The increased pollution from the world's largest fracked gas to methanol refinery in the world, here in Kalama, would add 4.6 million tons of carbon dioxide to the atmosphere each year. This project's demand for fracked gas would exceed the consumption of the Northwest biggest cities combined.

Factor in the fracked gas transportation leakage rates, the usage of methanol being used to make plastics or used for fuel, Northwest Innovation Works' proposed refinery would jump to 9.4 million metric tons of greenhouse gases per year. This project would increase fracked gas demand, resulting in more well drilling, fracking and would require a larger capacity of gas, resulting in a new pipeline being needed, locking in future fossil fuel usage for the next 40 years.

Is this what we want for Washington state or do we need to move toward a low carbon future?

Governor Inslee's Evergreen Action Plan is the clean energy needed. This plan is built upon 5 key principles.
1. Power the economy with 100% clean energy.
2. Invest in good jobs, infrastructure, Industry and Innovation.
3. Build greater Justice and Economic Inclusion.
4. End Fossil fuel Giveaways
5. Mobilizing Global Action

We have a global responsibility to phase out fossil fuel reliance in favor of clean energy.

As a resident of Kalama, I am concerned for the future of Kalama, the consequences of this massive fracked gas to methanol refinery will have on the health and safety of the citizens. We all deserve the right to clean air and water and to protect the Columbia River.

The evidence in the SSEIS demonstrates that the Department of Ecology must deny NWIW the permit needed for this project to proceed. We cannot keep building fossil fuel export infrastructures, the dangers of climate change are real.

Donna Orr

I am a resident of Cowlitz County, not another state or country. I am an ordinary citizen that has watched with amazement at the persistent delays that are crushing each suggestion of economic recovery to our county. There is no "perfect "manufacturing or industrial process. There will always be people opposed to any and all such business, even though it may be a legitimate business that provides a product or result that has a legitimate use.It appears that NWIW has done what has been asked by the state to be able to proceed with their business. Please stop moving the goalposts and let them build. We need jobs, not more "grants" or other public assistance programs.I sincerely hope the decision has not already been made & your request for comments is not just window dressing for the peons.

Bonnie McKinlay

To accept the proposal to advance the construction of the Kalama Manufacturing & Marine Export Facility at the dawn of human-caused climate disruption is unacceptable. I urge Dept of Ecology to reject this plan. We all are entrusted to care for this special planet. To permit NWIW's mega-facility to be dropped on the Columbia Riverbank at Kalama would be irresponsible to the human, plant and animal life in SW Washington. Such an acceptance of the methanol refinery smashes our hopes of addressing climate disruption before time runs out.

Susan Haywood

Just say NO to the refinery in Kalama.
It is a climate catastrophe even before it gets to Washington state. Tar sands are spewing methane as we speak. Pipelines are leaking into water supplies. Oil trains explode---in fact one did here in Mosier, Oregon not long ago. Last year a train hit a concrete pillar just across the river.

Anonymous Anonymous

The proposed Kalama methanol plant would be a disaster for the health and well-being of Washingtonians. As we grapple with the impacts of climate change, with the entire state under hazardous amounts of smog for much of September, it is reckless to consider building one of the largest methanol plants in the world here in our state. Methane, which will be leaked from the facility and in transport, is many more times potent than carbon dioxide as a greenhouse gas. The facility would use more water per day than the entire city of Portland. As a physician, it is inconceivable that we would undergo this endeavor during a time in which population health has been under such assault, from unprecedented pandemics to massive wildfires caused by greenhouse gas emissions.

Timothy Lewis

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Steve LACROIX

I am strongly opposed to the permitting of Kalama Manufacturing and Marine Export Facility. The proposed merit that it will displace coal plants in China is ludicrous. Just because one actor is slightly worse than ourselves does not have us coming out on top. We all lose if we don't curb our emissions and global warming. Please deny permitting of this facility.

MLou christ

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Bill Adams

Please do not let this project happen. It would be an environmental train wreck in the making. According to Sightline Institute, a PNW environmental think-tank, its air pollution would be equivalent to 4.6 million tons of carbon dioxide each year or about 5% of our state's total climate emissions from all other activities combined. We don't need 5% more emissions. We need 5% less if we are to have any climate benefits. This project is not going to make that happen. It would only worsen our climate situation. Please do the right thing and reject it. Thank you, Bill Adams

Liisa Wale

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jim minick

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Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

This methanol refinery is a way for Canada to be able to export natural gas to world markets and will cause catastrophic higher energy costs to the NW consumers and businesses by possibly paying 2/3 more for natural gas.

This article below shows Northwest Innovation Works is using this methanol for fuel and how this project is just a way to monetize and release large amounts of stranded Canadian natural gas. I have also enclosed a document showing that exporting natural gas benefits only a small and narrow portion of the U.S. economy, and not in the interest of the public (consumers and economy at large).

Liquid-rich gas production: An imperative opportunity for Canada
13 Feb 2018 Mary Hemmingsen, EVP and CFO, Northwest Innovation Works

When it comes to gas monetisation, Canada is looking for new approaches to remain competitive against the mature exporting markets. NorthWest Innovation Works is a multi-national partnership, committed to meeting the global need of a cleaner source for methanol production. This new technology will not only reduce the global carbon footprint but also introduce new gas monetisation techniques to Canada.

Ahead of the Canada Gas and LNG Conference and Exhibition, 14-16 May, Gastech Insights spoke with Executive Advisory Board Member and Executive Vice President & CFO at NorthWest Innovation Works, Mary Hemmingsen, to discover more about the organisation and what these new opportunities mean for Canada's gas industry.

Gastech Insights: NW Innovation Works is committed to meeting a global need for clean-burning liquid fuels and clean feedstock for petrochemical industry. Can you tell us more about methanol as a clean and versatile energy carrier?
Mary Hemmingsen: Methanol's versatility leads to many important applications as a clean and multipurpose fuel and feedstock: in marine and ground transport, power, heat and petrochemical applications. Adding to this versatility, methanol exists as a clear liquid form in ambient conditions, that is water soluble and biodegradable, ensuring easier and safer shipping and distribution.

Methanol demand is expected to increase steadily through 2035, in part, driven by increasing MTO demand with low-cost gas-based manufactured methanol that is more competitive to coal-based methanol. This rapid rise in MTO is led by China, driven by opportunities in the value chain and for improved environmental performance. Among the fuel applications being expanded is the:

• Marine Sector: Currently consumes 370 million metric tonnes of bunker fuel per annum. IMO standards on SOX & NOX emissions are required to be met by 2020 with methanol poised to capture at least 20% of this market based on methanol's attributes of cost-effective lower emission output.

• Ground Transportation Fuel: China, with others following, is leading the growing utilization of methanol as a clean fuel for transportation. Methanol standards have already been implemented in 14 Chinese Provinces mandating methanol blending, and are being implemented in additional Provinces.

• Small Mid-Boiler Market: In China, over 600,000 small to medium size industrial boilers consume approximately 700 million metric tons of coal per year or 18% of China's coal consumption. The opportunity to vastly improve environmental performance has motivated the Chinese government to phase out all coal-fired boilers with the capacity of 35 tonnes/hour or less by 2020, creating a corresponding conversion opportunity to methanol-fired boilers on the heels of currently converted boiler units which consume about 1 MTPA of methanol.

Gastech Insights: What monetisation opportunities can the methanol markets sector offer Canadian gas producers and what work needs to be done to ensure these opportunities are realised?
Mary Hemmingsen: Canada needs to realize the first-mover opportunity and accelerate aggressive efforts to capture new high value-add methanol markets in scale development. Leveraging our low-cost natural gas and advantaged gateway to a new growing clean Asian methanol economy, we need to crack the barrier of pipeline access and relentlessly focus our efforts to deliver a cost competitive advantage. Scale development and scale economics using between 1 to 2 bcf of gas would support at least two facilities of up to 28 MTPA of manufactured methanol and would capture a portion of the identified and looming methanol demand.

We need to act on the investment in related development already made in modularized construction and of interested host First Nations. This includes formalizing investments and the sharing of investment, costs and/or corridors for pipelines as well as providing various fiscal support arrangements and removing pipeline and other costs and delay barriers such as import duties and prolonged regulatory process, based on the high value-add for Western Canada and Canada as a whole.

We need to invest as a coordinated industry value chain and supply chain, relentlessly focused on cost competitiveness to be first to this new market. In doing so we can capture both a rapid step function increase in Asian methanol demand toward improved environmental performance and provide a supporting platform for other gas exports including Natural Gas Liquids (NGL) and LNG.

Gastech Insights: How can the industry harness the potential of liquid-rich gas successfully – allowing NGLs to turn from a hindrance to a help for Canadian shale producers?
Mary Hemmingsen: Recognizing the increasing "hotness" of liquid-rich production such as Montney gas, investment in pipeline corridors and support for co-development platforms, complemented by coordination in market development, is not only an opportunity but an imperative. Our Canadian governments and agencies, in partnership with focused industry players, can establish market entry and market penetration in supporting a cost competitive and timely development and manufacturing environment.

Gastech Insights: Why should industry players attend the Canada Gas and LNG Exhibition and Conference in May?
Mary Hemmingsen: The conference will bring together the players who are poised to inform and lead a new thrust for market access and development for our vast Western Canadian gas resources,

and in doing so realize the opportunity of gas value-add export products to contribute to the trifecta of energy, economic and global environmental performance improvement.

The Canada Gas and LNG Exhibition and Conference on 14-16 May, will identify the opportunity, tackle the challenges and set the solutions for long-term gas monetisation in Canada. Hear Ms Hemmingsen speak along with many other industry experts, book your pass today.
Image courtesy of NW Innovation Works

The NW Innovation Works and how methanol instead of LNG facilitate and export Canadian stranded gas. The higher costs associated with exporting it and the effects it will have on the NW economy is detailed in the articles below.

BP and China sign methanol plants at Port of Kalama and Port Westward
BP and China create Northwest Innovation Works JV

The UK super major BP and China Academy of Sciences created a cascade of joint venture called Clean Energy Technology Company to run the Northwest Innovation Works joint venture, a newly formed company, to build and operate twin major greenfield methanol plants at Port of Kalama in Washington, and at Port Westward in Oregon, USA.

With a total capital expenditure of $3.6 billion, BP and China Academy of Sciences intend to use the gas-to-methanol conversion to facilitate the export of natural gas to China.

Methanol proposal arrived in Tacoma after extensive Inslee courtship
By Derrick Nunnally APRIL 09, 2016

A chart in the presentation's slide show described the Northwest's natural gas as a "stranded cheap resource." Another slide said it could become more profitable if converted to methanol for export than if exported as liquid natural gas.

Testimony of Paul N. Cicio
President
Industrial Energy Consumers of America

Excessive LNG exports significantly accelerate consumption of U.S. low-cost natural gas - damaging long-term manufacturing competitiveness and jobs.
Excessive LNG exports are not in the public interest and will increase the domestic price of natural gas and natural gas-fired electricity, reduce global competitiveness, reduce GDP, and impact middle class jobs.
Exporting LNG is a failed public policy. Consuming the natural gas in manufacturing creates eight times more middle class jobs.
Excessive LNG exports significantly accelerate consumption of low-cost natural gas – damaging long-term manufacturing competitiveness and jobs.
Natural gas is not a renewable resource and LNG exports significantly accelerate the consumption of U.S. low-cost natural gas.

Pacific NW Consumers Will Pay More for Energy if LNG Exports Go Forward
Where does Spectra's Westcoast Energy pipeline go at the U.S. border?

July 25, 2014British Columbia, Canada, FERC, WashingtonJohn S. Quarterman
The combined Oregon LNG/Williams Expansion projects will force Pacific Northwest gas customers to outbid high-priced Asian markets for North American natural gas. The project will increase prices for every NW resident. Paul Cicio, President of the Industrial Energy Consumers of America, stated, "In the end, it's going to be every homeowner, every farmer buying fertilizer, and every manufacturer trying to create jobs who is going to be hurt by this."
Monetizing methanol Exporting natural gas in the form of methanol offers several advantages over the LNG pathway, argues an energy security expert.

Why Canada needs more pipelines FEBRUARY 13, 2019

In recent months, Canadian natural gas has been trading as low as one-third the price of U.S. gas, and sometimes close to one-tenth the price it could fetch in new markets, such as China, Japan, Korea and India.
For producers to realize better prices for natural gas they must diversify away from dependence on the U.S. market to areas where there's greater demand.

Rescue stranded gas assets with new markets, urges expert
B.C. has world-class natural gas reserves, but so does the U.S., which has gone from customer to competitor
By Nelson Bennett | March 29, 2016

Cheap gas from the Marcellus shale formation in New York state has been flooding into Eastern Canada, which was once supplied largely by the western provinces.

"That used to be almost all Canadian gas," said Dan Allan, executive vice-president of the Canadian Society for Unconventional Resources . "It's now being displaced by cheaper [U.S.] gas."

From 2007 to 2014, exports of Canadian natural gas to the U.S. declined 29%, according to Geoff Morrison, B.C. manager of operations for the Canadian Association of Petroleum Producers.

The Canadian Energy Research Institute estimates the flow of gas from the U.S. into Canada will double by 2027.

Thanks to the shale gas revolution, the Marcellus shale formation alone now produces more natural gas than all of Canada, Morrison said.
"We've been observing the U.S. [supplying gas to] markets that we traditionally serve, both in the States but also places like southern Ontario and Quebec," Morrison said. "Our biggest customer is now our biggest competitor, both in terms of North America [and] in terms of LNG."

But the U.S. isn't the only country with rich unconventional gas assets. The Montney Formation in northeastern B.C. is considered one of the richest in North America, due to its liquids.

And earlier this month, the National Energy Board updated estimates for the Liard Basin, which straddles B.C., the Yukon and the Northwest Territories. According to that estimate, B.C.'s share of the Liard has four times as much gas as previously estimated.

But without an export market in the form of an LNG industry, it's unlikely to see much

development.

"We've got a big tank of gas up here and we've got limited customers," said Greg Bury, president of the Gas Processing Association Canada. "If we don't get to the coast, ultimately we are going to have stranded gas and we are going to stop building projects.

"It's happening every day as we speak. I have been intimately involved with so many project cancellations that it's ridiculous."

Porter suggested the North American public doesn't realize just how important the shale gas boom has been for the American economy.

"We estimate that more than half of all the jobs that have been created since the Great Recession ended were in energy, or related to energy in one way or another," he said.

Since energy is a huge part of any economy, cheap oil and gas – for both power and transportation – are a huge competitive advantage.

"This has allowed us in the U.S. to have a substantial energy cost advantage over pretty much every other country, except Canada," Porter said.

But both Canada and the U.S. are at a crossroads.
Because of the local environmental concerns that fracking poses, and concerns about the effect on climate change of burning natural gas, shale gas and LNG are getting a rough ride in the department of social licence and the office of public opinion.

But just as North American innovation led to the shale energy revolution, Porter said, it can also address the attendant environmental concerns.
"This opportunity is truly a game-changer," Porter said. "Right now it doesn't feel so good, because oil prices are down and gas prices are linked to oil. But over the long run, this downturn is stimulating another wave of innovation and efficiency and competitive advantage."

Far from thwarting renewable energy investments, natural gas could be a buttress, he said.
"We're going to need a lot of natural gas if we're going to make the transition to clean energy. Natural gas is a powerful tool we have to make this transition, because it's going to take decades to do it. In the process of using natural gas as a transitional fuel, it's going to also hold down the cost of the transition."

2018 Economic Report Series LEVERAGING OPPORTUNITIES: DIVERSIFYING CANADA'S OIL AND NATURAL GAS MARKETS

Canadian producers are currently faced with insuf¬cient takeaway capacity for both oil and natural gas. This in turn limits Canada's ability to serve existing domestic and U.S. markets, and prevents Canada from accessing emerging overseas markets.

Even more urgently, lack of infrastructure has caused discounted prices for Canadian oil and natural gas exports to the U.S. These price discounts cost Canadians billions of dollars every year. Canadians deserve fair market value for our natural resources.

The key to obtaining better value for our resources in global markets is to build new and improve existing infrastructure, so Canadian energy products can compete for emerging global markets. Even more urgently, lack of infrastructure has caused discounted prices for Canadian oil and natural gas exports to the U.S.
Canadian natural gas growth is limited by pipeline infrastructure bottlenecks and a lack of LNG export infrastructure, resulting in severely discounted prices for western Canadian natural gas in both domestic and U.S. market

Prices for natural gas have been persistently low for a decade, because supply has outstripped demand

This is a highly competitive market. In 2016, Wood Mackenzie conducted a competitiveness study for LNG,9 which showed that a Canadian facility could deliver LNG to northern Asia markets at around US$11 per million British thermal units (MMBtu). While not as competitive as U.S. Gulf Coast projects, Canadian projects were seen to be more competitive than Australian greenfield projects and Alaskan LNG. LEVERAGING OPPORTUN
Canadian pipeline projects currently in development – particularly TMEP – would provide producers with much-needed market access options and reduce reliance on the U.S. as Canada's single export market. In addition, the proposed Eagle Spirit Energy project would transport oil from Alberta and B.C. to a West Coast export facility.

Canada's Natural Gas Industry Really Needs LNG
For western Canada, too much supply, not enough demand, and worsening pipeline constraints have saddled the gas industry with "the lowest prices in the world," even in negative territory.

RECEIVED
By DOE/FE at 3:25 pm, Nov 20, 2018

Driftwood LNG LLC: Supplement to Application for Long-Term, Multi-Contract Authorization to Export Liquefied Natural Gas to Non-Free Trade Agreement Nations for a 20-Year Period	))))))	FE Docket No. 16-144-LNG

NOTICE OF INTERVENTION, PROTEST AND COMMENT

The application seeks to increase the volume of LNG for which Driftwood LNG LLC (Driftwood LNG) requests export authorization from the equivalent of 1,415.3 billion cubic feet per year (Bcf/y) of natural gas. The U.S. Department of Energy (DOE) has not yet issued a final order on the pending application.

Executive Summary

DOE and the applicant have not demonstrated that the application to export LNG to NFTA countries is consistent with the public interest under the Natural Gas Act (NGA) and should therefore be denied. Figure 1, taken from the DOE report, "Macroeconomic Impacts of LNG Exports from the United States," illustrates that LNG exports create winners and losers. Natural gas producers and exporters are the winners and everyone else in the economy are losers, clearly illustrating that LNG exports are not in the public interest. Figure 1 makes clear that LNG exports are in the interest of the natural gas producer and LNG exporter, a small and narrow portion of the U.S. economy, and not in the interest of the public (consumers and economy at large). DOE approval of LNG export volumes connects low U.S. natural gas prices ($3.00 MMBtu) to high global LNG prices (Asia $12.00 MMBtu), which increases prices for U.S. consumers long term. DOE LNG export studies have violated the Data Quality Act, legally disqualifying their use as a resource for decision making. DOE has failed to consider the economic impact of a long list of consumer and economy-wide risks that are created by LNG exports. DOE failed to consider existing and future limitations in natural gas pipeline and storage infrastructure capacity and 'maximum' deliverability capacity needed to supply the U.S. market at peak demand and export LNG. All DOE reports assume that pipeline and storage capacity will be available despite the fact that constraints already exist and the ability to build-out new capacity is threatened by multiple legal and public opposition headwinds.

A Key Point: Consideration of LNG export applications need to lag the build-out of needed pipeline and storage capacity deliverability at peak demand needed to supply the U.S. homeowner, industrial and power generator consumers. If by chance that there is excess infrastructure capacity available to supply LNG export terminals, only then should these applications be considered. Unfortunately, the DOE is doing the opposite which threatens the entire domestic market. Especially at peak summer and winter demand.

If the DOE mismanages the approval volumes of LNG exports, and manufacturers lose competitive advantages, it puts trillions of dollars of manufacturing assets at risk, which is a sector with over 12 million high paying jobs.

I. Industrial Energy Consumers of America (IECA)

IECA is a nonpartisan association of leading manufacturing companies with $1.0 trillion in annual sales and with more than 1.7 million employees. It is an organization created to promote the interests of manufacturing companies through advocacy and collaboration for which the availability, use and cost of energy, power or feedstock play a significant role in their ability to compete in domestic and world markets. IECA membership represents a diverse set of industries including: chemicals, plastics, steel, iron ore, aluminum, paper, food processing, fertilizer, insulation, glass, industrial gases, pharmaceutical, building products, automotive, brewing, independent oil refining, and cement.

II. The Natural Gas Act (NGA) requires that shipments to NFTA countries must not be inconsistent with the public interest. A U.S. Government Accountability Office (GAO) report[1] makes clear that neither Congress nor the DOE has ever defined the "public interest." DOE is using guidelines developed in 1984 for LNG imports to inform LNG export public interest decisions.

The GAO report entitled, "Federal Approval Process for Liquefied Natural Gas Exports," dated September 2014 includes the following statement on page 11.

> In passing the NGA, Congress did not define "public interest;" however, in 1984, the DOE developed policy guidelines establishing criteria that the agency uses to evaluate applications for natural gas imports. The guidelines stipulate that, among other things, the market, not the government, should determine the price and other contract terms of imported natural gas. In 1999, DOE began applying these guidelines to natural gas exports.

In 1984, LNG imports were needed and they reduced risks for domestic consumers and manufacturers. Imports of LNG were in the public interest. LNG exports increase risk and especially market-determined LNG export levels by increasing consumer prices and reliability risks. Therefore, criteria used for decision-making in 1984 on LNG imports are inconsistent with what Congress had intended under the NGA, and should not be used to inform decision-making on LNG exports.

There is an explicit intent of Congress, in their asserting the requirement that LNG exports to non-free trade agreement (NFTA) countries must not be inconsistent with the public interest. And importantly, one can only assume they were referring to cumulative LNG export volumes because incremental volumes are too small to measure impact to the domestic price of natural gas. This is a reasonable assumption. When Congress passed the NGA and included the above-mentioned public interest provision, there is no mention of 'markets' as a predicate for determining levels of exports.

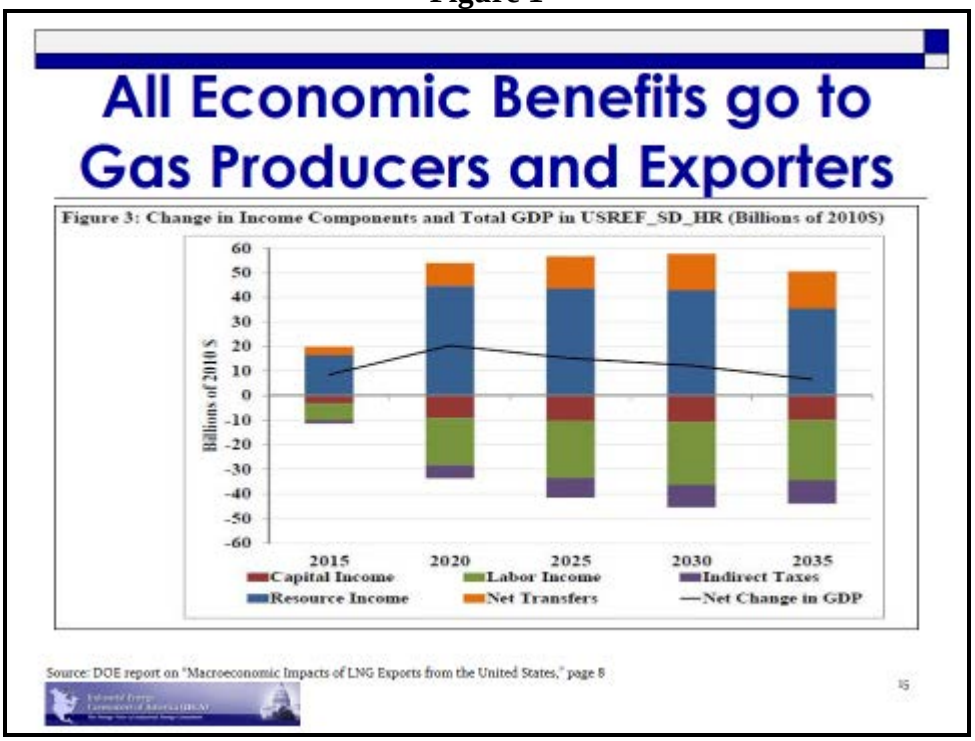
The U.S. Supreme Court has stated that "in order to give content and meaning to the words 'public interest' as used in the Federal Power and Natural Gas Acts, it is necessary

[1] "Federal Approval Process for Liquefied Natural Gas Exports," U.S. Government Accountability Office (GAO), September 2014.

to look to the purposes for which the Acts were adopted. In the case of the Power and Gas Acts it is clear that the principal purpose of those Acts was to encourage the orderly development of plentiful supplies of electricity and natural gas at reasonable prices."[2] Furthermore, the Court also stated that the "primary aim" of the NGA is "to protect consumers against exploitation at the hands of natural gas companies."[3] LNG exports exploit U.S. consumers when low domestic prices rise due to high global LNG demand.

To this point, the DOE report, "Microeconomic Impacts of LNG Exports from the United States" illustrates how natural gas companies exploit U.S. consumers by exporting LNG. You will note from Figure 1 below that the only entities that benefit from LNG exports are producers and exporters of natural gas. Everyone else is negatively impacted. The public loses. Natural gas costs increase, wages decrease, capital investment decreases, especially in manufacturing, and there is a reduction in indirect economic income.

Figure 1



U.S. consumers are benefiting by a U.S. natural gas market whereby domestic demand versus domestic supply is resulting is low relative natural gas prices. U.S. consumers are benefiting from our vast natural gas resources.

Why 'markets' cannot and should not be used to justify levels of specific LNG export applications volumes like this one or cumulative volumes of LNG exports is illustrated today with U.S. crude oil and gasoline prices. Because the U.S. crude oil price is connected to the global market, U.S. gasoline prices are at the highest levels in over four years. Global demand from other countries are dictating demand and price versus the

[2] NAACP v. Fed. Power Comm'n, 425 U.S. 662, 669-70 (1976).
[3] FPC v. Hope Gas Co., 320 U. S. 591, 610 (1944).

U.S. supply and demand. The net result is that the U.S. consumer is NOT benefiting from our vast crude oil resources. This can and will happen to natural gas if our low natural gas prices are connected to the high price of global LNG markets. It is it for this reason that connecting the low U.S. price of natural gas to the high global market price is NOT in the public interest.

What happened to Australia is another real time example that using markets to determine levels of LNG exports is not in the public interest. Australia has vast natural gas resources. Historically the consumer prices have been around $3.00 MMBtu. Now, because of LNG exports, the Australian consumer pays the Asian LNG net back price. This means that the Australian consumer pays the high Asian LNG price less transportation and liquefaction costs, which has resulted in Australian domestic consumer prices at $8, $9 and $10 MMBtu.

In fact, the Australian Competition and Consumer Commission started publication of LNG netback prices in order to boost price transparency.[4] The story highlights that the Australian consumer net back prices have increased from 7.27 Gj in 2017 to 10.69 Gj YTD 2018, a 47 percent increase. In approving LNG export terminals, the Australian government let markets determine the volume of exports. A disastrous impact to their consumers and manufacturing sector as jobs continue to decrease.

The DOE study entitled, "Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports"[5] illustrates that LNG exports would substantially increase U.S. natural prices. Page 54 of the reports states that "for all the reference supply scenarios in the more likely range, natural gas prices could be from $5.00 to $6.50 per MMBtu in 2040. These mid-range scenarios have a combined probability of 47%." This is the highest probability the study gave any scenario. Since today's Henry Hub price is roughly $3.00 MMBtu, the study confirms that natural gas prices could more than double causing domestic natural gas prices to rise to a level which would harm energy-dependent manufacturers and every homeowner. Consumers do not have an alternative. This is clearly not in the public interest.

There is all pain and no gain for consumers. The DOE report confirms that market determined U.S. LNG exports will connect U.S. prices to higher global LNG prices. The DOE report says that LNG exports will reduce the price that Asian countries pay and increase U.S. prices and eventually our prices will reach parity with Asia. At that point, the U.S. will have lost its competitive advantage. The report is explicit in highlighting the economic damage to especially manufacturing companies who are large users of natural

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[4] Australian Competition and Consumer Commission started publication of LNG netback prices in order to boost transparency. October, 2018. LNG World News https://www.lngworldnews.com/australian-watchdog-starts-lng-netback-price-publication/?utm_source=emark&utm_medium=email&utm_campaign=daily-update-lng-world-news-2018-10-05&uid=55872

[5] "Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Export," U.S. Department of Energy (DOE), June 7, 2018, https://www.energy.gov/sites/prod/files/2018/06/f52/Macroeconomic%20LNG%20Export%20Study%202018.pdf.

gas. Importantly, manufacturers will have lost their competitive advantage, with very serious long-term implications for a viable manufacturing sector, jobs, and investment.

IECA urges the DOE to conduct a rulemaking to define the public interest for LNG exports to NFTA countries before giving consideration to this and future application to export. The DOE should not give final approval to any LNG export application without having established the definition and evaluated the cumulative impact to the public interest. LNG volumes that connect low U.S. natural gas prices to high global LNG prices long term cannot possibly be in the public interest.

III. Violation of the Data Quality Act

DOE economic evaluations of LNG export public interest considerations must not violate the Data Quality Act (DQA). Other than the first EIA report, all DOE LNG export study reports have used proprietary economic modeling whose results cannot be duplicated by others, a violation of the DQA. (see appendix).

IV. DOE has not addressed vital short and long-term risks to consumers and the economy that are core issues in considering whether an LNG export application is consistent with the public interest.

a. DOE failed to consider pipeline and storage capacity risk constraints (and at peak demand), and their cost and reliability impact.

DOE failed to consider existing and future limitations in natural gas pipeline and storage infrastructure capacity and 'maximum' deliverability capacity needed to supply the U.S. market at peak demand 'and' export LNG. All DOE reports assume that pipeline and storage capacity will be adequate despite the fact that constraints already exist and the ability to build-out new capacity is threatened by multiple legal and public opposition headwinds.

The Henry Hub basis differential is an example. There are at least five pipelines with about 9 Bcf/day of capacity moving gas from Marcellus toward the Gulf, but only 2 Bcf/day has pipeline capacity to actually get the gas to LNG export terminals in Louisiana and Texas. This means that when a Gulf coast LNG export terminal starts up, the demand will drive up (blow-out) the HH basis price for consumers in the region. A direct cause and effect.

Today, gas marketers and industrial companies have difficulty securing capacity on pipelines because gas producers have locked in firm capacity and there is no excess capacity for manufacturing companies. We cannot grow our facilities without increased pipeline capacity.

The cost impacts of natural gas pipeline and storage peak demand limits are stunning as we saw from January 1 to January 8, 2018. Winter demand prompted severe gas and electricity price spikes in PJM at an estimated cost of $10 billion. The 2014 Polar Vortex estimated cost was $49 billion. Any one of these types of events greatly exceeds any "net

economic benefit" from exporting LNG. During the time frame of January 1 to January 8, 2018, 58.6 percent of total ISO gas fired electricity capacity was idle because of inadequate pipeline capacity. Nearly 45,000 MW of gas-fired capacity was idle in three NE ISOs.

b. DOE's failure to consider infrastructure pipeline deliverability and storage limitations is inconsistent with the President Trump's concern for reliability and resiliency of the electric grid.

Approving more applications to export is getting the cart before the horse. The DOE Electricity Office is doing the right thing examining vulnerability of the pipeline infrastructure. Studies are underway that will confirm what everyone already knows is that there are existing pipeline capacity problems.

c. DOE's failure to consider that LNG export consumers are fundamentally countries who have the ability to buy LNG from the U.S. at any price, even during winter peak demand, to keep their countries operating, results in higher marginal prices for consumers.

LNG buyers are basically countries. Either state-owned enterprises (SOEs) and or government-controlled utilities with automatic cost pass through. It is troubling that the largest LNG consuming countries have winter when we do which means that their highest demand is when we have our highest demand.

d. Failure to address cumulative demand versus natural gas resources.

A comparison of the U.S. Energy Information Administration's (EIA) AEO 2018 cumulative demand through 2050 to EIA's estimates of technically recoverable natural gas resources in the lower 48 shows that this demand would consume 69 percent of all resources. And, EIA has LNG exports peaking at only 14.5 Bcf/day. A very conservative forecast. While over time resources have been increasing, forecasted demand is out-stripping new resources. IECA did the same analysis using EIA AEO 2017 demand. That analysis concluded that 57 percent of all resources would be consumed. We anticipate that AEO 2019 will show substantially higher and faster consumption of available resources.

e. Failure to consider the uncertain nature of technically recoverable resources. Caution is warranted by DOE to not over-commit.

It is also important to keep in mind that *technically available* resources do not mean that they are *economical* to produce. To this point, the natural gas industry's Potential Gas Committee's most recent report of July 2017 states that 58 percent of all natural gas resources are classified as either 'possible' (new fields) or 'speculative' (frontier fields), which adds more uncertainty that these resources may not produce low-cost natural gas. All DOE LNG export reports assume that all of this natural gas is economical to produce when no one really knows because no one has ever drilled a well in these 'new fields' or 'frontier fields'.

f. Failure to consider future political decisions to limit acreage available for drilling or regulations on water or hydraulic fracturing that increase costs that must be recovered in higher prices of natural gas.

We have Presidential elections every four years that can change everything. As we have seen with some past Administrations, there were regulatory actions to limit access to federal lands for drilling and regulations to control drilling processes that increase the cost of production. A new Administration could inflict all of these and more thereby increasing natural gas costs and prices. States have and will continue to take action to limit drilling. Caution is warranted.

g. Failure to consider that the majority of producers of natural gas do not have a positive cash flow business.

Even with relatively higher crude oil prices for the first half of 2018, only 3 of 33 oil and gas companies posted positive cash flow. This is not sustainable long-term. Wall Street is concerned about the indebtedness of producers. Investors demand certain ROE's to continue to invest or lend money for drilling more wells. The fact that interest rates are also increasing puts further pressure on costs. Combined, this means that the price of natural gas must rise. DOE LNG studies do not address this fundamental issue.

h. Foreign consumers of U.S. LNG exports are receiving the benefits of using our infrastructure that is paid for by U.S. consumers, without paying for it. Their use of it increases our costs.

LNG exports use of U.S. infrastructure increasing the costs to all U.S. consumers. DOE has failed to consider these costs.

IECA wishes to intervene and be made a party to this proceeding, with all of the rights attendant to such status pursuant to 10 C.F.R. 590.303(b).

Sincerely,

Paul N. Cicio
President
Industrial Energy Consumers of America (IECA)
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202-223-1661
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APPENDIX

IECA letter on Data Quality Act to the DOE

July 27, 2018

Mr. Max Everett
Chief Information Officer (CIO)
U.S. Department of Energy
1000 Independence Avenue, SW
Washington, DC, 20585

Re: Data Quality Act Request for Correction: U.S. Department of Energy (DOE) Study on Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports, Docket No. 2018-12621

Dear Mr. Everett:

The Industrial Energy Consumers of America (IECA) requests a correction of the U.S. Department of Energy's (DOE) study on "Macroeconomic Outcomes of Market Determined Levels of U.S. LNG Exports," docket no. 2018-12621. The study uses a proprietary and non-reproducible economic model which violates the Data Quality Act (DQA). IECA seeks other important DQA corrections as well.

The DQA passed through Congress in Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554, HR 5658)[6] and mandates that agencies ensure "maximizing the quality, objectivity, utility, and integrity of information (included statistical information) disseminated by Federal agencies" to the public.

The DOE's "Final Report to the Office of Management and Budget on Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by the Department of Energy"[7] sets specific guidelines that must be met for the quality of information to be distributed to the public. Under the DOE guidelines, the study qualifies as "influential," meaning that it may result in an annual effect on the economy of $100 million or more.

The DQA guidelines, some of which are provided below, provide specific and important definitions. The study fails to meet these DQA standards.

- "Reproducibility: means the capability of being substantially reproduced, subject to an accepted degree of imprecision, and with respect to analytical

[6] Treasury and General Government Appropriations Act for Fiscal Year 2001(Public Law 106-554) https://www.fws.gov/informationquality/section515.html

[7] https://www.energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-DOE-67FR62446OMBquality.pdf

results, "capable of being substantially reproduced" means that independent analysis of the original or supporting data using identical methods would generate similar analytical results, subject to an acceptable degree of imprecision or error."

DOE's own guidelines say, "At minimum, DOE Elements should assure reproducibility for those kinds of original and supporting data according to "commonly accepted scientific, financial, or statistical standards."

- "Objectivity: means the information is presented in an accurate, clear, complete, and unbiased manner and the substance of the information is accurate, reliable, and unbiased. The guidelines require formal, independent, external peer review."

- "Integrity: means the information has been secured and protected from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification."

1. The DOE study uses a NERA proprietary economic model.

Third party economists have concluded that the results of the study are not reproducible, a requirement of the DQA. For this reason, a correction is necessary. A correction meaning that the study cannot be used for its intended purpose. Or, it must be redone with a non-proprietary economic model.

2. IECA seeks proof of paperwork and DOE decisions that the owner of the model, the peer review panel participants and study contributors fully complied with the DQA.

IECA believes that possibly every one of the individuals/entities involved have or will receive financial benefits from the natural gas and LNG export related industries, with the exception of John Staub of the EIA, and would not be independent in their views. A correction is necessary to comply with DOE DQA guidelines of objectivity and integrity.

IECA requests the documents that were required to be filed by study participants.
The DQA guidelines state that "peer reviewers be expected to disclose to agencies prior technical/policy positions they may have taken on the issues at hand, (c) per reviewers be expected to disclose to agencies their sources of personal and institutional funding (private and public sector), and (d) peer reviews be conducted in an open and rigorous manner."

If you have any questions, please contact me directly at 202-223-1661 or via email at pcicio@ieca-us.org.

Sincerely,

Paul N. Cicio
President

The guidelines, some of which are provided below, provide specific and important definitions. The study fails to meet DQA standards.

- "Reproducibility: means the capability of being substantially reproduced, subject to an accepted degree of imprecision, and with respect to analytical results, "capable of being substantially reproduced" means that independent analysis of the original or supporting data using identical methods would generate similar analytical results, subject to an acceptable degree of imprecision or error."

  DOE's own guidelines say, "At minimum, DOE Elements should assure reproducibility for those kinds of original and supporting data according to "commonly accepted scientific, financial, or statistical standards."

- "Objectivity: means the information is presented in an accurate, clear, complete, and unbiased manner and the substance of the information is accurate, reliable, and unbiased. The guidelines require formal, independent, external peer review."

- "Integrity: means the information has been secured and protected from unauthorized access or revision, to ensure that the information is not compromised through corruption or falsification."

JJ L

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Devon Kellogg

Department of Ecology:

As a parent, teacher, and longtime WA resident, I am deeply concerned about the effects of adding more greenhouse gasses to our atmosphere, increasing global temperatures and denying the children I raise and serve a stable climate system if we don't reverse course immediately.

Already we are experiencing the severe and costly effects of our warming world. We know from IPCC SR1.5 that we have just 10 years to reduce the offending emissions by 50% or more for our best chance at avoiding the worst effects. We cannot afford to add any more warming gasses to the mix!

For this proposed facility, fracking the gas, leaking it for transport, then producing methanol which is then shipped overseas to be used to make plastic is dirty, unhealthy and harmful at every step of the process. Permits for this project must be denied.

Thank you for your attention to this critical and urgent matter,
Devon Kellogg

Alexandra Richardson

This refinery would cause measurable and severe respiratory health problems due to air pollution to thousands of Washintonians and Oregonians, would harm iconic NW salmon and orca populations,and will fast-track our corner of the world to the climate tipping point. You know this is really bad. Please halt this project now.

Dimitri Stephanopoulos

I light of the recent IPCC report on the impending climate chaos and doom it would be completely foolhardy to go forward with this project. Please consider what this would mean for a warming planet. Nothing is more important now then reducing greenhouse gas emissions and informing the public to reduce their carbon footprint. Otherwise, it's going to keep getting hotter and more unstable until the planet will no longer be able to support organized life. It's not that far off at the rate we are emitting greenhouse gasses.

Julie Henling

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Julie Henling
4816 NE 47th St Seattle, WA 98105-3819
jhenling17@gmail.com

Carolyn Urban

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

I want a clean environment for all people to stay healthy now and forever!

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Carolyn Urban
11 W Aloha St Apt 501 Seattle, WA 98119-4741
curbanjgow@gmail.com

Alison Vrbas

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. It is time we start paying retributions to our native neighbors and not adding even more awful harm to their lives. I cannot stand by and let more environmental destruction occur, especially so close to my home.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Alison Vrbas
4513 49th Ave SW Seattle, WA 98116-4041
AliMVrbas@hotmail.com

Marian Karpoff

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We must treat the environment with care; no more carbon in the atmosphere!

Sincerely,

Marian Karpoff

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Marian Karpoff
11 W Aloha St Apt 702 Seattle, WA 98119-4743
fdmkarpoff@gmail.com

Shary B

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Shary B
1950 Alaskan Way Seattle, WA 98101-1075
shary50@yahoo.com

Shelley Hickman

The methanol plant proposed/rammed down throat here in Kalama is astoundingly stupid. This project was planned and marketed before any input from local citizens. This plant will be below my house and that means that whatever is being discharged from the plant on most days flows up the hills, targeting the north hills side of Kalama. Should this eyesore had been planned to billow out in the South side, the outrage from those folks with big beautiful homes that include a magnificent clear and clean view would have been overwhelming. As usual, poorer neighborhoods get dirty air. Stop this madness. Save our air and water for Washington State interests. Not Chinese.

Bonnie McKinlay

Thank you for accepting public comments on this crucial issue.
It boggles my brain to think that there is a possibility that Washington state which has benefited economically from science, can consider approving the Kalama Manufacturing & Marine Export Facility.The methanol facility proposal runs counter to the prevailing scientific wisdom on ending fossil fuel expansion. Please examine the extreme environmental harms caused by the hydraulic fracturing process. I urge you to study the report, "Too Dirt, Too Dangerous" from Physicians for Social Responsibility (2017).

Bonnie McKinlay

In the words of Washington State Governor Jay Inslee, "Climate change is a matter of great peril but also one of great promise. We can pioneer the industries of the future, create millions of good-paying jobs, and build the clean energy economy of the future." Washington is fortunate to have a governor who advocates for action on climate and who has the vision to see the economic advantages of abandoning fossil fuels and moving toward renewable energy.
Listen to your governor, do not accept the Kalama Manufacturing & Marine Export Facility.

Robert Brown

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. Climate change is real, and this plant would add to the problem without fixing much. I see very little promise in producing methane.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Mr. Robert Brown
1443 Edwards Ave Fircrest, WA 98466-6640
larkbrown@comcast.net

William Falk

This project would easily be one of the worst polluters in our state. The Kalama Methanol project is an environmental disaster in the making. This project will rely on an enormous amount of fracking to provide gas to make ethanol. This would be a catastrophe for the climate.

This project makes no sense financially or environmentally. I strongly object to this project and urge our NW policymakers to oppose it.

Sara Drescher

The proposed Kalama methanol plant would have severe negative health impacts for Washingtonians. As we grapple with the impacts of climate change, with the entire state under hazardous amounts of smog for much of September, it is reckless to consider building one of the largest methanol plants in the world here in our state. Methane, which will be leaked from the facility and in transport, is many more times potent than carbon dioxide as a greenhouse gas. The facility would use more water per day than the entire city of Portland.

This project will harm human health. As a physician, I cannot condone to building of this plant in our state.

Sara Drescher, MD

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

I am having concerns about how many verbal promises the Kalama methanol officials making to the local elected leaders like this one stated at the Cowlitz County Commissioner Debate between Kurt Anagnostou and Commissioner Weber.

What can you do to open public lands in Cowlitz County if elected?

Commissioner Weber replied at 22:53 of the video, "The third area is one that is intriguing and it involves the methanol plant. As you remember, the Kalama methanol plant carries within it a promise and expectation from the company that they will mitigate 100% of the cost of the fossil fuel that they used in the production processes to the tune of about $8 million dollars a year.

They have at least verbally that they would like a lot of that, if not all, of it, spent here in Cowlitz County to help build appropriate quality of place activities. So, you get that by supporting that application and getting that mill built.

RECEIVED
SEP 3 0 2020
WA State Department
of Ecology (SWRO)

Rich Doenges,
Department of Ecology,
PO Box 47775,
Olympia, WA 98504-7775

Re Kalama Refinery

Dear Mr. Doenges

The proposed refinery at Kalama has come to my attention; and I must take the time to write to you in your position of power.

May I ask, Who exactly would profit from this terminal?
Certainly not to residents of Washington state, nor the planet. Certainly not the salmon in the Columbia River, nor the Orcas who depend on them.

I hope you already plan to SAY NO to this disaterous idea. Future generations will look at the decisions we are making now, and either thank us or throw up their hands and cry.

Please take a Firm Stand and **stop this before it happens.**

Thank you,

Respectfully,
Liza Michaelson

Liza Michaelson

Po box 2835
Friday Harbor, WA 98250

MARK UHART
KALAMA, WA

PORTLAND OR 972
29 SEP 2020 PM 4 L

We protect what we love.

