

Appendix F: Original Comments

Part 2 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.

October 9, 2020

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

Submitted via Ecology's web portal

Re: Collected Comments on the Draft Second Supplemental Environmental Impact Statement for Northwest Innovation Works' Kalama Methanol Refinery and Export Terminal.

Dear Rich Doenges:

During the past month, Columbia Riverkeeper collected over 1,500 comments through our website in opposition to the Kalama methanol refinery. The comment signed by over 1,500 Riverkeeper members and supporters states:

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.

Sincerely,

To ease your review of these comments, we have attached the names of those who submitted this general comment to this letter. Many added short, individual, additional comments which are broken out in the table attached to this letter. I have also attached 185 individual postcard comments as well.

Thank you,

Dan Serres

Conservation Director, Columbia Riverkeeper

First Name	Last Name	Comment
Liz	Marshall	Don't you know that the CLIMATE CRISIS is EXTREMELY SERIOUS????? Don't you know that METHANE is vastly worse than carbon dioxide????? Don't you know that the world must RAPIDLY TRANSITION AWAY FROM ALL FOSSIL FUELS????? STOP this project NOW!!!
Glen Glen	Anderson Anderson	THE CASE AGAINST THIS EXTREMELY STUPID, RECKLESS, DANGEROUS REFINERY IS SOLID!!!!!!!!!!!!!!!!!!!!!! I IMPLORE YOU TO DO YOUR JOB -- and PROTECT OUR STATE'S ECOLOGY!!!!!!!!!!!!!!!!!!!!!! STOP DESTROYING OUR ENVIRONMENT, CLIMATE AND HEALTH!!!!!!!!!!!!!!
Glen Paul	Anderson Caggiano	It's time to focus on the future....look to sustainable, viable economic development & energy investments for all of the communities along the Columbia River. Stop this project.
Mimi Nicki Jean Marian Kat Barbara	Maduro Stoneman Johnston Carter Kerr Grafton	
Lascinda Lascinda James Ann	Goetschius Goetschius Tornatore Watters	We are the stewards of the Earth and must protect it and the animals
Chelsea	Coopershear	As someone who ran as The Climate President, please don't let this monstrosity go on in our state. Be the Climate Governor! (You know it's what's right)

Chelsea Richard	Coopershear Barker	The time is now. The time is almost passed. Let's create a better planet for our kids.
Jim	Clute	Current West Coast forest fires (with 350,000 acres burning within 100 miles of my home) provide a vivid reminder of the costs of global warming. Please support stopping this NWIW project and continuing your focus on Washington climate goals. Current West Coast forest fires (including 350,000 acres burning within 100 miles of my home) provide a vivid reminder of the risks of ignoring global warming. Please put a stop to this NWIW project and focus on meeting Washington's climate goals.
Jim Ian Isaac Amy Aaron Richard Joanne Mike Fuji	Clute Shelley Ehrlich Grondin Maples Swann Campbell Mercker Kreider	Mike Mercker
Norman Norman Thomas	Dick Dick Giblin	In particular, sufficient evaluation of the environmental affects of drilling, fracking and getting the gas out of the ground, have not been done. This releases a lot of gas into the atmosphere and this loss has not been sufficiently evaluated.
Molly	Patterson	Please do what you can to stop this. Life on earth is more important than money
Molly Eldon Joan	Patterson Broughton Smith	Please do what you can to stop this from happening. Life on earth is more important than money.

Thomas Jeanne	Keys Crowley	The state is on fire. Are you freakin' kidding me? What on earth is wrong with y'all? Please listen to the conservation and climate justice advocates demanding that you use whatever legal tools are in your arsenal to please shut down this refinery.
Aaron Thomas Will Ian Harold Ann Tom	Brown Brown Richardson Turner Watson Bryan Schwegler	
Tom	Schwegler	Thank you for considering this critical climate change and human health issue. Please do not risk us in Washington by allowing this plant. Our air is precious as the last weeks of extremely hazardous air has shown us. We count on you to protect us all, and our children and grandchildren.
Betsy	Hauge	Please do not risk us in Washington by allowing this plant. Our air is precious as the last weeks of extremely hazardous air has shown us. We count on you to protect us all, and our children and grandchildren.
Betsy Bethany Jodie Brian Debra	Hauge Cotton Zupancic Yanke Ellers	
Debra	Ellers	As a Washington resident who's vitally interested in the Columbia River Basin, its salmon, the Southern Resident Orcas who frequently forage around the Columbia's mouth, and stopping climate change, I'm absolutely opposed to this project.

Ken June Lynn	Margolis Elliott-Cattell Cardiff	Dear Friends, The catastrophic climate-related problems we are experiencing result from unanticipated consequences of investment decisions. Today, capital investments in carbon-based energy lock us in to the very technologies that are causing problems
Lisa Katherine	Manning Wright	The future is in renewable energy! The USA can be the world leaders to make a healthy planet and prosperous economy! Why waste time? We need to transition from oil and gas dependence that is destroying the ecosystems of our planet, ASAP!
Maradel	Gale	You have a say in what the Department of Ecology does. As a self-defined 'green' Governor, it is incumbent upon you to make sure this methanol operation never sees the light of day. We need to cut way back on greenhouse gas emissions, not add to them. Refusing to grant a permit for the Kalama methanol refinery is the only rational choice, and the science supports denial of a permit for this activity. Do the right thing here!
Maradel Philip J. Elizabeth	Gale Hyun Enright	
Jean Jean	Berolzheimer Berolzheimer	I urge you to stand up for the people and environment of our state! I urge you to protect the people and environment of Washington!
Jean	Berolzheimer	This is a project that would cause grievous harm to the environment and all its inhabitants. This project is likely to cause great harm to the environment and all its inhabitants!
Jean Mike Douglas les	Berolzheimer Allen Deaton roberts	

Andrea Jane	Stoner RN BSN CCM Kepner	This is a make or break time to protect the environment for our children and their future.
Jane Barbra Jonathan David Mary Lou	Kepner Vigars Mitchell Davis Zeis	
Heidi Heidi Marie Keith Tracy George	Cody Cody Garescher D'Alessandro Feldman Keefe	We need to stop this disastrous project, Governor Inslee. Youâ€™re the Climate Candidate. I am deeply disappointed that volunteers like me have to spend so much effort defeating this. Use you power and JUST SAY NO ALREADY. We need to stop this disastrous project.
Carl Patsy	Dominey Gilmore	Wash. Govenor Inslee ran for president on climate change. Approving this project would be a huge contradiction to that. Why should the U. S pollute our air to make methanol to send to China so the y can sell plastic back to us? Think, make, buy Am
Faith	Malay	
Roger fay Rebecca S.	Rocka forman Phrathep Smith	Please, protect our indigenous people, our environment, the future of our children. The EIS is flawed. Environmental damage estimates for Washington and Oregon are factually based. But the analysis of world effects is rooted in future supposition and assumption. Fact and wishful thinking are not equal.

Danielle Robert	L'Ecuyer Lindberg	STOP THE MADNESS!!! What a misnomer to have the word innovation in the title for a company that has no ability to innovate. This is quite frankly a power grab, a project designed to benefit a small cadre of people who place profits over people.
Robert Robert Steve Steve Steve Jonel	Lindberg Lindberg Erickson Erickson Erickson Stahr	You're doing a great job, Jay! Keep it up... Steve Erickson Steve Erickson White Salmon, WA If not for us...do it for the kids... Thank you!
Linda	Studley	Now is the time to address fossil fuels. We can't give lip service to the environment and continue down the road to apocalyptic climate change. There comes a time when talking needs to be replaced with action. You cannot give lip service to the environment and its impact on future generations and then build infrastructure supporting fossil fuels. One either joins a side with or without. It's time
Linda Sarah	Studley Prowell	We are experiencing the most devastating wildfires in history, in large part due to history. We can't afford to burn more fossil fuels. Plus the Columbia Gorge is one of the great treasures of our region. Let's protect it with integrity. Thank you
Francine t	Chinitz bell	As earth faces disaster, Fossil Fuel wants to accelerate the race to end our children's futures by foisting more "clean gas" on us through fracking. There's nothing clean about it. Fracking poisons water, fossil fuels destroy life in so many ways.
Barbara Querido Judy	Pikus Galdo Wyeth	