Mail a smile.

Thinking of You

RECEIVED
SEP 30 2020
WA State Department of Ecology (SWRO)

DEPT OF ECOLOGY
P.O. Box 47775
OLYMPIA, WA
98504-47775

DEAR ECOLOGY,
WE ARE ASKING YOU DENY THE SHORELINE PERMIT FOR THE KALAMA METHANOL PLANT. WE ARE AT A TIPPING POINT IN CONTROLLING OUR GHGs. THIS PLANT WILL BUMP ANOTHER 4.6 MMT OF CO2 INTO THE ATMOSPHERE EACH YEAR.

THE DECISIONS YOU MAKE ON THESE FOSSIL FUEL PROJECTS WILL DETERMINE IF WE ARE COMMITED TO ADDRESSING CLIMATE CHANGE HEAD ON. FOR THE SPECIES THAT CANNOT SPEAK, PLEASE, HEAR THEIR CRIES.

MARK UHART

Photo Credit: Mark Uhart

Washington Dept. of Ecology

Attn.: Rich Doenges

PO Box 47775

Olympia, WA 98504-47775

September 23, 2020

Dear Mr. Doenges,

All over the globe, fires rage. Glaciers and polar ice steadily melt at alarming rates. Climate change is happening now. We are in a crucial time regarding the survival of humankind and life as we know it.

It is our responsibility now to reject any new fossil fuel infrastructure. We must deny the Kalama Methanol Refinery. Instead we must look to create jobs and careers within sustainable industries.

The 'Without Kalama' case in this SEIS is a strawman argument. Saying this methanol refinery will create an emissions 'reduction' compared to if, theoretically, the plant were built using other technologies and locations, is a fallacy and an evasion of the climate crisis at hand. It is blatant greenwashing by The Chinese government corporation, Northwest Innovation Works. Insisting it has to be and will be built, whether here or somewhere else, is wrong. It does not, and it must not.

We must not allow a refinery that would cause more methanol to be burned as fuel overseas and result in significant methane pollution from fracking.

We must not allow this methanol refinery which would quickly become one of Washington's most significant sources of climate-changing pollution and use more fracked gas than all of Washington's gas-fired power plants combined.

Any mitigation for environmental impacts and emissions would at best be a tiny bandaid on a gaping wound.

Economic impacts for the next 40 years stated in this study fail to attempt to look at economic impacts of climate change and climate disasters over the coming decades.

Let's be bold, and redefine our generation by making decisive and final rejection of this new fossil fuel development. This, in hope for the future of us, our kids, grandkids and all future generations. I appeal to you, please reject the Kalama Methanol Refinery. It shouldn't be built here or anywhere, and we must do our part to stop it.

Thank you for your attention to this important matter.

Kind regards –

Sue Williard

San Francisco, CA 94122

Bea Ogden

I do not support fracking, the export of natural gas, nor the building of natural gas pipelines. These are all incredibly dangerous and destructive to the environment.

To Rich Doenges
P.O Box 47775
Olympia, Washington
98504-47775

September 17, 2020
Miss Donna C. Cameron
page 1 of 5 total

(← line Registeron)

https://ecology.wa.gov/Kalamamethanol
letter from https://admin.ecology.commentinput.com/?id=KG9ji.

Department of ECOLOGY
STATE of Washington
Southwest Regional Office
300 Desmond Drive
Lacey, WA. 98504

RECEIVED
SEP 30 2020
WA State Department of Ecology (SWRO)

I have been going to meeting at Longview, Wa. fairgrounds meeting place first 5 at the start of Proposed Turbo Plant Kalama, Wa. Been to permits in Kelso, Wa. Port of Kalama. Live only 9 miles away from Kalama. Its too close for me, Scares me the effects. Too large of scale ever to be proposed to be built ever anywhere. I've very concerned to future generations well being and life and possibly unable to reproduce human beings of 1 of side effects. So many more: Brain fog, forgetfullness, blurred vision, snow blindness, complete blindness, muscle problems, nueological problems, blisters, sores on skin disorders, who knows! pg1. Gases and Chemicals in air and water.

To Rich DoENges
Po Box 47775
Olympia Wa.
98504-47775

Miss Donna C. Cameron
September 17, 2020
Page 2 of 5

Presposed Kalama Turbo Plant
Kalama Manufacturing & Export facility

I've had Natural Gas in 2 homes. Lived the side effects and use of it. Gas causes rotten eggs smells; like the old Tacoma, Wa. plants that my daddy + I use to drive by to work.

Some Concerns use of water 4 time more than Ny uses in one year - just their guess or more! How long would it take to drain down the water so for that it would possible harm other water front seaport bussiness, where they could not run? Who's going to pay for water be transported if we get low, from where, how much to pay for water? We cannot promise the water. Even the Kalama City has flooded almost every year, not promise. We've had droughts too!

Who would pay to bring water in? Mother Earth, wind, ~~clouds~~ dancers; Snow clouds, Hail, water we cannot promise.

pg 3

Rich Doenges
PO Box 47775
Olympia, Wa.
98504-47775

Miss Donna C. Cameron
September 17, 2020

Proposed Kalama Turbo Plant
Kalama Manufacturing and Marine Export facility:

When as person has natural gas in house flames burn hot to touch heat's area up. It would heat our Mother Earth up in all her elements and surrounding water and lands and wet lands, fish and ocean life our air, and water, trees, birds. Mother Earth has been giving us warnings - earthquakes, chemicals in our ~~clear~~ clean water with ocean babings. We need to watch the signs, smell, hear, see, were being tested. We are the keepers of Mother Earth and surrounding elements. Mother Earth is our heartbeat of life. If she fails we fail next generations if we can produce life - if we make this mistake for next generation of life to survive. It's on your shoulders are you willing to take a chance for jobs and new monies in area or life for important? My daddy & I drive in Tacoma I asked Daddy why do people build big places like these that have smoke & smell bad?

Rich DoEnges
PO Box 47775
Olympia, Wa
98504-47775

Miss Donna C. Cameron
September 17, 2020
page 4 of 5

(360) 407-4030 Local

When Investor hear selling of high yeild how fast they could make monies. They don't think about the result. Its Greed, lots of monies, Sounds good on paper & meetings of investing money. How soon they could retire. But what about people in the area they didn't think of that. Or Even future children unborn because of this. These people meant well. Sometime money blinds people thoughts. Even people that first were invited to the (country Japan) to see small frackin wined & dined, room, feet thought wow Jobs, money to our city. But they didn't think of enviromental water, air toxins, and human problems, effects. We all need money to live and Jobs to pay our bills at what expense! Save our Mother Earth, oceans, wetlands, Kalama, people lifes and air and forests.

We are Keepers and protectors entrusted to not damage mother earth or energy field.

Rich Doenges
P.O Box 47775
Olympia, Wa.
98504-47775
(360) 407-4030 Locale ID conference ID: 4481906

Miss Donna C Cameron
September 17, 2020
page 5 of 5 total
last page

online http://admin.ecology.commetinput.com/?id=KG9jsi

Shes has heartbeat, brings food to grow. To harvest to feed all. Thank you mother Earth we are grateful. We wish to continue in reproducing future generations life of humans on earth. To do so we must be carefull what we manufacture on or do under surface and internal underground + above. We need Department of Ecology help protect make laws and all elements forms of life earth, water, oceans. for future generations to come. Please DoNoTlet this plant be built. Please do NOT hurt our Children allow them life to live, breath of fresh air. Love and SAVE our Planet Earth Please!

Thank you

Keep Kalama City Beautiful & family place! Clean Air

Miss Donna C. Cameron
900 Grade STREET unit 76
Kelso, Wa
98626-2945 USA.
dccameron.thorne13.h1@gmail.com

PS. Please send me a STAMPED sealed, Time of each page to me. thank you in mail if you could please.

pg5

RECEIVED
OCT 02 2020
WA State Department
of Ecology (SWRO)

Name: Teresa Flynn
Address: 610 Taylor Rd., #1813
City: Kalama
Province: Washington
Postal Code: 98625
Email: tflynn70@gmail.com

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

I Encourage the Department of Ecology State of Washington To deny the NWIw application. The facts are the project would add a total of 3.6 million metric tonnes of green house gas emissions per year .This is totally unacceptable. We as citizens of Kalama insist you deny the proposed project.

Thank you
Teresa Flynn

Department of Ecology

RECEIVED
OCT 02 2020
WA State Department
of Ecology (SWRO)

This Methanol Refinery will pollute our town and State of Wa. This location is a Migratory Bird route We dont need the fracked gas, The pipeline, and damage to our environment. It also a glutonous use of gas

Thank you.

Teresa Flynn
610 Taylor Rd #1813
Kalama, Wa. 98625

RECEIVED
OCT 02 2020
WA State Department
of Ecology (SWRO)

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

The Department Ecology needs to dismiss the speculative basis for this proposed project. The idea they would displace more polluting facilities using coal is not proven.Washington State needs to protect our citizens, living things, and resources. No Kalama Methanol Refinery! Teresa Flynn Kalama, Washington

610 Taylor Road #1813
Kalama, Wa. 98625

RECEIVED
OCT 02 2020
WA State Department
of Ecology (SWRO)

Name: Teresa Flynn
Address: 610 Taylor Rd., #1813
City: Kalama
Province: Washington
Postal Code: 98625
Email: tflynn70@gmail.com

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

My husband John & I retired to Kalama, Wa. NWIW is proposing to build a fracked gas to Methanol refinery here.There is no way this project would reduce carbon emissions, in fact it would increase carbon pollution in huge amounts. This is their shell game and we would be the losers. Dept. of Ecology needs to protect the citizens from this Polluting nightmare.

Thank you
Teresa Flynn

RECEIVED
OCT 02 2020
WA State Department
of Ecology (SWRO)

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

This proposed Methanol Refinery by NWIW does not meet the State of Washingtons goals for reducing climate pollution. No Kalama Methanol Refinery! Thank you Teresa Flynn Kalama, WA.

610 Taylor Rd. #1813
Kalama, Wa. 98625

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

My husband and I live in Kalama and are against the proposed Methanol Refinery This would be a out of control use of our resources. The pollution left behind would be enormous. The select few that would get rich ,from this never before built design is a pipe dream.Our own governor Jay Inslee has come out against this project. Pleas this has gone on way to long ,put an end to this proposed Kalama Methanol . Refinery. Teresa Flynn Kalama, Wa.

Thank you

Teresa Flynn
610 Taylor Rd #183
Kalama, Wa.
98625

The main purpose of this proposed project is to provide the Chinese government with a source of methanol that they can use as either a source of olefins for the plastic industry or as a fuel for transportation and industry. NWIW has stated that the intent of the methanol they will produce is intended for plastic manufacturing. The truth of the matter is that once the methanol is sold on the open market there is no way to control what it is used for.

The speculative theory that methanol produced by NWIW would result in a net reduction of global green house gas emissions due to global methanol market displacement is ludicrous. Fracking gas, transporting it through pipelines, refining the gas into methanol, transporting the methanol via tanker ship and ultimately burning the methanol all add to the global climate change crisis.

Department of Ecology needs to focus on what they can control within the State of Washington and not buy into the speculative theories that the proposed project would be "good" for the global environment. The fact of the matter is that reliance on fossil fuels is what got us to where we are now in the first place; global warming, ocean warming, sea level rise, shrinking sea ice and ocean acidification.

I encourage the Department of Ecology to adhere to the facts that this project would add a total of 3.6 million metric tonnes of green house gas emissions per year and deny the project on that basis.

Than you for your consideration

JOHN FLYNN
610 Taylor Rd. #1813
KALAMA, WA. 98625

RECEIVED
OCT 02 2020
WA State Department
of Ecology (SWRO)

Dear Mr. Doenges,
Don't allow the world's largest
gas-to-methanol refinery
to harm our climate and
Kalama. Keep our communities
safe and unpolluted.
I'm counting on you to stop
the refinery from coming
to Kalama. Sincerely, Catherine
Ingram

RECEIVED
OCT 05 2020
WA State Department
of Ecology (SWRO)

September 30, 2020

Mr. Rich Doenges

P.O. Box 47775

Olympia, WA 98504-47775

Dear Mr. Doenges,

I am opposed to the Kalama Manufacturing and Marine Export Facility in any form. The first rule of "holes" states that when you are in one, stop digging. We are in a climate crisis. We need energy solutions that don't add to the problem. There is no way to mitigate the downstream effects of this facility: the health impacts to the people of Washington, (it turns out that pollution even exacerbates the effects of Covid), the fuel needed for transport, and the risk of spills to and from the facility, to name a few. All of this so the people in China can make more of the plastic that clogs our oceans.

At some point, if we are going to save this planet, we need to start saying, "NO", to more fossil fuel facilities. Please do the right thing.

Sincerely,

Carol von Borstel

Carol von Borstel, Sequim, WA

carolvb@olypen.com

Sept. 29, 2020

Rich Doenges
Dept. of Ecology
PO Box 47775
Olympia WA 98504-7775

RE: Kalama Mfg. and Marine Export Facility
Draft Second EIS

Dear Mr. Doenges:

I am writing regarding the above project and to express my strong hope that the permit for this project be denied. While the draft EIS goes into great length regarding methanol / greenhouse emissions, I did not see where it addressed the issue of potential contamination of the Columbia River. Is Innovation NW prepared to evacuate all of the people downstream from the plant in the event of an accident and assume full responsibility for its cleanup? This project is a disaster on many environmental levels and is not in the best interest of the State

of Washington — not its land, not its rivers, and not its people. I strongly urge that this proposal be denied.

Thank you for your consideration.

Sincerely,

Kimberly Sims
9512 30th Ave NE
Seattle WA 98115

RECEIVED
OCT 05 2020
WA State Department
of Ecology (SWRO)

James Bruckner

Dear Decision-Makers at the Washington State Department of Ecology and other responsible Decision-Makers;
Regarding the proposed permitting of the methanol plant in Kalama, WA:

Your commission is to protect the air quality in Washington State. Will permitting this plant and its addition of "almost one million metric tons of carbon dioxide equivalent a year" execute that commission?

Your charter is to protect the air quality in Washington State. If "the Kalama facility would be one of the 10 largest sources of greenhouse gas emissions in the state", will you fulfill your charter?

Your ethical responsibility is to preserve the good air that we have in Washington State so that it does not become more like the air in China (where my son lived for three years and still suffers lung distress). Will trading carbon emission chips with China fulfill your responsibility to the citizens of Washington State?

Do you trust China to reduce their methanol production emissions in exchange for our increase in CO2 in a world that demands more methanol? Is this a good bet for reducing world carbon numbers, or is it a deal with the devil? Isn't it your job to protect our air, in Washington and world-wide? Where is your political logic?

Do you trust the onsite Chinese managers and chemical engineers to have Washington State air quality in mind, when compared to their own, it will still seem pristine to them after the "almost 1,000,000 metric tons" per year (= 2,204,640,000 pounds) have been added to our air. Chinese companies are ultimately managed by the Chinese government and its billionaires. Do your job please. Stop this backward thinking.

Has Homeland Security weighed in on this proposed methanol site? Will it be a good policy to allow a Chinese managed plant to sit on the only narrow piece of land where the three corridors of commerce come very close together? Interstate 5, the Columbia River, and all the North-South rail-lines converge exactly on this site. Will you let the Chinese build this bomb on this regional corridor? Have you heard of Beirut in the news lately?

This failure in leadership and foresight does not need to be your legacy. The banal corruption of leadership for profit is a never-ending story. Your job is to protect the clean air of Washington State, not to add 2 trillion pounds of CO2 per year to it. Please fulfill your charter, commission, and ethical responsibility.

Sincerely,

James K. Bruckner, Ph.D.
149 Date Street
Kalama, WA 98625

Public Comment:

Hello, Marcia Denison here,
I live just South of the ridge
South of Kalama River Valley,
North of Lewis River Valley.
We just faced Big Hollow fire that
grew 24,000 Acres of Unconstrained
Fury. Winds in these mountains are
strong and ever shifting.
A leaky pipeline or wind mixing
flames with methane could
increase wildfire and even ignite it.
Potentially a 24,000 Acre fire could
become 240,000 like in California
where fracking has cause Emense
gas leaks and fires.
Please, do not be Chineze
President Xi Ping's "yes" men! He
doesn't care how many people have
died of his Corvid-19 and he doesn't
care about our climate change,
massive wildfires and people
burning to death in their sleep.

OCT 02 2020

Please say No! Tokatama
Methanol
Plant.

Thank you, Marcia Denison

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OCT 05 2020
WA State Department
of Ecology (SWRO)

Rich Doenges re: NWIW SSEIS
Washington Department of Ecology
Southwest Regional Office
P.O. Box 47775
Olympia, WA 98504-7775

Greetings:

I am asking that Washington reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama.

I live and the banks of the Columbia River and I believe that we must be stewards of this river and as such we must do all we can to prevent unreasonable risks to it's waters. Additionally, I see no reason to add to the world's greenhouse gases by encouraging the dangerous methods of fracking gas and transporting it great distances via pipelines.

NWIW misled your agency, and the public, about the purpose and impacts of the refinery. I am counting on Ecology to dismiss NWIW's misleading claims and accurately account for the project's upstream and downstream climate pollution. God knows there is enough plastic in the oceans. But NWIW is telling their investors they have other goals than just making plastic.

There is no reason to risk our environment on a wink and a promise that the methanol will be used appropriately once it reaches China's shore.

For the community of Kalama, and others on the Columbia River and for our climate, the risk is simply too big. A methanol plant is a design based on fuel designs of the past and not of the future I am counting on you to do the right thing and stop this dirty, dangerous fossil fuel export project.

Sincerely;
M Laurel Whitehurst
M. Laurel Whitehurst
1308 NW Sluman Rd
Vancouver WA 98665

——— Original message ———
From: cddunn <cddunn@kalama.com>
Date: 10/1/20 11:58 AM (GMT-08:00)
To: Carol D <cddunn@kalama.com>
Subject: Menthal Plant in Kalama

ATTN: Rich Doenges
NWIW SSEIS
WA Dept of Ecology

My question is "why are we dealing with China". We are trying to rid them from our lives. They have caused death to our pets through dog food, medicine shortages and now COVID-19 to name a few. I see other counties, cities, groups, etc. in WA wanting the methanol plant, but no one is having it built in their back yard.

Well, no one asked us. I believe the citizens of Kalama and Cowlitz County should have the opportunity of voting whether we want it in our back yard or not.

We have a pristine river which won't be staying pristine once the plant is built. Same for the air. Some of the jobs will be good for building the plant but when it's in operation, there will be only a few jobs.

I have lived here in Kalama for 45 years and will be sad to see the demise of our beautiful area.

Carol Dunn
P.O. Box 165
Kalama WA 98625
Carol Dunn

RECEIVED
OCT 05 2020
WA State Department
of Ecology (SWRO)

Greg Martin

The proposed project runs counter to climate-related statutes and aspirations in our region and poses a serious environmental danger. First, the SSEIS clearly shows that the project in itself would substantially increase greenhouse gas emissions. Further, the economic case for the project is premised on increasing consumer demand for natural gas in the Northwest over a period of decades, which could only occur by continuing to expand the current gas production and delivery infrastructure, rather than transitioning to renewable energy sources as is urgently needed. Finally, I am concerned about the proposed methanol plant's vulnerability to a major earthquake. Projections I've seen for a Magnitude 9 quake in the Cascadia Subduction Zone indicate the potential for catastrophic damage along major rivers due to shaking and soil liquefaction. The Willamette is already lined with fuel terminals on ground that is likely to be liquefied by a big quake, leading to a massive release of volatile chemicals. I assume the site of the Kalama facility would be vulnerable as well, though I did not see this addressed in the SSEIS. Thank you for your consideration.

Akaya Kreger

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

My husband and I live in Kalama and are against the proposed Methanol Refinery This would be a out of control use of our resources. The pollution left behind would be enormous. The select few that would get rich ,from this never before built design is a pipe dream.Our own governor Jay Inslee has come out against this project. Pleas this has gone on way to long ,put an end to this proposed Kalama Methanol . Refinery. Teresa Flynn Kalama, Wa.

Thank you

Teresa Flynn
610 Taylor Rd #183
Kalama, Wa.
98625

The main purpose of this proposed project is to provide the Chinese government with a source of methanol that they can use as either a source of olefins for the plastic industry or as a fuel for transportation and industry. NWIW has stated that the intent of the methanol they will produce is intended for plastic manufacturing. The truth of the matter is that once the methanol is sold on the open market there is no way to control what it is used for.

The speculative theory that methanol produced by NWIW would result in a net reduction of global green house gas emissions due to global methanol market displacement is ludicrous. Fracking gas, transporting it through pipelines, refining the gas into methanol, transporting the methanol via tanker ship and ultimately burning the methanol all add to the global climate change crisis.

Department of Ecology needs to focus on what they can control within the State of Washington and not buy into the speculative theories that the proposed project would be "good" for the global environment. The fact of the matter is that reliance on fossil fuels is what got us to where we are now in the first place; global warming, ocean warming, sea level rise, shrinking sea ice and ocean acidification.

I encourage the Department of Ecology to adhere to the facts that this project would add a total of 3.6 million metric tonnes of green house gas emissions per year and deny the project on that basis.

Than you for your consideration

JOHN FLYNN
610 Taylor Rd. #1813
KALAMA, WA. 98625

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OCT 02 2020
WA State Department
of Ecology (SWRO)

Woodland WA Chamber of Commerce and Visitor Center
900 Goerig St.
Woodland, WA 98674
360-225-9552

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OCT 07 2020
WA State Department
of Ecology (SWRO)

September 15, 2020

Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Mr. Doenges:

The Woodland Chamber of Commerce writes today in support of Northwest Innovation Works' proposed methanol facility in Kalama. We believe the draft report released by Ecology answers all the questions it was directed to address in a thorough and comprehensive manner. It should be finalized without further change or delay and the permits for this project should be approved.

As the report makes clear, the benefits of this project will extend well beyond the roughly 100 acre site where it will be built. Woodland residents will benefit from the number of family wage jobs the project will bring. And the new tax revenue from this project will be critically important to funding critical services from our local and state governments.

In addition, the net environmental benefit globally is now well established. These are exactly the kinds of projects we need to fight climate change. And the mitigation plan for in-state emissions sets a new standard for how Washington State can be a leader in building a sustainable economy.

With this project we don't have to choose between jobs and the environment. Our community has supported this project since it was first proposed over six years ago. Given the events of this year, the need for jobs and tax revenue is greater than ever. The questions around the plant's emissions have been thoroughly answered – the science has spoken – and it is now time to get to work.

On behalf of the Woodland Chamber of Commerce, we ask that you finalize this report without changes or delays and approve the necessary permits immediately. Our environment and our economy can't wait any longer.

Sincerely,

Janice Graham
Woodland Chamber President

Dear Rich Doenges,

I am a Washington citizen who wishes this to protect our precious NW environment. The surrounding smoke is evidence of the urgency to move quickly to a low carbon future. The Kalama Methanol Refinery is not the way to get to that future. I am counting on the Dept. of Ecology to safeguard our health and environment by rejecting NWIW's proposed Kalama methanol refinery.

Respectfully, Janet Hedgpath

PORTLAND OR 972
18 SEP 2020 PM 3 L

MARK UHART
KALAMA, WA

PORTLAND OR 972
24 SEP 2020 PM 4 L

We protect what we love

Mail a smile.

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SEP 28 2020

WA State Department
of Ecology (SWRO)

DEAR ECOLOGY,

I AM ASKING YOU TO DENY THE SHORLINE PERMIT FOR THE KALAMA METHANOL PLANT. I TOOK THIS PICTURE ALONG THE COLUMBIA RIVER, UNOBSCURED BY THE VAPOR CLOUDS OF A REFINERY, THE NOISE AND THE SMELL! WHEN THE SALMON FAIL TO RETURN TO SPAWN THE EAGLES WILL BE GONE. SO MUCH WILDLIFE DEPENDS ON THE CRITICAL AREAS IDENTIFIED IN THE NMFS BIOLOGICAL OPINION. WHAT WOULD THIS EAGLE SAY IF IT COULD VOTE ON THIS PROJECT? DENY IT!

DEPT. OF ECOLOGY
P.O. Box 47775
OLYMPIA, WA
98504-47775

Photo Credit: Mark U

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SEP 28 2020
WA State Department
of Ecology (SWRO)

September 22, 2020

Comments re: Draft Second SEIS for the proposed Northwest Innovation Works Methanol Refinery and Export Project in Kalama WA.

To: Mr. Rich Doenges, Washington State Department of Ecology
PO Box 47775, Olympia, WA 98504-77753

I am a resident of San Juan Island in Washington State.
I am writing to you to ask you to deny the proposed Kalama Methanol Refinery project for these reasons:

Even though our islands are almost 300 miles away, the Columbia River is connected to us because of our island icons, the endangered Southern Resident Killer Whales. Orcas have been tracked following the salmon to the mouth of the river where they forage on the fish from the Snake and Columbia Rivers. These salmon, and therefore the orca, depend on the health of the rivers for survival. With this refinery, the river and its food chain would be threatened by: oil and fuel spills, ship strikes, air pollution, noise pollution, and water consumption and contamination.

As we recently experienced from the harmful air quality resulting from the wildfires in Oregon and California, air moves. What happens on the Columbia will not only affect our state, but the region and eventually the globe. This project should not even be considered due to the staggering amount of greenhouse gas emissions which would be produced as a result of before/during/after the fracking/piping/refining/shipping process associated with it. Where does this project fit in with Governor Inslee's push to reduce carbon emissions in our state? How does this project make any sense when all federal report on climate change warns that our nation is in great social and economic peril as a result of pollution of our own making? Why would we make more, on purpose?

The argument made by the backers that if we don't pollute then someone else will? How about NO POLLUTING by anyone? Our state should not be duped into becoming pollution enablers, and paying for it as well -- both in money and our health. I urge denial of this project. There is too much to lose, such as clean air and clean waters of the Columbia River, our state, region and planet.

Thank you for your consideration of these comments.

Ms. Shaun Hubbard
PO Box 805
Friday Harbor WA 98250
Email: shaunalice@gmail.com

cc: Governor Jay Inslee, PO Box 40002, Olympia WA 98504-0002
Port of Kalama, 110 West Marine Drive, Kalama WA 98625

23 Sept 2020

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SEP 28 2020
WA State Department
of Ecology (SWRO)

Dept. of Ecology
State of Washington

Howdy—

I, like many other people in southwest Washington, do not wish to see the Kalama Manufacturing and Marine Export facility put into operation.

Is Washington state really interested in stopping climate change or not? Lowering greenhouse gas emissions is a worthy cause and this methanol plant is not the way to do it. Whether the methanol is used for fuel or plastics — does it really matter? Either one is detrimental to our area, as well as Mother Earth.

Will the owners of this facility be held strictly liable for troubles that will undoubtedly

occur over the years? The Columbia river has been a dumping ground for too long and one or more ship, or trans-loading, mishaps will only exasperate the problem.

I hope the department of ecology will look at, and trust, the facts and not just the temporary economic benefits - if any.

Thank you.

Sincerely,

D. Sieler

Dennis L Sieler
2781 Terry Ave
Longview, WA 98632

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WA State Department
of Ecology (SWRO)

PO Box 470 Montesano, Washington 98563

September 20, 2020

Rich Doenges, Director
Department of Ecology
Southwest Region
PO Box 47775
Olympia, Washington 98504-775

In Re: Kalama Manufacturing and Marine Export Draft Second Supplemental EIS

Dear Director Doenges,

The Grays Harbor Audubon Society is opposed to the NWIW methanol refinery proposed to be built on the Columbia River. At a time when we must reduce carbon pollution and the impacts of climate change, considered a major threat to our security, introducing the proposed refinery would cause millions of tons of greenhouse gas pollution. This level of pollution is inconsistent with achieving Washington's climate goals, protecting Washington's Shorelines, and charting a path to keep global temperature rise below 2 degrees C. The fact that this is a permanent installation being constructed means that methanol will continue to be exported to (probably) China for many decades to come, a strong source of greenhouse gases out of control of any U.S. regulations.

The SEIS argues that methanol could "displace" dirtier energy when in actuality it will add to the amount of dirtier energy. Ecology's analysis contemplates 40 percent of the methanol being burned, yielding 2 million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate 5 million tons of pollution each year.

Over 62 bird species comprising thousands of birds were identified in the area of the Columbia River near the proposed refinery by Washington Audubon members in September 2019. Birds are seriously affected by everything, from changes in the timing of their food (insects) items to massive die-offs from huge regional fires during migration. Greenhouse gases causing global warming is upsetting many of the intricate timing regimes of natural systems, including flowering, insect emergence, wildlife food sources, migration and others not yet recognized. Life as we know it depends on lowering greenhouse gases, not allowing them to persist well into the future.

In addition, the proposed facility would negatively impact public health and negatively.

1. Fracking pollutes water systems and causes physical harm from earthquakes and the devastation of surrounding habitat.
2. The pipeline required to transport fracked gas has a high-risk potential for leakage and spills, releasing harmful chemicals into ground and surface water.
3. On-site operation of the facility would pollute the Columbia River and its tributaries with harmful runoff and contribute to reduced air quality leading to increase instance of asthma and other respiratory illness.
4. Methanol emits a wide range of hazardous air pollutants including ammonia, carbon monoxide, nitrogen dioxide.
5. Methanol is highly flammable and extremely toxic if ingested or inhaled.
6. Spills into large natural bodies of water, such as rivers and oceans, cannot be contained.
7. Increase in tanker traffic would harm endangered salmon and increase risk of ship strikes that harm or kill whales near the mouth of the Columbia River.
8. Pipelines will need to be built to supply the refinery, endangering communities along the route.

9. Accumulations of methanol vapors in confined spaces may explode if ignited, and containers filled with methanol may rupture violently if exposed to fire or excessive heat for a prolonged duration.
10. The proposed plant would be built on soil with moderate to high risk of liquefaction in a known earthquake zone.

Washington cannot contribute to the goal of keeping global warming "well below 2 degrees Celsius" by allowing major polluters to move forward. A low-carbon future demands investment in lower-emitting production processes. Ecology should not assume that future energy needs must be met by fossil fuels. All fossil fuel pathways would be massive polluters. None of them will solve our climate crisis.

Ecology also fails to consider whether cleaner energy technologies may dramatically displace the need to use methanol for transportation fuels. Industry studies show that more investment in fossil fuel industries yield much less job growth than greener energies. There is a greater job return in moving to a green economy. All of these high-carbon paths are unacceptable and inconsistent with Washington's clean energy and climate goals, and will not bring the jobs promised.

Thank you for your careful consideration of these concerns. The risk is too great.

Janet Strong

Janet Strong, President
Grays Harbor Audubon Society
on behalf of the
Board of Directors:
Jude Armstrong
Cecilia Boulais
Arnie Martin
Robin Moore
Mary O'Neil
Linda Orgel

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WA State Department
of Ecology (SWRO)

PORT OF LONGVIEW
EST. 1921

September 23, 2020

Attn: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47775
Olympia, WA 98504-7775

Mr. Doenges:

The Port of Longview ("Port") writes today in refence to the Second Supplemental Environmental Impact Statement ("SSEIS") the Department of Ecology ("Ecology") is currently conducting on Northwest Innovation Works' ("NWIW's)" proposed Kalama methanol facility.

The Port believes that the draft SSEIS prepared by Ecology is extremely thorough and examines all the questions it was asked to answer. In addition, Ecology's highly detailed and rigorous analysis proves the argument that NWIW'S Kalama facility will result in a net reduction in global Greenhouse Gas (GHS) emissions. Using Ecology's own best estimate, this project would result in a net reduction of over six million metric tons of GHGs every year—equal to eliminating approximately two times the number of GHGs as the entire city of Seattle emits annually.

With this project, our region has the opportunity to create up to 1,000 family wages jobs during a three-year construction window and generate $30-$40 million in new tax revenue for our local and state governments. This represents a transformational opportunity for our county's economy. Not only will this project benefit the State and Cowlitz County, it will benefit the Port of Longview by showing the world that Washington State is open for business. Unfortunately, that is not currently the perception we see when meeting with potential tenants.

In addition, the mitigation plan to account for NWIW's in-state emissions is comprehensive and sets a new standard for how Washington State can be a national and international leader in creating a sustainable economy.

Since 1921, the Port of Longview has relied on the Columbia River system for its livelihood. And today, the Port continues to rely on it to support nearly 20,000 jobs, $34 million in state and local taxes and $2.9 billion in overall economic value for its community. From strong environmental practices and economic prosperity to protecting health and safety, the Port of Longview Commission and staff unanimously urges the SSEIS to be finalized without further amendment and the permits for this project to be approved.

Sincerely,

Allan Erickson	Jeff Wilson	Doug Averett	Dan Stahl
Commission President	Commission Vice-President	Commission Secretary	CEO

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SEP 28 2020

WA State Department
of Ecology (SWRO)

Daniel A. Hannon
634 S.E. 52nd Ave.
Portland, OR 97215

Rich Doenges
NWIW SSEIS Dept. of Ecology
P.O. Box 47775 Olympia, WA 98504-7775

I have been reading about the proposed methanol plant that may be built in Kalama, WA. My understanding is that this facility will be processing fracked natural gas, to be made into methanol which would then be shipped to China, where it would be used in the manufacture of plastics. I do not think this is a good plan for several reasons:

1. The source of the natural gas—fracking—is a major concern. The chemicals used in fracking are toxic, and once they go down into the ground they are irretrievable. This means they could be contaminating groundwater into the distant future. Capped wells also leak methane-- a compound that traps forty times more heat than CO2. I believe we have a responsibility to discourage fracking.
2. The CO2 generated by the trains that bring the fracked natural gas to Kalama must be taken into account, although it doesn't show up in the articles I have read. The CO2 generated by the ships that take the methanol to Asia is another factor that needs to be considered, along with the CO2 used in the plant's construction.
3. I imagine jobs for the people of Kalama will be a big issue, and Northwest Innovation Works, which is proposing this methanol plant, will no doubt be pitching the job issue to county officials and the Kalama Chamber of Commerce. There is a short-term appeal to new jobs, but many of the jobs are likely to go to outside people with the skills needed to build a complicated processing plant. In the long run, the local people are likely to suffer the higher rates of cancer and other diseases that many people in Louisiana suffer who live near petroleum processing plants. Those who make the real money will be far away from the Kalama site.
4. The Columbia River itself also has to be considered, and it is of interest to Oregonians as well as Washingtonians, since it borders both states. By the time it reaches Kalama, it has been dammed fourteen times. It takes in the treated sewage of many towns and cities. It takes in the effluents from paper mills, farms and streets from hundreds of towns and cities in the greater Columbia River watershed. Yet the lower Columbia River is still a prime area for wildlife. How will this methanol plant affect the last portion of the river?
5. Finally, I just heard that China has pledged to have a carbon-neutral economy by 2060. That is admirable, especially since the USA has made no such pledge. However, the carbon a country generates outside of its own borders does not count, so China would be "farming out" its carbon emissions to our country, and this puts us in a position similar to that of many "developing" nations, doing the developed world's dirty work.

Daniel A. Hannon

Washington Dept. of Ecology
Attn.: Rich Doenges
PO Box 47775
Olympia, WA 98504-47775

Sept. 17, 2020

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SEP 21 2020
WA State Department
of Ecology (SWRO)

Dear Mr. Doenges,

I am Deena Tyrrell Grossman writing from Portland, Oregon, less than 35 miles from Kalama, Washington. Thank you for taking public comments on the second greenhouse gas analysis, NWIW Kalama fracked-gas to methanol refinery.

We can't breath!
This week Governor Jay Inslee wrote a letter to President Trump, saying:

"It is time to abandon the disastrous course that now envelops us in smoke and ash. Rapid climate change driven by human activity has created a fusion of natural risk and man-made catalysts to accelerate these unnatural disasters. Your reckless statements that climate change is a hoax and your gutting of environmental policies benefit no one but fossil fuel companies. Deliberate and decisive action must be taken on a global scale with the United States in the lead."

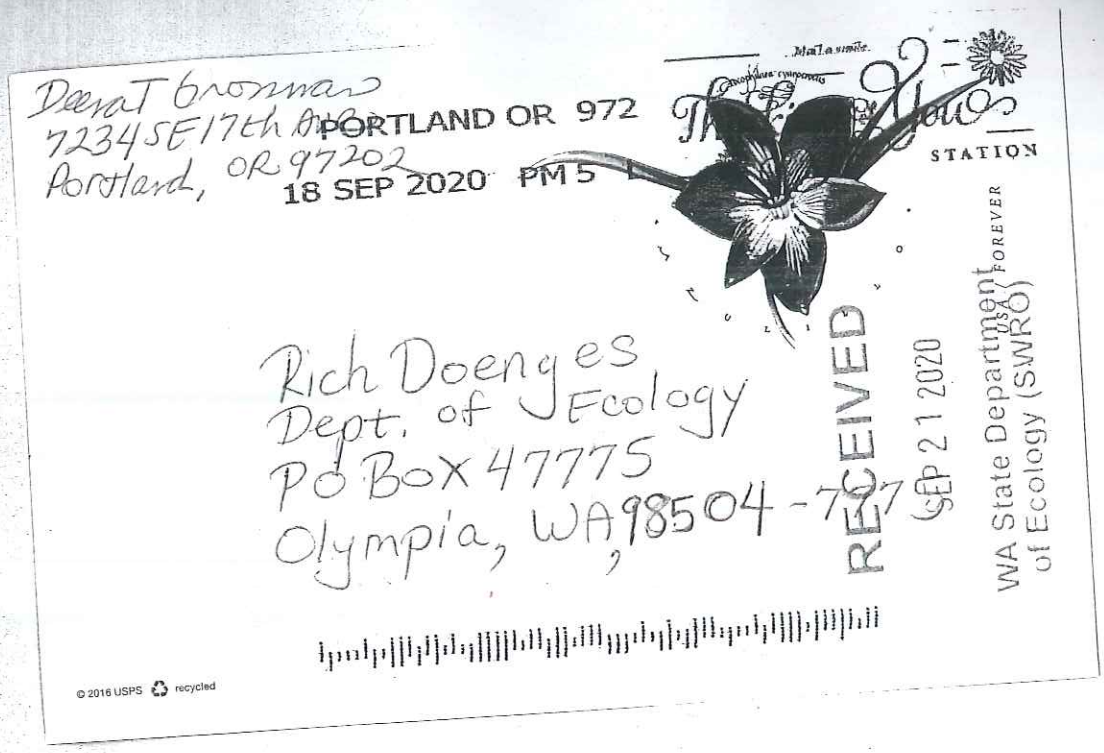
NWIW SEIS tries to whitewash the issue of greenhouse gas emissions exceeding 40 million tons per year from the proposed Kalama fracked-gas to methanol refinery. Their straw man argument pits these numbers against even more enormous imaginary numbers if the plant were built elsewhere. This is a form of environmental blackmail, essentially saying, "If you don't let us build this polluter here, our corporation or another one will build a worse polluter elsewhere." They insist it has to be built and they are wrong. It does not.

NWIW says it has to be built because the world needs more methanol for plastic and fuel. The sheer amount of plastic waste choking our oceans and piling up on the earth is yet one more environmental catastrophe they want to perpetuate and enlarge. NWIW, A Chinese government fossil fuel corporation, would become the single largest greenhouse gas polluter in Washington.

Please, people of Department of Ecology, lead us to a future of clean air we can breath, cool, clear water, thriving forests and healthy communities for your sake, for all our children and grandchildren. Please take the path to reducing greenhouse gas pollution and take your own mission statement to heart:
Protect, preserve, and enhance the environment for current and future generations.

Oppose actions which will intensify the environmental destruction of our beloved Pacific Northwest and deny permits for building the world's largest fracked-gas to methanol refinery in Kalama. Thank you sincerely for your attention.

Deena T. Grossman



Deerat Grosman
7234 SE 17th Ave
Portland, OR 97202

PORTLAND OR 972
18 SEP 2020 PM 5

STATION

Rich Doenges
Dept. of Ecology
PO Box 47775
Olympia, WA 98504-7775

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SEP 21 2020
WA State Department of Ecology (SWRO)

FOREVER
USA

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Sept 8, 2020

Dear Mr. Doenges,
Dept. of Ecology

Governor Inslee says, "It is time to abandon the disastrous course that now envelops us in smoke and ash" Deliberate and decisive action must be taken to slow climate change.

NWIW methanol refinery at Kalama would spew 4.6 million tons of greenhouse gas into the air every year for forty years. Please deny permits for this atrocity and protect, preserve and enhance the environment for current and future generations

Thank you. Deerat Grosman

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WA State Department
of Ecology (SWRO)

September 16, 202
PO Box 461
Kalama, WA
98625

To Richard Doegnes;

These letters are from the children who will inherit whatever it is we leave them.

These last weeks, with fire, smok hurricanes, flooding, have gone on wh feels like forever. This is climate change.

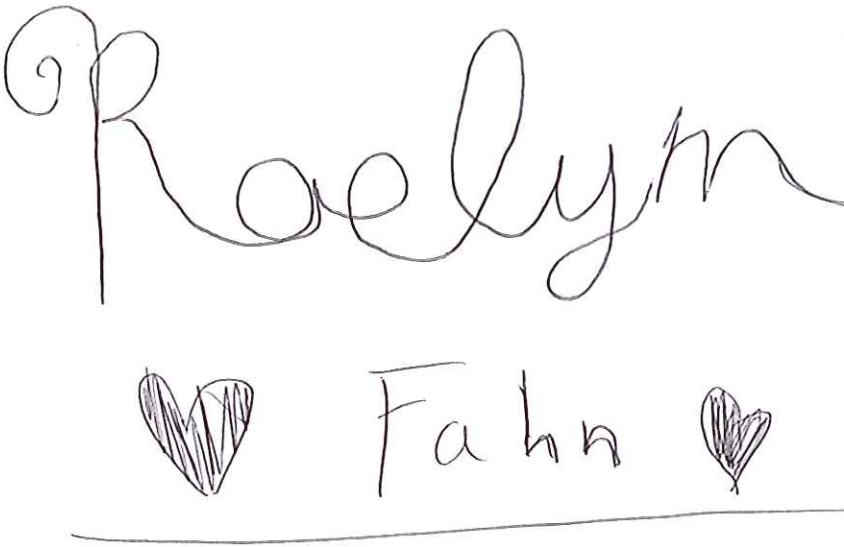
Not building a methanol plant in Kalama will not solve what our plane is facing, but it's a start. We have t adapt to climate change. If we do maybe these children will have a chance to maybe even a better life than we have had.

Please do not build a methanol plan in Kalama. (By the way, I'm 73 years old

Thank you.

Julie Harrington

Please don't build a meth plant in Kalama. I am 9 years old. thank you



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WA State Department

Please don't build a methane plant in Kalama. I am 4 years old. thank you

Vivi

Vivi Agloro

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WA State Department of Ecology (SWRO)

Please don't build a [redacted] methanol plant in Kalama. I am 4 years old. Thank you.

JOJO

Harrington

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SEP 21 2020

WA State Department of Ecology (SWRO)

Easton Fahn 11 years old

Please Dont Build the methin
Plant. Thank you

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WA State Department
of Ecology (SWRO)

Please don't build a methanol plant in Kalama. I am 13 year old. Thank you.

-Kyler Harrington

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WA State Department of Ecology (SWRO)

Please don't

build a methanol pl

in Kalama I am 8

years old

Thank you. Arlo

~~Harrington~~

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SEP 21 2020

WA State Department
of Ecology (SWRO)

Please don't build a Methanol Plant in Kalama. I am 11 year old. Thank You.

Loretta Harrington

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WA State Department of Ecology (SWRO)

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SEP 21 2020
WA State Department
of Ecology (SWRO)

6109 NE 57 Avenue
Vancouver Washington 98661

September 14, 2020

Department of Ecology
Ms. Rich Doenges
PO Box 47775
Olympia Washington 98504-7775

Dear ms Doenges,

I urge you to put a stop to the Kalama Manufacturing and Marine Export facility. This plant cannot be allowed to be constructed as it will increase the states greenhouse gas emissions by almost one million tons. This proposal does not take into account the adverse effects on water quality, fish and wildlife health. Nature is a finite resource that must be preserved, not destroyed. This will damage the delicate eco system of the Columbia river. The most alarming of all man's assaults on the environment is the contamination of air, earth, rivers and sea with dangerous and even lethal materials.

Sincerely June Yamrick

JUNE YAMRICK

9-15-20

Dear Dept. of Ecology;

The Methanol Plant that NWIW wants to build in Kalama will be a mega-polluter for its entire life. Washington cannot contribute to the goal of keeping global warming "well below 2 degrees Celsius" by allowing major polluters to increase our state's fossil fuels contamination. A low-carbon future demands investment in lower-emitting production processes. Comparing coal-based, oil-based, or gas-based pathways as NWIW is attempting to do, is outright misleading for assessing the need to steeply reduce global emissions altogether. The use of all fossil fuels is only making our climate crisis worse, creating bigger storms and fires, longer droughts and more extensive pandemics.