Erin	Chavet	Erin Chavet
Nina	French	I am disgusted by this proposal. The Native American Community needs to be made a priority, not Corporations.
Nina	French	
Nina	French	Are you kidding me? Who wants this in their back yard?
Deborah	Kramer	
Marquis	Mason	I have three generations of family currently living right near Kalama in Longview. They MUST know what risks are being taken on their behalf when they not ability to impact the outcome of this decision. You need to be a leader for the entire state.
Marquis	Mason	
Diane	Daiute	
Iris	Rochkind	
Theresa	Sullivan	
Lev	Tsy-pin	
Rebecca	Canright	
Joey	Cole	
Alicia	Liang	
Russ	Zielger	
john	pasqua	no methanol factory here.
john	pasqua	No oil exploration here.
john	pasqua	Dump all fracked gas .
		We all in the United States and throughout the world need to stop using all versions of fossil fuel, especially fracked gas and methanol. They create pollution in the extraction, the shipping and the burning and are destroying our planet.
Georgenne	Ferdun	
Dale	Walker	
Nancy	Corr	
Nancy	Corr	Please donâ€™t allow the huge amounts of fracked gas into this beautiful town on the Columbia River. Stop the methanol plant

Dena	Turner	I live in Portland. Kalama is my backyard. I strongly oppose increased air pollution, risk of fracked gas spills in our waterways and on our land; risking drinking water, fish, wildlife & a livable planet. Don't lock the Pacific NW into CO2 emissions
Dena	Turner	
Tiffiney	Oleyte	I have asthma and living in Portland Vanvover Valley during the spring and winter months cause invesion that causes air to hang and pollute our city. This severely impacts my ability to breathe. Having a terminal that could worsen air quality is a NO
Randall	Webb	
Randall	Webb	We must keep it in the ground if we are to save the planet. This is a horrible plan to move forward with this refinery. It is unnecessary and risky on a valuable waterway for salmon and other fish valuable to our region.
Laura	Zerr	
Todd	Clark	
Ji	Mun	
Ann	Cordero	Fracking is environmentally disruptive and causes water pollution. The use of methanol in either plastics or fuel would aggravate current pollution problems. And the carbon dioxide emissions from this plant would continue to fuel climate change. Stopping this is especially necessary to begin putting a halt to China and other countries treating natural resources in the USA as a colony from which they can extract goods. End the extraction economy.
James	Overholtzer	
Tim	Duda	
Bill	Robison	Hi, I want to let you know I oppose this project. After they took out Trojan I hoped to build on land I own in Rose Valley but this would kill that plan. Global warming is a huge problem and we need to address that, I know we can count on you.

Bill Leslie	Robison Spurling	I bought acreage in Rose Valley years ago. I don't want to be downwind of this facility, that is the personal side. We do not need to encourage fracking or plastics production, global warming is for real we need to stop it, not encourage it.
Leslie	Spurling	The last thing we need is more pollution. Fracking is environmentally disruptive from the moment the drill bites into the earth until the end product is "refined" and burned off. Stop it here: not welcome!
Dirk	Rogers	We are consuming water, land, air that isn't toxic yet as if the consequences mean nothing . It's pathological. Now is the time to show respect for local citizens and our environment. Allowing corporate industry to pollute our water and air is unacceptable.
kim Kate Amy	Maun Ketcham Hansen	
Margo	Miller	I'm concerned about the environment throughout the world and am appalled at the flagrant abuses we humans inflict upon it. These abuses destroy, at the least, quality of life and, at the most, the lives of all creatures, including humans.
Judy	Fairless	Protect our air and water. The refinery endangers the environment we all depend on.
Judy	Fairless	Reject refinery. Protect our environment. Climate change is real and it is now. Our lives are at stake. There is risk of pipeline rupture and spill. Please put the health and safety of the populace ahead of private profit for polluters. Pipelines run through areas where people of color and the poor live. This is an environmental justice issue.
elyette Tiffany Evelyn Ken	weinstein Dodge Kochanowski Humke	

Brian
Carolyn
Virginia
nancy
Joanne

Ainsley
Pettis
Jastromb
riggleman
Walters

Itâ€™s unthinkable with the fires we have now that we would add another huge source of climate change to our world. Please letâ€™s stop it!!!! Thank you. Antonia

Antonia
Marjorie
Alexis
Alexis

Forster
Nafziger
Ostrander
Ostrander

Please help protect our state and more importantly, Earth.

Lon

Dickerson

We must sharply reduce our GHG emissions ASAP, not lock in future fossil fuel use for decades. Methane is even worse and driving up the demand for fracked gas and methane pollution is unacceptable. Use your executive authority if necessary. Washington mandates 100% clean energy by 2045. But this project would increase our greenhouse gas emissions by 1 million metric tons/year and lock in fossil fuel use for decades. Eliminate the sugarcoating - provide honest conclusions in the SEIS.