Ecology's analysis also fails to consider how dumping high-polluting methanol into the market could negatively impact a transition to cleaner transportation alternatives and vehicle electrification. Ecology should base its permit decision on the known dramatic pollution and damage caused by fracking gas, producing and refining methanol, and burning or using methanol to make plastics. The rest is largely speculation. Please deny the methanol plant permit.

Sincerely,

Lethene Parks

M. Lethene Parks
13020 NE 93rd St.
Vancouver, Wa 98682

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SEP 2 1 2020
WA State Department
of Ecology (SWRO)

9.18.20

SIR,

THANK YOU FOR MAKING THE TIME TO READ THIS COMMENT.

FOR MYSELF "FEET ON THE GROUND" IMPLIES STABILITY, UPRIGHT AND ERECT, EYES FORWARD LOOKING TO WHAT IS AHEAD.

BIG PICTURE: THE PROPOSED METHANOL PLANT AND SHIPPING PORT WILL: EMPLOY TOO FEW, EXTRACT FROM OUR RESOURCES IMMENSE AMOUNTS OF WATER AND POWER, PRODUCE A PRODUCT WITHOUT A SINGLE IMMEDIATE USE IN THE

COMMUNITY.

RATIONAL AND REASONABLE THINKING WILL SURELY DEFEAT THIS PROPOSED FACILITY. IT IS OF NO USE TO US IN AMERICA. LET US MAINTAIN A CLEAR EYE ON A BRIGHTER FUTURE, WITHOUT THE DREAM OF PERFECTLY FLAWLESS PRODUCTION.

SINCERELY,

CHARLES JOY

7319 6TH AVE
#12
TACOMA, WA 98406
253.331.8567 1147SUZI@GMAIL.COM

DANIEL D ROBERTS, M.D.
DIANE E ROBERTS, RN
17440 HOLY NAMES DR, #518
LAKE OSWEGO, OREGON 97034
danderoberts@gmail.com
503-908-7834

September 17, 2020

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SEP 22 2020
WA State Department
of Ecology (SWRO)

Rich Doenges, Regional Director
Southwest Regional Office
P.O. Box 47600
Olympia, WA 98504-7600

Dear Mr. Doenges:

Sometimes the alure of perfection eclipses the possible. The dream of a giant leap threatens an incremental step.

Kalama Manufacturing and Marine Export Facility's Draft Second Supplemental Environmental Impact Statement demonstrates that KMMEF's proposed methanol plant is an important incremental step.

The Draft Second SEIS, using foreseeable variables and thoughtful and exhaustive analyses, demonstrates several things, among them:

1. KMMEF's proposed methanol production will reduce net GHG compared to filling the demand with available alternatives.
2. Worldwide demand for methanol is projected to increase over the next several decades.
3. Whether methanol is used as fuel or olefin production, KMMEF's methanol production is better for the environment than existing sources.

As health care professionals, we have previously looked carefully at the health effects of methanol manufacturing, reviewing the medical research over the past several decades. Because the toxic effects of methanol have been well documented and the physiology well understood, appropriate safeguards limiting exposure have long been in place. As long as these are maintained, the process is safe both for employees and for the community.

As environmentally sensitive retired physician and nurse and former Kalama residents, it is apparent to us that KMMEF has made a compelling case that its planned facility will result in less global GHG emissions and deserves ecology's approval.

Sincerely,

Daniel D. Roberts, M.D.

Diane E. Roberts, R.N.

LINDSHIP Maritime Services

1403 18th Avenue
Longview, WA 98632
360.431.8653
lindship@gmail.com
www.lindship.com

September 18, 2020

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SEP 22 2020
WA State Department
of Ecology (SWRO)

Rich Doenges re: NWIW SSEIS
Washington Department of Ecology
Southwest Regional Office
P. O. Box 47775
Olympia, WA 98504-7775

Dear Mr. Doenges,

The proposed Kalama Manufacturing and Marine Export Facility to build the world's largest fracked gas-to methanol refinery exporting product to China is of grave concern to me and my family, to the State of Washington and to the residents of Kalama because life on this planet is being impacted by global warming, a very real event. The methanol refinery is of concern to me personally as I own three fourplexes in Kalama and landlord to 12 families, many of which are single women and some with children. I am concerned for their health and welfare and for property values. Kalama is not a refinery city. It is a quaint waterfront town on the Columbia River with a port, light industry, small town cottage industry and surrounding Cascade outdoor recreational areas.

My professional experience since 1970 in the maritime field of international trade and transportation and as the Director of Marketing for the Port of Longview from 1991 until retirement in 2008 took me to ports all over the world. I am very familiar with most ports in the Pacific Northwest, their challenges and their good news. I believe the Port of Kalama is making a big mistake in fostering green house gas emissions (GHGs) putting the Columbia River and the global environment at risk for the economic benefit of China. For a decade the citizens of Washington have been fighting hard to keep fossil fuel exports from taking a foothold in our state and on the Columbia River. Methanol is no different and should not be permitted as was the case for coal exports.

When the current President of the United States withdrew our nation from the Paris Agreement to counter global warming, the Governor of the State of Washington along with other Governors committed to a U.S. Climate Alliance to take up the challenge to reduce GHGs. I am committed to this endeavor and fully support whatever we (the State of WA) can do to beat the clock that is ticking to keep the planet from warming 2 degrees F. The recent wildfires in CA, OR and WA have caused widespread loss of property, loss of life and irreparable damage to people's lives. Science is saying that global warming is the primary cause. The economic impact of wildfires should be considered in the evaluation of GHG emissions put out by the refinery. How can we expect the climate over the next 40 years, the lifetime of the refinery, to be any different if fossil fuel refineries are allowed to proliferate or coal fired power plants are not shuttered? No, in fact, likely worse.

Ecology's analysis showed that the KMMEF refinery would produce 4.6 million metric tons of carbon pollution annually. It could be more, as much as two times? Proponents initially stated that the product would be used to make olefins, plastics. Then there was a serious finding that the product would really be used in the fueling of vehicles. Once the product is on board ship and departs to international waters there is no way to control its final use. China (the government) will decide the final use of valuable energy resources. In fact, it would be best for Ecology to assume that all of the 10,000 MT per day of methanol production would be used as fuel for vehicles thereby increasing GHG emissions.

From fracking, upstream emissions, plant emissions, and downstream emissions methanol exports to China should be considered too dangerous for the local environment, the Columbia River and too toxic for the planet's fragile atmosphere. Our lives are insulated from the perils of the sun by a very thin layer of atmosphere. We must do all possible to keep that thin veil intact.

I ask Ecology to find that the refinery's output of GHG's is beyond the threshold in our State's passionate commitment to fight climate change and to therefor deny the shore line permit application for KMMEF.

Thank you for the opportunity to address this vital issue before the Department of Ecology.

Sincerely,

Gary Lindstrom
1403 18th Ave.
Longview, WA 98632
360-431-8653

Property Owner
337 S. 7th St., Kalama, WA
367 S. 7th St., Kalama, WA
701 Birch St., Kalama, WA



Kathleen Iberle
10417 NE 31st Ave
Vancouver, WA 98686-4357

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14 SEP 2020
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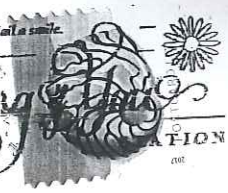

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WA State Department of Ecology (SWRO)

ATTN: Rich Doenges
NWIW SSEIS
Washington Dept of Ecology
PO Box 47775, Olympia WA
98504-7775

98504-7775

9/13/202

Dear Dept. of Ecology.

Re: second Supplemental Environmental Impact Statement for Kalama Manufacturing and Marine Export Facility.

The proposed facility will clearly add to global climate change in numerous ways. This is a very bad idea. The fires of the past week are partially a result of climate change - we don't need more CO_2 in the air. Mitigation is not the answer. I object to the facility.

Kathleen Iberle
10417 NE 31st Ave
VANCOUVER WA 98686



Kathleen Iberle
10417 NE 31st Ave
Vancouver, WA 98686-4357

PORTLAND OR 972
14 SEP 2020
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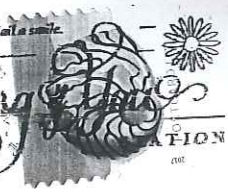

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WA State Department of Ecology (SWRO)

ATTN: Rich Doenges
NWIW SSEIS
Washington Dept of Ecology
PO Box 47775, Olympia WA
98504-7775

98504-7775

9/13/202

Dear Dept. of Ecology.

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The proposed facility will clearly add to global climate change in numerous ways. This is a very bad idea. The fires of the past week are partially a result of climate change - we don't need more CO_2 in the air. Mitigation is not the answer. I object to the facility.

Kathleen Iberle
10417 NE 31st Ave
VANCOUVER WA 98686

Comment: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020
RE: Emissions and Global Warming
Date: September 15, 2020

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WA State Department of Ecology (SWRO)

Respectfully submitted by: Kristin Edmark, MPH RD
7611 NE 296th Way
Battle Ground, WA 98604 kristinedmark@hotmail.com; (360) 666-1285

To: Washington State Department of Ecology c/o Rich Doeges

Thank you for the opportunity to comment. Thank you for requiring the SEIS be redone. Thank you for the changes made.

I am very much against the building of the Kalama methanol refinery because we are in a climate crisis and must stop our use and worldwide use of fossil fuels as soon as possible. I love hiking, kayaking and studying nature. Therefore, I am a member of the Audubon Society, Sierra Club and Columbia Riverkeepers and other outdoor groups. My daughter-in-law's family lost a beloved home this month to fire in Oregon but this is nothing compared to the devastation experienced by so many worldwide due to a warming climate.

Please revise your methane leakage rates to 1 to 3% to align with current findings and the Stockholm Environment Institute. 1% leakage is far below what should be expected. As you are familiar, the Stockholm Environmental Institute wrote (SEI-1800-db-towards-a-climate-test) "the US Department of Energy estimates that an average leakage rate for natural gas supply systems nationally is 1.6%"…However, research based on atmospheric measurement suggests that bottom up estimates…consistently under estimate methane emissions. Brand finds leakage could be 25-75% higher than inventory based estimates which would mean leakage rates of more like 1.5 to 2.6% for the US average." Rodney Mountain was found to be 2.8%; global average is accepted at 4.3% for shale gas production. SEI concludes that 1-3% leakage would be plausible for the Kalama methanol refinery.

Downstream impacts for the methanol refinery should assume that all methanol produced will be burned. We do not know the end use; China can use it in any way desired. Even if a percentage is used to produce plastics, the plastics will most likely also be burned. Similar to the purchase of insurance, it is imprudent to plan for less than the worst case scenario. 100% eventually burned is likely. There is no evidence that 40% of methanol will be burned.

Looking at the big picture, the refinery would encourage significant fracking at a time when it is imperative that the world reduce use of fossil fuels. The project would likely necessitate an additional north-south pipeline which in turn encourages more fossil fuel extraction. Increased extraction of fossil fuels violates Washington clean energy goals. Increased extraction will likely soon violate national goals. It is wrong to accelerate harm to the people and species of the world by increasing fossil fuel extraction and infrastructure. It is wrong to be party to the effects from the refinery and the acceleration of storms, fires, droughts, political unrest, climate refugees, expense…

The portion of the draft second SEIS which deals with displacement of dirtier methanol production in China should be eliminated. It is far too speculative with no evidence. Also, it sets a precedent for future projects to request approval on the basis that there exists a more polluting method which could be displaced.

In its present form, the second SEIS clearly shows a significant, unmitigatable increase in global greenhouse gas emissions. It is morally wrong for Washington and the USA to be a partner in this increase. Please deny the shoreline substantial development and conditional use permit on the basis of unacceptable greenhouse gas emissions.

Kristin Edmark

Comment regarding mitigation of greenhouse gas emissions

Comment: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Date: September 15, 2020

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SEP 22 2020
WA State Department
of Ecology (SWRO)

Respectfully submitted by: Kristin Edmark, MPH RD
7611 NE 296th Way
Battle Ground, WA 98604 kristinedmark@hotmail.com
(360) 666-1285

To: Washington State Department of Ecology
c/o Rich Doeges
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

Thank you for the chance to comment. The section of the draft second SEIS which deals with mitigation is not workable because 1) The plan is too vague. 2) The project is too large to mitigate. 3) NWIW and Port of Kalama have repeatedly shown they cannot be trusted with monitoring.

The mitigation plan is unclear. As written, it is unlikely the components of the plan would be in place and working before any methane is produced. No methane production should be allowed without equal mitigation. Even funding for the salaries is unclear. The Department of Ecology or other state organizations should not be expected to donate time to NWIW.

I do not believe it is possible to mitigate a project of this magnitude. As the draft second SEIS clearly shows, the project has significant upstream and downstream emissions. A plan which mitigates only emission in Washington State does very little to mitigate the full effect of this project and should not be considered mitigation. Real mitigation can only be done by removal of CO2e from the atmosphere. Most assuredly, NWIW does not plan to plant enough trees to remove that enormous amount of CO2e and certainly would not wait until the trees were large enough to sequester equal CO2 to the CO2e produced. Even if enough trees could be planted worldwide to mitigate the greenhouse gas produced, the warming planet is increasing the numbers of trees burning each year. Proposing to mitigate by other means like contributing to a wind farm or battery plant is not acceptable and will not prevent acceleration of warming.

Mitigation involves monitoring emissions. An outside entity must do all monitoring. Some examples of ways NWIW has shown that they cannot be trusted include:
1) The unacceptable SEIS from 2019 concluded that the methanol refinery would decrease greenhouse gas emissions worldwide based on too many unfounded unpredictable assumptions. Only data which would support their desired conclusion was used. NWIW continues to state that the refinery will decrease world greenhouse gas emissions.

2) The 2019 SEIS repeatedly dismissed, discounts or leaves out methane leakage from drill sites, pipelines, pump stations and transport including such statements as: 1.2.1.2 "There are no permanent sources of operational emission for the proposed pipeline with the exception of minor fugitive methane emissions".
3) NWIW insisted for years that the methanol would be used only for plastics until the evidence (the Powerpoint presentation to investors and statement by Mr Lebin) proved this was false.
4) The large amount of conflict of interest NWIW promotes is unethical. NWIW hired Richard DeBolt, a ranking member of the Washington State Capital Budget Committee. DeBolt is NWIW Director of External Relations. $143 million in tax loopholes have been negotiated with the State of Washington; $11.5 million for the dock and road has been in the state budget; Washington Public Employees' Retirement Funds are to be invested in NWIW through Stonespeak. NWIW has also hired Rick Desimone, a former Chief of Staff for Senator Murry for advisor, George Raiter, a former Cowlitz County Commissioner, as an outreach director. Gary Locke, a former Governor, as Chairman of an advisory board for NWIW, and two members from the Center for Urban Waters, Tom Luce and Rick Desimone.
5) NWIW violated Washington State public meeting laws. At the Dec 13th 2018 hearing on the draft supplemental EIS about 1000 members of the public came and almost 500 signed up to speak overwhelmingly against the refinery. Washington law requires the public free access to public hearings but on 12/13/18 we were asked to wait in a 45 minute line to provide name and address to enter the building. Since the hearing was only 3 hour long and there was a break the last 10 minutes of each hour, some members of the public missed almost the first 1/3 of the hearing before being allowed to enter. I was one of the many who prepared a comment and asked to speak but was not allowed time under the lottery system used.
6) NWIW/Port of Kalama sent a letter of support to the BUILD grant from the Cowlitz County Board of Commissioners. The Port of Kalama/NWIW conducted County Commission business at odd unannounced meetings. At the regular public Cowlitz County Commissioner's meeting, July 3rd, 2018, the vote on the endorsement letter for the grant application was included as "consent agenda" meaning when the agenda was approved so was the letter. Public comment was only allowed after the vote. The letter was pushed through quickly; Commissioner Axel Swanson admitted at the meeting that he had not read and did not know the contents of the letter.
7) In 2019, the NWIW website listed the average salary (to the penny) for employees once the refinery is operational. The average is misleading because it includes the high salaries of the executives. NWIW has applied for at least 4 visas for Chinese employees.

The mitigation plan presented in the draft second SEIS should not be accepted because it is nowhere near adequate, incomplete and does not include trustworthy monitoring. To leave it in as is makes it seem that the plan has validity; so the entire mitigation section should be rejected. Please deny the shoreline substantial development and conditional use permit on the basis of unacceptable, unmitigatable greenhouse gas emissions.

Kristin Edmark

Julie Martin

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

DeeAnna Holland

I actually live just a few minutes away from the proposed location which means I will have to experience whatever pollution and damage this facility will create. It was bad enough growing up across the river from an active nuclear power plant and the daily threat that it could fail, I would rather not live with another ticking time bomb minutes from my house.

Catherine Bax

Thank you for the opportunity to comment on this very disturbing project that is being pursued by Northwest Innovation Works (NWIW) in Kalama. My name is Catherine Bax. I am a retired medical professional and a resident of Oregon.

I do not want to see this methanol refinery built because it would be a huge emitter of greenhouse gases and cause further warming of our planet. NWIW's fracked gas to methanol refinery would cause millions of tons of greenhouse gas pollution. The refinery would use more fracked gas than all the gas-fired power plants in Washington, combined. And the refinery would induce new fracked gas pipeline expansions throughout the region. This is a huge project that will cause huge amounts of pollution and environmental degradation to our area in order to ship methanol overseas to be used to make more plastics or to be used as fuel.

The only path forward for our long-term survival on this planet is a low carbon future. The vast majority of scientists who study climate change and our experience as people in the 21st Century tell us this. Washington state has set some thoughtful clean energy and climate goals. This project is not consistent with those goals. NWIW's refinery would produce 4.6 million tons of greenhouse gas pollution each year, for 40 years, a staggering quantity of pollution that will undermine Washington's greenhouse gas reduction goals.

The idea that a NWIW methanol refinery in Kalama, Washington could produce less pollution and GHG's than another high carbon factory somewhere else (in China?) is speculative, tenuous and ridiculous. A project (Kalama Methanol Refinery) that will produce tons of pollution, but less than an existing project that is producing more pollution is not a good reason to go forward with the project (Kalama Methanol Refinery) that produces tons of pollution. You can always find something that is worse than the terrible thing you want to do. Neither project is acceptable. Future energy needs do not need to be met by fossil fuels. There are alternatives if you and I demand them. Kalama needs economic stimulus and good jobs for the people who live there. But projects that profoundly contribute to global warming, ocean warming and rising shorelines are not the answer for Kalama, for Washington State, for the Pacific Northwest or for the planet. There are alternatives if we demand and support them.

I implore you, The Washington State Department of Ecology, to reject NWIW's methanol refinery project and to deny the Shoreline permits for the project.

Catherine Bax

Don Steinke

To recap:
The DSSEIS for Kalama methanol:
Relies on a trust that other countries will not establish policies that alter the market for energy and plastic.
Fails to recognize that countries around the world are banning various types of plastic.
https://www.theladders.com/career-advice/14-unexpected-countries-that-have-banned-single-use-plastics#:~:text=Rwanda,ban came into full effect.
Fails to recognize that California now requires 50% recycled content in soda bottles.
Does not verify assumptions of methane leaks from pipelines
Does not account for abandoned wells that will leak methane forever.
Does not acknowledge that pipeline companies don't bother to repair pipeline leaks promptly unless there is a threat to public safety.
Does not acknowledge that China is committed to begin reducing emissions in 2030, and be carbon neutral by 2060.
Does not consider Inslee's Clean Air Rule
Does not consider HB2311, which establishes a state goal of 45% below 1990 levels by 2030.
Does not account for the emissions associated with ships while docked.

Linda Horst

Note to Ecology:

Admittedly, the following comment listed below does not critique GHG emissions, displacement or mitigation issues. My comment will, however, address the bona fides, or lack thereof, for Northwest Innovation Works to reliably and fully implement during the next 40 years their commitments contained in the DSSEIS: lowering GHG emissions; displacement of other dirty fuels; and 100% mitigation of all in-state direct/indirect GHG emissions.

The saying "All hat, no cattle" comes to mind when I consider the role of Northwest Innovation Works in their high-stakes, paper shell game they are waging with Ecology in this Draft SSEIS process.

While Ecology has invested considerable time and money researching and analyzing the myriad aspects and ramifications of this proposal, alarmingly zero attention has been devoted to the qualifications of the proponent of this climate/life altering refinery!

It is unconscionable that this upstart company that has never built a methanol refinery, never operated a methanol refinery or ever produced a drop of methanol is, in fact, proposing to build, operate and produce methanol in what would be the largest fracked-gas-to-methanol refinery in the world! Too ludicrous to be true? Tragically it appears not to be too ludicrous for every governmental agency in Washington state that has been tasked with reviewing this proposal for the past 6 years!

How did this meritless company get this far?

NORTHWEST INNOVATIONS WORKS LLC:

• No employees—according to WA Secretary of State, NWIW Kalama LLC has no active license with L & I—no covered employees
• No income—since forming their LLC, zero income from methanol sales
• No assets—business office rented not owned
• No credentials—no documentary evidence
• No experience building a methanol refinery
• No experience operating a methanol refinery
• No EPA approval for the ULE technology proposed to decrease GHG emissions
• No methanol refinery has ever used both ULE and ZLD technology together

They say "The devil is in the detail". The preceding "No—" details are red flags I trust Ecology will

not ignore.

There are all most as many red-flag comments submitted against this refinery proposal as red-shirted "No Methanol Refinery" opponents! All of us urge you to deny this permit.

R. David Goldberg

"The accelerating threat of climate change and the emerging science on the damaging impacts of natural gas production and distribution mean we must our full efforts on developing clean renewable, and fossil-fuel free energy sources."

-Gov. Jay Inslee
May 2019
Coming out against
the Kalama methanol
project.

Washington state has plans to reduce GHG emissions 45% below 1990 levels by 2030 and 95% below 1990 levels by 2050. To have a chance of hitting these goals it is necessary to find cleaner, renewable alternatives to fossil-fuels. This kind of thinking is necessary for solving the climate crisis. But it is the kind of thinking absent from the Kalama SSEIS when it states it is "not possible" to consider possible alternatives to the use of methanol. The SSEIS feels confident in predicting market trends 40 years out but is blind to Chinese policy makers setting different goals in the near future. Case in point: the Chinese government recently announced the goal of becoming carbon neutral by 2060. The market displacement theory put forward by the SSEIS is the current status-quo. But we need bold visionary thinking to solve the climate crisis. Too bad that thinking isn't coming from the Washington Department of Ecology.

William Forbes

There is no excuse for building more plastics manufacturing infrastructure when there is no longer any way to recycle plastics! This is clearly unsustainable and Washington deserves better. It's as simple as that. Just look at your own weekly trash and how much volume is plastics that can no longer be exported to other countries for processing and reuse. Exporting methanol to other countries just creates more global waste! Stop it - now!

Christopher Lish

Thursday, October 8, 2020

Attn: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47775, Olympia, WA 98504-7775

Subject: Don't allow the world's largest fracked gas-to-methanol refinery to harm our climate and Kalama -- Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

To Washington State Department of Ecology:

I strongly urge Washington State to reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama, Washington.

"Our duty to the whole, including to the unborn generations, bids us to restrain an unprincipled present-day minority from wasting the heritage of these unborn generations. The movement for the conservation of wildlife and the larger movement for the conservation of all our natural resources are essentially democratic in spirit, purpose and method."
-- Theodore Roosevelt

The project would use more fracked gas than all of Washington's power plants, combined. The company has sought to mislead regulators and the public about the purpose and impact of the refinery, falsely claiming that the project will displace "dirtier" forms of fossil fuels. We know that fracked gas is a potent greenhouse gas pollutant, and we are counting on Ecology to accurately account for the project's upstream emissions as well as the downstream pollution from the likely combustion of NWIW's methanol for fuel.

"As we peer into society's future, we--you and I, and our government--must avoid the impulse to live only for today, plundering for our own ease and convenience the precious resources of tomorrow. We cannot mortgage the material assets of our grandchildren without risking the loss also of their political and spiritual heritage. We want democracy to survive for all generations to come, not to become the insolvent phantom of tomorrow."
-- Dwight D. Eisenhower

For the community of Kalama and for our climate, the risk is simply too big. Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution. We are counting on you to stop this dirty and dangerous project.

"A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise."
-- Aldo Leopold

Thank you for your consideration of my comments. Please do NOT add my name to your mailing

list. I will learn about future developments on this issue from other sources.

Sincerely,
Christopher Lish
San Rafael, CA

David Hupp

Washington State Department of Ecology:

I testify again in opposition to the proposed Northwest Innovation Works (NWIW) Kalama Manufacturing and Marine Export Facility in any form. NWIW proposes a similar facility in Oregon and I oppose that as well. This is a followup to my first comment, dated September 19, 2020. This comment again refers to the "Draft Second Supplemental Environmental Impact Statement", Publication 20-06-011, dated September 2020.

The entire document, but particularly the sections dealing with economics (the profession in which I was trained) is written with slick, but dehumanizing language that reminds me of a quote I encountered a couple of years ago:
""Spills can have both positive and negative effects on local and regional economies over the short- and long-term ... spill response and clean-up creates business and employment opportunities for affected communities ... . The net overall effect depends on the size and extent of a spill, the associated demand for clean-up services and personnel, the capacity of local and regional businesses to meet this demand, the willingness of local businesses and residents to pursue response opportunities."
Source: "Trans Mountain [oil pipeline] Expansion Project, Risk Assessment and Management of Pipeline and Facility Spills", volume 7 of Kinder Morgan's Application Pursuant to Section 52 of The National [Canada] Energy Board Act proposing to triple pipeline capacity.

This absurd statement is manufactured by people who have lost their humanity. The sort of "economics" perpetrated in the second draft SSEIS connects to another absurdity inherent in this market-fundamentalist economic philosophy: the national accounts (e.g. Gross Domestic Product) reckon a polluting manufacturing process productive, with no subtraction for the human and community harm caused by the pollution. If the pollution is cleaned up, that also is considered productive. Thus both the process producing the pollution and the process for cleaning it up are "income".

The economics philosophy behind the SSEIS is rancid and inhuman and leads to great harm. The NWIW promises of "jobs" and "mitigation" should be seen in this light.

David Hupp
Hood River OR
October 7, 2020

M Judith Ferguson

Director Watson, Regional Director Doenges and Department of Ecology staff –

Thank you for your issuance of a 2nd SEIS on the Northwest Innovation Works (NWIW) Methanol refinery in Kalama after finding the project's initial submissions inadequate and inaccurate. I have read the document. As a resident of Tacoma in close proximity to the original Methanol refinery siting, I am more than aware of NWIW's modus operandi and am very sorry to see that their misleading and speculative theories of operation have changed very little over the last 6 years- - while during this same time span much has been revealed regarding the negative climatic and environmental impact of fracked gas. Building the world's largest fracked gas-to-methanol plant in Washington State does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Its current siting on the Columbia River at Kalama is as inappropriate and outrageous as its original siting in the Port of Tacoma was.

My fervent hope is that your Department will reject the project and deny Shoreline permits based on your new analysis, as well as the 'climate change' summer we have experienced this year - from the wildfire devastation on the west coast to the hurricane and derecho destruction in the Gulf and Midwest. It is an unfortunate truth that NWIC is a Chinese owned company that lies to regulators and the public. They enticed the Port of Kalama and Cowlitz County to sacrifice the health, safety and long term viability of the Columbia River ecosytem for profits and promises that may never be realized. NWIW cannot be trusted to mitigate negative impacts of this fracked gas refinery. The fact that this project had to abandon its initial Tacoma siting due to outspoken community opposition and is facing equal opposition and additional reviews in Kalama is a 'red flag' indicator that there is something wrong with it at its core. I appreciate that you addressed the likelihood that methanol produced in Kalama will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public that it would be used solely for plastics manufacturing.

Your new SEIS analysis reveals what the NWIW backers have long denied - that the refinery would cause more methanol to be burned as fuel in China and result in significant methane pollution from fracking. The methanol refinery would quickly become one of Washington's most significant sources of climate-changing pollution and use more fracked gas than all of Washington's gas-fired power plants combined. If built, our state will be locked into decades of additional climate pollution, even though we know it's past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

When I read the Public comments of so many others who are equally concerned, I feel hopeful. The pandemic has impacted systems and business practices across the board, as well as altered assumptions at many levels. Uncertainty and volatility abound in energy market dynamics, and the predictability of global fuel markets, technology development, consumer behaviors or regulations of any kind are equally uncertain. For those same reasons, one must not expect that what NWIW states they will or won't do will actually come to fruition. Talk is cheap and actions speak loader than words.

I am concerned that your SEIS provides too little detail on the actual mitigation that would be accomplished within the VMPF framework – and concerned that NWIW is the 'architect of the voluntary program.' Does this mitigation address the full impacts of NWIW's overseas emissions?. Without defined benchmarks to achieve, it can't be expected that NWIW will address issues in a forthcoming, transparent manner. Once in operation, the NWIW's working relationship with the State of Washington could abruptly change, as could the plant's operational plan. Promises to the community and State regarding mitigation, etc. could easily be dismissed and abandoned.

I do have four questions/concerns that I would like you to consider:
#1 - Have emissions from activities at the adjacent dock and wharf site been included in your analysis?
#2 - In regard to SW Washington Clean Air Agency, will they be monitoring the cumulative emissions of the methanol refinery in conjunction with the emissions of the other commercial industries in the area? It is my understanding that Puget Sound Clean Air Agency in my Port of Tacoma area monitors only individual emissions of each facility and does no monitoring of the cumulative emissions in the air. In addition, the Agency only monitors certain emissions and not all emissions. It may be that the list of monitored emissions needs to also be updated as the current list may not be capturing newer pollutants. I assume that such an update would need to be instigated by the State of Washington.
#3 - Wilma Subra spoke in Tacoma in 2016 regarding the initial proposed plant and expressed concern regarding the measuring of emissions during startups, shutdowns, testings and flarings. Will all emissions during these procedures be monitored or will some be 'self reported' or not reported at all? It's my understanding that these types of emissions do happen on a frequent basis and are most likely not reported. I would hope that their reporting would be mandated. NWIW's 10/30/2019 letter to Dr. Placido is vague to me in its 'mitigation list of emissions' on page 2.
#4 – September 2020's week of hazardous air quality throughout the region due to smoke and an inversion layer may be a precursor of events to come. What regulations will be put into place to ensure that the Methanol facility does not contribute to increased human health risks in similar situations? Will a facility shutdown be mandated in such cirucumstances?

Should this Refinery be completed, a local ecosystem will be forever altered - - this time by a Refinery that will be the largest in the world and whose operation will contribute millions of tons of greenhouse gas pollutants yearly for 40 years. It is profoundly inconsistent with achieving Washington's climate goals.

Thank you again for initiating a 2nd SEIS on the Methanol facility. I appreciate the opportunity to share my concerns about this Refinery yet again. I do hope that you will deny the Shoreline permit. The Methanol refinery is a project that was/is a bad fit for both the Port of Tacoma and the Port of Kalama.

Kathy Boylan

My sister and I are sending you a strong message about Kalama. Stop the project, save the salmon, save the environment!


NO
KALAMA
METHANOL
REFINERY
3A3 B75


NO
KALAMA
METHANOL
REFINERY
3A3 B75

Joana KIRCHHOFF

Stop Kalama and stop environmental degradation!!!!

Bob Carroll

I am in favor of the NWIW Kalama Methanol project. the science shows that methanol (which we have need of) will be produced with no liquid discharge and severely reduced emissions. it is better to produce it here in this way instead of it being produced using coal in china, and have the emissions blow over here anyway. it will also create good local jobs.

Cowlitz Indian Tribe

My name is Celine Cloquet. I'm an elected council member of the Cowlitz Indian Tribe. The proposed Kalama methanol manufacturing and marine export facility lies within our homeland. The Cowlitz tribal council has determined that this project is inconsistent with the tribe's stewardship ethic, and today, force our opposition to this project moving forward. The Columbia River's ecosystem including floodplains, wetlands, aquatic habitat, and cultural sites are in a depressed state. As we stated in our testimony and letter to the shorelines hearing examiner in January 2017, the existing review documents under-represented the project's impacts. The Washington State Department of Ecology is responsible for ensuring shorelines compliance, critical areas protections, and floodplain management actions.

Our comments until now have focused generally on localized impacts. For the GHG emission review, we have attempted to take a broad view from many perspectives. The tribe considers the recent firestorms, flooding events, and other severe weather outbreaks demonstrate a clear link between global conditions and local impacts. The SSEIS does little to persuade us that this is a green project. While this project may move forward, its contribution to global emissions is still significant. Whether this project brings more vehicles to the road or more shampoo bottles that is supporting throwaway consumer culture, which is undermining our climate stability. We ask that the Department of Ecology review the project's impacts and findings relative to greenhouse gas emissions and mitigation carefully, thoroughly, and with an eye to the seventh generation.

In closing, the tribal council has concluded that the project's objective to produce methanol is not consistent without our belief that our actions are critical to our planet's warming trend. Thank you

Robert Wagner

Hello, I am glad The Department of Ecology extended the comment period giving me the opportunity to voice my opinion on this critical SSEIS. This is critical to me because I am concerned about the negative impacts of the NWIW methanol project on my community which is just nine miles away and it's impact on the Washington and the world.

I am not a scientist but I have reviewed the SSEIS as best I could and done some homework on some of it's conclusions. While there are many questions that the study answers and raises, I came away with two major concerns/questions.

First of all the study notes that the plant would produce 4.6 million tons of carbon emissions per year for potentially 40 years. It is my understanding that this would put it in the top ten of Washington industries that emit green house gases. To me this is totally inconsistent with our States goals of reducing green gases and the rate of global warming. Our State has pledged to work towards these goals but allowing this type of project makes the pledge hollow. Are we serious about our goals?

My second major concern is the lack of commitment and/or a plan that NWIW has for mitigating the impacts of it's plant. To me this would be a critical element of the SSEIS and leaving it vague and voluntary is a recipe for disaster. Apparently NWIW has already been less than honest about it's intent for the uses of the methanol, plastics or fuel, and so nothing should be left to chance.

In closing I believe it is in the best interest of my community and my State that your department deny the shoreline permit for the NWIW project. This project needs to be rejected if we truly want to protect our local and global communities.

Sincerely, Bob Wagner, Longview Washington

Sally Keely

DSSEIS Table 3.5-11 states KMMEF will emit approximately 4.6 million metric tons of CO2e per year, every year, for the 40 year planned lifetime of the Kalama Methanol Refinery. There is simply no way to mitigate this level of climate pollution. Per the U.S. government's own GHG equivalencies calculator at https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator (screenshot attached) this is comparable to burning over 5 billion pounds (that's billion with a B) of coal, per year, every year, for 40 years. Is this what Ecology wants? Is this what Gov. Inslee wants? Is this what the people of Washington state want? NO, of course not! NWIW = Not What I Want. We all need to REDUCE our GHG emissions not massively increase them. This level of emissions added to our already swollen carbon footprint would be a death sentence for our citizens, young and old. Do not permit this insanity. DENY shorelines permits.

Greenhouse Gas Equivalencies Calculator

Equivalency Results

How are they calculated?

The sum of the greenhouse gas emissions you entered above is of Carbon Dioxide Equivalent. This is equivalent to:

4,600,000 Metric Tons

Greenhouse gas emissions from

- **993,800** Passenger vehicles driven for one year
- -or-
- **11,414,392,06(** Miles driven by an average passenger vehicle

CO_2 emissions from

- **517,609,992** gallons of gasoline consumed
- -or-
- **451,866,405** gallons of diesel consumed
- -or-
- **5,068,568,923** Pounds of coal burned
- -or-
- **60,895** tanker trucks' worth of gasoline
- -or-
- **530,810** homes' energy use for one year
- -or-
- **778,807** homes' electricity use for one year
- -or-
- **25,295** railcars' worth of coal burned
- -or-
- **10,649,972** barrels of oil consumed
- -or-
- **188,046,666** propane cylinders used for home barbeques
- -or-
- **1.2** coal-fired power plants in one year
- -or-
- **586,648,221,8!** number of smartphones charged

Greenhouse gas emissions avoided by

1,564,626



Tons of waste recycled instead of landfilled

-or-

223,518



Garbage trucks of waste recycled instead of landfilled

-or-

195,728,023



trash bags of waste recycled instead of landfilled

-or-

993



Wind turbines running for a year

-or-

174,752,118



Incandescent lamps switched to LEDs

Carbon sequestered by

76,061,974



tree seedlings grown for 10 years

-or-

6,007,386



acres of U.S. forests in one year

-or-

31,118



acres of U.S. forests preserved from conversion to cropland in one year

Ron Lee

My name is Ron Lee. I'm an 18-year member of the Operating Engineers Local 701. I'm in support of the project. I appreciate the review done by the Department of Ecology, and I'm concerned about those who want to ignore the science. I believe more than enough study has been done. I ask and encourage [inaudible] it is time for the department to permit this project to proceed. Even this more conservative study sets a clear picture of the benefits of the project, both on a statewide basis and globally. Please proceed swiftly to [sound cut] allow positive impacts.

Thank you, Department of Ecology. Good work. Please move swiftly.

Jordan Van Voast

My name is Jordan Van Voast. I'm a licensed acupuncturist and member of 350 Seattle. I urge you to reject the permit application for the Kalama Manufacturing and Marine Export Facility, which is based upon a flawed and incomplete analysis of negative impacts not only to the local environment, but to the global climate. 2020 is on track to be one of the warmest years on record. This summer's historic wildfire season with mega fires still burning in California, Oregon, and Washington have thus far killed at least 37 people, burned six million acres and blanketed hundreds of thousands of square miles with a plume of thick, toxic smoke that was tracked as far as Europe; 5,000 miles away.

Health experts recommended everyone in Seattle to stay indoors for 11 days. But even with high-quality indoor air filters, many of my clients reported negative effects. How many people living unsheltered died or are still ill from the smoke? Nobody tracks those numbers so we will never know. These fires are a direct consequence of human-caused climate change, and the impacts are always going to be inequitable.

The proposed construction of this facility contradicts Washington State's climate goals and will accelerate the climate emergency. As we enter the Anthropocene, when actions of decision-makers like yourselves will determine whether human civilization will survive another generation or two, I urge you to listen to the cries of Mother Earth. Please act boldly and with conscience to reject this permit. Help Washington State become a true climate leader by exercising leadership while we still have a little time left. Thank you very much.

10/8/2020

Submitted by: Gloria Uhart, Kalama, WA

SUBJECT: Deficient KMMEF EIS Environmental Assessment and Risk Analysis

NWIW's assertion that the KMMEF will not have an environmental impact on the indigenous people of Washington State is laughable. Although not a subject of review in this SSEIS, it is an open matter in the EIS and FSEIS and must be considered by Ecology in their decision. It appears only the Cowlitz tribe was included in the early discussions, but it was limited to the KMMEF facility and lateral project, not the potential impact of 185 MMTs of GHGs over 40 years to their native fisheries.

Chapter 11 of the Draft EIS addressed "Historic and Cultural Resources." The scope of the environmental impact was inconsistent with the culture and rights of the indigenous people as defined in multiple Washington treaties. On pages 17-123 and 17-124 of the FSEIS it states, "The NOI was published in the Federal Register and was mailed to approximately 300 interested parties, including federal, state and local officials; … "potentially interested Indian tribes, …" Based on the potential impact of the Native peoples' way of life all of the tribes in WA should have been notified, not just the two Washington confederated tribes (Chehalis and Umatilla Reservations) and the Columbia River Inter-Tribal Fish Commission listed in Chapter 18 (Distribution List) of the FSEIS. The other tribes are in Oregon (Grand Ronde, Siletz and Warm Springs.) What was the logic in notifying these Oregon interior tribe confederations at the exclusion of notifying 16 Washington coastal and Puget Sound tribes, and seven Puget Sound interior tribes who depend on salmon and steelhead as a way of life?

There are 29 federally recognized tribes throughout Washington, consisting of some 140,714 Native citizens. The livelihood for many Washington Native people rely on fishing, agriculture and timber, as is with the Yakima Nation. Sea life and salmon are especially culturally and economically important for the Coast Salish people. Their dependence on the earth's resources was unrecognized by NWIW in the FSEIS, and not even mentioned in the SSEIS. The GHGs spewed out by the KMMEF will impact nearly all tribes in Washington, but particularly the coastal, Puget Sound and Columbia River tribes due to increased ocean acidification and higher water temperatures.

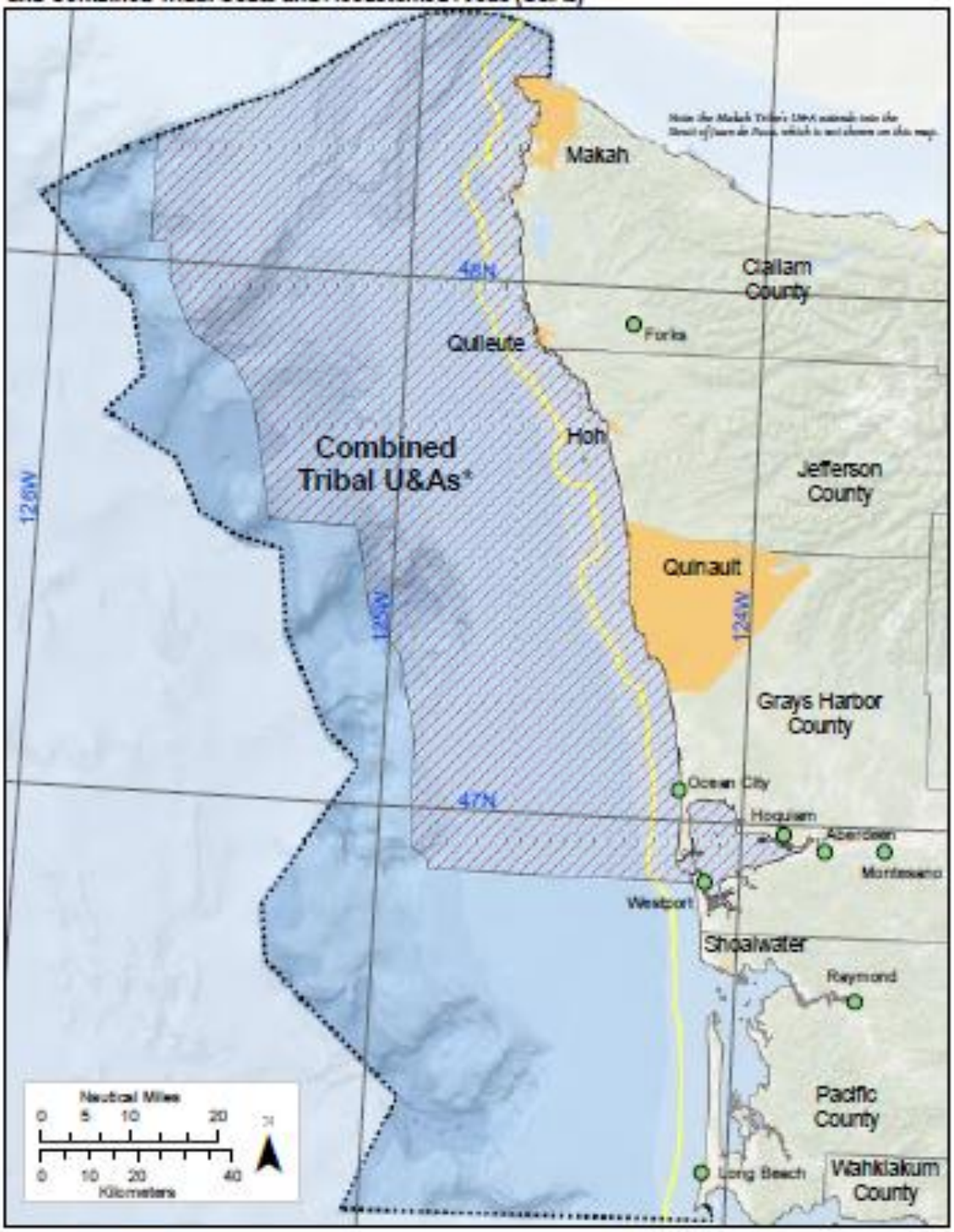
The regulatory context used in Chapter 11 of the EIS was described as "the cultural resources within the Area of Potential Effect (APE) for the proposed project, and probable impacts on such resources." The APE used was the approximate 100 acres of the KMMEF building site, Kalama Lateral Project (the proposed pipeline), and proposed electrical service improvements. The cultural resources were as identified in a cultural survey using the Washington State Department of Archaeology and Historic Preservation (DAHP) database. There were no changes to Chapter 11 in the FSEIS. This is an extremely narrow scope considering that the increased GHGs, which will exacerbate climate change, will continue to affect Washington fisheries in Native American waters.

As described in the "Marine Spatial Plan for Washington's Pacific Coast (June 2018)," "the management of the marine environment is crucial to each of the coastal tribes, as the marine environment is integral to their history, culture, identity, and future. Marine resource management as a matter of law is shared

with the State and federal government. The MSP Study Area overlaps with 3,924 square nautical miles (67%) of the combined, adjudicated tribal fishing Usual and Accustomed Areas (U&As) and can be seen in Map 2 (next page.)