Lon
Edward
Alaine

Dickerson
Mills
Borgias

Elana

Carpenter

PLEASE JAY!!! You can do it!!! STOP THIS CRAZINESS!! SwWash DOES NOT NEED THIS POLLUTER!!! Absolutely a Republican move to pretend 200 jobs is worth it. Those of us educated KNOW we do not want this beast! (I continue to support you governor!) Our Sw Washington area DOES NOT need this China based plant to process methanol to ship to China to make plastic to send plastic crap back to the USA!!!! We MUST CONTINUE TO FIGHT FOR CLEAN AIR/CLEAN EARTH!!! PLEASE PLEASE Stop this beast !! Letâ€™s do this Jay!!! Block this monster from sww!!! Letâ€™s let intelligence win and not the willfully uninformed! ðŸ’?

Elana

Carpenter

Elana

Carpenter

Elana	Carpenter	Jay: thank goodness youâ€™re a champion for intelligence and we are hoping you can stop this “ething” being promoted for SW Washington. Washington state DOES NOT need this plant to kill more air around here on the river for chinese plastic. ðŸ˜¡ This is embarrassing to the intelligent and ecologically informed citizens of this area of the state. Stop the crazy and do not support this non beneficial “ething”. Thank you.
Elana	Carpenter	Thank you for the great job you are doing presently. Keep up the good work.
Gregory Penelope Dan Georgeanne	Ellsworth Lichatowich Sherwood Samuelson	
Dell Tammy	Goldsmith Smith	I'm sure you will see and join me to oppose this dangerous and damaging project. No matter how many short term jobs it might produce the damage to our climate, air, fellow creatures and our own air could not possibly be worth it.
Susan	McRae	The devastating effects of global climate disruption are undeniable. At this point, delay in addressing these serious problems is almost as bad as denial. We cannot continue building fossil fuel infrastructure that will keep polluting our planet.
Susan clinton Madeleine	McRae burdette Sosin	The devastating effects of global climate disruption are undeniable. At this point, delay in addressing these serious problems is almost as bad as denial. The longer we continue 'business as usual,' the exponentially more expensive it becomes.

Pat	Wasp	<p>Please consider how such a project will effect not only the near term but the long term health of the Columbia River Estuary. We need to stop supporting infrastructure that promotes carbon consumption. What will your personal legacy be?</p> <p>Please, Governor -- Say NO! Climate change is advancing much faster than expected. It is appalling that this project is even being considered. Thank you, Peggy Bruton</p> <p>With scientists warning that climate change is proceeding much faster than previously anticipated, I find it bizarre that such a project is even being considered. The switch to clean energy can't wait!</p>
Elsa	Bruton	
Elsa	Bruton	
Rachel	Unger	
Karl	Koessel	
Laura	Nowack	
Todd	Stewart	
Jean	Svadlenka	<p>As a resident of the Pacific Northwest, and a concerned citizen, I urge you to deny the Kalama methanol plant proposal to ensure the future of our climate, our lands and wildlife, and our posterity. This plant will cause more harm than good.</p>
Carol	Becker	
Alexander	Ing	<p>Please do not allow this refinery to be placed in Kalama! So destructive. We need to protect the rest of our planet.</p>
Joan	Berinstein	
Rich	InLove	
Sarah	Lombardi	<p>After experiencing unprecedented wildfires in OR the past week, & simultaneously seeing new sheets of ice caps melt into the sea, it is increasingly apparent the only conscionable course of action is swift and drastic change to curb climate change.</p>
Jorge	De Cecco	

Rose
Kevin
Warren

Dallal
Gallagher
Kronenberg

The fires in the Pacific northwest are proof enough of what we are all heading in to. Please stop this craziness, that puts profit before peoples' lives.

Warren

Kronenberg

You're our neighbor in Olympia. Please stand up for your love of the environment and deny this permit. Just like you're trying to save a little bit of the West side for your child and the heron, you can save our planet from more pollution.

Our quality of life here in WA is inextricably tied to the vibrancy and health of the natural environment. There is no going back when that are irreversibly altered and affected. Our precious natural surroundings are our treasure, not to be defiled.

Alan
ken
Nikki
Brenda
Victoria
Matt

Cook
gunther
Jones
Michaels
Mansfield
Emmer

As a life-long Washingtonian, mother and grandmother, I encourage the Dept. of Ecology to REJECT the NWIW proposal for a fracked gas-to-methanol refinery in Kalama. Resulting pollution and greenhouse emissions problems would be a KALAMITY.