"Four counties (Clallam, Jefferson, Grays Harbor, and Pacific Counties) border the Study Area, along with the reservations of five federally-recognized tribes (the Hoh, Makah, Quileute, and Shoalwater Bay Tribes, and the Quinault Indian Nation) (Map 2). At the Study Area's southern boundary is the Mouth of the Columbia River, the largest river in the Pacific Northwest with source waters from the Rocky Mountains. At the northern boundary is the Strait of Juan de Fuca, with source waters from Puget Sound and the Strait of Georgia (Canada). Two-thirds (67%) of the MSP Study Area overlaps with the Usual and Accustomed Areas (U&As) of one of the coastal treaty tribes – the combined area for adjudicated tribal fishing U&As is approximately 3924 nautical miles of the Study Area. The Makah U&A extends into the Strait of Juan de Fuca, which is not displayed on this map.)

Map 2: Cities, Coastal Tribal Reservations, and Combined Tribal Usual and Accustomed Areas (U&As)



Washington Coastal Tribal Reservations (DNR)

Incorporated City (WSDOT)

County Boundary (DNR)

Latitude and Longitude (ESRI)

Washington MSP Study Area (State Ocean Caucus)

WA State Boundary (NOAA)

Combined Tribal U+As (NOAA Fisheries)

** This represents the combined U&A footprints, within the MSP Study Area only, for the Quileute, Quinault, and Makah tribes. Each tribe's U&A varies within this area.*

Map coordinate system: North American Datum of 1983 (NAD83), Washington South State Plane Coordinate System, meters. Not to be used for legal purposes.

Four of the five tribes adjacent to the MSP Study area signed treaties and include the Hoh, Makah, and Quileute Tribes, and the Quinault Indian Nation (referred to collectively as the coastal treaty tribes). The treaties with the Makah Tribe and Hoh Tribe, Quileute Tribe, and the Quinault Indian Nation govern the relationships between the federal government and the coastal treaty tribes. "Through signing those treaties, the treaty tribes agreed to allow the peaceful settlement of much of western Washington and ceded land to do so, in exchange for, among other things, their reserved right to harvest fish, shellfish, wildlife, and plants, and exercise other cultural practices both on and off-reservation. The treaties reserved the right to fish in "usual and accustomed grounds and stations" beyond a tribe's reservation boundaries. Other tribes were recognized by the federal government through federal processes and maintain tribal reservations, but do not have treaties with the United States.

U.S. District Court and Supreme Court decisions (1974, 1979 and 1994), upheld the tribes' treaty fishing rights, affirming the tribal right to harvest up to 50% of all fish, including naturally occurring shellfish and salmon within their respective U&As. The KMMEF, indirectly through its unmitigated GHG emissions and projected effects of climate change, will deny the tribes of Washington their fundamental treaty rights.

Furthermore, the In January 2017, the Makah Tribal Council approved the Makah Ocean Policy. The purpose of this Policy is to "protect and exercise the treaty-reserved rights and culture" of the Makah Tribe that are inextricably tied to the health of the ocean. The Policy acknowledges that in order for the Makah Tribe to preserve its treaty rights, "it is critical for the Tribe to be informed of, and actively involved in, decisions on actions that may affect the Tribe's use of treaty resources or the health of the ecosystems upon which these resources depend (emphasis added.)" The Makah Ocean Policy contains consultation procedures that establish the requirements for when consultation is needed, including when it should begin, as well as pre-notification requirements, points of contact at the Tribe, and what is required of state and federal permitting agencies to initiate formal closure of consultation. (To obtain a copy of the Makah Ocean Policy, please contact the Makah Tribe, Rosina DePoe, Chief of Staff for tribal council).

In my quest for bringing facts to the table, facts that NWIW would prefer to obscure behind a curtain of deception, I read nearly 50 scholarly peer-reviewed research papers on the aquatic biodiversity of our oceans and the Pacific Northwest, and the effects of climate change on our fisheries. Ocean acidification and increasing temperatures are affecting the survivability of shellfish, salmon and steelhead in the Pacific Northwest. This includes the Pacific Ocean all the way to the coast of Alaska and the Bering Sea where salmon spend a good part of their time in the ocean. Our fisheries are not the only ones in decline. The 2020 salmon returns in Alaska so poor that many Alaskan communities are claiming fishery economic disasters and requesting government assistance. As of 8/12/20 all sockeye, chinook, pink and chum salmon fisheries are below projections, with some areas completing closed to commercial fishing. Bristol Bay appears to be the only area with good returns.

I reviewed the 2019 and 2020 Washington Coho Forecast Summary published by the Dept. of Fish and Wildlife. The forecasted and actual returns for hatchery and natural Coho salmon went from 2,013,316 in 2019 to 987,494 in 2020 (forecasted), less than half. Runs will likely be just above 50% of the 10-year average. Every production unit is forecasting significantly fewer natural fish. Although this is a

snapshot, and only represents one of the 19 species, the running 10, 20 and 30 year averages indicate nearly all species of salmon and steelhead are in decline. Many species will be on the edge of extinction by 2050 as a result of climate change, and here we are still considering the approval of a shoreline permit that will clear the way for a foreign-owned and operated GHG-emitting methanol plant to be built in our community at the expense of our economy and Native Americans. I'm in shock. What are we thinking? Ecology must deny the KMMEF shoreline permit.

Mark Uhart
LTC. USA Ret.
Kalama, WA

Vikki Nelson

My name is Vickie and I'm a new resident of Kalama and Cowlitz County. I am asking the Department of Ecology to reject this project. I am greatly disheartened to see that state and county officials clearly have no interest in protecting the residents this county, nor in providing safe long-term jobs and innovative and growing industries.

Northwest Innovation Works is a dubious company that is primarily backed by the Chinese government, and according to documents obtained by OPB, has been telling different stories to different interest groups. While it has been telling Washington officials that this plant would mainly produce plastic, it has been telling Chinese investors that it will play a large role in feeding China's insatiable fuel appetite. Company stakeholders are lying to US officials and fully intend to use this plant primarily for burning fuel, making this environmental assessment invalid.

Another issue is that the current pipelines that transport methane gas from Whatcom County lack the capacity to supply the plant. This means that an entirely new pipeline would need to be built along the length of I-5, requiring the use of eminent domain to remove citizens from their homes and significantly increasing the risk of methane leaks. According to a study done by the Environmental Defense Fund, a methane leak rate of even 3% would result in significant climactic damage. There are no reliable studies that show that any methanol company has been successful in limiting these leaks. Even the current DEQ study has estimated leakage rate of at least 3%, or about nine million cubic feet of methane per day.

Furthermore, this project is a dud and will not lead to long-term job growth or stimulus. Countless economists and studies have shown that there is a glut of fossil fuels on the market, and so many of them are struggling to be profitable that they must rely on taxpayer subsidies. Northwest Innovation is no different and has already applied for a two-billion-dollar loan guarantee from the US Department of Energy. By the time this plant comes online it will be losing money, leaving US taxpayers with the bill. Fracking in gas is on its way out; we should not be part of a dying and destructive industry.

Finally, methanol is a highly toxic flammable and volatile compound. It is not only capable of causing an explosion that would destroy the town of Kalama, but loose methanol can also cause toxic gas vapor clouds that can travel with the wind.

Diane Dick

2020 10 08 Comment #6

Washington State Department of Ecology
Olympia, Washington
Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.
Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.

The data on purchased power is incorrect and based on speculative assumptions.

Purchased power is detailed in Appendix C of the SSEIS and includes the following:

"Purchased power
The proposed project will import 100 MW (864,000 MWh) of electric power from the regional power market through the Cowlitz PUD transmission system during continuous operation. Power demand is reflected in Megawatt Hours (MWh). Total power demand is shown in Table C-17 for the ULE Alternative. Power demand over the 100 MW provided by purchased power is provided for by the on-site natural gas combustion turbines (emissions from the on-site power generation are captured in the ULE Production Scenarios)." P. C-20

"Electrical power demand
Electrical power will be required for KMMEF operations. A portion of the power required will be generated from onsite combustion turbines, and the rest, estimated to be 100 MW by NWIW, will be purchased from the power market. Emissions from electrical generation by the onsite combustion turbines are included in the emission calculations for methanol production for the ULE alternative. Emissions for the 100 MW of purchased power are based on three generation scenarios:
• Low Scenario. All purchased power is generated from renewable sources. The current renewable mix from Cowlitz PUD is 86% hydroelectric, 8% nuclear, and 6% wind.
• Mid Scenario. Purchased power is from a mix of generation sources, which changes over time in line with the expected, future energy mix in accordance with the Washington State Clean Energy Transformation Act (CETA) signed into law on May 7, 2019. In the mid scenario, generation from 2020 to 2030 is from the current marginal power source (defined as the source of electricity that is first or cheapest available to meet an increased power demand), generation from 2030 to 2045 is from a mix of 20% marginal power and 80% renewable power, and generation from 2045 and beyond is all from renewable sources.
• High Scenario. Purchased power is all from the current marginal power source.

A NW Power and Conservation Council study of CO2 emissions in the NW power system published in 2018 concluded that the expected emissions over the time frame of the project from

marginal power sources were in a range that correlates well with the emissions from a combined cycle natural gas-fired powerplant. Therefore, for the purposes of this study, a combined cycle natural gas-fired powerplant was assumed as the current marginal power source.
Emission factors for combined cycle natural gas-fired powerplants, hydroelectric generation stations, nuclear powerplants, and wind turbines were derived from GREET and are shown below in Table C-1." SSEIS p. C-3

Table C-1 shows range of emissions from power purchases from low to high scenarios. [extracted data]
Purchased Power GHG Emission Factors (g/kwh)
CO2e 0.61 216.57 431.43

The 864,000 MWh from 100 MW demand for continuous operation is incorrect. Multiplying 24 hours of 100 MW demand for 365 days yields 876,000 MWh.

As noted in a previous comment, nowhere in the SSEIS are the electrical power requirements and sources for operating the KMMEF marine dock, including shore power provided to over 80 vessels at berth annually, evaluated. The GHGs generated from this power and marine dock vessel operation are not evaluated.

Based on scenario descriptions above, GHG emissions from on-site purchased power range from 526.7 for low estimate, 187,112 mid estimate, to 372,752 MT CO2e/year for high estimate per Table 3.5-2.

So which of the electrical power resource scenarios and resulting GHG emissions are most likely and reasonable?

All the estimates are low given the absence of including KMMEF dock operations and error in calculating the hours of operation in a year.

The low estimate is unlikely given a large new industrial load will not be allowed as a priority customer for Cowlitz PUD's hydropower resources. NWIW will be required to purchase power from the open market.

The mid estimate is speculative based on the ability of current electrical power resources to move towards clean and renewable resources. [It is also speculative dirtier generation from coal will be replaced by arguably cleaner gas generated electricity given the huge amount of gas NWIW will be sucking out of the limited PNW gas infrastructure.] It is speculative and dubious NWIW will even be operating at the farthest time frame that includes the cleanest power.

The high scenario, with estimate of 372,752 MT CO2e/year by using current marginal resources, is the most likely and reasonable number to work with.

To put the high scenario GHG emission number in larger context, the EPA GHG calculator states 876,000,000 kWh of electricity produces 619,367 metric tons of CO2e.

Refining the power resource further, the following is the result from 2018 eGRID data for the same amount of electricity:

"Using the eGRID subregion NWPP (WECC Northwest) emission rates and 4.80% percent line loss, your estimated annual use of 876,000,000 kWh of electricity results in 586,632,672 pounds CO2, 367,219 pounds SO2, and 550,829 pounds NOX emitted in one year from the power plants in your area.
It would take 6,896,152 seedlings grown for 10 years or 313,053 acres of forests in one year to offset those CO2 emissions."
https://www.epa.gov/egrid/power-profiler#/NWPP

Converting the above to metric tons, the CO2 alone represents about 262,000 metric tons of GHG. Nitrous oxide has 298 time the global warming potential of CO2.
https://climatechangeconnection.org/emissions/co2-equivalents/

Even the estimate of GHGs from purchased electrical power for on-site consumption in the high scenario is lowballed. Please redo the purchased power calculations and emissions to reflect reality.

Thank you,

Diane L. Dick
Longview

Cynthia Svensson

Dear Mr. Rich Doenges,

Here are my comments about the DSSEIS:

1. As a resident of Kalama, the State of Washington, and the Pacific Northwest I do not find any reassurance in the meager mention of mitigation plans in the DSSEIS. The plans need to be spelled out in detail; what, where, when, how much, etc. Saying the Washington Department of Ecology will be part of the process really just throws the responsibility on the State of Washington, much the same as your Department having to redo the DSSEIS. Why are State employees working for NWIW for free? If we can't depend on the permit applicants to do straightforward reports, how can we trust them to run what would be the World's biggest methanol plant (using an untried on full scale process) safely? Please demand a real, detailed mitigation plan from the applicants and allow citizens to review that plan. Living in Kalama, I need to know that my quality of life and safety will not be degraded.

2. I know that this plant would be in Washington and that you work for the State of Washington. Still, there are people in Oregon living closer to the proposed plant than most citizens of Kalama. They need protection and they have not even been mentioned let alone considered in mitigation or safety plans. Do we need to drag the State of Oregon into the discussion? Let's just be good neighbors and insist that NWIW do the right thing by mitigating GHGs in Oregon, as well, and include that in the mitigation plan.

3. I don't believe I saw water mentioned as a GHG in the DSSEIS and yet it is a big player when localized in a giant plume over a relatively small area. Recent wildfires really brought air quality issues to the forefront with unhealthy to hazardous conditions in the area. Now imagine a plume helping to seal that in. Sadly, if our experience with the Tillamook Burn is any indicator, we can expect more wildfires in the next several years just because of fire-dried forests. Please, give some consideration to water as the GHG that it is.

4. Please recheck the mileage used for the pipeline distance from the fracking fields to Kalama. I don't believe it will be possible to put in pipe "as the crow flies." The actual distance may raise figures by 50%.

5. How many GHGs are released in the average pipeline explosion? How often do the explosions happen? How is that correlated to the age of the pipeline? We have had an explosion very near Kalama. There was a bad one in Bellingham not too long ago. How many GHGs were released? This estimate needs to be added in to the GHG volume, if it has not already been done.

6. The DSSEIS has spent a lot of time on market analysis and comparing different processes. Unfortunately, there is one key process for which we have no data. The ULE has been tried in a pilot plant but never on a large scale, and certainly not on a World Class scale. There is a reason that the Methanol Industry has not taken up the ULE process and I don't believe it is just about profit. It is simply too big a risk for too little gain. It may not be any cleaner at all if the electricity needed to run the process is from fossil fuel rather than hydro and if the use of hydro causes some other user

to have to turn to fossil then there may be no savings at all.

7. The DSSEIS proves that there will be huge amounts of GHGs produced in the State of Washington. No one can prove that producing those GHGs will result in the failure to produce an equal amount of GHGs elsewhere. In an expanding market, which the DSSEIS fully stands by, the Kalama GHGs will be added to the ever growing amount of GHGs on the planet. Someone who is making good money doing something is not going to stop that venture just because someone else starts to make the same product. As long as there is money to be made, the first guy will keep going. There is money to be made by using cheap coal as feed stock or fuel in China and that will continue no matter what we do here in the State of Washington.

8. The DSSEIS reports that at least some of the methanol will possibly be burned as fuel. Thank you for considering that. Of, course, all of it can be burned as fuel. Please use figures reflecting all of it as fuel because even if it goes for olefins, it will free up other methanol to be used as fuel.

9. I know the DSSEIS is about GHGs and I have focused on that, but please, don't forget the many other problems that this proposed methanol plant would create such as 7 times the ASIL for DPM generated by the tugs needed to control the Panamax tankers. We already have so much DPM in our air from !-5, the railroads, and ship traffic. Please, don't let anyone add to that and then seal the whole mess in under a vapor plume.

Thank you,

Cynthia Svensson
MS Chemical Oceanography, U. of W.
Kalama resident

Annemarie Dooley MD

My name is Anne-Marie Julie, and I'm a kidney doctor and a member of Washington Physicians for Social Responsibility. I'm speaking tonight because we face multiple crises. The first in March, when I treated COVID patients, many of whom died. Then in the last week, as I prescribed inhalers to patients unable to breathe from wildfire smoke, a deadly disease followed by life-threatening wildfire smoke; both a direct result of our climate crisis.

Yet, inexplicably, I'm having to explain why it's not a good idea to build a greenhouse gas-producing methanol refinery on the banks of the Columbia where I stood last summer with the local community in Kalama. This Refinery will be fed by fracked gas that is toxic from source to delivery. I assume no one listening has seen the effects of methanol exposure on people. I have. It includes blindness, vomiting, and unless I clean the blood of the dialysis machine, death. But somehow we're to believe that carbon-intense methanol refining here is clean because it reduces coal burning in China. It sounds like the same flimflammery that came from Volkswagen when they promoted low-emission diesel engines; it was all an illusion.

To be blunt, the corporation and the paid experts behind this methanol refinery are part of a system of indifference that does not care if refining methanol imposes a cost of methane leaks and air pollution on state residents. Cost including chronic ill health, increased medication use and days lost from work; costs that are never counted because they fall on small and lower-income communities; costs that far outweigh the benefits offered by a small offering of local jobs.

I'm asking the Department of Ecology not to allow this refinery. A facility that would increase greenhouse gas emissions and contribute to a future of Northwest skies; yellow with smoke. The Shoreline Permit for this project should be denied. Thank you.

Sharon Rickman

>> My name is Sharon Rickman, and I live in Vancouver, Washington. Building a new fossil fuel infrastructure refining fracked gas is wrong and will negatively impact all of us and future generations. I lived in Western Pennsylvania and witnessed firsthand the harms of fracking to air and water quality. The oil and gas industry built fracking wells on our local small farms, targeting a vulnerable community with false promises. When the farmers' entire ecosystem was poisoned from hundreds of trucks hauling in water and hauling out toxic wastewater and open-air evaporation ponds, the oil and gas industry responded by proof to us that the air and water was not contaminated before we came here.

This EIS statement is misleading and does not address cumulative upstream impacts of all phases of fracking; including emissions of hundreds of trucks bringing in water, trucking out toxic wastewater, operation of compressor stations, and storing poisonous water in open-air evaporation ponds. The health from this toxic fracking chemicals is hazardous to people, air, animals, and land. We need new sustainable clean energy jobs in Washington. Building a new fossil fuel infrastructure using fracked gas will not provide that.

Please do the right thing and reject this proposal and all permits to stop this dangerous project.

George Raiter

>> Thank you for the opportunity to testify. My name is George Raiter. I'm a 45-year resident of Cowlitz County. I've served eight years on the Longview City Council, two terms as the Mayor of Longview in the state legislature, and for 12 years as a Cowlitz County Commissioner. I've contracted with Northwest Innovation for community outreach for the past three years.

I'm well aware that the social and spiritual health of our community is directly tied to the health of our economy. The approval of this project will both benefit our community and improve the global environment. I believe in some fundamentals; including equal application of the law and the rule of science. The studies you have are mandated by state law and indisputably based on sound science. By granting this permit, Washington can set the highest standard and be a national leader.

The [inaudible] emission technology results in the air emissions being classified as a minor source; similar to a new gas station.

The investment in zero liquid discharge allows no discharge whatsoever into the Columbia River. There's no solid waste generated by the process. Although there will be no rail or truck traffic moving raw material or product, this project will pay millions of dollars annually to the Cowlitz County Road Fund. Global greenhouse gases will be reduced equivalent to twice that emitted annually by the entire City of Seattle. The company has agreed to go further and mitigate local greenhouse gases.

Please do not move the goalpost. Follow the science, follow the law, grant these permits.

Longview/Kelso Building Trades Construction Council

>> Good evening. For the record, my name is Mike Bridges. I'm the current President of Longview/Kelso Building Trades Construction Council, and a lifelong resident of Cowlitz County. For over six years, you have heard me and many other local leaders and residents promote the many benefits of this project, and applaud the environmental protections and extra mitigation that Northwest Innovation has agreed to do.

I want to go on record that the Building Trades is in support of making mitigation a requirement in the final permitting documents to further secure the positive environmental impacts that it will create. We trust that Ecology will provide the same level of quality oversight for mitigation that they have throughout this year in the permitting process.

Over the years, I've seen a lot of parallels between the work we do as union leaders and the work being done by some of the environmental

groups. You've heard me speak during these hearings while I might not agree with all of the tactics and antics I've seen from the opposition. I know it is a noble cause to fight for the future of our planet and the future of our children, but I think the time for fighting is over. The department of ecology has included everything in this study that those opposed here today have asked for. The project still proves out to be a net benefit for the global environment.

While some of the numbers and variables have changed, we cannot argue the results of the math and the science that have been done to get to where we are now. We have a SCIS that clearly illustrates a huge reduction in global greenhouse gases. I sincerely hope our friends on the opposition side will see the environmental wind that is right here in front of them, the wind that they helped to create. To my friends that still oppose this project, I would urge you to reconsider. There is no one silver bullet that will fix global warming. We must look at things that we can do right now.

To those who still oppose the project based on politics, well, ignoring six years of study and science, I would say your position is disingenuous, to say the least. In closing, I would like to thank the department of ecology for this process and their due diligence to bring this project to the point we are now. We have the ability to make real positive changes while setting a standard for the rest.

>> Michael, thank you so much for your comments. Anything additionally you need to let us know, I ask you to submit in writing

Althauser Rayan Abbarno Attorneys at Law

>> My name is Peter Abbarno. I'm a small business owner, Attorney, mayor pro tem in the city of Centralia in Lewis County. But most importantly, I'm a father of two young school-aged children. I'm in favor of the methanol facility because of the positive regional impacts it'll have on jobs and the economy for my family and many other families, and the impact it will have on helping flattened the global greenhouse gas emission curve. Good-paying and family-wage jobs shouldn't be the sole province of the future sound. Southwest Washington deserves greater work opportunities and this project will not only create construction jobs, but 200 plus permanent family-wage jobs.

I have no doubt that high schools and community colleges will be creating curriculum and programs that complement this type of facility who will need employees with trade vocational training, as well as education in the science and math mathematics. The methanol facility will be huge factor in reducing the unemployment rate in Southwest Washington, which has over nine percent in Cowlitz County, and over nine percent here in Lewis. In addition, ecologies and analysis predicts that the facility will reduce global greenhouse gas emissions by about six million tons. That is assuming a large amount of methanol would be used as fuel rather than the intended use without factoring in future technological improvements and additional mitigation factors.

This type of displacement is a positive step towards reducing greenhouse gases globally. Washingtonians want their kayaks, tents, cars, and computers so why not contribute it to contribute to their production here and produce it in a way that will reduce global GHG? The alternative is that those products will be produced solely in other countries without any emission regulations. Actually, this facility is contributing more to GHG emissions than acting on the facility, which would help reduce global GHG and create local jobs. Thank you.

Jamie Weingarten

Jamie Weingarten, I'm a Kalama County resident. I like to think that I was involved in the Sovereign Citizens Movement, really believe in President Trump, and everything he's doing to fight against China and the Chinese influence overseas. I never thought I'd say this, but the Kalama Patriot Militia is really into supporting what the work being done here by the Riverkeeper and the Sierra Club. We stand with you in your fight against the Chinese influence in our region. I just want to say that, as a supporter of our president and America, I really am excited and enthusiastic about how much support we're getting for the fight that we have by all these good people who are calling in, and talking about this.

I just really want to make that testimony heard, and that as true-blooded Americans and believers in this country, we're standing together with all these wonderful folks that are calling in from out of state. I don't typically agree with them, but I'm going to have to join up with them on that. I thank you and I hope that you do what is right, what you know is right, and what we don't know is right here. Thank you very much.

Bob Carroll

Bob Carroll. I'm a member of IBEW Local 48 in Southwest Washington. I'm a resident of Vancouver, Washington. I'm fully in support of this project, and I hope that you will okay the permits to get this project going. The mitigation that will be done in order to support lower emissions is a great thing. Since there'll be no water emissions or water discharge into the river, that's a good thing because I'm also a fisherman. The river and the port is designed for projects to be built on it, to provide products for our country, as well as other countries too.

This is American made product that will be used to make the plastics that we all use. I'd rather have them made with lower emissions and made out of coal. Thank you very much for the work you've been doing. I encourage you to permit this project and let's get it going. It will also provide a number of jobs, but not only that it's going to provide careers. Because there are going to be apprentices that work on this job that we'll go to having 35 or 40-year careers in the construction trades. Thank you very much. Have a good day, and please permit this project.

Washington State Labor Council

Larry Brown. I'm President of the Washington State Labor Council. I'm here in support of the Kalama Manufacturing and Maritime Export Facility. This facility will help reduce global greenhouse gases for products that will be produced elsewhere if we don't produce it here. We know that it'll help sequester carbon in the products that had built, eventually, and then save tons of greenhouse gases. We work on economic development across the state.

One of the problems that our state has is the uneven benefit of the economy, that [inaudible] project that is going to work well for our rural areas of the state, providing jobs, providing for economic activity, provide for local governments and schools. I appreciate you giving me the opportunity to testify tonight and urge your support. Thank you.

Aedan McCall

>> I would like to say I oppose the construction of the Kalama Methanol Refinery because the project's goal of converting frac gas to methanol in order to export as fuel or for plastic, doesn't serve the interest of people living in and around Kalama or the rest of Washington. The facility may offer high paying jobs to residents, but the costs are similarly high. The pollution will have adverse effects on the people living in the area of the refinery and degradation of its surrounding environment.

With the analysis that almost a million tons of methane would be released each year throughout the fracking and conversion process, air and water quality would worsen, exacerbating the existing issues that living near a freeway with coal and oil trains traveling through consistently has created. Based on this information, I ask that a refinery ought not be built. Thank you for your time.

David Radtke

>> My name's David Radtke. I'm a union member of IBEW Local 48. I'm a Journeyman Electrician. I'm a rural resident and I've lived in the greater Portland area my whole life. We were working on a lot of different projects, schools solar projects, wind, the hydroelectric dams in Oregon and Southwest Washington. I understand the need for renewable energy and a greener future. I think that this project is going to help reduce the global greenhouse gas emissions related to methanol, and the use of plastics. Northwest Innovation Works that agreed to implement the zero liquid discharge technology to keep the Columbia River protected. That's something that we all care a lot about.

This facility will meet and exceed requirements for clean operation. The state of Washington is going to create something like a thousand construction jobs over a three-year period, 200 full-time jobs, 500 indirect jobs in the local community, much-needed tax revenue, and it's going to be done in a responsible way. I think it's time to move this project forward and I'm hopeful it can be a model for the future of construction in this country. Thank you.

Sept Gernez

Hi, my name is Sept Gomez. I'm an organizer with the Sierra Club, and I'm representing our 3.8 million supporters across the country who are counting on you to deny this project. The Sierra Club's mission is to explore, enjoy, and protect the planet. This project would destroy the local environment while massively contributing to global warming, and as such, we're working to stop it.

I'd like to remind you of your mission statement. The Department of Ecology's mission is to protect, preserve, and enhance Washington's land, air, and water for current and future generations. Approval of this project would be a counter to your mission. We've given you facts so you don't need facts from me. I'd love to share where I'm coming from personally on this.

I am a transgender non-binary person and many youths in the trans community are unhoused. While the Clean Air Agency has been telling everybody to stay inside with the wildfire smoke fueled by climate change, our youths are out there suffocating. Unhoused individuals cannot stay inside. During this pandemic, my sister has been pregnant. She's due in December. It's a strange time to be welcoming my niece into the world and I'm counting on you to fight for a future where these kids can survive.

Please deny this project. Thank you

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OCT 08 2020

WA State Department
of Ecology (SWRO)

Margaret Cemulini 503-556-9219
130x635, Rainier, Oregon97048

Oct 4, 2020

No methanol plant in Kalama for China.

The Chinese used to say, " Hide your light and bide your time".
Now, it is "Strive for achievement"

Please don't give the permit to this project because it isn't in the best interest for the American people.

It's known that the Chinese are buying their way into controlling as much of the world as they can and have been doing so quickly and quietly.

Don't be so naive as to give them our PORT, OUR CLEAN AIR AND OUR WATERWAYS TO FACILITATE THEIR MILITARY AND GOVERNMENT,.
We have been complacent and have stood by like children watching a freighter pass by. The methanol sent overseas can only be detrimental to our safety and peace of mind.

If the argument is for clean air: be aware that China has been building coal plants in rural areas as it pushes through their " belt and road " plans across Asia to Africa and eventually, to Spain. They advance their plans and do not tell us..

If the argument for jobs: we can use the methanol here for our own use and encourage development and industry just as well as the foreign developers By using it here we know what it will be used for and don't take the risk of having it used against us.

Be reminded: imperialist China thinks Australia is " chewing gum on its boot". It has conflicts around the world, with us the U.S., Canada, Taiwan, India, Britain and Argentina just to mention a few.

To transport Huge quantities of methanol in container ships up and down the Columbia River is a trespass on all who consider it a safe passageway. The idea that this Large methanol plant will be BUILT DIRECTLY ACROSS FROM THE TROJAN NUCLEAR DEPOT containing caskets of highly contaminated nuclear waste is unbelievable. One destabilizing explosion could be disastrous for the communities close by and for the whole river.AND United States of America and its people.

The long term implications of this proposed methanol plant is only for Chinese expansionism. PLEASE DENY IT.

Margaret J. Cemulini

Washington Dept. of Ecology

RECEIVED
OCT 08 2020
WA State Department
of Ecology (SWRO)

John Flynn

The mission statement of the Washington Department of Ecology is to "protect, preserve and enhance Washington's environment for current and future generations." It is the responsibility of the Department of Ecology to protect the residents of the state from harmful health and environmental impacts.

The proposal by Northwest Innovation Works to build a fracked gas to methanol refinery on the shore of the Columbia River for shipment to China is in direct juxtaposition to that responsibility. Even the Governor of Washington, Jay Inslee, who was originally a supporter of the project, has come to the realization that this proposed fossil fuel project is not supportable.

I encourage the Department of Ecology to follow the governors lead and deny any and all permits for this unsustainable project.

Thank you.

John Flynn
Kalama, Wa.

Cowlitz Indian Tribe

October 2, 2020

Rich Doenges
Department of Ecology
Kalama SSEIS
PO Box 47775
Olympia, WA 98504-7775

RE: Comments Regarding the Draft Second Supplemental Environmental Impact Statement for the Northwest Innovations Methanol Manufacturing and Marine Export Facility Revised Mitigation

To Mr. Doenges, SEPA Responsible Official

The Cowlitz Indian Tribe has reviewed the revised Port of Kalama Draft Second Supplemental Environmental Impact Statement (Draft SSEIS) Greenhouse Gas Report associated with the Northwest Innovations methanol manufacturing and marine export facility. We thank the Washington State Department of Ecology for the one-week comment period extension which allowed our tribal council to discuss this important matter.

The Cowlitz Indian Tribe is a Federally Acknowledged Government entity located in the Pacific Northwest. Our historic area of interest includes a large portion of the Lower Columbia River Basin that spans both sides of the Columbia River in Washington and Oregon States. The proposed Kalama Methanol Manufacturing and Marine Export facility (also identified as the 'methanol facility') lies within our homeland, which has been established through historical adjudication processes. The Cowlitz Tribe has held neutrality on the project to evaluate company statements and actions. However, the Cowlitz Tribal Council has now determined this project is inconsistent with the Tribe's stewardship ethic and we today voice our opposition to this project moving forward.

The Cowlitz Indian Tribe does not evaluate project impacts based only on narrow regulatory definitions. Project impacts are, in reality and in fact, permanent impacts to a landscape. Within the Columbia River, features such as floodplains, wetlands, aquatic habitat, and Cultural Sites are in a depressed state. Landscape features, such as dredge spoils at the project site, are temporary, manmade features. Development is a habitat restoration opportunity that is lost – once a site is developed, the site cannot and will not be restored within the Cowlitz's seven-generations world view. The landscape of the Project's proposed APE and surroundings are rich with Cowlitz Heritage and significant Cultural and Natural Resources.

The Cowlitz Indian Tribe Culture Resources Department and Natural Resources Department work together to address important project-related impacts to natural resources which are integral parts of

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our heritage and traditions. Clean water, culturally significant fish, plants, and the various species and habitats that will be affected are parts of our continuing Cultural Heritage. These components of the landscape, which are interdependent on each other, are priorities for the Tribe. The Tribe holds Indigenous knowledge about surrounding Cultural Resources, i.e. archaeological sites, fishing stations, root gathering locations (and the like). Though the landscape has changed over the period since European contact, there are still important Cultural Resources that need to be protected.

The Cowlitz Indian Tribe are stewards of the land. As such, the Tribe and Northwest Innovation Works have engaged throughout the permitting process. NWIW has been respectful and conscious of the Tribal interests in land, sea, air, water, fisheries and wildlife. We have, we believe, influenced some environmentally sound changes to the project proposal. In the event Kalama Methanol Manufacturing and Marine Export Facility moves forward in permitting, it is our expectation to have an ongoing involvement in mitigation portfolio discussion and review.

Please contact our Natural Resources Department Director, Taylor Aalvik, Cultural Resources Department Director Nathan Reynolds or our Natural Resources Program Assistant, Tiffini Alexander for follow up communications and scheduling. Taylor or Nathan can be reached via email taylor.a@cowlitz.org, or NReynolds@cowlitz.org, and Tiffini can be reached at: 360-577-8140, or talexander@cowlitz.org.

Sincerely Yours,

Philip Harju
Chairman of the Cowlitz Indian Tribe

Cc:
Laura Watson, WA Dept. of Ecology
Craig Bill, Executive Director, Governor's Office of Indian Affairs

October 8, 2020

Director Laura Watson
Washington Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Submitted via Ecology's web portal and email to laura.watson@ecy.wa.gov

Re: Comments on the Draft Second Supplemental Environmental Impact Statement for Northwest Innovation Works' Kalama Methanol Refinery and Export Terminal.

Director Watson:

We are experiencing a climate emergency; the Washington Department of Ecology (Ecology) should act accordingly. Ecology must re-examine its conclusion that the world's largest fracked gas-to-methanol refinery would somehow benefit our climate. Northwest Innovation Works' (NWIW) proposal and climate rationalizations—which are essentially the same as previously rejected coal, crude oil, and LNG export schemes—have no place in Washington's "carbon-free future."[1] Recognizing that new fossil fuel infrastructure is incompatible with climate progress, Governor Inslee publicly stated that he can no longer in good conscience support NWIW's proposal. Ecology's willingness to accept NWIW's speculative, self-serving, and defeatist climate rationalizations—especially after the company was caught misleading Ecology about the refinery's purpose—jeopardizes Governor Inslee's credibility and accomplishments as a climate leader.

[1] Governor Inslee (quoted in Columbia Basin Bulletin, *Federal Climate Report Suggests More Warm Years Such As 2015 Will Be A Reality For Columbia Basin* (November 30, 2018)).

I. The Kalama Methanol Refinery Has No Place in a Low-carbon Future.

The intensifying climate crisis cannot be resolved by speculative half-measures, like NWIW's proposal, that deepen our dependence on fossil fuels. Governor Inslee explained that locking in multidecadal fracked gas infrastructure projects is not sufficient to accomplish what's necessary for our climate.[2] Even experts sympathetic to the methanol and the fossil fuel industries admit that "[w]e have no room to build anything that emits CO_2 emissions."[3] Governor Inslee understands that Washington has a "dwindling window for action" in which we must reduce emissions to half their *current* levels to avoid reaching an irreversible tipping point.[4] In this context, NWIW's proposal to increase current emissions between **4.17 and 5.41 million metric tons a year**[5] (in hopes of slowing the growth of hypothetical future emissions) is unconscionable. There is no margin to entertain NWIW's gamble; Governor Inslee knows that "we don't have the luxury of a 50-year transition phase."[6] Accordingly, NWIW's proposal to cause 4 or 5 million metric tons of climate pollution every year is not part of the "carbon-free future"[7] that Governor Inslee has charted for Washington.

II. The DSSEIS Assumes, Without Explanation, That NWIW's Methanol Would Be Used *Instead of* Other Sources of Methanol.

As it must, Ecology has abandoned the Supplemental Environmental Impact Statement's (SEIS) flawed economic rationalizations for why NWIW's methanol would be used instead of other methanol.[8] The SEIS' displacement theory "was based on the assumption that the methanol produced by [NWIW] would displace an equal quantity of methanol derived from coal in China because it is more expensive to make methanol from coal."[9] Columbia Riverkeeper and others

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[2] Office of Governor Inslee, *Press Release: Inslee announces opposition to two gas projects in Washington* (May 8, 2019).
[3] The Guardian, *World has no capacity to absorb new fossil fuel plants, warns IEA* (November 12, 2018) (quoting Fatih Birol, executive director of the International Energy Agency).
[4] Office of Governor Inslee, *Press Release: Inslee announces opposition to two gas projects in Washington* (May 8, 2019).
[5] Draft Second Supplemental Environmental Impact Statement for the Kalama Methanol Refinery (DSSEIS), p. 84 (Table 3.5-13).
[6] Office of Governor Inslee, *Press Release: Inslee announces opposition to two gas projects in Washington* (May 8, 2019).
[7] Governor Inslee (quoted in Columbia Basin Bulletin, *Federal Climate Report Suggests More Warm Years Such As 2015 Will Be A Reality For Columbia Basin* (November 30, 2018)).
[8] DSSEIS, Appendix B, pp. 4, 17.
[9] DSSEIS, p. 22.

explained why this assumption was unreliable and untethered from basic economic principles.[10] Recognizing these flaws, Ecology informed Washington legislators that NWIW's assertions about displacement did "not appear to be supported from an economics or emissions standpoint."[11] Ecology also requested "an improved explanation of how the proposed project would displace (i.e., reduce) coal-to-methanol production in China."[12] Upon further scrutiny in this Draft Second Supplemental Environmental Impact Statement (DSSEIS), Ecology has discarded NWIW's rationale for the displacement theory.[13] Accordingly, NWIW's central climate argument for building a massive fracked gas-to-methanol refinery in Washington is without merit or justification.

Yet instead of admitting that substitution is speculative and uncertain, the DSSEIS just assumes that substitution would occur.[14] The DSSEIS blithely claims that (1) demand for methanol in China will increase in the future,[15] and (2) NWIW would meet that new demand instead of other, dirtier forms of methanol.[16] But Ecology's new iteration of the "displacement theory" does not provide a reason *why* Chinese methanol consumers would choose NWIW instead of other methanol sources. Assuming, rather than explaining, substitution is especially galling because Ecology repeatedly asked for a *better* explanation of why substitution would

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[10] *See* Columbia Riverkeeper *et al.*, *Comments on the Draft Supplemental Environmental Impact Statement for Northwest Innovation Works' Methanol Refinery and Export Terminal*, pp. 10–17 (December 27, 2018).
[11] Ecology, *Letter to State Legislators Re: SEPA Process for the Northwest Innovation Works Methanol Facility*, p. 5 (February 25, 2020).
[12] DSSEIS, p. 23; *see also* DSSEIS, Appendix B, p. 5 ("Ecology has directed that the intent of the second SEIS is to, 'quantify . . . how the methanol produced would affect other sources of methanol production'").
[13] *See* DSSEIS, Appendix B, p. 17 (explaining that the DSSEIS' economic analysis "is based on entirely different reasoning than was used in the First SEIS.").
[14] Rhetorically, assuming displacement allows Ecology skip ahead to a straw-man comparison between coal and natural gas as methanol feedstocks. Logically, however, Ecology's inability to propose a new mechanism for substitution should have terminated the exercise in greenwashing referred to as the "displacement theory."
[15] DSSEIS, p. 50 ("methanol market is forecast to continue growing"); *see also* DSSEIS, Figure 3.5-8.
[16] DSSEIS, p. 50 (asserting that "if KMMEF sells 3.6 MMT per year to China, then the emissions for 3.6 MMT of methanol produced under alternate cases would be replaced with the emissions from the KMMEF-produced methanol each year."); *see also* DSSEIS, Appendix B, p. iii (suggesting that "low-cost methanol from Kalama would replace other low-cost Chinese suppliers – those that would be more likely to expand with the growing market"); *see also* DSSEIS, Appendix B, pp. 17–18 (claiming that that "low-cost coal-based methanol will expand production in China as demand for methanol increases").

occur.[17] The DSSEIS jettisons NWIW's flawed rationale for substitution but provides no alternate mechanism. Instead, Ecology just assumes that perfect one-to-one substitution—a central contention of NWIW's climate claims—would occur. The competing explanations offered in the DSSEIS and the SEIS indicate that the "displacement theory" is a pre-determined result desperately searching for justification, which is clearly arbitrary

Evidence in the DSSEIS actually contradicts Ecology's assumption about substitution. The DSSEIS contains information suggesting that Chinese methanol customers would have no incentive to purchase NWIW's methanol instead of other methanol—and, in fact, might prefer domestic methanol sources. First, the DSSEIS reiterates that all methanol is the same; NWIW's methanol is not superior to other methanol.[18] Second, the DSSEIS concludes that NWIW would be a "price-taker,"[19] meaning that NWIW would sell its methanol at the same price as other methanol producers.[20] Third, worldwide methanol production capacity significantly exceeds demand, and capacity is increasing faster than demand.[21] If NWIW's methanol would be no better or cheaper than other methanol, and there will be no shortage of methanol producers to choose from, a methanol consumer in China would have no reason to select NWIW instead of a different methanol source. Add to that scenario the DSSEIS' admission that China prefers

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[17] Ecology, *Letter to State Legislators Re: SEPA Process for the Northwest Innovation Works Methanol Facility*, p. 2 (February 25, 2020) ("Ecology does not have enough information to determine if the SEIS's central assertion driving the net beneficial conclusion, displacement of Chinese coal-to-methanol plants, will occur. Ecology has questioned this assumption and asked for more information to be included in the analysis on which the assumption is based."); *see also* DSSEIS, p. 23 (Ecology requested "an improved explanation of how the proposed project would displace (i.e., reduce) coal-to-methanol production in China."); *see also* DSSEIS, Appendix B, p. 5 ("Ecology has directed that the intent of the second SEIS is to, 'quantify . . . how the methanol produced would affect other sources of methanol production'").

[18] DSSEIS, p. 73 ("[U]nlike products that can be uniquely distinguished by their qualities, methanol is a uniform commodity."); *see also* DSSEIS, Appendix B, p. 6 ("methanol is a commodity, in that the quality doesn't vary noticeably from one producer to the next").

[19] DSSEIS, p. 50; *see also* DSSEIS, Appendix B, p. iii (explaining that all future methanol from Kalama or other sources will be sold at the same, "market clearing price.").

[20] If the DSSEIS is wrong about NWIW being a price-taker, and NWIW would actually sell its methanol for less than the prevailing market rate (as suggested at DSSEIS, p. 52), the increased availability of cheaper methanol could drive additional (rather than substitute) consumption. *See* Columbia Riverkeeper *et al.*, *Comments on the Draft Supplemental Environmental Impact Statement for Northwest Innovation Works' Methanol Refinery and Export Terminal*, p. 13 (December 27, 2018) (explaining the relationship between decreasing commodity prices and increased consumption).

[21] DSSEIS, Appendix B, Figure 3-4.

domestic methanol production to imports when possible,[22] and Ecology's assumption that Chinese consumers would purchase methanol from NWIW instead of other sources becomes even more arbitrary and unsupported.

If NWIW can sell all of its identical methanol at identical prices to its competitors, that means that the methanol market is absorbing NWIW's methanol *in addition to* other sources of methanol. In fact, the analysis in the DSSEIS finds no cause-and-effect connection between the Kalama proposal and reduced coal-to-methanol production in China. The market analysis essentially concludes that the methanol market is expanding so quickly that any new source of methanol will be price competitive.[23] If this is true—and it would almost have to be, in order for NWIW to find buyers based on the information in the previous paragraph—NWIW's methanol, and its greenhouse gas emissions, would be additive. The DSSEIS, like the SEIS, has failed to address a fundamental problem with the displacement theory: namely, that increasing the supply of cheap methanol available to a rapidly expanding market is likely to result in additional, rather than substitute, consumption.[24]

Ecology's failure to explain *why* substitution would occur—even though so much of the climate analysis rest on this assumption—violates the State Environmental Policy Act (SEPA). When an agency "entirely fail[s] to consider an important aspect of the problem," the resulting SEPA[25] analysis is illegal.[26] By merely assuming, rather than explaining, substitution, the DSSEIS "entirely failed to consider"[27] whether substitution would actually occur. And whether NWIW's methanol would substitute for, or add to, consumption of other sources of methanol is an important aspect of the DSSEIS' climate analysis.[28] Accordingly, Ecology's failure to explain

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[22] DSSEIS, Appendix B, p. 18 ("within China there is likely a preference for expanding domestic [methanol] production where feasible").
[23] DSSEIS, Appendix B, p. 19.
[24] *See* Columbia Riverkeeper *et al.*, *Comments on the Draft Supplemental Environmental Impact Statement for Northwest Innovation Works' Methanol Refinery and Export Terminal*, p. 13 (December 27, 2018) (explaining the relationship between decreasing commodity prices and increased consumption).
[25] National Environmental Policy Act (NEPA) provisions, and case law interpreting NEPA, are used in Washington to discern the meaning of SEPA and its implementing regulations. *See, e.g., ASARCO v. Air Quality Coal.,* 92 Wn.2d 685, 709 (1979); *Kucera v. State Dep't of Transp.,* 140 Wn.2d 200, 215–16 (2000).
[26] *Lands Council v. McNair*, 537 F.3d 981, 987 (9th Cir. 2008).
[27] *Id.*
[28] *See* Ecology, *Letter to State Legislators Re: SEPA Process for the Northwest Innovation Works Methanol Facility*, p. 2 (February 25, 2020) ("Ecology does not have enough information to determine if the SEIS's central assertion driving the net beneficial conclusion, displacement of Chinese coal-to-methanol plants, will occur."); *see also* Ecology, *Comments on Draft Supplemental Environmental Impact Statement*, p. 6 (December 8, 2018) ("One of the central

an important aspect of NWIW's displacement theory—namely, why displacement would occur—violates SEPA.

III. The DSSEIS' Assumptions About the Future are Defeatist, Almost Certainly Incorrect, and Illegal.

Even if Ecology could explain why substitution would occur under *current* market conditions (which it cannot), the DSSEIS' prediction that the fundamentals of methanol production and consumption will remain the same for the next 40 years is defeatist and unreliable. As the United States Court of Appeals for the D.C. Circuit noted, "projections of energy markets over a 25-year period are highly uncertain and subject to many events that *cannot be foreseen*, such as supply disruptions, policy changes, and technological breakthroughs."[29] Undeterred, the DSSEIS attempts to predict the future—and its prediction is bleak: no economic events, environmental regulations, or technological breakthroughs will materially alter the way methanol is consumed or produced during the next 40 years.[30] Continuing down our current trajectory of rampant fossil fuel consumption would be disastrous for our planet and civilization. NWIW shrugs and says: this "how the world actually works."[31] Fortunately, the DSSEIS' fatalistic assumptions about the future are not reliable.

The DSSEIS' cynical guess about the next 40 years of human history does not constitute the "hard look" that SEPA requires. SEPA mandates a hard look at the impacts of a proposal that are reasonably foreseeable—no less, and no more. An agency "cannot close its eyes" to a project's negative impacts;[32] by the same token, an agency cannot impute to a proposal benefits that are not reasonably foreseeable.[33] Because, as explained below, Ecology's predictions about the future of China's methanol market are unreliable, NWIW's supposed climate benefits premised on those predictions are also unreliable. The DSSEIS' attribution of speculative and uncertain benefits to NWIW's proposal violates the requirement that Ecology take a "hard look"

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points of the Draft SEIS is that the emissions displaced by this project are greater than the emissions created by the project . . . .").

[29] *Sierra Club v. United States DOE*, 867 F.3d 189, 194 (D.C. Cir. 2017) (emphasis added).

[30] DSSEIS, Figure 3.5-8 (predicting steady increase in methanol consumption in future decades); DSSEIS, p. 49 (explicitly excluding potential "different global policies (fossil fuel/plastics phase outs or bans for example)" from the analysis); DSSEIS, p. 75 (The market analysis "assumes that methanol production technologies are not materially improved in the future.").

[31] Tom Luce, *NWIW Kalama Fact vs. Myth*, p. 2 (September, 2020).

[32] *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 344 (1976).

[33] *Cf.* Ecology, *Comments on Draft Supplemental Environmental Impact Statement*, p. 6 (December 8, 2018) (asking NWIW to "use expected and worst case assumptions, not just best case assumptions, to support an analysis that is as accurate and inclusive as possible").

at NWIW's impacts on the environment and human health.[34] The current displacement theory is as speculative and selective as the first; Ecology should not rely on displacement when calculating the emissions from NWIW's proposal.

a. Demand for methanol may fluctuate or decrease over the next 40 years.

The DSSEIS' assumption that demand for methanol will increase in line with current[35] projections throughout the next 40 years[36] is speculative and unreliable. In reality, whether demand for methanol grows, shrinks, or stays the same over the next 40 years will be determined by a wide range of factors that "cannot be foreseen"[37] or controlled by Ecology. Chief among those unknowable factors is the future of the global and Chinese economies; without robust global economic growth, the projected growth in demand for methanol will not materialize. Recent unforeseen economic disruptions—including the Great Recession, the COVID19 global pandemic, and natural disasters intensified by the climate crisis—demonstrate our inability to predict reliably future economic conditions.

Demand may also decrease or stagnate if substitutes; technological innovations; or trade, environmental, or other policies emerge that discourage methanol or plastics consumption. Specifically, industry watchers are beginning to question the assumption of ever-increasing demand from the plastics sector in China and worldwide. The Center for International Environmental Law recently explained that "the proliferation of social and political changes . . . call into question industry assumptions of unfettered growth in plastic demand and consumption."[38] For instance, Chinese policies to reduce single-use plastics will significantly erode demand for plastic feedstocks.[39] Other analysts have noted that "Plastics, like oil and gas, are suffering from the dual malady of overexpansion and *underconsumption*."[40] Additionally, the

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[34] *See Pub. Util. Dist. No. 1 of Clark Cnty. v. Pollution Control Hearings Bd.*, 137 Wash. App. 150, 158 (2007); *see also Coalition for a Sustainable 520 v. U.S. Department of Transportation*, 881 F. Supp. 2d 1243, 1259 (W.D. Wash. 2012) (holding implicitly that NEPA's "hard look" standard applies to SEPA).
[35] Or, more accurately, pre-COVID19 projections.
[36] DSSEIS, Figure 3.5-8.
[37] *See Sierra Club v. United States DOE*, 867 F.3d 189, 194 (D.C. Cir. 2017) (describing the difficulty in predicting fossil fuel and energy markets over a 25-year period).
[38] Exhibit 1: Center for International Environmental Law, *The Long-Term Prospects for the Plastics Boom*, pp. 2–3 (April 2018).
[39] Exhibit 2: Independent Commodity Intelligence Services, *INSIGHT: China ban on single use plastics threatens 4m tonnes/year of polymer demand* (January 24, 2020).
[40] Exhibit 3: Vox, *Coronavirus stimulus money will be wasted on fossil fuels* (June 29, 2020) (emphasis added).

DSSEIS acknowledges that demand from traditional methanol customers is already weakening.[41] Flagging demand from traditional methanol consumers "due to environmental protection policies and weak prices"[42] corroborates existing concerns that 40 years of steady demand growth from fuel and olefins producers is not a foregone or reliable conclusion. NWIW's alleged climate benefits come from supplying marginally cleaner methanol to meet projected future increases in methanol demand.[43] Because those demand increases are not foreseeable throughout the life of the proposal, neither are NWIW's climate benefits.

b. Climate policy will change significantly in the next 40 years.

Ecology's assumption that China, the State of Washington, and the rest of the world will not adopt new policies[44] to address the climate crisis during the next 40 years is contrary to the evidence and, frankly, disheartening. The DSSEIS' market analysis is expressly premised on no new climate regulation occurring in the next 40 years.[45] Undercutting this key premise, however, the DSSEIS describes current efforts to improve climate policy[46] and admits that new environmental regulations could significantly affect decisions about methanol production and

[41] DSSEIS, Appendix B, p. 8 ("The traditional downstream sectors are seeing a slowdown in methanol demand. For example, formaldehyde and DME capacity barely expanded in 2019 primarily due to environmental protection policies and weak prices.").
[42] *Id.*
[43] DSSEIS, Appendix B, p. iii (suggesting that "low-cost methanol from Kalama would replace other low-cost Chinese suppliers – those that would be more likely to expand with the growing market").
[44] In addition to climate policy, the DSSEIS also assumes that trade policies will not change in next 40 years—while acknowledging that trade policy has a significant impact on methanol prices and the fundamentals of the market analysis. *See* DSSEIS, Appendix B, p. 15 (international trade in methanol is "subject to ongoing trade relationships with many different countries"); *see also* DSSEIS, Appendix B, p. 1 (explaining that "trade policies" play a role in methanol consumption and production decisions). As Columbia Riverkeeper and others previously explained, the current U.S.-China trade tensions are just one example of how changes in trade policy could upend the DSSEIS' assumptions. *See* Columbia Riverkeeper *et al.*, *Comments on the Draft Supplemental Environmental Impact Statement for Northwest Innovation Works' Methanol Refinery and Export Terminal*, pp. 11–12 (December 27, 2018).
[45] DSSEIS, p. 49 (excluding potential "different global policies (fossil fuel/plastics phase outs or bans for example)" from the analysis); DSSEIS, p. 105 (The DSSEIS does not "consider the possibility of new policies or market shifts to occur in the markets for fossil fuels or plastics. For example, a ban or phase-out of those products could have results that would alter the assessed impacts of the KMMEF."); *but see* Exhibit 2 (describing China's new ban on some single-use plastics) *and* Exhibit 1 (describing the proliferation of plastic bag bans worldwide).
[46] DSSEIS, pp. 33–37.

consumption.[47] Difficulty in precisely predicting future climate policy choices[48] does not justify or excuse the DSSEIS' assumption that global climate policy will remain the same for the next 40 years. Instead of making obviously false and defeatist assumptions, Ecology should admit that climate regulations may change significantly and that such changes make NWIW's impact on future global emissions tenuous and unpredictable.

China's recent pledge to achieve carbon neutrality by 2060 obliterates one of the DSSEIS' key assumptions. The DSSEIS' market analysis is premised, in part, on China not adopting more progressive climate policy before 2060.[49] But on September 22, 2020, President Xi announced to the U.N. General Assembly an ambitious plan for China to achieve carbon neutrality in the next 40 years.[50] This announcement casts many of NWIW's key claims,[51] and the assumptions in the market analysis, into serious doubt. While the details of China's pledge are still emerging, and there is no absolute guarantee that China will meet its goal, President Xi's statement makes new climate policy in China substantially more foreseeable than not. Ecology should not give NWIW credit for China's progressive climate policy.

Similarly, the market analysis' assumption that climate policy will not progress in the next 40 years ignores state and international goals for combating climate change. Many nations remain committed to the Paris Accord, which calls for limiting global warming to well below 2 °C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5 °C above pre-industrial levels. Reducing emissions consistent with limiting warming to 1.5 °C is also the policy of the State of Washington. To reach these goals, global greenhouse gas emissions from fossil fuel combustion and industry will need to decline by more than 75%, which is roughly the reduction codified into Washington law this year. The market analysis does not explain how these climate policies would impact NWIW or NWIW's ability to displace other forms of methanol.

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[47] DSSEIS, p. 105 (explaining that new policies leading to "a ban or phase-out of" fossil fuels or plastics "could have results that would alter the assessed impacts of the KMMEF"); DSSEIS, Appendix B, p. 14 (the "production of methanol, MTO and coal-to-olefin (CTO) development in China are potentially affected by environmental regulations"); *see also* DSSEIS, p. 68 (admitting that evolving "environmental policy in China and globally" complicates the market forecast).
[48] *See* DSSEIS, p. 49 ("Scenarios with substantially different global policies (fossil fuel/plastics phase outs or bans for example) are too uncertain to include in this analysis."); *but see* Exhibit 2 (describing China's new ban on some single-use plastics) *and* Exhibit 1 (describing the proliferation of plastic bag bans worldwide).
[49] *Id.*
[50] The Guardian, *China pledges to become carbon neutral before 2060* (September 22, 2020).
[51] Because NWIW's methanol—and its end uses, fuel and olefins—are not even close to carbon neutral, it is uncertain whether methanol consumers in China would be able to purchase or use NWIW's product throughout the next 40 years.

c. New technologies could alter the methanol market and the displacement analysis.

The DSSEIS's assumption that no technological progress would impact methanol production or consumption over the next 40 years is arbitrary and contrary to NWIW's own predictions. Methanol production and consumption have experienced "a host of evolving technologies" in recent decades;[52] such innovation will not stop if NWIW begins producing methanol. New production technologies—and technological development of substitutes for methanol or its end uses—may significantly alter the methanol market or cause NWIW to "displace" less-carbon-intensive sources of methanol. Nevertheless, the DSSEIS' market analysis pretends that no new technological developments or substitutes will emerge over the next 40 years to disturb the current market dynamic.[53] Ecology admits this assumption is wrong,[54] but then relies on this assumption claiming that the inevitable technological changes are difficult to predict.[55] Not knowing what will happen next is not the same as knowing that nothing will happen. Instead of making bad assumptions, the final SSEIS should admit that next 40 years of technological developments—and their effects on the production and consumption of methanol—are not foreseeable.

NWIW might displace emerging technologies that are better for our climate. The DSSEIS' faulty assumption that no new technological alternatives will emerge in the next 40 years sets up a one-sided comparison between NWIW and existing, dirtier forms of methanol production.[56] But as new production technologies and substitutes develop over the next 40 years, NWIW could wind up "displacing"[57] cleaner sources of methanol, olefins, or transportation. For example, NWIW predicts that a nearly carbon-neutral source of methanol—from electrolysis driven by solar power[58]—will become available in the Chinese market during the lifetime of

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[52] *Cf.* DSSEIS, p. 51 ("Key drivers of increasing demand are . . . a host of evolving technologies for using methanol for fuel transportation and cooking fuels"). For instance, 40 years ago, no one used the "ULE" process—or any process—to make methanol for plastics or transportation fuel on a commercial scale.

[53] DSSEIS, p. 75 (explaining that the DSSEIS' market analysis "assumes that methanol production technologies are not materially improved in the future").

[54] DSSEIS, p. 75 ("In reality, methanol technology is likely to change and improve.").

[55] DSSEIS, p. 75.

[56] SEPA requires consideration of a reasonable range of alternatives and choices, as opposed to the kind of constrained choices that lead to only one conclusion. *Solid Waste Alternative Proponents v. Okanogan Cty.*, 66 Wn.App. 439, 444–45 (1996).

[57] This assumes the DSSEIS explains *why* displacement would occur—it does not.

[58] *See, e.g.,* Uusitalo *et al.*, *Potential for greenhouse gas emission reductions using surplus electricity in hydrogen, methane and methanol production via electrolysis*, Energy Conversion and Management, Vol. 134, pp. 125–34 (February 2018).

NWIW's proposal, and perhaps even before NWIW would begin production.[59] Additionally, many climate experts tout vehicle electrification as a necessary step towards a truly low-carbon future, but an abundance of cheap fossil fuels (like NWIW's methanol) could disrupt the adoption of electric vehicle technology. The DSSEIS' conclusion that any "displaced" methanol would be dirtier than NWIW's methanol rests on assumption that no cleaner methanol or substitutes will attempt to enter the market in the next 40 years. Even NWIW predicts otherwise.[60]

d. A market analysis cannot reliably predict methanol consumption in China's planned economy.

The DSSEIS' market analysis is unreliable because market forces only partially determine how methanol is produced and consumed in China.[61] The Chinese economy is still a planned economy in many respects, subject to substantial government control over how, where, and when to produce and consume certain commodities.[62] The DSSEIS acknowledges that, while China has begun moving toward a mixture of market and planned economy, this transition will take a long and uncertain amount of time.[63] Nevertheless, the analysis proceeds under the false premise that only market principles determine methanol production and consumption decisions in China. In blindly applying a pure market analysis to a planned economy, Ecology "entirely failed to consider an important aspect of the problem"[64] and generated a DSSEIS that is unreliable and illegal.

Below are a few examples illustrating how non-market forces could significantly alter methanol production or consumption in China, undermining the market analysis on which the DSSEIS' conclusions rest:

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[59] *See* Northwest Innovation Works, *Investment Overview*, pp. 20, 22 (March 2018) (suggesting a new source of renewable methanol could be available before 2025 and at latest 2040); *see also, generally,* Choon *et al.*, *Powering the Future with Liquid Sunshine*, 2 Joule 10 (2018).
[60] Northwest Innovation Works, *Investment Overview*, pp. 20, 22 (March 2018).
[61] DSSEIS, p. 73 ("It is difficult to know how far [China] has progressed toward a free market economy, and how much it retains the planned, or control economy where the government makes the decisions about what is produced where. China has been transitioning toward a mixed economy where market forces play a role in determining supplies."); *see also, e.g.,* DSSEIS, Appendix B, p. 18 ("within China there is likely a preference for expanding domestic production where feasible").
[62] *See, e.g.,* DSEIS, Appendix A, p. 59 (describing China's strict regulation of natural gas consumption by economic sector).
[63] DSSEIS, Appendix B, p. 16 ("China does not currently operate a completely free market," and China's current perceived movement toward a free market "is an enormous transition and will take a long time to accomplish.").
[64] *Lands Council v. McNair*, 537 F.3d 981, 987 (9th Cir. 2008).

- China's government could simply forbid the use, or cap the increase, of coal as a feedstock for methanol. This is not farfetched; China's government has already forbidden new domestic natural gas as a methanol feedstock.[65] China recognizes the problematic nature of its coal-to-methanol industry and is actively taking steps to reduce coal-to-methanol production and its GHG footprint.[66] Indeed, China will almost have to prohibit or curtail coal-to-methanol in order to achieve China's recently announce goal of carbon neutrality.

- Alternatively, China's government could mandate the continued, or increased, production and consumption of coal-based methanol. Commentators have noted that the growth of China's coal-to-methanol industry appears to be driven at least in part by domestic "labor policy" and "social incentives," including China's government's desire to "foster downstream plastic processing as well as upstream coal mining employment in China's poorer interior regions."[67]

- Many of NWIW's international competitors also do not operate in free markets. The price of naphtha, a key substitute for methanol, is tied to crude oil production.[68] Crude oil production and price is significantly influenced by the Organization of Petroleum Exporting Countries (OPEC), which can artificially move oil prices through controls on output. OPEC has historically used its partial monopoly on oil production to advance the geopolitical, as well as economic, goals of its member states. Future OPEC decisions to increase, reduce, or maintain crude oil production are not foreseeable but could make naphtha cheaper or more expensive than current market forces would dictate.

Despite these possibilities, the DSSEIS claims that its pure market analysis reliably predicts how China's largely planned economy would respond to increased methanol supply from NWIW. In reality, the scenarios above demonstrate that China could decide to produce and consume more *or* less coal-derived methanol than market conditions dictate.

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[65] *See* DSSEIS, Appendix B, p. 15.
[66] DSEIS, Appendix A, pp. 59–60.
[67] Center for International Environmental Law, *Fueling Plastics: How Fracked Gas, Cheap Oil, and Unburnable Coal are Driving the Plastics Boom*, p. 6 (2017); *see also* DSSEIS, Appendix B, p. 17 (admitting that China's decisions about whether to curtail or increase coal-to-olefin production may depend in part on "government policies related to local employment.").
[68] *See* DSSEIS, p. 70 ("[T]he profitability and economic feasibility of naphtha-to-olefins over MTO is highly dependent on oil prices since naphtha is derived from oil.").

Myopically examining only market forces is even more arbitrary because the Kalama methanol refinery would be owned and financed by the Chinese and American governments, respectively. As Columbia Riverkeeper has explained elsewhere in detail, the Chinese government, through the Chinese Academy of Sciences, controls Northwest Innovation Works.[69] Additionally, the U.S. Department of Energy is contemplating a $2 billion investment in the construction cost of the Kalama methanol refinery.[70] State control and subsidy of companies like NWIW is the antithesis of a free market and strongly suggests that factors other than pure market forces could influence how NWIW makes and sells methanol.

IV. If NWIW's Defeatist Assumptions Are True, Displacement Is Temporary and All Methanol Consumption Is Additive in the Long Term.

If all of the DSSEIS' assumptions discussed in Sections II and III are correct, all of NWIW's lifecycle emissions would *still* be additive to emissions from Chinese coal-based methanol in the long run. The DSSEIS assumes that: demand for methanol in China will continue to grow;[71] all new demand will be met;[72] and the demand will be met either by NWIW or a dirtier source of methanol.[73] What the DSSEIS should have explained is: what happens after NWIW stops operating or all of its available fracked gas feedstock is turned into methanol and used as olefins or fuel in China? By the DSSEIS' logic, China's demand for methanol would still be increasing, that demand will be met, and China (without NWIW) will resume using dirtier fossil fuel resources and pathways to meet that demand. The DSSEIS' assumptions only suggest that China would use NWIW's methanol first or before—not instead of—using other, dirtier sources of methanol.

Because NWIW's carbon dioxide pollution would remain in the atmosphere for 300 to 1000 years,[74] NWIW's purported ability to displace dirtier forms of methanol is relatively meaningless if that displacement is not permanent. Ecology must consider impacts that would

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[69] *See* Exhibit 4: Columbia Riverkeeper, *Letter to the Committee on Foreign Investment in the United States regarding potential foreign governmental control of Northwest Innovation Wo*rks, p. 2 (April 18, 2019).
[70] *See* Exhibit 5: Desmog, *Washington Petrochemical Plant Subsidies Would Violate Federal 'Double Dipping' Rules Say Environmental Groups* (October 4, 2019).
[71] DSSEIS, Figure 3.5-8.
[72] DSSEIS, pp. 51 ("all methanol demand will be met"), 75, 79.
[73] DSEIS, Appendix A, p. 58 ("[I]n the absence of attractive imported methanol, coal based domestic methanol production will continue to rise to meet growing industry needs based both in economic and market forces as well as policy direction.").
[74] NASA, *The Atmosphere: Getting a Handle on Carbon Dioxide* (October 9, 2019).

occur after the lifetime of a proposal where, as here, it makes sense to do so.[75] The long-term accumulation of carbon pollution in our atmosphere—not the rate of carbon emissions during any given year—is driving the climate crisis. According to the DSSEIS' logic, the only way to prevent China from consuming NWIW's methanol *and then other sources of methanol* is to prevent NWIW from exporting North American fracked gas as methanol to China. This aligns with the need, becoming more widely recognized, to leave a significant portion of the earth's remaining fossil carbon in the ground.[76]

NWIW will doubtless argue that China's production and consumption of methanol (and potential substitutes) after the lifetime of NWIW's proposal are too difficult to predict.[77] But it would be completely arbitrary for Ecology to employ one set of market assumptions during the proposal's lifetime but abandon those assumptions the instant NWIW exits the methanol market. NWIW cannot have it both ways. Either the market analysis's assumptions are too speculative (in which case the displacement theory should be removed from the SSEIS) or those assumptions are reliable (in which case displacement would not occur in the long run). Under either analytical approach, the climate pollution caused by NWIW's proposal would add to—not displace—pollution from other types of methanol production.

V. The Kalama Methanol Refinery's Climate Pollution Would have Significant Negative Environmental Impacts.

For almost five years, NWIW, the Port of Kalama, and Cowlitz County have twisted themselves in knots to avoid an obvious conclusion: the Kalama methanol refinery's climate pollution would have "significant adverse impacts" within the meaning of SEPA.[78] For all of its flaws, the DSSEIS does admit that the methanol refinery's climate pollution would be "significant."[79] Ecology could hardly have found otherwise;[80] the DSSEIS estimated greenhouse

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[75] *See* WAC 197-11-060(4)(c) (Agencies must "carefully consider the range of probable impacts . . . that are likely to arise or exist over the lifetime of a proposal or, depending on the particular proposal, longer.").
[76] *See* Scientific American, *The Biggest Climate Challenge: Leaving Carbon in the Ground* (November 30, 2015).
[77] How such conditions could be reliably predictable for 40, but not 41, years is difficult to understand.
[78] RCW 43.21C.060.
[79] DSSEIS, p. 105.
[80] *See City of Federal Way v. Town & Country Real Estate, LLC*, 161 Wn. App. 17, 55, 252 P.3d 382, 401 (2011) (rejecting argument that contributions of 0.05 percent and 0.12 percent to Washington's total carbon emissions would be insignificant for SEPA purposes).

gas emissions from NWIW's proposal at between 4.17 and 5.41 million metric tons a year.[81] By any measure, that is an extraordinary amount of climate pollution and clearly significant.

Like much of the DSSEIS, however, Ecology's reasons for finding significance are internally inconsistent and violate SEPA. The DSSEIS specifically concludes that the "in state" emissions attributable to NWIW are significant, requiring mitigation.[82] SEPA contains no authority for constraining the "significance" question to in-state impacts—all reasonably foreseeable impacts are part of the significance inquiry and, where applicable, the mitigation requirement.[83] Further, Ecology's conclusion that the methanol refinery's impacts would be "significant" implicitly rejects the displacement theory. But it is arbitrary to rely on displacement in one section of the DSSEIS and ignore it in another. Ecology appears to be searching for a way to make mitigation enforceable, but only within the scope of NWIW's pre-existing voluntary in-state mitigation proposal. Whatever its motivations, Ecology cannot legally limit the significance inquiry to in-state effects and cannot logically find that the proposal's impacts are "significant" while adopting NWIW's displacement theory.

VI. NWIW's Proposed Mitigation Framework is Incomplete and Illegal.

The mitigation framework illegally ignores a large portion of the greenhouse gas emissions attributable to NWIW. The Shoreline Management Act requires mitigation to ensure "no net loss" of shoreline ecological functions from development proposals.[84] Like all proposed shoreline developments, the methanol refinery must mitigate its negative impacts—including climate impacts—on Washington's shorelines.[85] Setting aside the unreliable displacement theory (which Ecology's significance determination implicitly rejects), *all* of NWIW 4.17 to 5.41 million metric tons per year of climate pollution would harm the ecological function of

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[81] DSSEIS, p. 84 (Table 3.5-13).
[82] DSSEIS, p. 105.
[83] WAC 197-11-060(4)(b) (SEPA regulations specifically direct that an "agency shall not limit its consideration of a proposal's impacts only to those aspects within its jurisdiction, including local or state boundaries."); *see also Cathcart-Maltby-Clearview Comm. Council v. Snohomish Cty*., 96 Wn.2d 201, 209 (1981) (SEPA "mandates that extra-jurisdictional effects be addressed and mitigated, when possible.").
[84] Ecology, *Shoreline Master Program Handbook*, Chapter 4, p. 3 (2010) ("Simply stated, the no net loss standard is designed to halt the introduction of new impacts to shoreline ecological functions resulting from new development.").
[85] *See Columbia Riverkeeper et al. v. Cowlitz County et al.*, Washington Shorelines Hearings Board Case No. 17.010c, *Ecology's Motion for Partial Summary Judgement*, p. 13 (August 7, 2017) (explaining "the clear connection between greenhouse gas emissions, climate change, and the high potential for impacts to the shorelines of statewide significance and the Lower Columbia estuary specifically.").

Washington's shorelines. The "no net loss" mitigation requirement therefore applies to *all* reasonably foreseeable greenhouse gas emissions caused by the methanol refinery. Absent such mitigation, approving the Conditional Use Permit (CUP) would violate the Shorelines Management Act.

Regarding the subset of the proposal's greenhouse gas polution that NWIW proposes mitigating, the DSSEIS—like the SEIS before it—provides no meaningful detail about that mitigation. SEPA guidance requires NWIW to "clearly identify the mitigation measures" NWIW is proposing and describe whether those measures are mandatory or potential.[86] Ecology has reiterated the need for greenhouse gas mitigation measures that are real, specific, identifiable, quantifiable, verifiable, and permanent.[87] Precisely these concerns led Ecology to reject NWIW's nearly identical mitigation framework in the SEIS and to call for "additional discussion" of the proposed mitigation in the SSEIS.[88] Specifically, Ecology requested more complete information on seven aspects of NWIW's mitigation proposal.[89] NWIW failed to respond to these outstanding questions.[90] Ecology then informed Washington legislators that an SSEIS was needed to develop "detailed emissions accounting to know how much mitigation must occur, criteria to make sure the [mitigation] projects and markets used to comply generate real, verifiable, and permanent reductions, and procedural requirements to make sure [mitigation] happens as intended."[91] Instead of providing specific information responsive to Ecology's questions about mitigation, NWIW keeps talking about creating a framework, partnering with stakeholders, and enlisting the help of an advisory board.[92] The DSSEIS provides no new details on how NWIW's framework would translate into real, verifiable reductions in global greenhouse gas levels. Without information about the specific carbon offset projects that NWIW would fund, Ecology has no real ability to assess the efficacy of potential future mitigation. Ecology cannot

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[86] Ecology, *Publication No. # 98-114: State Environmental Policy Act Handbook*, p. 57 (2003).
[87] Ecology, *Comment to PSCAA on DSEIS for PSE LNG Project*, p. 2 (Nov. 21, 2018).
[88] DSSEIS, p. 18.
[89] Ecology, *Letter to Cowlitz County re Incomplete Shoreline Conditional Use Permit #1056*, p. 2 (October 9, 2019).
[90] Ecology, *Letter to Cowlitz County re Notice of Determination for a Second Supplemental EIS*, p. 1 (November 22, 2019) (explaining that Ecology's questions were "not adequately addressed in the 2019 Supplemental EIS, nor were they adequately addressed in the County's November 4, 2019, letter to Ecology.").
[91] Ecology, *Letter to State Legislators Re: SEPA Process for the Northwest Innovation Works Methanol Facility*, p. 6 (February 25, 2020); *see also* Ecology, *Notice of Second Supplemental Environmental Impact Statement*, p. 1 (November 22, 2019) (explaining that the SSEIS was necessary to "complete the analysis of the . . . potential mitigation of" the project's impacts).
[92] DSSEIS, Appendix D, pp. 1–2.

evaluate or approve NWIW's application for a CUP without these details,[93] and it would be arbitrary and capricious for Ecology to accept a mitigation proposal that is essentially identical to one that Ecology previously found insufficient.

Finally, to achieve the reductions in climate pollution we know are necessary, new polluters like NWIW must mitigate their emissions to well *below* zero. Maintaining current emission levels is not sufficient—current emission levels are causing the current climate crisis. We need robust, identifiable, and enforceable mitigation measures that lead to significant *reductions* and improve conditions for disproportionately impacted communities.

VII. The State of Washington Should Reject the Kalama Methanol Refinery.

The undersigned organizations[94] represent tens of thousands of Washingtonians and people across the Northwest working to protect the Columbia River, Kalama, and our climate from NWIW's petrochemical refinery. Commenters call on Governor Inslee and the State of Washington to deny the methanol proposal permits based on: the Washington Shorelines Management Act;[95] the substantive authority granted by SEPA;[96] the authority to control state-owned lands underlying Interstate 5 in the Kalama Lateral pipeline route;[97] and the public trust doctrine.[98] Permitting new fossil fuel infrastructure like NWIW's methanol refinery is the antithesis of addressing climate change—and the time to address climate change is now, or never.[99]

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[93] *See* WAC 173-27-130(5).
[94] Incorporated by reference are all previous comments submitted by Columbia Riverkeeper and others regarding this proposal, and exhibits thereto. Because those documents are already in Ecology's possession, they are not attached as exhibits to this letter but should be included in the administrative record for the SSEIS.
[95] *See* WAC 173-27-140(1) ("Review criteria for all development.") *referencing* RCW 90.58.020(1).
[96] RCW 43.21C.060.
[97] RCW 47.44.050; *see also* Columbia Riverkeeper *et al.*, *Letter to Governor Jay Inslee and WSDOT Secretary Roger Millar regarding Kalama Lateral Pipeline Right-of-Way Authorizations* (September 18, 2020).
[98] *Cf. Illinois Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 459–60 (1892).
[99] Office of Governor Inslee, *Press Release: Inslee announces opposition to two gas projects in Washington* (May 8, 2019) (Governor Inslee explained that we have a "dwindling window for action" during this decade in which we must reduce emissions to half their *current* levels to avoid reaching an irreversible tipping point.)

CONCLUSION

The Kalama methanol refinery is a climate suicide pact. Washington should not accept NWIW's invitation to significantly increase greenhouse gas emissions out of fear that other governments will abandon their commitments to addressing climate change. In reality, Washington can neither predict nor control all of the political and economic choices that will shape our future climate. Washington can, however, prohibit NWIW's massive new source of climate pollution and, in so doing, provide hope and leadership to other governments facing similar choices.

Sincerely,



Miles Johnson, Senior Attorney
Columbia Riverkeeper

Submitted on behalf of:

Columbia Riverkeeper
Washington Environmental Council
Sierra Club
Center for Biological Diversity
Washington Physicians for Social Responsibility
Natural Resources Defense Council
Food & Water Watch
350 Seattle
350 Tacoma
NoMethanol360.org (Kalama)
Lower Columbia Stewardship Community
Green Energy Institute
Don & Along Steinke
Earth Ministry/Washington Interfaith Power & Light
Friends of the San Juans
STAND.earth
350 PDX
Breach Collective
Great Old Broads for Wilderness
Save our Wild Salmon
Neighbors for Clean Air
Rogue Climate
Portland Audubon Society
Northwest Environmental Defense Center
Oregon Conservancy Foundation
Oregon Physicians for Social Responsibility
Power Past Fracked Gas Coalition
Stop Fracked Gas PDX
Stop Zenith Collaborative
Climate Action Coalition
Sunrise PDX
First Unitarian Church of Portland

Exhibits:

1. Center for International Environmental Law, *The Long-Term Prospects for the Plastics Boom* (April 2018).
2. Independent Commodity Intelligence Services, *INSIGHT: China ban on single use plastics threatens 4m tonnes/year of polymer demand* (January 24, 2020).
3. Vox, *Coronavirus stimulus money will be wasted on fossil fuels* (June 29, 2020).
4. Columbia Riverkeeper, *Letter to the Committee on Foreign Investment in the United States regarding potential foreign governmental control of Northwest Innovation Wor*ks (April 18, 2019).
5. Desmog, *Washington Petrochemical Plant Subsidies Would Violate Federal 'Double Dipping' Rules Say Environmental Groups* (October 4, 2019).

cc'd via email:

- Heather Bartlett, Deputy Director, Washington Department of Ecology
- Rich Doenges, Southwest Region Director, Washington Department of Ecology
- Reed Schuler, Senior Policy Advisor to Governor Inslee, Climate & Sustainability
- Lauren McCloy, Senior Policy Advisor to Governor Inslee, Energy
- Taylor Aalvik, Natural Resources Director, Cowlitz Indian Tribe
- Julie Carter, Policy Analyst, Columbia River Inter-Tribal Fish Commission
- Carl Merkle, Confederated Tribes of the Umatilla Indian Reservation
- Marcus Shirzod, Yakama Nation Office of Legal Council

Seotenber 27, 2020

Richard Doenges, Regional Director
Southwest Regional Office
Department of Ecology
PO Box 47775
Olympia, Washington, 98504-775

Via Web & Email: http://admin.ecology.commentinput.com/?id=kG9ji
rich.doenges@ecy.wa.gov

In Re: Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environment Impact Statement

Director Doenges:

Thank you for this opportunity to comment on the proposed Kalama Methanol Plant.

FOGH (Friends of Grays Harbor) is a broad-based 100% volunteer tax-exempt 501(c)(3) citizens group made up of crabbers, fishers, oyster growers and caring citizens. The mission of FOGH is to foster and promote the economic, biological, and social uniqueness of Washington's estuaries and ocean coastal environments. The goal of FOGH is to protect the natural environment, human health and safety in Grays Harbor and vicinity through science, advocacy, law, activism and empowerment. We oppose locating any coal or other fossil fuel terminals in the State of Washington, and any expansion of such terminals elsewhere.

As we commented in our December 27th, 2018 letter, which we incorporate by reference, Washington State is a leader in clean energy and should not be approving the transport and storing of so dangerous a fossil fuel. In addition, we incorporate by reference those comments made by Grays Harbor Audubon Society, Earthjustice, Columbia Riverkeeper, Washington Environment Council, Center fo Biological Diversity, Washington Physicians for Social Responsibility, and the Sierra Club.

We find the following to be significant adverse impacts and are concerned that they were inadequately addressed in the SEPA/NEPA review process and this new Supplemental document.

1. The project proposes to create the world's largest methanol refinery, proposed on the Columbia River in Southwest Washington, would use more fracked gas than all of the Pacific Northwest cities combined and need massive new fracked-gas pipeline expansions throughout the region.

2. "Following the crude oil collapse in early March, the US methanol market was largely unchanged until later in Q2 as some domestic production issues were cleared up. Domestic product availability was widely viewed as more limited, but as production continued to run smoothly during Q2, oversupply was a top concern for much of the market. Consumption of US methanol in Q2 remained quite muted with less active than usual spot market seen for much of the quarter. Coronavirus weakened demand, particularly from China, impacted the global methanol market. Weaker demand caused US spot prices to sink to four-year lows as stricter coronavirus precautions implemented in much of the country". Source: *Independent Commodity Inteligence Services (icis.com)*. This seems to conflict with the "Markets and Trends" statement made in the Executive Summary. It is clear that proposed and planned facilities will have an effective lifespan beyond the time when all experts agree that we must abandon all fossil fuels. This means that these will be stranded assets and wasted economic investments. Are we considering another destructive white elephant for the Columbia River?

3. We reiterate, the Methanol plant would not meet Governor Inslee's package to transition to 100 percent clean electricity by 2045, as well as several other proposals to clean up electricity, buildings and transportation and a mandate for utilities to eliminate all fossil fuels, such as coal and natural gas, from the state's electricity by 2045.

4. Ocean acidification will only be increased as we continue to use and abuse fossil fuels. Our Pacific Northwest marine resource economy provides sustainable economic value to both tribal and non-tribal communities. Treaty rights and our coastal communities cannot be ignored by inappropriate development.

Sincerely,

Arthur (R.D.) Grunbaum
President

Post Office Box 1512 Westport, Washington 98595-1512 Phone/Fax (360) 648-2254
http:fogh.org rd@fogh.org 501(c)(3) tax-deductible

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SEP 15 2020

DEPARTMENT OF ECOLOGY
OFFICE OF DIRECTOR

September 12, 2020

Washington State Department of Ecology'
Olympia, WA

Please, once and for all, stop the proposed methanol refinery in Kalama. That refinery's voracious daily appetite for 130m cu ft of daily mostly fracked gas is enough to destroy the climate on its own. That amount of fracked gas amounts to more than all commercial gas users in the State combined. Gas is a fossil fuel and fracking makes things even worse.

97% of the world's climate scientists are in full agreement that we must get off of fossil fuels and move instead to clean, renewable energy if we are to have a livable, sustainable planet for our future generations.

Thank you,
Mona Lee

Mona Lee
4802 S. Othello St.
Seattle, WA. 98118
206-898-5452

R.C. Olson

Yes. Hello, this is [inaudible] Olsen. I'm a civil engineer and a certified construction manager living in Bellevue, Washington. I work all over the state. I look at any potential construction project as potential revenue for myself or people like me, but I think we have to look at a project like this with a global view, and especially a focus on our climate future. In my mind, and the minds of many, many other folks, this is a climate hazard project that will increase our climate change scenarios and do great damage to all of us around the globe.

I'm very much opposed to this project. It is not something we should be looking for jobs as a justification for it. I think we know that clean energy projects have much in the way of jobs potential and that's where we should be focusing. I thank the Department of Ecology for doing this analysis and providing the opportunity for public comment and urge you to reject this project's permit application. Thank you.

Rich Doenges et al:
Department of Ecology
Olympia WA

September 6, 2020

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SEP 15 2020
DEPARTMENT OF ECOLOGY
OFFICE OF DIRECTOR

Re: Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement

I have a hard time seeing any rationality for development of this methanol plant, esp. in 2020 with all the environmental problems this is going to acerbate.

Trying to use the inefficiency of other methanol plants as an excuse to build this plant - is not an answer. Upgrade those plants – don't add another plant!

The source is from a pipeline from the tar sands of Canada – the dirtiest oil on the planet.

The plant is being constructed for Chinese plastic! How irrational is that?

What are the chances for an explosion? How about an oil/methanol spill? How about ship wrecks?

All these potential problems for 200 jobs?

The only way this gets passed is "under the table"!

Mike Conlan Redmond WA

Cc: Director Laura Watson, Governor Jay Inslee, Senator Maria Cantwell, Representative Susan DelBene, Columbia Riverkeeper,

MaryAlice Wallis

Hi, this is MaryAlice Wallis. I've been a resident of Longview, Washington since 1972. My husband and I have raised our family of four in Longview. We love our community. It was founded by Robert A. Long a person with a grand vision for development and industry along our wonderful Columbia River water highway. As a taxpaying citizen homeowner and business owner, I have been concerned over the last several years at the great difficulty of seeing where the industries turned away from establishing in Southwest Washington. I am concerned for the welfare of the citizens that reside in my City of Longview, where I currently serve as the mayor. Our families need real jobs. Our region and state need real investment. Seeing citizens in our community without work or having to travel long distances to find work is discouraging.

I'm in full support of the Northwest Innovation Works. I appreciate the review done by the Department of Ecology. Those who continue to ignore the science behind this project are only fooling themselves. In addition to global greenhouse gas reductions, Northwest Innovation Works will mitigate for 100% of its in-state emissions, even those not directly tied to its facility 100%. This will create investments in renewable natural gas development, saving and improving forest lands and practices, and driving other innovative greenhouse gas reducing technologies and opportunities locally, regionally, and globally.

What further excites me about Northwest Innovation Works is not only will this project helped to employ 1,000 workers during construction and 200 into the operation of the facility upon the completion of construction, it will also generate $30 million to $40 million in new state and local taxes. The investment of Northwest Innovation Project provides a much-needed boost to our struggling Cowlitz economy. Please, please, issue permits for this project to proceed. Please listen to the folks that reside in this community

Washington State Senate

Olympia Address:
403 Legislative Building
PO Box 40420
Olympia, WA 98504-0420

Senator John Braun
20th Legislative District

Phone: (360) 786-7638
Toll-Free: 1-800-562-6000
John.Braun@leg.wa.gov

September 8, 2020

Rich Doenges
NWIW SSEIS
Washington Dept of Ecology
PO Box 47775
Olympia, WA 98504-7775

Mr. Doenges,

I am writing today in support of the methanol facility in Kalama, proposed by Northwest Innovation Works. The draft Second Supplemental EIS report released by Ecology has again upheld the assertion of a global greenhouse gas net benefit. I believe the process should be completed and permits for the project approved without further delay.

Cowlitz County is a rural county that has seen high unemployment for decades. The economic impact of this project would be in the form of the creation of many new family wage jobs along with tax revenue for critical community resources.

The benefits from both the environmental and the economic outcomes make this project one that should be a priority for Washington State. The science behind the environmental impact study has answered the question of environmental benefits, and given the events of this year, the economic benefits are of vital importance to Cowlitz County.

I would ask that you consider the prompt approval of this project and allow the process to go forward without further delay.

Regards,

Senator John Braun
20th Legislative District

Kevin Tempest

Thank you for the opportunity to speak today on this important and complex topic. My name is Kevin Tempest and I work as the R&D scientist for the Low Carbon Prosperity Institute.

The rapidly dwindling greenhouse gas budget demands resource allocation only with high confidence that long-term benefits outweigh costs. Other Pacific Northwest export proposals have merited rejection on GHG grounds. This one looks different. According to analysis I completed in late 2018, global GHG emissions are likely to be 2 million to 7 million tons per year lower with this facility than in its absence. The draft analysis arrived at similar conclusions through its own separate methods providing an increased competence.

Across a wide range of assumptions such as methane leakage, global warming potentials, and methanol end uses, 47 different scenarios forecast a very likely range of 2 million to 9 million net emissions avoided per year and an extremely likely range of 0.25 million to 12 million net avoided emissions per year. That is before consideration of in-state emissions mitigation that is much more ambitious than Ecology's own clean air rule. While Kalama Methanol is likely to remain lower-emitting than prevailing alternatives, confidence diminishes further out in time.

In a sector that Governor Inslee's ambitious evergreen plan found is the costliest to decarbonize, demand for methanol and plastics is forecast to continue to grow through at least mid-century, even under low carbon scenarios that maximize recycling in the circular economy, such as those from the energy transitions commission, and the International Energy Agency. Longer-term prioritization of carbon capture and finite biogas resources are the clear leading candidates to drive emissions towards zero. Combined, these technologies are actually carbon negative. This facility can and should be ready to adapt to these technologies and trends in order to minimize the risk of becoming a net-emission source and increasing the odds of compatibility with the net-zero emissions future.

Thank you for your time.

Walter B. Pistor
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Email: wpistor@kalama.com
Tel.: (360) 673-1560

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SEP 16 2020
WA State Department
of Ecology (SWRO)

September 2, 2020

Mr. Rich Doenges
Southwest Regional Director
Washington State Department of Ecology
P.O. Box 47775
Olympia, WA 98504-7775

Dear Mr. Doenges:

Thank you for your service to the residents of Southwest Washington!

Please allow me to give you my personal perspective of the proposed methanol plant at the Port of Kalama. I favor it for a variety of reasons. My vote is to approve the NW Innovation Works plan.