REBECCA
April
Albert
Jessica
Dominic
Bowdie
Garrett
Jeff

CASTILLEJA
Atwood
Gamble
Kelley
Petoud
Jaime
Jones
Kulp

Please don't be complicit in a crime against your own children.

Tracy	Ouellette	Please consider our responsibility to future generations to mitigate the permanent changes due to greenhouse gases. Leadership owes some hope to our children and grandchildren of inheriting a healthy planet.
Tracy	Ouellette	
Georgia	Kessi	
Joan	Thompson	The climate crisis has never been more evident in the northwest than during the recent/current wildfire storm. It is time to stop pandering to industry and act responsibly, for the sake of the people living in this region and for the entire world. It's way past time to stop destroying the earth for short-term satisfaction of needs and invest in our collective future through focus on renewables. NO MORE FRACKING. I oppose this refinery!
Deborah	Brown	
Jill	Boyer-Quick	
John	Teevan	
Kristina	Psaris-Weis	
Randy	Hauth	This proposed project jeopardizes all the world's citizens, by establishing major infrastructure for continued use of fossil fuels, which would exacerbate global warming and climate change. Reject it for the sake of coming generations.
margo	wyse	
Estelle	Voeller	
L.	Fielder	
Jessica	Rojas	
Erika	Balbas	With increased wildfires, adjacent to urban areas, in relation to this refinery- the cumulative risk and collective impacts are too high to allow this project to proceed.
BC	Shelby	
Marianne	Corona	
Stephen	Dutschke	
Dahlia	Wisner	

PLEASE!

Sheila EILEEN	Dempsey MASSEY	
Eugenia Eugenia Lisa	Fontyn Fontyn Barrett	Please keep our air and waters clean! Eugenia Fontyn Ridgefield, WA Eugenia Fontyn Keep our air and waters clean!
kim Morgan Mauria Phebe Alyson	davis Macconaugha-Snyder McClay Schwartz Provax	As our forests burn, we cannot ignore the urgency of climate change around the globe. It is time to be proactive and end fossil fuel extraction and use. Our grandchildren depend on it!
Tamara Amy Richard Sarah Rebecca	Westbrook Roberts Kolber Terry Field	You cannot buy a healthy living environment. You cannot buy time! It's time to put our focus on healing our earth. A healthy earth is a healthy humanity.
Joan Florence Janice Erik	Spiering Harty Wilfing Horngren	We in the NW must do all we can to mitigate climate change. With wildfires becoming ever more frequent and devastating, we have our work cut out for us in combatting human causes of climate change. The proposed refinery adds human caused pollution. This would adversely affect many Washington residents. Please do not go forward with Kalama methanol refinery!

Larry Jennifer Christi Paul	Winther Westra Dillon Borcherding	NWIIW has not been clear with us from the start! First methanol for plastic and will now be used as gas for cars too! China's NWIIW's Fracked gas to methanol is not reducing pollution, it's simply moving it to our side of the Pacific. No Thanks!
Frank	Marre	Thank you Governor for championing clean energy and stopping future contributors to global warming and pollution. As a doctor and preventive medicine specialist, I know first hand how important your work is to human and global health. Thank you
Frank	Marre	As a doctor, I know first hand how harmful this pollution is to human health as is global warming. Please don't let our state become a contributor to this human health and global crisis. We have to transition to renewables. This methanol business is just doubling down on conventional fossil fuels. Do not proceed.
Jeremy Joann Cathy	Fields Koch Bledsoe	
Brian	Belet	Fracking is a short-term endeavor, and its long-term environmental damage far outweighs the energy extracted. Several states are already experiencing the negative consequences of this practice. The state of Washington needs to avoid this fate.
Debbie	Tomasovic	As you painfully know, we are long overdue to make change to our carbon emissions production in order to turn the tide of climate change. Please support the prevention of building yet another source of our climate change crisis.
Debbie Suzanne	Tomasovic kruger	It is long past time that we took action to reduce carbon emissions that are creating our climate change. Fires all over our region are a humbling reminder that we need to move swiftly to curb the tide of climate change.

Jon
Melinda
John
Rebecca

Hager
Hutcheson Horn
Filippelli
Kendall

We desperately need to reduce carbon dioxide levels from the current 450 parts per million to 350 parts per million before it is too late. Time is running out. The NWIW proposals takes us in the wrong direction. Please save future generations now.