1. I treasure the Kalama River which I have fished yearly for 55 years. Therefore, I hopefully have considered all risks emanating from the Northwest Innovation Works plant which you have been evaluating.
2. My wife and I have lived directly on the Kalama River for the last 23 years. Certainly we have a more vested interest in the general safety of the Kalama River Valley and its surrounds than someone from Portland or Hood River.
3. My wife and I fully support the Kalama School District as evidenced by our voting for additional funding for proper instruction in quality local schools. Our taxes have increased substantially since we moved here. To be exact, our property taxes this year for our Kalama River Road properties total $10,495.37. You can see that my wife and I are contributors who have a vested interest in the safety of our Kalama community. It seems to me we have more legitimate concerns over the proper functioning of the proposed methanol plant than some critic with nothing to lose.

Mr. Doenges, you and I are like partners. Your vision is to sustain healthy land, air and water in harmony with a strong economy. My wife and I want the same as you and the Department of Ecology. Basically, we are satisfied with the reasonable risk of the new methanol plant. What we need are the economic benefits from the methanol plant. Only you can authorize that. You know the tax benefits and the employment benefits from the new plant. My point is that your vision and mine are compatible, but we need your plant authorization to achieve all the mutual benefits.

Mr. Doenges, your stated mission is to protect, preserve, and enhance the environment for future generations. We are partners in this mission too. We want the same as you.

For your information, I have talked with astute, local businessmen I respect, and they feel the same as I. Progressive people inherently want progress. Non-contributors often want the status quo, and outside critics typically challenge, gripe, fuss and conjure up negatives to make themselves feel important. You and I want sensible progress in accordance with your vision and Ecology's mission statement.

It is my hope that the methanol plant can be build soon. It will be a great example of American progress and ingenuity. It will help a lot of people.

Respectfully yours,

Walter B. Piston

Carrie Parks

Hi, my name is Carrie Parks. I'm a longtime resident of Vancouver and I love our natural surroundings in this area. I want to talk to the methanol supporters and tell you to wake up and smell the smoke-filled air. Do you want to destroy the livability of your town and lock us into another 40 years of poisoning the planet? Why are you pursuing a dying industry that will put your people out of work in a few years? That is if they survive the wildfires, the droughts, the storms, the pandemics, and the food shortages being caused exactly by the kind of pollution you want to pump into our air. Building this factory will leave you behind in the new economy.

California is making its buses fully electric by 2040 and putting through 300,000 zero-emission trucks on the road by 2035. Portland is building generators that will make electricity by bobbing up and down in the ocean. Spokane is building an electric sports car and battery factory that will create up to 3,000 jobs. I'd like to direct you all to www.drawdown.org which has a lot of ideas on climate solutions. One is putting small turbines in the river whose blades turn as the water flows past naturally capturing the energy. Such a system could reduce carbon emissions by 1 to 3 gigatons of CO2.

Just retrofitting existing buildings could provide lots of good construction jobs while improving people's lives. Retrofits could cut energy use by 40% and avert tons of greenhouse gas emissions. You could do all of those things here in Kalama instead of a dirty industry.

Since ecology is comparing the effects of carbon emissions from the methanol plant to that from burning coal, it should also include an analysis of emissions from the methanol plant in comparison to sustainable alternatives like these. Look for better cleaner technology and longer-lasting jobs instead of turning your beautiful town into a dirty industrial center. Deny the permit.

1102 A. Creekwood Ct. SE
Olympia, WA 98501
(360) 570-0848
zeiglerbob@msn.com
September 17, 2020

RE: Personal Comments: Kalama Manufacturing and Marine Export Facility Public Hearing" September 17th by Bob Zeigler (Retired WDFW Biologist and SEPA Responsible Official, Member of Pax Christi – Catholic Peace and Justice Movement in Association with Earth Ministry) Concerned Citizen over Increasing Climate Catastrophe and Actions by State on Fossil Fuel Expansion Projects.

Statement begins:

My Name is Bob Zeigler and I live in Olympia, Wa. Thank you for the opportunity to comment on the EIS on this Methanol Processing and Export facility on the banks of the Columbia River. I first want to complement you on listing significant direct impacts on the projects such as it being one of the top ten greenhouse gas emitters in our state. This is an excellent introduction and a practice that should be kept in EIS's on upfront impact summary.

The problem I see is in the discussion of mitigation in the interior of the document and appendices concluding that greenhouse gas impacts will be mitigated 100% over its life of 40 years in a process currently undefined by partners to be determined later by staff not yet funded nor guaranteed funded for 40 years nor can we count on the guarantee of political will to carry through. In state government we see many unfunded mandates that suffer staff cuts and intended actions do not get done. All resource agencies experience this in budget cuts in lean times. The compensatory mitigation stated for one of the top ten greenhouse gas emitters, while intended, appears to possibly be just a hope and a wish. Is this appropriate to justify permitting a project on a hope of replacing current and future losses of climate impacts in a project that would increase release of greenhouse gases? There is also the limitation that the compensatory mitigation has to be "cost effective".

The EIS has no risk analysis of catastrophic event: war or sabotage, earthquake, tsunami, break of upstream Columbia River dams, methane explosion.

Question: Was the Exxon Valdez spill ever mitigated anywhere near 100%? Catastrophic events can and do occur over the life of projects.

Question: How are secondary impacts of methane discharges along transmission lines or drilling and withdrawal from below ground compensated for, when often not recognized?

For 20 years scientists have been warning us about the dangers of climate change to existence of life on our planet. For the last 5 years prophetic voices in our faith communities have been

calling us to urgent action to keep fossil fuels in the ground and rapidly transition to renewable energy sources.

Now in our Faith Communities we are entering a time of special focus on healing the earth and protecting creation. This Friday starts **Jewish High Holy Days with Rosh Hashanah** and ends October 4th. In Catholic. Episcopal and Lutheran Communities from September 1 until October 4th (Feast of St. Francis) celebrate **The Season of Creation** with a focus on protecting creation, controlling climate change through individual (Lifestyle) and collective community efforts to restore the earth and divesting from fossil fuel industries for transition to renewables and reforestations.

Pope Francis in announcing Season of Creation states: "Climate restoration is of utmost importance, since we are in the midst of a climate emergency. We are running out of time, as our children and young people have reminded us," and strengthened regulation of "the activities of extractive companies" to "ensure access to justice for those affected," especially Indigenous communities."

That is the reason I come to speak at this hearing in addition we are now experiencing the worst air quality in the nation from our fires and seeing numerous Gulf and East Coast hurricanes and storms, floods and droughts. We see clearly **today** that climate change is here and is not healthy for our children and other living things. It leaves us with severe economic problems as well.

Thank you.

Bob Zeigler

Bob Zeigler
Olympia, WA

Don Steinke

Good morning. I'm Don Stanky, retired physics teacher. We are being given false choices, either choose this project or choose whatever the market decides. Our colleagues around the world will fight those other projects. They stopped 15 LNG export terminals in British Columbia, stop the two pipelines on the East Coast, and twice defeated one in Coos Bay. Plastic bands are occurring all over the world, our colleagues are counting on us to do our part and stop this project.

Our climate system cannot afford either one of those choices. We are close to the point at which global warming will not stop until temperatures have risen five degrees celsius, which would be the end of civilization as we know it. Toyota proposed the Prius in 1988 and it was a good idea at the time, but even a Prius factory built in Kalama today would not be compliant with policy in China now. China told the automakers go all-electric or go home.

China leads the world in wind, solar, and battery-electric buses. They have 400,000 battery-electric buses, and we have what? 400? China's signed the Paris Climate accords. Even if all the speculation in the EIS actually happened, this project would not comply with that agreement. You should not approve a project unless you know all the facts. Don't guess at the methane leaks in the pipeline measure then.

The home base, where the pipeline airplane is in the Pearson airport in Vancouver, attached methane sensors to those plants. Five days ago, Bloomberg reported that gas companies are abandoning their wealth, leaving them to leak forever. Just one of them in California could have emitted 30 tons of methane, and there are millions more like that. Include those facts--

Cathryn Chudy

Hi, my name is Cathryn Chudy, and I'm a longtime resident of Vancouver, Washington. For more than 30 years I have worked with suicidal children from all over Washington and Oregon. One thing these kids have in common is that they do not see a future for themselves. A second thing is that they do not trust adults in their lives to make wise decisions on their behalf.

There is a struggle going on here between adults who are fighting for a safe and healthy future for their children and grandchildren and adults who are pursuing an outcome that puts that healthy and safe future at risk for no reason other than the pursuit of short term fossil fuel profits at the expense of the long term welfare of our state and our region. We are blessed here in Washington that many of our elected representatives recognize the risks that our children face going forward if fossil fuel businesses usual is allowed to continue unrestrained.

That is why Washington has set aggressive climate goals that limit gas emissions in order to protect us from the harm we are already suffering because of the climate crisis we are in. We are at a crossroads in determining how we will all move forward in achieving Washington's greenhouse gas reduction goals. On one side is the fossil fuel industry trying to persuade us that fracked gas to methanol, to plastic and fuel in China is somehow a pathway to a speculative lower carbon future.

The company that is cleverly attempting to greenwash this pursuit of profits at our expense wants us to ignore the reality that tons of greenhouse gas pollution each year will be dumped into Washington for the next 40 years and it'll magically go away with the voluntary promise to mitigate what is really non-mitigatable. On the other side are the multitudes of we the public, who are showing up and reminding you that speculation is not fact. That voluntary mitigation of polluting greenhouse gases is not good enough ground to stand on when it comes to the health and safety of our environment and the future of our children. The only path to meeting our state's climate goals and ensuring a safe and healthy future for generations to come is to deny this proposal and the shorelines permit. Thank you.

Matthew Hepner

Hello, my name is Matthew Hefner. I'm the executive director of the Certified Electrical Workers of Washington, and the legislative and Policy Director for the International Brotherhood of Electrical Workers. I want to start by saying thank you to Ecology for its diligent work, and its leadership in setting precedent for responsible development. This is really groundbreaking and a true environmental win.

I'd like to thank NWAW and the environmental stakeholders for creating cutting edge PIS precedent that will resonate throughout the country on mitigation. I'm in support of this project the IBEW, we backed 100% Clean Energy Act. We were the first union to be involved with that, we're the first union to support the low carbon fuel standard, and testify in the legislature as such. It is because we differently support responsible and inclusive environmental policy that we support this project.

If we are serious about transitioning to a clean energy future, that also means clean manufacturing. All things cannon will be used in clean energy products, and a clean energy future products for EBs, for wind turbines. This is a crucial project to get to a clean energy future. Thank you, and please support this project.

Pillip Norman

This is not an energy project in service to any local users deserving of state respect. The project imagined is purely is purely a forbidden export scam. Public commons are exploited and ruined forever, so that greedy investors in charge of a theft, may sell buried treasure for personal profit. The treasure of stored energy has value for all but those greedy, only if kept in the ground, undisturbed. Sensible people will put an end to fracking ruin. A livable planet for our deserving descendants, requires that we, now, learn to live responsibly.

Earth Ministry

Hello, my name is Maddie Smith, and I'm part of an organization called Earth Ministry. We organize people of faith throughout the state of Washington for environmental and climate justice. I'm a Unitarian Universalist and one of my faiths key principles is the respect for the interdependent web of all existence of which we are apart. It's clear from the SSEIS that ecology knows we're all connected, as you've taken a look at various scenarios of greenhouse gas emissions for the world. Whether this project is built or not.

As a person of faith, it's also clear that if 2020 has taught us anything, is that we are in a time of great moral reckoning. Right now we are all called to be prophetic and envision a future that is different from one shown in a model where climate pollution increases no matter what we do. We know that to create a livable future for future generations, we can't continue with business as usual. I'm a young person, and worry about what the world will look like in the 40 year lifespan of this proposed project. It's clear to me that we can't continue with business as usual, and that we can't assume that other similar projects around the world will be built if this project is not built.

As a person of faith it's also really important to me, that we listen to the indigenous folks who have always lived in this land. The person from the [inaudible] tribe who testified earlier. We have to listen to the folks that have stewarded this land and if they're opposed to this project, we must also be. Thank you.

Marlene Meyer

I'm Marlene Meyer, resident of Washington for over 21 years. I'm here personally to talk about the same things that many people have already brought up, the tribal convents, the Sierra Club. By the way, we do have a trans child who is been loved and living in a good condition, but I do know most of them are rejected by families and have a very difficult time, so I found your comment interesting. In respect to the project, I'm also in agreement that we are comparing two negatives, and I really am surprised in the state of Washington, with our progressive ideas about reducing carbon emissions that we are even comparing these two negatives. Currently, I am calling you from California. I am staying in a city that was developed around oil refineries with commitments and promises to help the people in the area and to not be polluted. This is a very sad area I'm living in. It's depressing to see what's happened here. They have the ninth worst polluted beach in the state. What was going on in the history of the building of this with a commitment to clean production for the future? Did they not foresee the future? Did they not plan for it? How can we foresee what's going to be coming up here and there is not a commitment on paper for clean up by this company. Even if there is, how do you clean up thousands of marine life?

Don Steinke

You cannot allow the DSSEIS to stand as is without knowing who monitors the pipeline for leaks and how soon they repair Class 3 leaks.
In this story, from Franklinville NY, we learn that there were three classifications of leaks. And we learn that a pipeline company allowed a leak for over a year and had not scheduled it for repair because it was a Class 3 leak, in a remote area.
https://www.niagara-gazette.com/news/local_news/southern-tier-pipeline-leak-response-stirs-local-concern/article_f4824e45-2ce7-5e1f-9487-b84f4f66d210.html

Jennifer DeCent

My name is Jennifer Dissent and I live here in Collins County in Ariel. I'm a business agent for Laborers International Union of North America, local 335. In my now 15 year career as a laborer, I've had the opportunity to work on environmental crews. This crew is comprised of highly skilled, trained laborers, dedicated to preserving and protecting the environment. Allowing the Northwest Innovation Works Kalama Methanol facility to move forward will have a positive impact on the environment. With a plan to include tribal labor, environmental and environmental justice members on its governance board.

A carbon reduction project dedicated to the fight against climate change benefiting our community every step of the way. Thank you for this opportunity to make this comment. I want to end on this note, Washington state can and should set the highest standards and lead other States, our nation and other nations. Please approve this project as a great example to drive those high standards.

Eileen Fromer

Hi. My name is Eileen Fromer, I live in Portland. I'm passionate about the climate crisis and about stopping greenhouse gas emissions. I believe that the department of ecology has an opportunity through its analysis and these hearings to do the right thing. Simply, that is to deny the shorelines permit for the Kalama Methanol refinery. On its website Ecology states, "Washington is a national leader in cutting greenhouse gas emissions to prevent climate change." Now they state that the Kalama Refinery would be one of the top greenhouse gas polluters in Washington, emitting 4.6 million tons of carbon pollution annually for 40 years. How on earth can Ecology claim to be cutting greenhouse gas emissions and approve this shoreline permit?
The under estimated methane leakage from natural gas extraction, transmission along the pipe route and the refinery, and after the methanol leaves the refinery, what then, first it was just going to be used to make plastics, as if plastics are not already an environmental disaster, but at least the methanol wouldn't be burned for fuel. Then they changed their story. So 40% might be burned as fuel yielding 2 million tons of carbon pollution each year, and there's no guarantee that all the methanol won't be burned. We are in a climate crisis, the wildfires are here along with the drought, storms, floods, and displaced people all over the world. It's time to say no, enough is enough. Washington and the department of ecology must live up to their claim and be a leader in addressing the climate crisis.

Norm Cimon

Yes. So, I'd like to, first of all, point out out that the static market analysis is not very useful. These markets are changing so quickly that a dynamic analysis is really where you want to go. In other words, this is going to be changing very, very quickly. I'm in Oregon, I'm a systems analyst. I've worked for the US Forest Service, my own company, I worked for the EPA years ago. The crucial issue for me is that you have not examined all of the upstream costs, specifically, gas companies are now abandoning their wells, leaving them to leak methane forever. You need to go back to your analysis, go back to the upstream portion of this and start looking at that seriously.

What I mean by that is that you can do a probabilistic analysis, that's what people do, and actually get some idea of how much additional methane will be coming out, given that a lot of these wells are simply going to be abandoned. This project, as far as I can tell is not one that is designed to do anything that will benefit the environment. Looking at, and someone said, the two negatives, it's not the way to go.

Right now, Melrose, I think it's Malden, Washington has gone. We've lost any number of towns here in Oregon. The mantra I live by is that short term self-interest is greed, long-term self-interest is morality. I would ask you do, essentially the work of some serious long-term interests and make a moral decision. Make sure that this project does not go forward, we're losing too much at this point. Thank you.

Luke Henkel

Thank you so much for the chance to speak and share. I'm Luke Henkel and I work closely with Earth Ministry and on the Care for Creation team at St. James cathedral. I'm living in Seattle, Washington but very invested in opposition to this project. I just was on a trip this last week with [inaudible] sailor sea, walking from Mount Rainier to Houma down to the mouth of [inaudible] river and I was hearing the whole week about how proposed projects like this Kalama Methanol facility are 80%, 87%, 90% likely to fail at some point along the pipeline infrastructure.

Having lived in the Pacific Northwest for much of my adult life, I know what a green area we are, how likely we are to be known all over the world as this progressive place. I've heard a lot of science during this hearing but I just want to take a step back and talk simply. We've heard all of these facts, we've heard all of this data on both sides of the argument of whether or not we'll have this facility and for me, it's just convenient excuse to hide the fact that this is wrong.

We heard from Maddie Smith, who's part of Earth Ministry and she's wanting to say this is a moral reckoning. We're faced this year, 2020 as she said, if nothing else has taught us this year from all the crises we faced, we have the chance now to really pay attention to what all of these crises are teaching us and learn from them. Get it right, learn how to work together, learn how to say no to the things that we know are wrong. Forget all the data, forget all this slides that we're going through and just pay attention to what the indigenous leaders are telling us, to what the simple facts are and they are, this cannot go forward. If we want to have any chance of getting ahead in 2021 and beyond. Thank you so much.

Don Steinke

Although you seem to be limited to GHGs, you cannot ignore the seismic risks of this project.
When EFSEC and Gov Inslee rejected the Tesoro Savage oil terminal proposed in Vancouver, they didn't base their rejection on climate, they based it on seismic risks which could not be mitigated.
We heard from a geology professor that the seismic risks in Kalama were identical to Vancouver.
He said that although the boundary of the subduction zone is off shore, the actual place where the plates would get stuck could be right under Kalama.
That risk cannot be mitigated.
Furthermore, when we have a major seismic event, (we're overdue) and the pipeline ruptures and the refinery, what number would you assign to the emissions.
It is not if but when. It is likely to be larger than any seismic event in California.

Mike Reuter

I am speaking here as an individual and not as the Mayor of Kalama.

"Natural Gas isn't a Bridge Fuel; it's a Gateway Drug."
John Farrell

According to the Hearing on the Kalama Methanol Refinery in Cowlitz County on page 9/30, it states:

The project would require one-third of the total amount of natural gas currently used in the State of Washington, making the project the state's single largest consumer of natural gas, and possibly impinging of the state's available supply. Should the amount of natural gas used by this project be considered when reviewing this shoreline application?

How will we ever lower our dependence on natural gas if one company's demand is equal to 1/3 of the entire State of Washington? Is this refineries expected 30- 40-year lock on natural gas really a way to move us away from fossil fuels?

I know that the people who work at The Department of Ecology say that we can just let this one go through. This seems like the best of the worst. This is the wrong kind of thinking; this one approval means multiple massive fossil fuel projects will make your jobs even more distressing. This will open the floodgates of new endeavors of fossil fuel projects; the thin green line would be broken. The word would get out; they have found the key to open the gates.

Policy decisions need to be made on the most effective hierarchical order of gas allocation between domestic and foreign sectors to facilitate economic development and prosperity for all SW Washington.

The Climate Crisis Requires That We Move Away from Gas
June 26, 2019, Sheryl Carter Bobby McEnaney
These are long-term, expensive investments that have a good chance of becoming uncompetitive, or economically "stranded," since there is much cleaner, cost-competitive (or soon to be) alternatives to reach our climate goals. That means we will still be paying for these investments long after they are no longer economically or environmentally viable, resulting in higher energy bills, lost jobs, and financially unstable utilities.

I will never understand why we spend millions of dollars in energy-efficient appliances in homes, use low flow toilets and washers, and insulating our homes and businesses to save on gas heating only to have one company come in and take all of the savings. This company should reimburse the citizens and businesses the millions of dollars that have already been invested trying to reduce our carbon footprint.

Having one company take 100MW of power, 320 million therms of natural gas, and 4 million gallons per day is an astronomical amount of our NW resources. I think that's why there has never been another ULE methanol refinery built since the prototype 30 years ago; no country can give up

that much of its limited resources. How many companies will not be able to use these essential non-renewable resources when they are desperately needed years down the road?

This project's shortfall would be a great documentary film that will probably be seen on Netflix. It has all the makings of extreme short-sightedness of elected officials and agencies not unheeding the warnings that were supposed to protect the people of Washington for centuries, and not just for decades. People have already started thinking of which actor or actress that will be playing their part.

Hollis Dye

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. The methanol plant at Kalama should not be built, we should be looking into other alternatives other than fossil fuels. With all the technology that is coming on line and the harms we know that fossil fuels have had on the global climate, it is time to do the responsible thing and look for alternatives. No to the Kalama Plant.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Hollis Dye
PO Box 453 Grapeview, WA 98546-0453
hjdskeezix@gmail.com

Catherine Ruha

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

Inherent in this moral imperative is investing in a livable future that is safe for all to thrive. We can't thrive with polluted waters and air! This short term thinking is criminal. This short term thinking is killing humans and everything else on this struggling Earth. Imagine loving the world instead of treating the world as some form of trash receptacle for our human inability to change. Imagine a cleaner world where you approve human projects that heal and nurture a healthy relationship with the community, water, and land of Kalama and Washington State.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Catherine Ruha
1541 NE 91st St Seattle, WA 98115-3144
ruhac@outlook.com

Anne Bryant

I am strongly opposed to the the second Supplemental Environmental Impact Statement (EIS) for the Kalama Manufacturing and Marine Export Facility.

Although I live in Portland, OR and not in the state of WA, the fate of that ancient, venerable river, the Columbia, is the fate of the entire region. Bringing methanol to this region is too great a risk to this bioregion.

It's enough reason for me to say NO to this project that the Cowlizt Indian Tribe is opposed to this second SEIS. Their assessment is that the project would irrevocably damage their ancestors's cultural resources and already altered natural landscape. It would permanently ruin the lower Columbia and ruin salmon and wildlife habit.

Rather than invest in development of a project that could become a stranded asset in a number of years, why not invest in sustainable jobs for the Kalama area?

Marilyn Cornwell

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

The environmental devastation caused by the fracked gas refined into methanol begins right when is fracked from of the ground. Leaks during fracking, transportation, refining it into methanol, and then shipping the methanol overseas, are links in a chain of pollution around the neck of the people and creatures of this land that will directly contribute to greenhouse gas pollution. The cry that we cannot breathe becomes ever greater if that chain tightens.

It is our moral and spiritual obligation to confront the misinformation, speculation, and omissions about the environmental effects of methanol production by NW Innovations Works in the environmental impact statement. The environmental costs to the many far outweigh any profit that will be made by a few.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
The Rev. Marilyn Cornwell
9010 SE 47th St Mercer Island, WA 98040-4410
mmcornwell@live.com

Kathleen Grimbly

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

The Kalama is home to Spring Chinook which are crucial food for endangered Southern Resident Killer Whales. Why spend millions on salmon recovery while endangering this remnant population with the effects of fracking?? Seems a bit like the left hand not knowing what the right is doing.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise. If built, our state will be locked into decades of additional climate pollution, even though we know it is past time to pursue a truly low-carbon future. Speculating that this project may displace other fossil fuels is not adequate justification for the known pollution that will harm our communities and climate.

Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Ms. Kathleen Grimbly
4658 Blank Rd Sedro Woolley, WA 98284-8911
bluemoonexplore@gmail.com

Arlene Hobson

Dear WA Department of Ecology,

As a person of faith, I believe we are called to care for both the well-being of communities and the environment.

We need to be investing in a livable future that is safe for all to thrive, especially the young people of our state and nation.

Building the world's largest fracked gas-to-methanol plant in Washington does not align with my personal values of stewardship and justice, nor does it support our state's commitment to reducing climate pollution. Please reject Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit.

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Northwest Innovation Works has demonstrated that they are deceptive and will seek profit over people's wellbeing. They cannot be trusted to mitigate the impacts of this fracked gas refinery. The fact that the project has needed three reviews, with outspoken community opposition during each, shows that there is something wrong with it at its core. As Governor Inslee stated, we cannot support such fracked gas projects in good conscience.

You have a moral responsibility to protect public health and reduce our region's climate pollution. Please do what is right and deny this project. Thank you.

Sincerely,
Arlene Hobson
19809 Linden Ave N Shoreline, WA 98133-3514
rleen206@gmail.com

Teressa Barsotti

This project is dangerous and potentially disastrous for our region. Keep it in the ground!

Diane Dick

2020 10 08 Comment #7

Washington State Department of Ecology
Olympia, Washington
Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.
Greenhouse gas emissions are insufficiently explained in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions.

The SSEIS asks a basic question. How much CO2e will be produced in refining 3.6 million metric tons of methanol per year?

When science looks at a question and comes up with an answer the usual first response to the answer should be another question. Is the answer reasonable? In the case of NWIW the answer is no.

Looking only at methanol process, from Table 3.5-2 GHG Emissions from On-site Sources, the ULE process and purchased power (the 100 MW demand required for the process) will produce GHG emissions ranging from the low estimate 728,535.7, to mid estimate 915,121, to the high estimate 1,347,803 MT CO2e/year.

The high estimate means 0.374 metric ton of GHG would be emitted for every metric ton of methanol produced. The low estimate yields 0.202 metric ton GHG per ton of methanol.

The methanol industry would likely find these answers ludicrously implausible.

"Ten or more years ago, a typical methanol manufacturing plant would emit about 0.9–1.0 metric tonnes of carbon dioxide for every ton of methanol produced. In addition to the environmental concerns, large CO2 emissions represent operational inefficiencies in a methanol plant, since the carbon emitted as CO2 is not available for making methanol molecules. In fact, excess CO2 from other industrial facilities can also be captured and consumed to increase methanol production. Through the implementation of efficiency improvements and through replacing of older facilities with newer plants that use more efficient technologies, over the last decade methanol plants have been able to significantly reduce CO2 emissions by up to 40%. Some facilities report emissions as low as 0.54 tonnes of CO2 / tonne of methanol produced. This is equivalent to emitting 3.8 lbs of CO2 per gallon of methanol."
https://methanolfuels.org/about-methanol/environment/

The ULE process is not new. It is based on a small prototype, the Coogee facility in Australia,

operational more than twenty years ago.

Here is what I told Southwest Clean Air Agency about the Coogee ULE process in my comments January 2019 regarding extension of NWIW Kalama's air discharge permit.

"The ULE process is not a conventional methanol process with conventional equipment and has only been used in one small facility that has since been closed, the Coogee Methanol Plant, Laverton North, Victoria, Australia, operated by Coogee Energy Pty Ltd.
https://insider.thewest.com.au/august-2017/power-played/
The best information on the Laverton Coogee methanol process and emissions can be found in Coogee Energy Pty Ltd Methanol Plant Environment Improvement Plan, December 2003. Attached.
http://s3.amazonaws.com/zanran_storage/www.coogee.com.au/ContentPages/1245343343.pdf
This was the plant's third improvement plan (EIP). They had problems. They admitted it was an experimental process that needed improvement.
"The Coogee Methanol Plant is Australia's only methanol production facility, and is currently capable of producing between 70,000 to 80,000 tonnes per annum of chemical grade methanol. The plant operates 24 hours a day, 7 days a week, all year round." EIP p. 10 The Coogee methanol plant had capacity to produce in one year what NWIW Kalama plans to produce in 8 days. In other words, the NWIW production capacity is proposed to be about 45 times greater than the prototype on which it is designed.
In 2003 the Coogee plant had been operating almost ten years. Their aim was to produce methanol with greater efficiency and less CO2e emissions. The EIP states in 2002 that 0.781 Tonnes CO2e were produced per tonne of methanol, EIP p. 21. If this emission rate were applied to NWIW Kalama production of 3.6 million tons methanol per year, then NWIW would be emitting 2,811,600 tons of CO2e annually at the refinery site alone, over twice the estimate projected in the ADP."

When scientific inquiry reveals extraordinary results, extraordinary proof is required. The unrealistically low emissions Northwest Innovation Works claims will result from their ULE methanol process demands extraordinary proof. Chemical equations describing a perfect process are not sufficient or realistic.

Demand real world examples the NWIW ULE process will produce the extremely low emissions as claimed on a large industrial scale.

Thank you,

Diane L. Dick
Longview

Barbara Bengtsson

The proposed Kalama Methanol Plant presents yet another false solution to the problems we are faced with in this pivotal time. A time marked by disasters, inequality, and a sense of uncertainty, if not doom. Wildfires and storms are increasing in severity and destructiveness; devastating droughts are followed by ruinous floods; from the Arctic region to the Antarctic continent, ice and glaciers are melting. We are not only reading about these disasters, many of us are living through them. Thousands lost their homes in recent years - on the west coast to wildfires, on the east coast to hurricanes. We know the cause of these calamities, climate breakdown driven by the burning of fossil fuels. We have known this for over 40 years - James Hansen first testified to congress about global warming in 1988 - yet instead of decreasing global emissions, we almost doubled them by 2017.

The possibility of changing course, still exists. If we follow the recommendations of the IPCC and reduce emissions by about 50% in the next ten years, we can still prevent the earth's climate from completely spinning out of control. This is why the proposal to build a large methanol plant at the mouth of the Columbia River is utterly preposterous. Any project that relies on the continued extraction of carbon from the earth, where it is safely sequestered, sets us on a dangerous path to irreversible climate disaster.

But climate disaster is not the only threat exacerbated by continued fracking and drilling. If, as the proponents claim, the methanol produced by this plant would be shipped to Asia and used in plastic manufacturing, it would contribute to the ecological disaster caused by the rapacious use and discard of plastics. Today plastics are ubiquitous components of our environment. Most of us know about the "Great Pacific Garbage Patch," which turns out to be not so great for life in and around the oceans. Plastics are making their way into the stomachs of whales, fish, and birds. Not even remote islands are safe from their toxic reach. In the Pacific Ocean's Midway Atoll, an Albatross nursery, chicks are dying of plastic pieces unwittingly fed to them by their parents. Scientists are predicting that by 2050 there will be more plastic than fish in the world's oceans. Is this the earth we want to leave behind? If innovation were truly at the core of NW Innovation Work's business model, the company would work on developing more efficient, effective and sustainable processes for collecting and recycling the plastics currently in circulation instead of proposing to make more.

If the methanol would be used as fuel, it would worsen the climate crisis by contributing to greenhouse gas pollution and by delaying the adaptation of renewable energy sources. Data suggests that fracking operations are leaking much more methane than previously estimated. While more research is needed before a final conclusion can be reached, circumstantial evidence is strong. The New York Times reported last December that "Methane levels have soared since 2007 for reasons that still aren't fully understood. But fracking natural-gas production, which accelerated just as atmospheric methane levels jumped, is a prime suspect."

Methane is a powerful greenhouse gas, 80 times more potent than carbon dioxide. Although it does break down after about 20 years, this does not help us. Climate research determined that we have only ten years to reduce fossil fuel consumption by half to prevent irreversible climate destruction. Therefore, as Ecology notes, "the Washington Legislature has adopted aggressive limits to reduce our state's emissions in the years ahead."

Permitting the construction of what "would be one of the 10 largest sources of greenhouse gas emissions in the state," would sabotage the emission limits our legislators worked hard to establish. Ecology's Second Supplemental Environmental Impact Statement (SSEIS) shows that "if constructed, the proposed Northwest Innovation Works methanol facility would" be responsible for at least 4.6 million tons of carbon dioxide emissions per year. Nonetheless, the authors of the SSEIS hypothesize in their conclusion that global emissions would be worse without the Kalama plant, based on the assumption that the methanol produced in Kalama would replace methanol produced from coal. That assumption is flimsy, if not misguided. If anything, the current pandemic is teaching us how quickly predictive models can fall apart. Approving the construction of this facility would set us on a dangerous path to irreversible climate breakdown.

Mitigating climate and ecological breakdown requires us to treat the root of the crises. We need to leave carbon in the ground, stop burning fossil fuels, and limit the production of plastics. I am urging Washington's Department of Ecology to step up to the task and stop NW Innovation Works from constructing what would be the world's largest methanol plant in Kalama.

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Sally Keely

Ecology caught the shell company Northwest Innovation Works in yet another lie. On page 13 of the DSSEIS Ecology describes how the methanol produced in the Kalama Methanol Refinery could be burned as fuel, even 100% of it burned as fuel, despite the first amendment of the dock use agreement between the Port of Kalama and NWIW. The June 2019 amendment(1) states, "No quantity of methanol produced at the Facility shall be sold for use as fuel products." Frankly this is contradictory to logic, reason, and public statements made by company executives.

As Ecology noted, once a tanker leaves dock, the product on board can be sold to anyone on the global market including wholesale commodity traders who could sell the methanol to other middlemen. Sale records would be impossible to track. Port has no way to enforce what the Chinese government does with the methanol or even if its destination is China.

The amendment says that NWIW will self-report any violations. But we know that NWIW is not credible, there have been so many lies. The Port and NWIW have a very cozy relationship. We rarely hear from NWIW, the Port Commissioners seem now to be NWIW's spokespersons.

In terms of the end use of the methanol, NWIW tells one thing to potential investors and another to the public and regulatory agencies. Reporting in April 2019, Oregon Public Broadcasting, our local PBS, caught NWIW in a major lie, telling investors the methanol is to be burned as transportation fuel while telling the public that it is to be used as an olefin for plastic production(2).

In summer 2017 NWIW sponsored an industry conference called "Sowing the Seeds of a Cleaner Future"(3) that focused on the prospects of using methanol as a liquid fuel, even going so far as calling it 'Liquid Sunshine'(4). The conference reading materials do not even mention plastic production.

Wu Lebin, the chairman of C.A.S. Holdings, has repeatedly said the end use of the methanol is for fuel including to Reuters in December 2017(5)(6) admitting a goal of the company is to "drive use of methanol as a transportation fuel for cars and ships." More recently, for an International Capital Conference last November(7), Mr. Lebin's bio says that NWIW will use the ULE process to convert North American gas to methanol to provide China with fuel.

It is avidly clear that with this amendment the Port is trying to sidestep the shorelines process, limit the scope of the cradle-to-grave GHG emissions in the FEIS, and mislead the public and state regulators. They are building this huge fracked-gas-to-methanol refinery, they've marketed the methanol as a fuel source, and now they are asking us to believe the methanol will never be burned. And note if it is burned as fuel, according to their own FSEIS (Appendix B, page 50), that would add an additional 5.44 million tons of carbon pollution annually. This dock use "promise" cannot substitute for the legal requirements of a full true SEPA analysis of GHG emissions including from burning NWIW's methanol as fuel. We are counting on Ecology for holding true to that science, not the speculation described in the DSSEIS.

Don't get me wrong. I vehemently oppose this project no matter the end use of the methanol because methane gas is too environmentally damaging, and our state should and can be a model to the nation in moving to clean renewable energies immediately. But NWIW and the Port of Kalama are trying to have it both ways, while lying to the public, state regulatory agencies, and the Dept. of Ecology.

DENY the shorelines permits.

1. http://opb-imgserve-production.s3-website-us-west-2.amazonaws.com/original/proposed_dock_usage_agreement_amendment_no_1.pdf
2. https://www.opb.org/news/article/methanol-plant-kalama-fossil-fuel-china/
3. https://nwinnovationworks.com/news/sowing-seeds-cleaner-future.html
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6. http://www.chinadaily.com.cn/business/2017-04/05/content_28793866.htm
http://www.internationalcapitalconference.com/speakers/wu-lebin

Bill Adams

Please reject this project. Despite what the proponents claim, it's a dirty project and will do nothing to combat global warming. It's estimated that it would emit 4.6 million tons of carbon pollution per year. That's a lot of dirty air and it would only exacerbate global warming. In May, 2017 I was diagnosed with broncheostasis. It's an incurable lung disease. My lungs are honeycombed. While there's no cure for it it's not necessarily fatal as it can be managed. But, manage means I need to breathe clean air. And, there are many others out there like me that have respiratory problems and need clean air. While I live outside of Cowlitz County, air pollution does not respect geographical boundaries. With combating global warming in mind as well as considering people like me, please deny the project. Thank you, Bill Adams

eileen johnson

No kalama methanol refinery. It is an environmental disaster in the making that would poison the Columbia river and further polute the pacific NW air.

Mark Keely

There is uncertainty to rely on a narrow set of bottom up estimates for methane leakage rates while leaving out top down leakage rates. It is suspect to have one and not the other. Considering the multiple locations and long distances from the wells through the pipelines to its final destination top down observations should be included in evaluating methane leakage rates because they are more comprehensive with sensors that capture the full range of operating conditions at gas extraction fields and pipelines. To leave out top down observations would be the practice of dubious legality. Regarding DSSEIS page 42, Alvarez found good agreement that a combined estimate for methane emissions to be 60% higher than US EPA emission inventory estimate.

RAYNA HOLTZ

Comment on the Second Supplemental EIS for the Proposed NWIW Kalama Methanol Plant rev. Oct. 8, 2020 from Rayna Holtz

My comments fall into two categories. First I look at the issue of greenhouse gas emissions that this study so wonderfully examined with considerable care and research, to see the greenhouse gas emissions results of various scenarios depending on whether the Kalama Manufacturing and Marine Export Facility (KMMEF) is built, versus results if it is not built. Second, I look at the context for this study, and for the Washington State governor's and legislature's 2020 progress on charting an effective path to comply with guidelines framed by the world's experts, the Intergovernmental Panel on Climate Change (IPCC). In both cases, I look at not only market forces, but at forces increasingly being mustered to counter market pressures with regulations and incentives that prioritize environmental health and the long term survival of human and other species over market trends driven by profit incentives.

A. The depth and breadth of this SSEIS is impressive, as is the broad range of possibilities it must contend with. However, it suffers from errors, omissions, assumptions.
1. One unknown is how the methanol will be used. We do know that Northwest Innovation Works (NWIW), which is Chinese backed, told the Port of Kalama that the Kalama plant would primarily sell its methanol to markets for olefins in Asia, but when presenting the project to potential funders it emphasized profits from selling the methanol for use as fuel. This behavior does not inspire confidence, but does warn that NWIW will manipulate to achieve a for-profit goal rather than speak out of a confirmed set of ethical guidelines incorporated into the operations of its business. (Why then should we assume that NWIW will follow through with its promised voluntary mitigation plan?)

2. To account for the uncertainty about intended uses, the range of models in the SSEIS includes both use as fuel and MTO (methanol to olefins), but looking at Fig 3.5.3 on p.65 we see that the Chinese use of methanol for fuel quintupled from 2006 to 2016 and it continues to rise. Isn't it likely then that the use of fuel will overtake the use for olefins? Beyond this example the number and combination of variables far exceeds the capability of meaningful modeling. While we do not know precisely what the methanol will be used for, we do know that it will add GHGs to our overtaxed atmosphere starting in just a couple of years and continuing for 40 years (the projected life of the plant), including the next two decades when we it is critical that we reduce GHGs. What is not burned as fuel, will become a problem to the environment when it is discarded, since the uses for products derived from olefins do not break down and return to the soil, so they will present other problems.

3. It is simplistic to want to partially justify the permitting of a facility that uses fossil fuels, emits GHGs in bringing its raw materials to its site, emits more in producing its product, and still more while conveying its product to Asia merely because it produces just slightly fewer emissions than other producers of its product!!

4. This report is based on outdated science. It uses IPCC4 100-year GWP values to calculate CO2e, despite the fact that the IPCC subsequently updated them to more accurately reflect the

significantly enormous GWP of methane in its first 20 years. On p. 90 this report even acknowledges that: "GWP values are periodically updated to reflect current science regarding the energy properties of GHGs and their lifetimes in the atmosphere." Thus the report should have used the most accurate and current GWP values, which are found in the IPCC's fifth Assessment Report's 20-year GWP. The reason given by the authors for using the IPCC4 100-year GWP is that they are "the most commonly used GWP values," meaning they have been around longest?!! This error biases all the results apparently deliberately so as to minimize the GWP of all the methane emissions. It doesn't matter what the annual GWP will be, averaged over the next 100 years! It matters tremendously what it is going to be annually between now and 2040!!

5. The calculations of upstream emissions are not well presented in this report, but seem to minimize the problem of methane escape at extraction sites, where gas is fracked. Researcher Robert Howarth notes that "scientists have measured big increases in the amount of methane, the powerful global warming gas, entering the atmosphere over the last decade." The evidence: "The chemical signature of methane released from fracking is found in the atmosphere, pointing to shale gas operations as the culprit." Howarth points to the fact that methane is most active in its first 20 years as having rapid rewards for curtailing its emissions: "Carbon dioxide emitted today will influence the climate for centuries to come, as the climate responds slowly to decreasing amounts of the gas. Unlike its slow response to carbon dioxide, the atmosphere responds quickly to changes in methane emissions. Reducing methane now can provide an instant way to slow global warming and meet the United Nations' target of keeping the planet well below a 2-degree Celsius average rise," Howarth said. (Robert Howarth, ecologist at Cornell University and author of the study published Aug 14 in the journal Biogeosciences.)
6. The problem of emissions from pipeline leaks all along the way is not mentioned. Pipelines are made of lengths of pipe connected. Over time, joints fail, as surrounding earth is disturbed by a variety of impacts, including earthquakes. Not only does this likelihood add to our burden of greenhouse gases, it adds threats to the health and safety of communities and ecosystems due to contamination and fire hazard. (I well remember my daughter's story when she was a Western Washington University student of a local incident: "On June 10, 1999, a gasoline pipeline operated by Olympic Pipeline Company exploded in Bellingham, at Whatcom Falls Park." - Wikipedia)
7. As the Department of Ecology News Release of Sept. 2 states, "The project would increase greenhouse gas emissions within Washington State by almost one million metric tons of carbon dioxide equivalent a year." And because the report uses the AR4 100-year GWP (see point 4 above) this under-reports the CO2e for whatever portion of this happens to be methane, so we need to multiply that figure by 86. Not helpful, especially when our Washington legislature's 2009 goal, which was to bring our emissions down to 1990 levels by the end of 2020, has already failed completely, and instead our emissions have increased by about 8 percent!!! What part of NO MORE EMISSIONS do we not understand?

8. This report does not consider the possibility that yet cleaner processes may soon make the Kalama technology with its "ultra-low emissions" obsolete.
*One possibility is producing methanol from the carbon dioxide in the atmosphere! An example: "Carbon dioxide-to-methanol process improved by catalyst," Science Daily, June 28, 2018, Penn State.
*Another: "Harnessing light for a solar-powered chemical industry," by Associate Professor Daniel Gomez, Royal Melbourne Institute of Technology, published in ACS Applied Energy Materials, Jan. 30, 2019. In this second article Dr. Gomez states: "Chemical manufacturing is a power hungry industry because traditional catalytic

processes require intensive heating and pressure to drive reactions." And, "The photo catalyst we've developed can catch 99% of light across the spectrum, and 100% of specific colours. It's scaleable and efficient technology that opens new opportunities for the use of solar power—moving from electricity generation to directly converting solar energy into valuable chemicals."

9. There is no mitigation that can adequately compensate for adding GHGs to earth's atmosphere at this time in history. Is it OK to add just a little oxygen to a raging house fire?

B. The context for this permitting process is not average. This is a precedent-setting moment, when every person and every life form on the planet is facing a crisis with a magnitude as great as the one that destroyed the dinosaurs. We simply cannot behave as though it's business as usual, and the best-written set of justifications and excuses wins a work-around to avoid the rules.

1. RCW70A says, under Intent—2020 c 79: "(3) The longer we delay in taking definitive action to reduce greenhouse gas emissions, the greater the threat posed by climate change to current and future generations, and the more costly it will be to protect and maintain our communities against the impacts of climate change. Unchecked, climate change will bring ever more drastic decline to the health and prosperity of future generations, particularly for the most vulnerable communities."

A new methanol plant in Washington would hinder the difficult task that is so urgent right now: to turn our GHG emissions around. With every passing month, more damage is done because of the effects of climate change, and some of the processes unleashed by global warming are actually accelerating its damage and speed (for example: the thawing of tundra is releasing additional methane that had been sequestered in the frozen tundra!) Climate change is increasing in momentum, so that some damages we can still hope to avert by reducing GHGs this year, will become inevitable if we wait to act until next year.

2. Until recently the United States has enjoyed one of the most stable democracies in the world, with time-honored institutions that enabled us to have the rule of law to protect our human rights and welfare. But we have not shouldered the responsibilities that come with our extensive privileges and wealth. According to the Center for Climate and Energy Solutions, the United States leads the world in Per Capita Greenhouse Gas Emissions, with over 18 tons of CO2 equivalent per person in 2017. Russia follows with a bit more than 15, then Japan with a bit less than 10, and the European Union is at about 8. The U.S. is responsible for 25% of the cumulative emissions of GHGs from 1751-2017, followed by the EU at about 22%. It's high time to step up. No simple for-profit venture, the possibility of initiating a successful new corporate enterprise, can take priority over this existential necessity.

3. Department of Ecology's Perry Lund states in his letter of October 9, 2019, to Dr. E. Elaine Placido, Cowlitz County, that "By law, Ecology must review all CUPs for compliance with the following: 1) The Shoreline Management Act (RCW 90.58)."

Looking, therefore, at RCW 90.58.020, in "Legislative findings—State policy enunciated—Use preference", we find that the third paragraph lists "seven uses of state shorelines to guide the development of master programs for shorelines, "in the following order of preference which: (1) Recognize and protect the statewide interest over local interest; (2) Preserve the natural character of the shoreline; (3) Result in long term over short term benefit; (4) Protect the resources and ecology of the shoreline. . ."

Although a Kalama methanol plant may bring jobs and an economic boost to the local folks, the

broader statewide interest will be better served with less GHGs and a healthier shoreline. The long term benefit will be much better served by NOT siting an enormous methanol plant where it can jeopardize "the resources and ecology of the shoreline."
This shoreline is part of the magnificent Columbia River estuary, whose health and water quality affect large communities of marine life both locally and downstream, extending to shorelines north and south along the Washington and Oregon coasts. Further, this ecosystem lies at a critical bottleneck for a majority of Washington's vital salmon runs, which travel from the Pacific Ocean back up the Columbia to numerous feeder rivers draining both the eastern Cascades and the western Rockies, spanning all of eastern Washington and part of British Columbia. These waters must be protected for the sake of innumerable beleaguered salmon stocks that have already been decimated by dams and premature melting of snowpack causing excessive warming of spawning streams that consequently cannot hold adequate oxygen to keep spawning salmon alive. On these salmon runs depend not only fisheries that have supported indigenous fishermen since time immemorial, and more recent commercial and recreational fisheries, but also the iconic Southern Resident Killer Whales of Puget Sound, now unable to find sufficient forage year-round to sustain healthy reproductive adults. It is unwise to allow any more dangers to further transform one of their key habitats into a gauntlet beset with hazards. (Further detail: see "Policy on Coastal Liquefied Natural Gas Facilities," attached.)
RCW 90.58.020 also states, "Uses shall be preferred which are consistent with control of pollution and prevention of damage to the natural environment, or are unique to or dependent upon use of the state's shoreline." There is no industrial plant that is immune to accidents. The siting of a large methanol facility in such a sensitive shoreline with the potential to cause lethal harm to so many already struggling species with both extremely high economic value and incomparable iconic northwest significance poses unacceptable risks of the sort this law warns against.

In summary, the backdrop of climate change against which this methanol plant is proposed dwarfs all other considerations with its multiple threats and exigencies. We must look at this decision with eyes wide open, and make a decision that will help slow the unraveling of the planetary systems on which biological life depends. Deny the conditional use permit.

Sincerely,
Rayna Holtz

POLICY ON COASTAL LIQUEFIED NATURAL GAS FACILITIES

Approved by the Surfrider Foundation Board of Directors on February 6, 2010

Whereas, the Surfrider Foundation advocates for the conservation of coastal and ocean resources and the use of renewable energy sources over fossil fuels;

Whereas, recent reports suggest that domestic supplies of natural gas are growing and there is nearly a century's worth of production at current rates;

Whereas, energy interests are proposing and applying for licenses to build thirty new liquefied natural gas (LNG) port terminals in U.S. waters;

Whereas, all of the proposed LNG port terminals and 75% of the approved LNG port terminals are designed for exporting U.S. sourced LNG;

Whereas, energy industry outlooks project that the U.S. will become the second largest LNG exporter in the world (after Australia);

Whereas, new coastal LNG terminals require infrastructure development that creates upland environmental impacts that adversely affect coastal resources, including shoreline alteration, coastal erosion, and water quality impairment.

Whereas, the processing and shipment of LNG produces greenhouse gas (GHG) emissions that are much greater than domestic natural gas;

Whereas, the process of turning natural gas into LNG is highly energy intensive, and in total, LNG is estimated to be the largest source of GHG emissions growth from the oil and gas industry by 2025;

Whereas, the drilling and extraction of natural gas results in large amounts of fugitive emissions of the world's most potent GHG, methane, which has 84 times the global warming potential of carbon dioxide in the short term;

Whereas, the Surfrider Foundation, through its Policy on Climate Change, has recognized climate change is a scientific reality that will include dangerous changes in the characteristics of the ocean including warmer waters, higher acidity, rising sea levels and increased storm severity that threaten coastal communities, beaches, and coastal and ocean ecosystems;

Whereas, Surfrider Foundation has resolved to support efforts to reduce carbon and other GHG emissions;

Whereas, the known and anticipated environmental impacts of LNG facility development and operation include marine life mortality associated with continuous water uptake; discharge of both cold and chlorinated water to marine environment; air quality degradation, including carbon dioxide emissions; high energy consumption

rate; introduction of invasive species, including those discharged in ballast water; benthic habitat disturbed in mooring and transmission pipeline installations; and light pollution;

Whereas, the unknown environmental impacts of coastal LNG facility development and operation present significant risks to the marine environment that are difficult, if not impossible, to adequately address through adaptive management protocols under existing regulatory authorities;

Whereas, the siting of LNG facilities and related infrastructure is an applicant-driven process that requires regulatory agencies to conduct environmental review and consider input from affected communities and the public.

This policy is general in nature; the Surfrider Foundation recognizes that every specific case must be evaluated in the context of the local setting.

NOW, THEREFORE, BE IT RESOLVED that the Surfrider Foundation Board of Directors finds:

Coastal community members, the general public, local businesses, and recreational ocean users, including beach goers and surfers, are affected by the development of LNG facilities and associated infrastructure, and are key stakeholders in local, regional and national project proposals.

LNG facilities, due to their consumption of finite natural resources, generation of GHG emissions, and other harmful effects on the environment, are not a viable means of providing safe and sustainable energy. Given the availability of alternative renewable energy resources, LNG facilities are not consistent with successful overall strategies for addressing climate change.

Given the impacts to coastal and ocean ecosystems, air quality, including increased greenhouse gases, and coastal access, the Surfrider Foundation finds that siting LNG facilities in the coastal zone is not consistent with successful protection, conservation and access to coastal resources.

Diane Dick

2020 10 08 Comment #8

Washington State Department of Ecology
Olympia, Washington
Re: Formal Comments on Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement, September 2020

Please deny Kalama Manufacturing and Marine Export Facility (KMMEF) a shoreline substantial development and a conditional use permit. The environmental impacts from the project are significant and cannot be mitigated.

Why does this SSEIS devote about two-thirds of the intended greenhouse gas analysis on an economic study, and poorly done at that?

"Economic Analysis: A market-based evaluation was conducted to assess whether methanol produced by the project would substitute for or replace other sources of methanol, rather than supplement them." SSEIS p. 38

According to Washington law and Department of Ecology website the purpose of SEPA and environmental impact statements is to identify and analyze environmental impacts. This begs the question why more consideration was not given to identified GHG emissions. Fugitive and transportation emissions from a long pipeline route are not analyzed. Emissions from operation of the KMMEF marine dock are ignored. There is no substantiation of low emission claims from the ULE process itself, despite the ULE process being untested on a huge industrial scale and results from the Coogee ULE facility contradicting such low emission claims.

Yet this SSEIS goes into mind boggling detail, or perhaps obfuscation, to guess what methanol markets will look like in forty years to support a result intended to make Kalama methanol look like the cleanest and most competitive methanol on the planet.

The most obvious economic question might be, if NWIW's ULE methanol process is so wonderful then why aren't other methanol producers replicating it? Especially the big players in the market, like Methanex? After all, the technology has been around for more than twenty years. If no one else is using it, the logical course would be to find out why not? Could it be the most forward-thinking methanol producers are moving to LCM, low carbon methanol, and fossil free renewable gas feedstock?

Why does the economic analysis not mention NWIW's parent company GTM's intentions to produce methanol in British Columbia, closer to gas feedstock producers?

Financial advisors have a fiduciary responsibility to advise that past performance is no indication of future returns when it comes to investment risk. Yet this SSEIS seems to have no doubt about the reliability of their future assumptions in drawing a conclusion.

Indeed, there is not even past performance when it comes to Northwest Innovation Works. It is a paper LLC created in January 2014 to pursue a speculative venture. A major investor, British Petroleum, pulled out within a year after the price of oil dropped precipitously making the economic viability of the venture too risky. The principals have no credible background in petrochemicals. President Vee Godley was previously involved in the failed Hoku silicon plant in Idaho.

While supporters complain vociferously about the lengthy permit process, NWIW has never produced complete financial and facility plans. They have claimed much, yet never revealed the project would be the world's largest methanol refinery. One would think this might be a selling point for a worthy project.
The original idea was to use the CR process and not more than 36 MW demand from the power grid. This got changed when they realized the air pollution controls from burning so much natural gas for power generation was too costly.

Then there was the issue of wastewater disposal and impingement on shorelines and wetlands.

When they were caught hawking the project to investors as producing methanol for fuel instead of the stated purpose as plastic feedstock, they needed another port lease amendment.

NWIW was promoted as producing taxes and jobs. Yet the port agreement only requires 80 permanent jobs, less than one job per acre of waterfront industrial property. NWIW has lobbied the legislature for tax benefits. The project has applied numerous times for federal tax dollars to build the dock. It has applied for a two-billion-dollar federal loan to build the refinery.

The tax benefits and two billion loan should be considered in the SSEIS economic analysis considering the implications such subsidies might have on relationships with global trading partners, if the state subsidies to Boeing are any indication.

After more than six years of experience with Northwest Innovation Works, please heave this project overboard. It is a risky financial investment and a sure route to environmental and climate degradation.

Thank you,

Diane L. Dick
Longview

evan johnson

No Kalama Methanol refinery. this project would cause a huge amount of climate pollution

Kathy Boylan

No to Kalama methanol refinery. In these dire times it is time to stop listening to the petro chemical industry spin and consider the human and environmental costs of this highly toxic project.
ENOUGH

Sally Keely

KMMEF is a 3-part project: the lateral pipeline, the dock, and the refinery itself. They are all tied together. One is not able to operate without the other two. Either all three should be permitted or NONE should be permitted. (I favour the latter!) The pipeline aspect of the proposed Kalama project remains highly controversial. The people of Kalama and Cowlitz County do not support the use of eminent domain for exporting gas in the form of methanol. The 3.1-mile lateral pipeline is for corporate gain and serves no public purpose. This issue bridges traditional political divides in Kalama. Families have had their homes and land held hostage by the threat of eminent domain for years, and now 2 more with the recent FERC rubber-stamped extension decision. My own home is ¼ mile from the Williams north-south pipeline and I can't imagine the uncertainty they must be feeling. STOP Kalama methanol refinery. DENY the shorelines permits. Let homeowners along the lateral pipeline route get their property, and sanity, restored.

Richard Voget

The SSEIS shows clearly that the facility would generate around 4.6 million tons of carbon dioxide pollution each year, equivalent to around 5 percent of the state's total climate emissions. This much is clearly established and irrefutable. The mission of the department of Ecology should be to oversee the reduction of greenhouse gases, and not declare a project as acceptable because it is less dirty than an alternative. The most recent international and global assessments show that if greenhouse gases continue to increase at the current rate, global temperatures are likely to reach 1.5 degrees Celsius above pre-industrial levels by as early as 2030. The SSEIS states that only emissions from Washington State will be mitigated. And mitigation can be spread over years past 2030. Between the unmitigated emissions from China and British Columbia as well as the unmitigated emissions that haven't had their turn to be decarbonized, this project will be increasing global warming at a time when the window to avert a climate crisis is closing

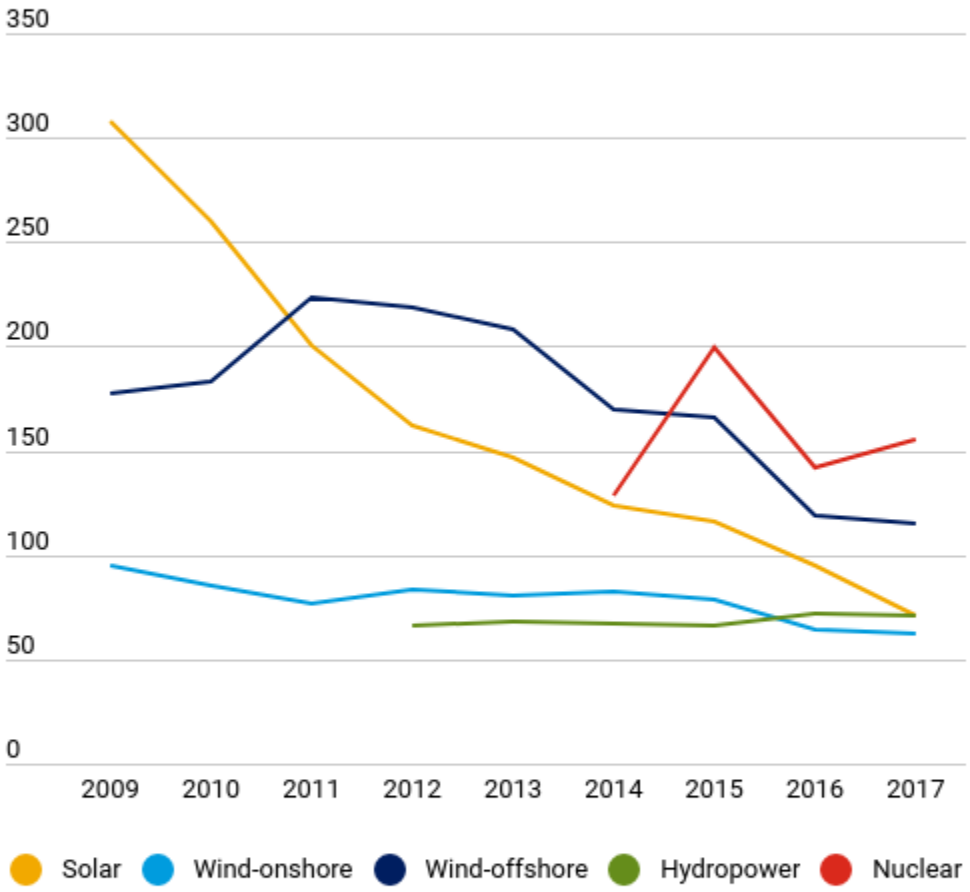
The entire premise of the Kalama project is establishing 40 more years of consumer demand for gas rather than moving away from fossil fuels. How can you confidently predict consumer demand for the next 40 years? Coal production has crashed as the price of natural gas became cheaper due to fracking. I have included the Chart of the Week from the April 2019 World Economic Outlook that shows prices dropped 76 percent for solar panels and 34 percent for turbines between 2009 and 2017 making them competitive alternatives to fossil fuels and more traditional low-carbon energy sources such as hydropower and nuclear. Renewable energy generated electricity will become cheaper than methanol and all the other fossil fuels in the not to distant future and well within the 40-year premise of the SSEIS. The price of methanol will not remain constant as predicted in the report. The Kalama refinery will eventually close as methanol becomes noncompetitive.

Please do not approve this project that will contribute to global warming until it closes due to market economics that were not evaluated in the report.

Cheaper power

Rapidly falling costs are fueling investment in solar panels and wind turbines for electric power generation.

(levelized cost of electricity, US dollars per megawatt hour)



Sources: Bloomberg New Energy Finance; Federal Reserve Economic Data; and IMF staff calculations.

Note: Levelized cost of electricity data has been deflated using GDP delflator and does not include subsidies and taxes.

Thomas Gordon

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Ellen Mickle

Dear Washington Department of Ecology,
I strongly urge you to deny the Kalama methanol refinery project since, based on your own draft analysis, it would be a major polluter. It would use more fracked gas than all of Washington's gas plants combined. In May 2019 Washington became the fifth state to commit to 100% clean energy by 2045. Since the passage of this legislation signals a desire by Washingtonians to curb climate-chaos driving pollution, rather than a preference for how the electrons running into their homes are produced, I urge you to deny this project. In 2019 it was also revealed that Northwest Innovation Works had been misleading the public and regulators by claiming the methanol would be a cleaner source for plastics, when in reality, as OPB reported, they lured investors for "an opportunity to buy into a new methanol supply chain to fill China's insatiable appetite for fuel." I'm not apprised of what ethics fossil fuel project firms operate by, but in the field of planning, which I just started grad school for, one of the ethics by which we operate is to "not misrepresent facts or distort information for the purpose of achieving a desired outcome." After this came to light, Port of Kalama commissioners unanimously passed a lease amendment that prohibited the firm from exporting its product for fuel. The very community is against the intent of this project, and we simply don't have the environmental budget to support this opportunity for private industry to generate massive amounts of wealth, so please deny.

Carolyn Fox

I am opposed to the proposed Kalama methanol refinery. It will be a huge emitter of greenhouse gases and it won't stop anyone from continuing to mine coal and burn it. It will be a 'net addition' of greenhouse gases to the planet. Please do not issue a permit for this project.

Thank you.

Carole Eby

I implore you to reject the request for shoreline conditional use permits for the Kalama Methanol refinery. The SSEIS states that it "would increase greenhouse gases in Washington, but could substitute for dirtier sources of methanol globally". The operative words here are "would" which is a certainty, and "could" which is speculative. Could relies on a hope that the Chinese might take a coal feedstock plant off line, stop building more coal to methanol plants, not burn the methanol as fuel, not sell off the equipment from a shuttered plant to a third world nation, and the list goes on.

My husband and I bought property 6 miles south of the proposed methanol plant in January 1972. As friends and family helped us build this home the siren to warn us to flee a disaster at the Trojan Nuclear facility was being erected a few yards from our driveway. Kalama Chemical emits a stench that gives us nausea and headaches. We think of the spent fuel rods stored at Trojan. This is the legacy my children and grandchildren inherit. Please do not add this massive GHG polluter with speculative benefits.

I also call your attention to the issue of mitigating the alarming volume of greenhouse gases this plant will spew into the air we breathe. In an interview with the Daily News, Mr. V. Godley, speaking for NWIW expressed pleasure over being able to mitigate entirely in the State of Washington. Yet we know full well that the SSEIS says if the emission reduction obligation cannot be met with local or regional projects "the board will look to purchasing credits through established national or international carbon markets". Furthermore if the cost of those hypothetical local or regional mitigation projects can't be covered in the budget "then the reduction obligation is achieved with the purchase of carbon credits". The public has been fooled into thinking that full mitigation means all those greenhouse gases are being magically neutralized locally. Perhaps there's a bird refuge, nature path, or an acre of sapling trees in Kalama's future? You know this is intended to lull people into complacency.

Though not directly related to your request for comment on the GHG and mitigation issues, I wish to note the disingenuous nature of NWIW when it comes to the highly touted subject of 200 highly paid jobs. We have seen the lease agreement between the Port of Kalama and NWIW. They agreed that the requirements of the lease could be met with as few as 80 employees, and if circumstances dictated, NWIW has the option to negotiate with the Port for an even lower work force. We are tired of this spectacle of smoke and mirrors.

Climate change is real. This refinery doesn't belong in Kalama or anywhere else. Deny the permits. Speak to the best interests of people. Urge the Port of Kalama to focus on clean energy projects. Even when a project has hung about in the wings forever there is still time to say "no". Thank you for protecting our air and water, and our future.

Sincerely,
Carole Eby
1010 Martin's Bluff
Kalama, WA 98625

Charlotte Linton

My name is Charlotte Linton. I live in Seattle. I'm here today to ask the Department of Ecology to reject this project. As a mother of a two-year-old daughter, I'm extremely concerned about the impacts of climate change in our planet and our future. Just last week, we only had to look out our windows to see the effects with small blankets in our entire region. I had to explain to an outdoorsy toddler that she couldn't leave the house and that simply breathing the air could be harmful. I know that increased wildfire activity is just one of the many ways that climate change is harming our region, and like many of us, I'm wondering how many more things have to be explaining to the young people in our lives. This refining would produce an exorbitant amount of greenhouse gases, which we know will contribute to global climate change.

You mentioned in the analysis that the emissions for methanol production will be higher if the Kalama facility is not built, but this is purely speculation. In a changing world, it's impossible to predict the demand for methanol and over the next 40 years. Rather than trying to guess how methanol may be produced elsewhere, we should concentrate on what's happening in our own state. This level of pollution is totally inconsistent with Washington's climate goals. We need to be leading the way in the transition to a clean energy future, not investing more fossil fuel infrastructure.

The environmental impact statement mentions that Northwest Innovation Works intends to fully mitigate the impacts of the project. However, this will be accomplished through a voluntary mitigation framework for which there are very sparse details. With no plans for specific projects or measures they intend to take, how are you going to hold them accountable? With so much at stake for our communities and our environment, we cannot simply trust that this corporation will be true to their word. If we wanted to >> curb the effects of climate change, we need to start with our own state and our own communities. By rejecting this project, the Department of Ecology has the power to make a huge, positive impact for the next generation of Washingtonians, help us to protect, preserve, and enhance our environment. Thank you for your time.

Neal Anderson

I've heard several people make the argument that we should build this because it would be better for the climate, but if we don't build a massively polluting refinery here, someone else might build one that's even worse. It seems like a pretty weak argument anyway, but it completely ignores where we are in the climate crisis. It's way too late now for incremental improvements. Scientists are saying that to avoid catastrophic tipping points and widespread species extinction, our only hope is to rapidly decarbonize over the next few decades, shutting down existing fossil fuel refineries and eliminating all sources of climate pollution within 30 years.

Now, we're talking about building a brand new one with a 40-year lifespan, which means we're already planning to fail. Going forward with this project means giving up on trying to secure a livable future for our children. It means telling the next generation that they'll have to live with ever-worsening disasters because we lack the imagination to do anything other than build more fossil fuel refineries, and try to convince ourselves we're making improvements. It means telling them that we valued our short term economic interests over their futures.

Making a huge investment in a new fossil fuel project at this point would mean we've given up and accepted that we won't solve climate change in time, and so we've decided that we may as well profit from it. But we can do better than that. We can reject the fossil fuel industries of the past and start building a truly clean future in Washington. Thank you.

Cathryn Chudy

Ecology did the right thing when expecting NWIW to provide accurate and truthful answers to relevant questions on the proposed facility. The current SSEIS release on September 2nd became necessary when your persistence met the stonewall of a company that is long on promises, and short on reliable answers when it comes to being honest with regulators and the public. The original proposal for a facility twice the size of Kalama to be built and operated in Tacoma, stalled in part back in 2016 over failure of the same company to answer basic health and public safety questions posed by the public and the port commissioners at Tacoma.

A replay of this failure by this company to truthfully factually and adequately answer questions about the proposed facility and Kalama, has, once again, forced you to pursue substantive answers to relevant questions on your own. What you did establish with the second EIS is that upstream, onsite, and downstream emissions will result in an increase, not a decrease and not a removal of climate pollution here in Washington. When the Hail Mary that proponents are grasping in order to make their dubious case with the ecology, involves a diversion from reality by taking us down the yellow brick road to the Oz of speculation and if then, thinking that somehow has been converted into a case for environmental game where there literally factually is not.

Voluntary mitigation may sound reassuring to some, but add on the phrase when feasible, and to the extent, possible, and you have an empty promise that more than likely will disappear into thin air as the profits are pocketed outside of Washington, and our children and grandchildren inherit the climate pollution mess that cannot be wished or mitigated away so easily. You are the guardians of our air, land, and water. You cannot sign off on this proposal masquerading as a climate solution without betraying the trust we and those who come after us, place in you. We urge you to deny the permit and reject this project. Thank you.

Joyce Follingstad

I am Joyce Follingstad, a Psychologist Nurse, a kayaker from Portland, Oregon, who cares about keeping our rivers clean, keeping our climate from heating up further, and keeping our air and environment pristine for our children and all the citizens of the world. I reject this proposed Kalama Refinery, which is to turn frac gas into methanol. First, because the frac gas process is causing numerous waterways and underground water wells to be contaminated. Also, the fracking process causes leakage of methane gas, further increasing global warming, and the transmission of frac gas to Kalama would endanger the citizens of Southwest Washington of the Scenic Columbia River Gorge, and up Northern Oregon through gas leaks and deadly explosions and fires.

I reject this refinery because it would create millions of tons of greenhouse gas pollution for its projected 40 years of refining, which will only increase the climate catastrophe that we are already experiencing. I reject this refinery because the methanol that this burned overseas as fuel will come back to us and to Asian citizens in the form of additional air pollution, an estimate of five million tons annually. This is not compatible with the healthy air needed by humans, flora, and fauna. Please do not build this refinery as it does nothing to further the goal of renewable non-polluting energy for the future. That is where we need to place our investments so we can prevent further speeding up of our one and only planet.

Nick Engelfried

>> Hi, my name is Nick. I live in Bethlehem, Washington. I oppose this methanol plant and fundamentally disagree with the logic of the model we saw during the presentation for calculating global lifecycle greenhouse emissions. We cannot simply assume that if this plant isn't built, an exactly equal amount of methanol will still be consumed and supplied from plants that would not have been built if this plant was permitted. That isn't how markets work, they respond to supply and demand. When supply of a dirty fuel goes up, it will displace clean energy and more people will consume it. Further, the world is undergoing an energy transition that will only be hampered by this plant.

Oil companies like Shell and BP are planning for a post-oil future. General Electric just announced it will no longer make coal plant parts. China is considering increasing its goals for renewable energy production, and it seems like that has potential to affect assumptions made in the EIS. We should focus not on emissions in China that we can't directly control, projections of wish are based on dubious assumptions about future energy markets and what the Chinese government will or will not do. We need to focus on our own carbon emissions here in Washington, which we can control in which the EIS shows will go up if this plant is built.

In the coming decades, the incentive for countries to move beyond fossil fuels will become even greater as we see increasing numbers of climate-related disasters, like the fires here on the West Coast and as governments respond. Is that reality being factored into the EIS? I don't see how it can be. Again, we should focus on what we can predict and control, which are carbon emissions here in Washington that will unequivocally go up if this plant is built. Thank you.

Cathryn Chudy

I listened carefully to all who spoke during three virtual hearings. I was dismayed to be told that in opposing this proposed facility I am putting feelings over facts and ignoring science, that I rely on plastics and am a hypocrite for asking our Dept. of Ecology to reject it on the basis of end uses that we all need, and that I am simply advocating to keep the status quo rather than "try something different."

Feelings are essential when combined with facts that clearly show how this proposal will harm rather than help us, both in the short run and especially in the decades to come.

I see through the selective "science" advocated by proponents, that intentionally misleads and misrepresents, in order to reach conclusions that will somehow justify a "YES" outcome. A stronger case has been made by many of us that the "science," when not "cherry-picked, along with basic common sense, compels the Department of Ecology (the guardian of our land, air and water) to do the right thing for Washington by saying "NO" to both the Shoreline Permit and the proposed facility.

Plastic and methanol for fuel are end uses that we as stewards of the future for our children and grandchildren should be steering away from, rather than embracing. We can and will find alternatives that won't cost the health, safety and quality of life for the next seven generations.

As for maintaining the status quo, the Kalama proposal actually represents continuing a toxic "status quo" that advocates "business as usual, aka pursuing obscene profits for the few over harm to the many. We are asking for trying something different - saying "no" to fossil fuel profits in light of doing no harm.

Finally, I would not think to tell a child faced with a bully in front of him to let that bully land a sucker punch on his left or right eye, simply because there probably is another meaner bully around the next corner who will do worse. We should not tolerate this kind of reasoning to justify this facility, and neither should the Department of Ecology.

I urge you to deny the Shorelines Permit and ultimately reject the facility itself.

As Henry David Thoreau said:

"The cost of a thing is the amount of what I will call life which is required to be exchanged for it, immediately or in the long run."

State Representative 20th District

>> I'm Ed Orcutt. I'm a State Representative here on the 20th district. I'm also a resident of the Kalama Community and live just a few miles from where this plant would be built. I'm giving testimony in favor of building the plant, and it's for many of the same reasons that we've heard people oppose the plant. We've heard that we can't mitigate, we can't reduce incrementally but I believe we have to reduce incrementally. I think any opportunity that we have to build a facility that will reduce the overall amount of carbon emissions that we're going to get, is something that we must be doing.

It's been mentioned about the catastrophic wildfires that we've had here. Those have released a huge amount of carbon into the atmosphere and what's even worse, is we've lost the carbon sequestration ability of those forests. That makes it all that much more important that we do these incremental steps to replace what has been lost. Not only is there more carbon in the atmosphere because of the fires, but it's no longer sequestering carbon.

I believe we need to do this to get the benefit in the time that it's going to take to get those forests recovered and sequestering the carbon that they've released, and other carbon it's going to take 40 years, 50 years for some of those, that's over 300 million tons of carbon that will not get sequestered if we do not build the plant. If we are in a climate emergency, we must be taking every step we can and doing it as soon as we can. To me, that says we need to build the plant and we need to build it as quickly as possible. Thank you

Markus Boos

Thank you. My name is Markus Boos. I'm a pediatrician and a scientist in King County. Simply put, I cannot speak strongly enough against the building of this refinery and I implore Washington State to deny the permit for its construction. Based on the department's analyses, this project would produce millions of tons of carbon pollution yearly, and not only does this run contrary to our state's climate goals, but the facility will also pollute water systems including the Columbia River, while devastating the surrounding ecosystems.

As a physician, I'd like to address the health effects that would result from construction of this refinery. What the environmental impact statement does not directly address are the indirect costs it will occur secondary to the refineries adverse effects on human health locally. In 2018, the Intergovernmental Panel on Climate Change released a detailed report summarizing the devastating effects of human-driven climate change secondary to the combustion of fossil fuels, and the release of greenhouse gases. These consequences include economic and health impacts in natural disasters, sea-level rise, and the effects of extreme heat on changing ecosystems that won't be unable to support human life. To mitigate these impacts, the IPCC demands that we reach and sustain net-zero greenhouse gas emissions. Fundamentally the permitting and building of this finery runs contrary to that goal and no amounts of greenwashed messaging about, "Carbon emissions savings" associated with this project can contradict that.

We are experiencing health effects of unabated greenhouse gas release today, and that will worsen only with time. That's from heatstroke, floods, wildfires, heat-sensitive infections are occurring in our backyards and worldwide. As a pediatrician, I recognize the local longitudinal health effects of pollution and climate change secondary to greenhouse gas emissions from refineries such as the one in question, which include a greater incidence and severity of atopic dermatitis, asthma, other respiratory illnesses, which are compounded by the wildfires we are experiencing.

I also witnessed firsthand the detrimental health effects and mental health effects as well. We know that all the consequences disproportionately affect children, and these enormous costs will ultimately fall on our woefully unprepared healthcare system and must be considered in any impact assessment. I reject the permit for this.

Caleb Ceravolo

My name is Caleb Ceravolo, I'm a 15-year-old from Ridgefield. The pipeline that is part of the committee today would pump frat gas to export to Northwest Innovations Work, a Chinese company. This pipeline would go through the land that will be seized through eminent domain against people's will, whether they want the pipeline or not. This pipeline brings down the property value, which is said to be made up and just compensation, but who determines what just compensation is?

The pipeline also leaks flammable greenhouse gas into the area, which the company might say won't happen, but there's a gas and you can't stop a gas from leaking in such a large project longterm. Also, the Trump administration brought down requirements from keeping these leaks from happening. This is deadly for the people whose property this pipeline is forcibly put through on a local level and causes climate change on a global scale.

Also, the wells this pipeline would be pulling from will leak even when the company isn't using them or when the company eventually finishes pulling from them. Even if they're filled with concrete, which can cost hundreds of thousands of dollars, this becomes a temporary solution because the concrete will erode eventually in 40 to 60 years, when the people who run this company are dead and don't have to deal with the consequences their actions caused.

This will become a problem that my generation has to deal with. We don't even want the pipeline in the first place. In summary, they are claiming you have to choose methanol over coal because of the lesser of two evils, but instead, you can choose no equals. You can't solve climate change by adding more fossil fuels. Thank you for your time.

Caroline Ceravolo

Hi, my name is Caroline Ceravolo and I'm a 16-year-old from Ridgefield, Washington. Yesterday the wildfire smoke again reached our house, making our air unhealthy to breathe. It's better than last week, I guess, when we were thankful that the air quality was only hazardous, instead of so hazardous that it's off the chart. The scientific consensus is that this is made worse by global warming. I have heard that this methanol refinery is supposed to help with climate change. Do they mean help climate change or help fight climate change?

I know I'm only 16, but I know that adding methane to our atmosphere is not how to reduce greenhouse gases. You reduce greenhouse gas emissions by pulling fossil fuels out of our economy, not by building an additional fossil fuel facility, to say otherwise is magical thinking. If you allow for this facility, you are helping climate change, you are rooting for it.

When I am the age of our president, it will be the year 2076. By then we will be way past all the deadlines of getting rid of fossil fuels from our economy. Will you still be alive? What areas in the United States will be habitable considering the preponderance of drought, wildfire, flooding, hurricanes, sea-level rise, and storms so intense that we have only seen in Hollywood movies? Where will be livable for me? Because as bad as 2020 has seemed, this will be considered the good old days.

Our atmosphere hasn't even warmed to the degree it will from all the greenhouse gases currently living in our atmosphere. This is what you're leaving kids like me with. I have no position of power, but you do. Sometimes it's hard to do the right thing. I'm sure if you reject the permit for the methanol refinery, you'll get sued, you can make people mad, but at least you should be able to sleep at night. At least you will send my generation the message that you do understand science and that you do see us. You'll be giving us a chance to clean up the messes left by your generation and those ahead of you, because if you allow this methanol refinery to operate, you are burying my future. Thank you for hearing my testimony.

Phillip Englund

My name is Philip England. I'm part of Sunrise Selfless Washington, in Vancouver, Washington. As we know, the climate crisis we're in is now undeniable. Every year, it keeps getting hotter and hotter, and we keep breaking heat records to the point where the entire West coast this year has been on fire. Well, we haven't burned down yet, we're still faced with smoke that went beyond the hazardous, it broke the meter. This is just the beginning, this is going to keep happening, this is going to keep getting worse and worse unless we take strong and immediate steps to save our [inaudible].

A methanol refinery is not the way to do that. All this talk of market conditions, the global market and these graphs, that's a capitalist show game, it's imaginary, it's a mirage. There's no [inaudible], that just because we put up a refinery in Kalama China isn't going to go," Okay, well, they put up one, well, let's shut down a couple of ours", it doesn't work like that. Then we're going to have all refinery going, they're going to have their refinery going, the only thing this does is put millions of tons of carbon into the air.

This is mitigation measures that they say they're going to do are not only insufficient, we don't need mitigation. This is not a step in the right direction, this is not good for the climate in any way, shape, or form. We need not to have this at all. In the strongest term's possible, I urge the department of ecology to deny this permit. This is our future we're fighting for, these are our lives we're fighting for, and that is pretty frigging serious. Thank you so much. I wrap up.

Mark Leed

The proposed methanol refinery would produce millions of tons of greenhouse gas pollution each year for 40 years. 4.6 million tons of carbon pollution per year is inconsistent with Washington's climate goals and with protecting Washington shorelines. To begin with, the SCIS underestimates upstream emissions, using even the most conservative estimates, upstream greenhouse gas pollution will exceed ONE million tons per year. In addition, methane leaks from abandoned gas wells were omitted from consideration. It is well known that abandoned gas wells continue to leak methane for decades.

The SCIS concludes that greenhouse gas impacts can be mitigated. It relies on Northwest Innovation Works flood speculative analysis to argue that methanol could displace dirtier energy. Rather than engaging in a highly speculative market analysis, ecology should focus on the known pollution that will come from the facility. Nobody knows what worldwide energy markets will do over the next 40 years, but we have reasonably accurate estimates of the carbon pollution the refinery will create. Ecology should not assume that future energy needs must be met by fossil fuels.

The SCIS market analysis presents a false choice between bad options, all of them massive polluters, none of which will solve our climate crisis. Thank you for your time.

Tina Barrows

My name is Tina Barrows. I live in Vancouver, Washington. It breaks my heart to hear that there's 15 and 16-year-olds on this testimony asking for us to not fuck up their lives. I have to agree with them and ask to oppose the building of this facility because I do not agree that fossil fuels are the way of the future. Building a fossil fuel facility that's potentially better than what we have right now is just the wrong path.

Scientifically looking at climate change, we know it's induced by global warming and we will have a huge biodiversity loss and unstable weather patterns, which will eventually disturb the earth's ability to sustain humans. I am a single divorced woman with cats, my only worry is who's going to feed the cats when the shit goes down. I'm asking all of you people on the panel who make the decisions. I know you're doing your job, I know you have all the facts, but I presume you also have children. You might have grandchildren. I asked you for their sake.

Since I have time left, also what hasn't been addressed yet, which I also feel is important, is that building more fossil fuel infrastructure destroys the land, it hurts indigenous people, the most vulnerable populations that we have, and it's just wrong. We need to go forward with clean energy sources or with reductions in our consumption, which is my personal opinion. It's a small decision to make whether Washington builds a facility, but it's going to be on a global scale a large factor, so I'm asking to choose wisely. Thank you.

Don Steinke

Hello, I'm Don Seinke, my wife will follow me. I'm a retired physics teacher. In response to all those in favor of the project, we are being given false choices between two negatives, between two unacceptable pathways. Your children's future will be destroyed by either one of them. Yes, plastic is a wonderful material, but instead of making so many single-use plastic bags, we could say that plastic for better purposes. In fact, we banned some plastic bags in this state by 2022 and other jurisdictions are doing likewise.

The emissions from making paper bags are no better. The building trades don't have the right to change this part of the world forever so that you can have a two-year job. To ecology, I say, in your final EIS, please answer these questions. Is this proposal consistent with a sense of urgency and the latest IPCC report? Is this proposal consistent with the Paris climate accord which China signed? [inaudible] clean air rule requires polluters like this on the paper mills on long [inaudible] to reduce emissions 5% every three years, how will this project do that? Will pipeline lakes being monitored and fixed promptly? Exactly how will accompany mitigate their emissions and will their plan mitigate their in-state emissions the first year?

When given a range of impacts, why did you choose the least harmful option instead of the worst-case scenario? The models that EPA and others provide for estimating emissions are notorious for low balling. Will you include methane leaks from abandoned wells? Include the emissions from burning plastic. Most of the plastic that we think we recycle actually gets burned. Include those displacements for EVs by this project and the emissions from trucks working in the fracking fields. Now from my wife Alona, thank you.

Alona Steinke

My name is Alona Seinke. I'm a retired RN from Clark County and a member of the Healthy Climate team with Physicians for Social Responsibility. What do these places have in common? Pine Ridge, South Dakota. Camden, New Jersey. Immokalee, Florida. Welch West, Virginia? These are sacrificed zones. Those areas of the country that have been offered up for exploitation in the name of profit, progress, and technical advancement. Where human beings and natural world are used and then discarded in order to maximize profit.

Methanol plants produce waste that poison the air, exacerbating and increasing the rates of asthma. Chronic respiratory diseases, cardiovascular disease, and cancer. This leads to lost wages, education interrupted, and increased hospitalization and healthcare costs. How would that be mitigated? Cowlitz County already has a high rate of asthma. The county's death rate for chronic lower respiratory disease is 54% higher than statewide.

According to the Community Needs Index scores, the rates of poverty and poor health, in general, are much higher here than in the state or nation. Kalama is seen as an easy mark for the exaggerated promise of jobs. Please deny this project, do not offer up Kalama for exploitation in the name of profit. Do not allow it to become another sacrifice. The people of Kalama are not disposable. Thank you.

Diana Winther

Hello, my name is Diana Winther. I'm a resident of Cowlitz County and a supporter of the Northwest Innovation Works Facility in Kalama. I'm also an attorney by trade and I believe in focusing on facts and analysis above feelings when it comes to making important decisions in my life and in the life of my community. I first want to thank the Department of Ecology, you have the challenging mission of protecting, preserving, and enhancing the environment for current and future generations. The second, SCIS is proof of your commitment to that mission. The consideration of public input into a scientific analysis of the facts under a variety of scenarios.

It is proof that this facility will create a net reduction of global greenhouse gas emissions by at least 6 billion metric tons a year. If opponents of this project brought this to me as a case, I would turn it away. Not because I'm a climate denier, I would simply point out that they had already won. It demanded a cleaner project, they got it. They asked for further study, they got it. If it were my job to advocate for a cleaner tomorrow, I would point to NWIW and demand that any new facilities meet or exceed the bar is set.

This project has proof that concerned citizens can effectively campaign for change and they should be proud of that accomplishment, but from the testimony I've heard throughout this process, it sounds like project opponents are simply in the business of saying no. It sounds like they don't believe in the necessity of plastic for medical equipment, like ventilators. That they don't realize that olefins are required to build the wind turbines and the electric vehicles of the green economy we should all be working towards.

Project opponents also seem to ignore the fact that the community of climate exists because of a balanced of industry and environment. We have paper mills and chemical factories and a steel manufacturing plant all within a few miles of each other along the Columbia River. These facilities offer real careers, including benefits that can support a family and provide for a dignified retirement. Unlike the low-wage service jobs that others have suggested are good enough. Thank you.

Lacey Breton

I urge you to deny this permit for the methanol refinery, and here's why. Look, folks, we just lived through two weeks, only two weeks of toxic air and we could see it. We can smell it. We knew it was there. None of us could leave our houses unless it was absolutely urgent, unless we had a job that we had to go outside, but kids were stuck inside. The methanol refinery will do the same thing as the forest fires just did. We won't be able to see it, but it'll be there. The promise of permanent local jobs is a mirage.

I've had experience working with community colleges and developing and maintaining their education programs. A program in Cowlitz County at the local University here is unsustainable, both in a steady stream of qualified candidates and in funding. Who's going to train these, "Local employees" for permanent jobs? For those of us who are from this area, I live in Kalama. For those of you rather who support this project, I certainly don't, where are we going to go? Who's going to help us when there's an accident. Not if, but when, because anyone who promises -and we should all know this as adults- anyone who promises that there's not going to be any accidents, he's literally lying because, how can they know? They can't.

I was talking to Rosemary a couple of weeks ago in the midst of the election. I asked her why she was supporting this project and she said she wanted to show that Cowlitz County can handle large and complex problems like this. I had to say, "Rosemary, why do you think they came here when they failed elsewhere? It's because they're looking for politicians who are inexperienced in this kind of project and wouldn't know any better." China has lied and misled about the end use of this project, and that should be a red flag to us all.

Look, I would like a high paying job too close to my house, but I'm not going to ask for it at the expense of the health of my neighbors. I care about you too much to support this project.

Cathryn Chudy

Ecology did the right thing when "expecting" NWIW to provide accurate and truthful answers to relevant questions on the proposed Kalama facility. The current SSEIS released on Sept. 2 became necessary when Ecology's persistence met the stone wall of a company that is long on promises and short on truthful and reliable answers when it comes to being honest and forthright with regulators and the public.

The original proposal for a facility twice the size of Kalama, to be built and operated in Tacoma, stalled in part back in 2016 over failure of this same company to answer basic health and public safety questions posed by the public and the Port Commissioners at Tacoma. A replay of this failure by this company to truthfully, factually, fully and adequately answer questions about the scope,nature and impacts of this proposed facility in Kalama once again forced Ecology to pursue substantive answers to relevant questions.

What you did establish with this second supplemental EIS is that upstream, on site and downstream emissions will result in an INCREASE (not a decrease or removal)of climate pollution in Washington.

The "Hail Mary" that proponents are grasping at in order to make their dubious case with Ecology involves a diversion from reality by taking us down the yellow brick road to the OZ of speculation and "if/then" thinking, that somehow has been converted into a case for environmental gain where there literally, factually is none.

"Voluntary mitigation" may sound reassuring to some, but add on the convenient phrase "to the extent possible" and you have an empty promise that more than likely will disappear into thin air as profits are pocketed outside of Washington and our children and grandchildren inherit the climate pollution mess that cannot be wished or "mitigated" away so easily.

There are good reasons that our Governor Inslee has said clearly that he cannot support this methanol facility in our state, and his climate agenda supported by legislation has established climate goals that protect, not endanger, our children's future and the future of the next seven generations. Ecology can and should do all it can to act in accordance with those wise climate goals.

Ecology is the guardian of our air, land and water - you must not sign off on this proposal masquerading as a "climate solution" without betraying the trust we and those who come after us place in you.

I urge you to deny the Shorelines permit and reject this project once and for all.

Don Steinke

OK, my final comment.

I began commenting by thinking about impacts you left out that should be included in the SSEIS.

Now I turn to elements that were inserted by the proponent that should not be in the EIS and should be removed.

Remove the speculative, business as usual, market assumptions!

James Gus Speth from Yale, is a member of the National Academy of Sciences. He says that this planet will not be fit to live on, if we continue business as usual.

To include business as usual in your SSEIS is to accept our eventual destruction.

Remove the speculative, business as usual, market assumptions from the SSEIS.

Dela Zitkus

2020 brought us the hottest January on record, the hottest May, and the hottest September. Ever. April and June came extremely close to breaking their records.

The whole argument for or against the methanol refinery comes down to whether you believe it will increase or decrease greenhouse emissions. Let's use logic here. We'd be adding capacity to pull more fossil fuels out of the ground and either burn them for fuel or make plastics. The only way that adding capacity could lower greenhouse gases is if this methanol displaces another more-greenhouse emitting one.

Since we can't force the Chinese to produce less coal-derived methanol, we should assume that this new methanol would simply be added to their current supply. NWIW's numbers are all based on the argument that this new refinery would displace current production of some coal-based methanol production. There is no basis for this argument. Since China is a sovereign government and not a U.S. territory, we can't tell them what to do. Once the methanol leaves for China on a tanker ship, it's gone. What they do with it is their business. NWIW may be singing a sweet tune now, but once the refinery is built, all bets are off. The only control we have is now. The only power we have is to not build this refinery. I urge the Department of Ecology to deny the permit.

Mike Reuter

Hello, my name is Mike Reuter. I am speaking here as an individual and not as the Mayor of Kalama. I have serious concerns that Northwest Innovation Works is not going to be here long enough to be accountable for long term concrete emissions mitigation. The reason why I have these dots are as follows. According to Washingtons Secretary of State, Pan-Pacific Energy, the parent company of Northwest Innovation Works, UBI number 603371412 is a foreign profit company. They report 11 to 28 workers to L&I. As of September 15th, 2020, Northwest Innovation Works LLC, Kalama no longer has an active license with L&I in Washington. According to ProPublica, Pan-Pacific Energy received $150,000 to $300,000 in CARES Act loans to maintain eight jobs.

My question is, is this really a Chinese-backed company or a group of speculators trying to find enough money to survive after British Petroleum pulled out as their biggest partner? How can the CARES Act loans were given to Pan-Pacific Energy and not for Northwest Innovation Works? If the port and the county really believe that Northwest Innovation Works will abide by the commitments for greenhouse gas emissions, the EPA should be the ones who will be responsible as Northwest Innovation Works is not able to comply with its requirements. If every environmental group doesn't fall for the claims that this company has promised, how can the Department of Ecology do so? Thank you very much

Sarah Scott

Thank you so much. My comment consists of this. Please just don't do this. I agree with all of the succinct, wonderful comments against it. I'm simply a mom here in Richfield, near Kalama. I support Jay Inslee voting against it. If it's not good for Tacoma, how can it be good for my area? This is a beautiful, pristine, natural area. Please visit it, please save it. This doesn't make sense ecologically or financially for this area.

Just don't let this happen, I beg of you. I have no problem using pure emotion and beg you not to let this happen. Thank you.

Mary Elizabeth Theil

My name is Mary Elizabeth Thiel, and I'm a Kalama, Washington resident. Last year, my husband and I became new parents and we're excited to raise our daughter in this community where the people are friendly and hardworking. This area allows us to be in an ideal location where we can be close to nature and enjoy all the outdoor activities. This is including but not limited to fishing, hiking, boating, kayaking.

Many of these activities utilize materials that are made from synthetics not to mention the clothes we currently wear, the technology I'm using to speak with you now, and the PPE we are currently required for our safety. Stating that we need to move away from plastics is hypocritical at best as I know other items such as car seats, hospital equipment, piping and or tires, just as much as the rest of us do. The materials needed to manufacture these items comes from China and other parts of the world that is out of view from our watchful eye.

We are presented now with an opportunity I cannot ignore to make a positive impact in our world to reduce GHGs. Just as the smoke from our fires in our region spread around the world so does the pollution created from the production methods currently used around the world. I support Northwest Innovation Works and their project. Their project puts the town of Kalama and the State of Washington in a position to be a leader in creating cleaner resources with technology that is groundbreaking while creating a cleaner world.

If Northwest Innovation Works project hadn't been delayed these past four years, and when the Department of Ecology's best estimate should be believed we could have saved the world a projected 24 million tons of GHGs. I commend the Department of Ecology for their hard work competing their independent SEIS, which also proves North Innovation Works mission. Here I am now pleading with you to pass this permit to allow Northwest Innovation Works to start building this project.

We are tired of waiting and are ready to make a change that can be felt around the world while supporting our community. My husband and I want to leave our daughter a world that is better than it is now. One that not only has cleaner air but it's full of hope and opportunity.

Zach Theil

My name is Zach Thiel and I am a Kalama resident as well. I am a husband and a father and strongly consider myself an avid outdoorsman. Adding to what my wife said, I would also like to voice my support for the Northwest Innovation Works project and thank the Department of Ecology for their due diligence in their SEIS study. Please approve this project and let's get this bill. We are tired of waiting and we are tired of false stats, and we are tired of ignoring what science keeps proving time and time again, just being disregarded.

Climate change is real, and we need a meaningful action. In addition to the positive climate impacts this project proposes, we cannot ignore the positive impacts this company will bring to our economy and our community. I implore you, please approve the permits for this project. Thank you very much.

Michelle Trickey

Hi, my name's Michelle Trickey. I'm here from Seattle though I have family all over the country and I absolutely represent people affected really far from here. One thing that you should know about me is that I work for Amazon, so I'm not anti-corporate in any particular way. I've been working there for five years. I anticipate working there for another five. I really am worried about the corporate interests in the Northwest Innovation Works project and the way that they're skewing the way that we're looking at facts.

It's true that when you just look at the point of burning methanol is cleaner than burning carbon dioxide, but that completely doesn't look at the upstream leakage, which this report estimates at a far lower number than most other reports, to a point where we're taking conservatism to an absurd level. That means that we're underestimating the carbon equivalent impact of the methanol refinery by about tenfold. That really perturbs me as a person who works in corporate America and knows that our decisions need to be based on the best available data and that we shouldn't be stuck on what we were looking at five years or 10 years ago and need to be looking at the most updated information.

I care a huge amount about climate change as do most people. Two of my friends are having babies this week. The new mom is not far from my future as well, but this is not the right way to do it. If this is the best path forward that we have to offer our children, I really despair. I just like to let the Department of Ecology know that I thank you so much, but please do not accept this facility. Please adjust the methanol leakage rates.

Nancy Elbert

I was born and grew up in Longview, WA.

I do not believe the SEIS adequately addresses upstream pollution in the lifecycle study for the proposed Kalama methanol refinery. For instance, the refinery would increase the amount of natural gas moving through the current pipeline, and inevitably more pipelines (not just a short extension spur to the refinery) would need to be built once reserves are drawn down. (I resent this because by state law, new pipelines have to be paid by ALL ratepayers, not just the refinery "hog" that would be creating the need for new pipelines in the first place.)

Natural gas lines are known to have not insignificant leaks and even "smallish" sounding amounts of 1% - 3% escaping are extremely harmful for climate change due to methane being 50 times more greenhouse gas-producing than carbon dioxide. Don't forget also the harmful effects to people who are nearby. Infants and children do not have agency and cannot simply move away from the problem.

The natural gas feedstock is proposed to be sourced from fracking to take place in British Columbia, but in all likelihood that will not be enough and eventually it will also need to come from fracking in the Rocky Mountain States. Regardless of source, fracked gas is known to disturb bedrock, cause earthquakes, and most terribly of all: poison groundwater with chemicals that cause cancer, birth defects, miscarriage, and stillbirth. The SEIS does not adequately take into account the harm caused by fracking, especially because Life Cycle Associates, (hired and paid for by proponents of the refinery), carefully selected their statistics to paint a cheery but inaccurate picture of the long-term affects of the additional fracked natural gas that would be needed for feedstock to the refinery.

I ask that the following be taken into account when performing analysis of this proposed project: 1) climate effects of fracked gas; 2) climate effects of pipeline leaks (with realistic leakage rates) and 3) the many harms to nearby inhabitants where fracking is taking place and where there is leakage. If these three things are fully taken into account, you will understand why I oppose building this methanol refinery. Thank you.

Liam Doucet

My name is Liam Doucet. I am 18 years old and here on behalf of myself and my family who live in the city of Portland, Oregon. That said, I do hold a volunteer position at Historic Pearson Airfield in the city of Vancouver, Washington. I am here because I strongly oppose the plan to build a methanol refinery next to the Columbia River, and on top of the land indigenous nations call home and rightfully so. The threat that the facility will pose to the Northwest and its people is nothing short of catastrophic.

A vibrant ecosystem of animals and people both along the Columbia and even way up North, as far as the sailors see rely on the Columbia River to bring salmon, which is now at risk of extinction because of the lower Snake River dams. A methanol refinery built will end up sealing a deadly fate for all salmon either before or when the leak happens. Yes, I do mean when not if. Looking at the history of methanol plants and frankly, all chemical plants in this country, negligence, and abuse seems to be a common factor when a disaster happens.

Unfortunately, not every single worker at this facility will be competent enough to make sure all systems work properly. If I learned anything from what happened 36 years ago in the city of Bhopal, India it's that failing safety systems is a classic blunder that happens with almost all American-owned refineries. At least 16,000 civilians were claimed dead the night an American chemical refinery operated by American workers released toxic vapor into the skies of India when its neglected fail-safe broke. The people of the nations native to Kalama would be the very first ones to be hit by any spill or vapor release which will severely injure and kill thousands of them and eventually even kill or seriously injure a large American population only 30 minutes from the proposed refinery which my family and I are part of.

Despite the country I was born in supporting the finest military in the world, I doubt that they're willing to hand out any kind of modern treatment or protective gear to those who would be affected. To whoever is responsible for the creation of this refinery, there's no doubt that you won't provide for those people affected. You decided to build the largest refinery on earth next to these people and didn't even ask them which says a lot about how much--

>> Hi, Liam, you're going to have to provide the rest of your comments in writing and we'll go ahead and go over that information at the end of the hearing.

Don Steinke

After reading the comment from Cowlitz County, I respond as follows:

As I understand it, SEPA includes ALL impacts, there is no such thing as going beyond your authority in terms of impacts or scope.

The impacts of Kalama Methanol are not likely to be mitigated. There is no way to be sure the impacts will be mitigated. In fact, the proponent plans to mitigate only the impacts within the state. Say so in your SSEIS and reject the project.

Anonymous Anonymous

My name is Mark [inaudible]. My wife and I live here in Kalama. We oppose this project. We appreciate the opportunity to comment on the SSEIS. One of the long-term social and economic costs is the KMMEF and other fossil fuel projects are approved. We're at a tipping point best described by higher temperatures that are melting glaciers and ice packs changing how our earth reflects and absorbs light. We're seeing [inaudible] shifts that are changing how plants and animals can survive during extreme heat and cold weather, uncharacteristic of the geography. We're seeing circulation changes in the atmosphere and oceans bringing extreme conditions that our fisheries and aquatic plants cannot survive.

We're at a tipping point, and a slower rate of fossil fuel consumption is not going to push all the global warming. We must stop it now. We're living with the effects of fossil fuels consumed as far back as 100 years ago. The last time the earth warmed this rapidly was 56 million years ago. The framework for the economic analysis presented in section 3.4.5 of the SSEIS is flawed. It is focused only on the GHG emissions alternatives. It doesn't address their negative economic impacts on climate change, only the positive ones. It fails to address the following economic costs none of which can be considered positive environmental impacts.

The cost of fighting wildfires and subsequent disaster relief, the cost of lost timber and harvest as a result of wildfires, decreasing timber harvest as a result of hotter and drier weather, loss of commercial fishing revenue, directly or indirectly as a result of decreasing salmon, steelhead and shellfish harvest. State and federal disaster money is committed to, due to the extreme weather events and fishery disasters, repairs to public roads and utilities as a result of extreme weather events. I can go on.

>> Mark, I'm going to have to ask you to summarize your comments in writing and we'll go over that information at the end of the hearing.

Carrie Parks

My name is Carrie Parks. I'm a longtime resident of Vancouver who knows that 2020 is not an unusual year. This is the beginning of a new normal being caused by a fossil fuel industry which has spent years squelching cleaner technologies. The local tribes are against this plant. The Native Americans lived here for thousands of years without damaging the environment the way that white people have in only 172 years of European settlement. Maybe they know something, and maybe we ought to listen to them. We should deny this permit. I want to address some of the talking points I've heard from the other side.

Northwest Innovation Works and their supporters are cherry-picking the science they want, which is bad science. To tell us that we're ignoring science is ridiculous. You've heard from lots of legitimate scientists talking about the real facts in these hearings. You can observe the pandemics, fires, floods, hurricanes, droughts, and other effects with your own eyes.

The world scientists are almost unanimous in warning us that climate change is killing our planet, and us with it. We have to stop polluting. You're talking about it being a positive impact on the environment, polluting a little bit less than some other plant that may or may not be there. That's just ridiculous and insulting.

Dumping another million tons of greenhouse gases into the atmosphere every year for 40 years is not going to get us where we need to go. The factory will provide good jobs to the local community. That's a lot of what I hear people saying, but you are ignoring all the jobs you are killing, agriculture, tourism, restaurants, the local campground, fishing, hiking, the jobs destroyed by fires, floods, hurricanes, and ocean acidification. Those are jobs too. Those are also people that need to support their families. The choice that Kalama has is not between this plant and no jobs-

>> Carrie, we're going to have to ask you to summarize your comments. We'll go over that information at the end of the hearing.

Ituna Environmental Club

My name is Ryan Welch. I'm the President of Skyview High School's Chapter of the Ituna Environmental Club. It's now the largest youth-led environmental activism group in Southwest Washington. It's with an eye on the future of my generation, and of those to come, that I'm speaking today in opposition of the proposed Kalama methanol refinery.

Ecology's analysis has improved since the initial report, but it remains far too speculative. In addition to the uncertainty shown right up front in the sensitivity analysis, there is a huge unanswered question in the form of burning methane. Northwest Innovation Works originally stated that none of the methanol that their fracked gas facility produced would be burned for power. Now they've quietly flip-flopped, but they haven't provided a solid figure for how much might be burned. We can't afford any increase in co2 emission and the fact that we still don't know what the increase would be is damning. Now, in reading the EIS, it seems like the entire argument revolves around the world having two possible sources of energy, Columbia methanol, or worse sources environmentally, and this is a dangerous false dichotomy. We don't have to accept a future that's powered by fossil fuels.

If the supporters of Columbia methanol truly stand by it because of procedure environmental benefits, then why not go one step further? We can replace methanol in any form with renewable energy sources. Really that is the only choice we have now to avert climate collapse. This is not a complicated decision. It boils down to this. Will Ecology stand up for the health and well-being of Washingtonians or will they bend to the wishes of those who consistently mislead state regulators?

The climate crisis filled our skies with smoke not even a week ago. This project would only accelerate environmental damage to the stage. We're in a climate emergency, which means that half measures won't cut it. We demand a clean future, not a cleaner future. Ecology must reject Northwest Innovation Works' proposal. Thank you.

Kirk Leonard

Washington state will be locked into decades of additional climate pollution from the proposed methanol refinery.

The speculation this project could displace coal in China is not adequate justification for the known pollution that will be released into the atmosphere that will harm the climate and communities in this region.

If built, the Kalama methanol refinery would create an enormous increase in greenhouse gas emissions, moving Washington further away from achieving the climate goals for this state.

As a member of the Kalama community, I have a vested interest for the quality of life everyone can enjoy and be proud of. Please deny the permit.

I urge you, the Department of Ecology to honor your mission to Protect, Preserve and Enhance the environment for current and future generations.

State Representative from District 13

>> My name is Alex Ybarra. I'm a state representative from District 13, which is North Central Washington. Most importantly, I'm an advisor for the energy strategy Advisory Committee, which is tasked with meeting all of the 100% clean bills meaning we have a goal to limit the amount of carbon issued into the air in 30 years and the goal is set. Some of the things that we consider on achieving those climate goals is electricity generation, buildings, transportation, and manufacturing. This particular project would be part of the manufacturing goals that we need to meet in order to meet our climate goals over the next 30 years to keep the climate clean for our future kids.

At the end of the day, the goals will be met. If this plant goes up, the goals will be met no matter if the plant is up or not, but we will achieve those climate goals that have been set in legislature. Another thing that I'd like to also talk about is forest fires. I live in eastern Washington and every fire that comes across, most of them in the Cascades come directly to my hometown of Quincy, Washington.

We had smoke for a week and a half before there was any smoke in the Seattle area at all because the fires come to us. If you talk to the folks that live in Kittitas County, Yakima county in the fire areas, it's not due to climate change, it's due to forest management. We had $65 million set aside to do more forest management which was not passed by a portion of the legislature so there was no forest management to happen. It's forest management that needs to happen to stop the forest fires, not climate change. We're doing something about climate change with the 100% clean bills.

Regna Merritt

Please accept attached comments from Regna Merritt, PA and Thomas T Ward, MD

9 October 2020

Director Laura Watson
Washington Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503
Submitted via Ecology's web portal and email to laura.watson@ecy.wa.gov

Re: Comments on the Draft Second Supplemental Environmental Impact Statement (DSSEIS) for Northwest Innovation Works (NWIW) Methanol Refinery and Export Terminal

Dear Director Watson,

We write today to provide comments and relay our deepest concerns regarding the DSSEIS for the NWIW methanol refinery and export terminal, which would increase local and regional emissions of GHG pollutants, degrade air quality and harm the health of residents of Kalama, Cowlitz County and the State of Washington. The DSSEIS contains technical flaws which have the effect of minimizing the amount of GHG pollution to be emitted over 40 years. We believe the proposed facility presents a grave danger to public health and should be rejected.

I'm a retired Physician Assistant and have worked in the Emergency Department of a Regional Trauma Center and in Family Medicine. I participated, as did health professionals and many concerned Cowlitz County residents, in the development of the November 27, 2018 Health Impact Assessment (HIA) for the Millennium Bulk Terminal-Longview proposal. My husband is an Infectious Disease physician and Emeritus Professor at Oregon Health Sciences University (OHSU).

One of several goals of the HIA was to increase understanding among Cowlitz County residents about the connections between major development projects and health and health equity. Those who engaged in the HIA process are well aware of the documented health status of many residents of Cowlitz County and Kalama and the issue of **environmental injustice**.
http://www.co.cowlitz.wa.us/DocumentCenter/View/15492/MBTL-HIA-and-Apps---November-2018---WEB?bidId=

From the HIA (p. 25): "Health data shows that the people of Cowlitz County already experience rates of death and hospitalization for some diseases related to air pollution that are higher than the Washington state average, especially lung and heart diseases."

"When disease rates are higher than the state average in a community, especially when that community is experiencing social and economic conditions that contribute to these differences, it is considered a health disparity. If an additional risk is added, such as increased air pollution to a community that already has health disparities, it is considered an environmental justice issue. Cowlitz County and affected neighborhoods

are more vulnerable to the types of health risks associated with increased air pollution than other parts of Washington State would be."

p. 59

HIA Table 3 : **Mortality Rates per 100,000 Population for Selected Cardiovascular Conditions Related to Air Quality and Noise Exposure (2011-2015)**

Kalama's mortality rate for myocardial infarction is statistically significantly higher than the state rate ($p<0.05$).

p. 25

Deaths from heart disease in Cowlitz County were about 10% higher than the state average.

p. 25
Deaths from combined chronic lower respiratory diseases were about 52% higher in Cowlitz County compared to Washington State as a whole.

p. 31
Cowlitz County consistently ranks near the bottom of Washington counties in health indicators.

pp. 40 and D-10
"What is certain, if increasing global GHG emissions from human activities continues on a "business as usual path," residents in Washington State and Cowlitz County will experience far greater harm than if the level of GHG emissions at the global level are dramatically reduced sufficient to arrest the increase in atmospheric GHG concentrations and limit global warming to under 2^0 C."

My husband and I are acutely aware of the increased threat from exposure to GHG emissions and other toxic pollutants during production and transport of methane, during transformation of this fracked gas to methanol, during further transport and through controversial end uses. We cannot and must not ignore these negative impacts of new GHG emissions on human health.

We are concerned about potentially disastrous cumulative impacts – adverse impacts that cannot be mitigated by unenforceable voluntary actions offered by NWIW, a company that has made contradictory and false statements (regarding end uses of the methanol) to the State of Washington or potential investors or both.

Please consider this additional information from the 2018 Health Impact Assessment which demonstrates the risks of increased GHG emissions, climate change, related air pollution and environmental injustice to Cowlitz County residents**:**

Impacts on Health of from Climate Change due to project GHGs: Appendix D

p. D-1
The effects of climate change vary by location. In Washington State, some changes already observed include an average temperature increase of 1.30 F and a lengthening of the frost free season by 35 days (+/- 6 days) between 1895 to 2011, as well as more frequent nighttime heat waves.[7] Overall, glaciers and springtime snowpack has declined, with a 49% decline in glaciated area on Mt. Adams between 1904 and 2006.[7]

p. D-4
Projected future changes in Washington's climate include further decline in snowpack and a shift away from snow-dominant and mixed rain-snow dominant watersheds toward rain-dominant watersheds (Figure D-6). Changes in Washington's climate in the near-term and mid-term future will likely increase hazards to human health. Without preventive and protective measures, this will worsen a variety of health outcomes at the population level. Climate change is also expected to increase health disparities by disproportionately impacting those who already bear a larger burden of risk factors and illness, such as people with lower income, people with existing chronic disease, the socially isolated, those with a disability, immigrant and refugee populations who may have less English language fluency, and some communities of color.

p. D-5

Hazards to health that are climate-sensitive and likely to grow as the effects of global warming intensify include:

Heat-related Illnesses. Currently in Washington State, between 25 to 113 people are hospitalized for heat illnesses every year, about 50% of whom are age 65 and older.[10] Risk for heat-related illness, hospitalization, and death increases during extreme heat events,[11, 12] although hot weather safety measures can protect people from exposure.[10] Bethel and colleagues have predicted that more frequent heat waves in the northwest will increase the burden of heat-related illness such as heat stroke, and exacerbate chronic illness for people with cardiovascular, respiratory, and kidney disease. Other populations at risk include outdoor laborers, children, and people ages 65 and older.[13] Figure D-7 shows extremely hot days in Washington. Cowlitz County experienced more extremely hot days in 2016 than other parts of the state.[14]

Respiratory and Other Conditions Exacerbated by Pollen and Wildfire Smoke. Researchers expect the pollination season to lengthen and the production of allergy-causing proteins to increase.[9, 15] A longer and more intense allergy season would increase the burden of allergy and asthma symptoms. Drier, warmer conditions are expected to increase the number of acres burned by wildfire in Washington,[7] increasing the potential for exposure to wildfire smoke[13] and exacerbating heart and lung disease. Wildfire smoke events are associated with an increase in emergency room visits and hospitalizations for respiratory-related illness.[16, 17, 18, 19]

Vector Borne and Zoonotic Diseases. Diseases such as West Nile virus, Zika virus, Lyme disease, Hanta virus, and others transmitted by vectors (e.g., mosquitos, ticks, rodents) are influenced by climate's direct effects on habitat, the pathogen, the vector, the vertebrate reservoir host (e.g., birds and mammals), and their interactions with one another. Climate change is expected to alter the distribution of vector species and may increase the extent of suitable habitat for some vectors, thus increasing risk of exposure and disease. For example, M. Hahn and colleagues predict more suitable habitat in southwest Washington counties for the tick *Ixodes* spp (Figure D-8).[20] The genus *Ixodes* spp includes *Ixodes pacificus*, which carries Lyme disease, is the more prevalent species in Washington. (SW WA counties more suitable habitat for tick Ixodes.)

p. D-6
Water-Borne and Food-Borne Disease. Risks to water quality may grow as a result of increasing frequency of heavy precipitation events, flooding, and sea-level rise, as well as from drought and wildfire. Drinking water systems, including private wells, inundated with flood waters could affect water quality and increase risk of water borne illness or disrupt drinking water services. The risk of exposure to harmful toxins found in some types of algal blooms is also expected to increase. Harmful algal blooms in freshwater bodies pose risks to health if the water body is a source of drinking water. Toxic algal blooms can also affect health if people use the contaminated water for recreational activities like swimming. Marine biotoxins can contaminate shellfish and temporarily increase the risk of foodborne illness.[9]

p. D-7
Risks from Extreme Events. Power outages and other impacts of storms, flooding, drought, and wildfire can interrupt provision or access to critical services, destroy property, and displace people. The mental health effects of these traumas can have long lasting effects.[9] More frequent, more extreme, and more overlapping events are anticipated across the United States and in the northwest.

Mental Health Effects. Changes in climate are expected to take an increasingly large toll on mental health and wellbeing as a result of both increasing acute and gradual effects of climate change. Some populations are more vulnerable to these effects than others, including children, the elderly, people with pre-existing mental illness, the economically disadvantaged, the homeless, first responders, and those whose sustenance and livelihood depend on the natural environment. The threat of climate change itself has been shown to have a negative impact on mental health.[9]

p. 58
Baseline Health of Cowlitz County Baseline conditions in Cowlitz County and neighborhoods along the rail line assessed as part of this Health Impact Assessment were found to be experiencing health disparities. Health disparities are preventable differences in the burden of disease, injury, or opportunity to achieve optimal health experienced by socially disadvantaged groups. Examples of preventable differences in the burden of disease can be seen in the tables below. Some notable differences include:

- Some neighborhoods had more than double the rate of death from chronic lower respiratory diseases compared to the state average.

- Some neighborhoods and Cowlitz County had statistically significantly higher rates of death from heart disease.

- No neighborhood had a rate of disease or death that was statistically significantly lower than the state average for any condition assessed. Health disparities are experienced by socially disadvantaged groups. In Cowlitz County, these groups include a higher proportion of the population who have less than a high school degree, are living with a disability, are living in a mobile home, are unemployed, and/or are living in poverty.

- More information about the social and economic determinants of health for Cowlitz County and the neighborhoods near the rail line can be found in this Health Impact Assessment in Appendix E, *Population Characteristics*.

p. C-20
The health effects related to air pollution would more likely be experienced in people with pre-existing conditions, such as heart and lung diseases, respiratory infections, cerebrovascular disease, and diabetes, as well as in infants, children, pregnant women, and people over 65 years of age. Health data from 2011 through 2015 indicates the people of Cowlitz County and some neighborhoods that would have air pollution impacts in the study area, already experience rates of death and hospitalization for some diseases related to air pollution, especially respiratory diseases that are higher than the state average. This indicates the population of Cowlitz County and affected neighborhoods would be at even greater risk of experiencing health effects than other parts of Washington.

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We are very disappointed in the approach used by DOE, with technical flaws that appear to mask or ignore the burdens that will be placed on Kalama, Cowlitz County and the State of Washington should the project be approved. The projected GHG emissions are based on speculation and support of a worst-case scenario in 40 years. This represents a failure to consider that Washington may continue efforts to meet and exceed climate goals. Never has the American public been so aware of and concerned about climate chaos, the overlapping risks to air quality and water quality, forests and our health. There is a failure to consider a scenario whereby, on a national level, reasonable climate goals/GHG goals may be implemented during the next administration. There is a failure to consider the scenario in which China meets or beats its recently stated goal to be carbon-neutral by 2060.

We also urge you to consider an appropriate methodology that utilizes more robust measurements of methane release/escape from fracked gas infrastructure. Please use fly-over data, so as not to undercount dangerous emissions.

We face sufficient challenges to deal with existing sources of GHG gases. Decision-makers must not commit to massive new fossil fuel infrastructure that is guaranteed to emit at least 4.6 million tons of GHG pollutants each year for 40 years.

If this project is approved, a vicious cycle will be expanded and locked in:

- Increased GHG emissions
- Increased emissions of Toxic Air Pollutants
- Degraded air quality increases risks to the health of Kalama, Cowlitz County and Washington residents
- Increased risk of deadly forest fires in Washington
- Degraded air quality from forest fire smoke exacerbates heart and lung disease, increasing morbidity and mortality.
- Increased health risks, especially for vulnerable populations, result in worsening health outcomes for Covid-19 patients and/or victims of future pandemics

We must prevent what we cannot cure. Please do not approve this project, which would be the largest fracked-gas-to-methanol facility in the world. Please do not make a mockery of Washington's climate and public health goals. Please do not exacerbate health risks at this pivotal moment in our history.

Take action and help prevent catastrophic climate disruption that will harm the health and safety of Cowlitz County and Washington residents. We urgently and respectfully request that you reject the flawed sections of analysis for this project, reject the methanol refinery, deny the Shoreline Permit and protect the health of our communities, our climate and our precious Earth. Thank you for considering our comments.

Sincerely,

Regna Merritt, PA (retired) Member Advisory Board and Healthy Climate Action Team

Oregon Physicians for Social Responsibility

Thomas T. Ward, MD Emeritus Professor of Infectious Diseases

Diana Gordon

I think there is real reason to doubt that the methanol from the proposed Kalama refinery will be used to produce plastics. I fear that it, or a large portion of it, will be used as vehicle or other fuel instead.

The reason is straightforward. There are several methods of producing olefins and they are readily available. In 2016, for instance, eighty-two percent of the world's most-used olefin, ethylene, was produced by steam cracking of naphtha and ethane. Naphtha is produced by refining crude-oil, and ethane is a co-product of natural gas production, both tried and true technologies. Only 2% was from methanol.

I think that China will decide that it makes more sense to go with the cheapest methods and use the Kalama methanol for fuel. I doubt that they would build any new coal-to- methanol plants at this point - they have pollution problems as well as a climate plan to go carbon neutral by 2060.

Methanol burned as fuel produces more GHG's than using it to manufacture plastics: 2 CH3OH 3 O2 -> 2CO2 4H2O - so we get CO2 which stays in the atmosphere much longer than methanol and has long-lasting global warming effects. Added to that, methanol has only about half the energy density of gasoline and therefore about twice the volume of methanol would be used to go the same distance as gasoline.

Using part or all of this product as fuel would seem, then, that the Kalama refinery would really be a fuel refinery and should be referred to EFSEC and the Governor to decide if we want to dump this amount of GHG's into the atmosphere.

We cannot be sure exactly what the Chinese will do down the road. We do know, however, that, if they do not abide by their agreement, there is no Olefin Police Force to ride in to rescue the climate from the added and illegal GHG's.

The climate problems this year - uncontrollable fires, early hurricanes, a lingering and devastating drought to name a few and all caused or exacerbated by climate change - all signal to us that this is the wrong time and the wrong place for this refinery. It is our time and our responsibility to wrap our arms around Washington's climate goals. We must do what we can to make fossil fuels and greenhouse gases problems that we are actively making progress against.

Please deny the Shoreline Permit for this plant.

John Flynn

Department of Ecology
KMMEF-Draft SSEIS
In reviewing the Draft SSEIS for the proposed KMMEF methanol refinery I was disappointed to find no reference whatsoever to the negative impacts of ocean acidification from greenhouse gas emissions and CO2 absorption on marine ecosystems. These impacts include negative affects to commercial fishing, recreational fishing, aquaculture (oyster farming) and last but not least to the Native American tribal communities that depend upon the marine ecosystem for cultural and subsistence gathering.
In February of 2012 then Washington Governor Christine Gregoire convened the Blue Ribbon Panel on Ocean Acidification and tasked that panel to produce a set of recommendations to guide Washingtons response to ocean acidification. The results of the panels findings were submitted to the Governor on November 27, 2012.
A technical document titled "Scientific Summary of Ocean Acidification in Washington State Marine Waters" was created. This document was the foundation for the Panels report "Ocean Acidification:From Knowledge to Action, Washingtons State's Strategic Response".
On November 27, 2012 Governor Gregoire signed Executive Order 12-07 directing the Department of Ecology to implement the recommendations of the Panel, which listed as its number one priority the reduction of carbon dioxide (greenhouse gas) emissions.
In December of 2017 an addendum was released that expanded upon the original 2012 report by the Blue Ribbon Panel on Ocean Acidification. All of these documents can be found on the Department of Ecology website. They are an integral part of Ecology's mandate to protect and preserve Washingtons environment. Ecology must abide by the mandate given to them.
My question to Ecology is why is there no mention of or reference to the impacts of an estimated 4.6 Million Metric Tons of greenhouse gas emissions per year from the proposed Kalama methanol refinery and its effects on ocean acidification? The Department of Ecology was and continues to be involved in studying the impacts of ocean acidification from CO2 absorption resulting from greenhouse gas emissions. Therefore, it is only logical to conclude, that ocean acidification as a result of greenhouse gas emissions would be part of any analysis included in the Draft SSEIS.
I ask the Department of Ecology to not be derelict in their duty to include these impacts in their SSEIS. I am confident that if the Department of Ecology seriously looks at the negative economic and cultural impacts of ocean acidification to commercial, recreational and tribal fishermen and women resulting from the greenhouse gases emitted
from this proposed project they will categorically deny any and all permits for the proposed Kalama methanol refinery.
Do your duty and deny this project.
Thank you.

Sheri Jacobson

I urge you to reject this project. Annual emissions from the manufacturing process alone would add over a million tons of carbon pollution to our air. It would also emit hazardous chemicals like ammonia and nitrogen oxide. It will use government funds for a project that will hurt our environment instead of being used for something to help it. My home state of Oklahoma is wracked by earthquakes as a result of fracking. I don't want my adopted state of Washington to become another fossil fuel victim. Please stand up for the citizens of Washington and reject this project. Sincerely, Sheri Jacobson

Sheri Jacobson

I urge you to reject this project. Annual emissions from the manufacturing process alone would add over a million tons of carbon pollution to our air. It would also emit hazardous chemicals like ammonia and nitrogen oxide. It will use government funds for a project that will hurt our environment instead of being used for something to help it. My home state of Oklahoma is wracked by earthquakes as a result of fracking. I don't want my adopted state of Washington to become another fossil fuel victim. Please stand up for the citizens of Washington and reject this project. Sincerely, Sheri Jacobson

Lucy Pierce

I am a retired teacher from the Longview School District and own my own home here in Cowlitz County.

The proposed Kalama methanol refinery is a 2.1 Billion project ◆ That's Billion with a "B." By asking for a federal guaranty loan, NWIW, a Chinese-owned subsidiary, wants the U.S. taxpayer to assume ALL of the risk of refinery. What kind of position does this put us in if the Chinese later decide to slap a 25% tariff on U.S.-produced methanol in response to President Trump's tariffs on Chinese goods? What if other global buyers of methanol won't pay much as we assumed at the time of the proposal? We, the American taxpayer will have NO leverage with the Chinese and will bear the full cost of a now-useless refinery, road and dock improvements, pipeline extensions, etc. I also heard that up to 400 million dollars could come from the Washington State Public Employees' Retirement System funds, such as PERS and TRS (my teachers' pension). So if this refinery goes bust, that's an awfully big chunk of money for our public employee pensions to lose. I don't want my children and grandchildren to pay the price of bad decision-making on the part of our leaders today, and I certainly don't want my teachers' pension funds used to build a refinery that will increase the amount of greenhouse-gas producing methane that is produced in the world.

I would also like to know why it is that Washington State and County governments are offering approximately $143 Million in tax incentives without any "clawback" provisions written into the deal so that if NWIW doesn't come through (in providing the number of local jobs and pay rates that they have promised to our community), we don't have to honor the $143 Million in tax incentives. What incentive does NWIW even have to provide the promised number of jobs, salaries, etc. without a clawback provision? Other states and cities in similar positions have insisted on clawbacks... Why are our local leaders so afraid to do the prudent thing and demand them?

Lastly, the proponents of the refinery are making wild speculations about net climate benefits, because it assumes that China will use the methanol to replace dirtier coal. We have NO assurance that that will come to pass. We have NO way to measure whether the Chinese are in fact, reducing their usage of coal-derived-methanol. They have not made any concrete agreement with us that they will in fact replace any coal-derived methanol, and even if they did, we'd have NO way to enforce said agreement. Most likely, they will simply ADD this new supply of methanol to their current activities, not replace any "dirtier" form of consumption.

Russell Jacobson

Please reject this project. We need to be moving away from fossil fuels but this plant would lock us into fossil fuels instead. It would use an enormous amount of water from the Columbia and Kalama River aquifers just at a time when water usage and shortages is becoming critical. Toxic fumes from the plant will adversely affect the health of thousands of residents. These are only a few of the many negative impacts this project would have on Washingtonians. I urge that you not let this let this project go forward. Sincerely, Russell Jacobson

Brian Blake

Throughout my career, whether as a logger, an environmental specialist, or a legislator I've seen the people of southwest Washington work hard to balance their strong sense of community and pride they take in the natural beauty of our area with the need to promote more economic development that protects our environment. Today, with NW Innovation Works' proposed methanol facility at the Port of Kalama, we have the ability to strike the right balance between creating jobs and protecting our air, land, and water while making measurable progress in combatting climate change.

This project has been under intense review for nearly six years. The company and its regulators have proceeded with full transparency and the public has been meaningfully involved in process every step of the way. Like most big projects, this one has attracted some opposition that's part of the democratic process.

My friends in the progressive and environmental activist communities should take pride in knowing that their aggressive advocacy around this project has meant that we have all the facts to know that moving forward with this project is not just good for jobs, but good for creating a more sustainable and accountable system to measure climate change impacts and mitigate for them. NW Innovation Works' project meets the tests needed to move forward: we have all the facts, we know the impacts on our community, and we know that building the project will reduce the release of greenhouse gas emissions associated with manufacturing the products we all use every day.

The Department of Ecology's Second Supplemental Environmental Impact Statement details how building the Kalama methanol facility will result in a net reduction of 6 million metric tonnes of greenhouse gas emissions annually, which is equal to eliminating approximately two times the number of GHGs as the entire city of Seattle emits annually.

I have worked hard, on a bipartisan basis, with my legislative colleagues to ensure that the Washington State Department of Ecology's review of this project was both thorough and timely. With the just released Draft Second Supplemental Environmental Impact Statement, I think the Department has met those goals. After receiving comments and completing the response process, there should be no further delay in finalizing the analysis and issuing all necessary permits. I intend to continue to work with my legislative colleagues to hold the Department accountable in this regard.

While Cowlitz County has rebounded from the deepest parts of the recession to a certain degree, it has been left behind the economic boom that much of the state is experiencing. Many of the county's economic and social indicators lag behind the rest of the state, which can be traced to a lack of access to good, family-wage jobs.

Southwest Washington historically has one of the highest unemployment rates in western Washington. The latest statistics indicated that the county's labor force participation is substantially lower than the national rate and that average annual wages are well below the state and national averages. Too many Southwest Washington families live in or near levels of poverty. The problem is especially acute for children with far too many living in poverty. Southwest Washington has significantly higher rates of poverty for the same cohorts for the state as a whole.

This lack of opportunity and the stresses families face in Southwest Washington result in impacts to school readiness and other social determinants. As an example, less than a third (30%) of Cowlitz County children are assessed to be kindergarten ready when measured by the WaKIDS' six domains. This compares to 47% for the state overall.

Many project opponents who don't live in Southwest Washington seem to think that these statistics will somehow, magically get better on their own, or they ignore them. They won't get better on their own and we can't ignore them.

Jobs make a difference for communities. Cowlitz County does not have enough good paying jobs. We need to create more. NW Innovation Works will create the right kind of jobs for our community.

The project is estimated to create 1,000 jobs during construction, 200 direct permanent family wage jobs during operations, and 500 indirect and induced jobs. They will support $700 million in local spending on labor, goods, services and produce $21 million in annual salaries - a significant percentage spent at local businesses.

NW Innovation Works is committed to local jobs and has agreed to a Project Labor Agreement with the Longview/Kelso Building and Construction Trades, along with the full support of the Washington State Building and Construction Trades Council and the Cowlitz/Wahkiakum Central Labor Council. This means that local Trades people are guaranteed the first chance at work opportunities on this project. Local workers making a family wage translates into the investment dollars spent on this project staying in the community and supporting the local economy. Increase in apprenticeship opportunities for our local youth, unemployed or underemployed community members.

And NW Innovation Works has planned partnerships with Lower Columbia College, Workforce Southwest Washington, and the Cowlitz County Economic Development Council to establish a program for training and hiring permanent employees from the local community that will include full tuition and stipend for students who are accepted into the training program and full-time living-wage employment at the facility upon program completion.

NW Innovation Works is investing in the community. Increased local spending will grow small businesses, increase land and property values and enhance overall opportunity & quality of life for residents. And the project will generate much needed tax revenue. NW Innovation Works has neither requested nor received changes in tax law or special tax treatment to build in Cowlitz County. The company will pay an estimated $57.9 million in taxes during construction and $30-40 million in annual taxes during operations which will further enhance the quality of life for local residents and their families - New community facilities, enhanced community services and infrastructure & improved local schools.

These are meaningful benefits that cannot be substituted for by rhetoric or good intentions.

Climate change doesn't respect borders. It is a global issue and our response to it must be done in a way that recognizes we are all in this fight together.

The Department of Ecology's report confirms that we are in a time of large and rapid increases in

global demand for methanol. Nowhere is demand for methanol rising faster than in China. China consumes approximately 50% of the world's methanol and approximately 80% of the methanol China produces is derived from coal. The Chinese government has continued to promote efforts to use their abundant coal resources for high value industries, notably, the chemical industry.

If we don't help to meet that demand here – in an environmentally sound way – that demand will be met by someone else – probably in the Middle East, Russia, or China. That's not conjecture. That's a fact.

And what we know from the Department of Ecology report is that by producing the methanol in Kalama at NW Innovation Works' facility, we will reduce greenhouse gas emissions. If we let others do it, those emissions will go up. Why would we pick that? The answer is, we shouldn't.

We now know, from the highest environmental regulatory authority in the state all that we need to know about this project. We are a state with tough environmental standards. This project meets those standards.

Opponents should join project supporters in understanding the bottom line facts regarding the environmental benefits moving forward with this facility means and embrace the progress represented by the project. Efforts to further delay this project means two things: bad outcomes for the working families of southwest Washington and bad outcomes in our fight against climate change.

Stacy Neal

Thank you for your work to protect Washingtons environment and acknowledgement that previous environmental analysis of Northwest Innovation Works (NWIW) Methanol refinery proposal in Kalama, Washington have been inaccurate and inadequate.

This new Draft Supplemental Environmental Impact Statement represents some important improvements in evaluating the true climate impacts of this facility, including addressing the likelihood that methanol produced by this facility will be used as transportation fuel, despite deliberate efforts by NWIW to mislead your agency and the public otherwise. And while the SEIS has made some necessary adjustments in the methane leakage rates, the rates continue to be low estimates given the widespread underreporting of leaks. However, even with the unreasonable assumptions about the single-sourcing of gas from British Columbia, as well as the unrealistically low leakage estimates for that source, the analysis confirms that NWIWs proposed facility would be enormously polluting.

Despite these marginal improvements, the evaluation of potential mitigation and displacement contained in this analysis is misleading and concerning in its reliance on speculative and unenforceable assumptions. One can simply look to the impacts of this pandemic to see evidence of incredible uncertainty and volatility in energy market dynamics. It is dangerous to presume this analysis can accurately predict global fuel markets, technology developments, consumer behavior, or regulations for the coming four decades. Furthermore, the SEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework, nor does this mitigation address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that this projects impacts will be mitigated, and the urgency of climate change demands that mitigation should be the last option (after all other impacts are reduced) in order to address unavoidable impacts, not simply to maintain the status quo as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIWs proposed facility would become one of the greatest sources of climate pollution in Washington. It is simply unacceptable for Washington to build an unequivocally and enormously polluting facility based on speculative analysis and a faint hope of theoretical emission reductions. Ecology should dismiss the speculative basis that this project could displace even more polluting facilities, and instead should base its permitting decision on what is reasonably foreseeable and indeed, assured, about this project--that it would cause millions of tons of greenhouse gas pollution each year, for 40 years, and is profoundly inconsistent with achieving Washingtons climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIWs proposal to build and operate this dangerous methanol refinery in Kalama. We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Daphne White-Hall

My name is Daphne White-Hall, and I'm a native Washingtonian. I currently live in Lewis County. I'm a young professional and a student. I am very concerned about our economy and our environment, which is why I'm in total support of the Kalama project. I appreciate the review done by the Department of Ecology, and I believe it is very important for the department to proceed with this project. Right now we have an opportunity to build a stronger economy and to help our environment. Many times those issues are in opposition.

However, that is not the case with the Kalama project. Building the project will help a post-COVID-19 economy recover by providing over 1,000 jobs and 30 to $40 million in new taxes. That is outstanding. In addition, it will reduce global greenhouse gases by six million tons. As global demand for methanol increases, we need to have the project here in Washington State with the environmental regulations that we have using natural gas rather than Iran or Russia using coal without the same standards of environmental regulations.

We need to put this good science to work while benefiting our communities. Our families need real jobs and our region and State need real investment. Our economic problems were tough before and are getting worse with the COVID-19 crisis. We need to take action right now. I encourage the Department of Ecology to permit this project without delay. Thank you very much.

Daniel Serres

Please see the attached collected public comments gathered through postcards and online through our website.