Melvin
Amy
JoAnn

Mackey
Heyneman
Margo

Thank you for considering this important issue that would negatively impact local residents and our beautiful and fragile environment.

Jami
Jami

Hefren
Hefren

Thank you for your attention to this very important matter.

Thank you for giving this careful consideration. People in Kalama and the surrounding area, such as Castle Rock where I live, do not want this refinery. It will do irreparable harm to the environment and consequently our lives.

Jami
Linda
Maryellen

Hefren
Alstad
Redish

At some point humans will either wake up or wait a little longer and become extinct. And allowing any... let alone the world's largest... fracked gas-to-methanol refinery to be built is not being asleep... it's being in a coma. WAKEUP!

John

Hendry

Just say no! No to further pollution. No to further carbon in the atmosphere causing more climate chaos. No to investing resources in a technology and product that is in its last days. The future is in renewables not in gas and methanol.

Sandy
Melissa
Virginia

Polishuk
Suarez
Davis

Samuel	Taylor	Investing in fossil fuels today is throwing away tax-payer money. It's so much smarter to be investing in clean energy. Please consider the consequences in the next several years. Sincerely, Bonnie Taylor, PhD
Samuel	Taylor	Investment in other than clean, renewable energy is simply misguided at this time. Sincerely, Sam and Bonnie Taylor
Samuel	Taylor	There are so many other good, (climate-friendly) options.
Amanda	Ferguson	
Don	Stephens	For years I windsurfed at Kalama when the northerlies were favorable. This project will interfere with this enjoyment, not to mention the environmental and rail impacts. This refinery does not belong here!
Don	Stephens	
Sarah	Stewart	
Patricia	Jerrells	We have enough to contend with enduring and stopping the climate disasters that occur naturally without having to put up with man made pollution. Please protect the Columbia River and the citizens of Washington who deserve clean air and water.
Patricia	Jerrells	We have enough to contend with enduring and stopping the climate disasters that occur naturally without having to put up with man made disasters or contamination. Please protect the Columbia River and the citizens of Kalama and impacted areas.
James	Milling	
Maja	Haloway	Please continue your support of the keeping the Columbia River environment healthy and safe for all of us. We do not need this dangerous refinery on our river!
Maja	Haloway	I am registering yet another protest against the proposed methanol refinery. The Columbia River belongs to all of us. I am against allowing a large refinery that benefits businesses in China and a few selfish American companies at our expense.
Teresa	Lyman	

Pat	Rucker
Donna	Knipp
Marianne	Eddington
Robert	Rossi
Regan	Fisher

As Oregon burns like never before, this proposal must be rejected. Thousands of new wells & infrastructure will be built. EPA - over 1 million in US, UN - over 3 millions worldwide - wells leaking methane Private profits are the only ones to benefit.

Carol	Jagiello
Mike	Seyfried
J	Kelly

Please donâ€™t allow this Fracked gas to methanol Refinery NWIW

Jill	Callahan
------	----------

Please Do Not allow this refinery, NWIW, that produces the very dangerous methane gas, to be built here in our Southwest Washington region! It will pollute our area and beyond! It will use a huge amount of our water source, the Columbia River.

Jill	Callahan
Cheryl	Trosper
Stacey	Rohrbaugh
Terry	Johnson
Sarah	Collmer
Joan	Rothlein

No to a fracked gas to methanol refinery in Kalama. It will help fuel climate change and keep us Americans dependent on fossil fuels instead of sustainable energy sources.

Bill	O'Brien
Nina	Sackett
Chris	Drumright

Do NOT approve this refinery on the Columbia River! It will be the END of the salmon!

Lynn	Dawson
Vikki	Nelson
Janice	Karpenick

Anthony
jeffrey
Mary
Mary Ann
Lyle
Luan

Mehle
sanders
Shaughnessy
Jasper
Austin
Pinson

Pipelines leak, and methanol is toxic to humans AND wildlife. This is an environmental disaster and an ecological nightmare in its entirety. Please do not allow the building and operation of such a disastrous industry.

Donna
Nathan
Michael
Scott
Jamie
Jennifer

Newman
Baker
Wilson
Species
Shields
Nitz

Kalama should not become a sacrifice zone for fossil fuel refining that will contribute to air pollution and climate change. Allowing this major fossil fuel infrastructure to go forward is at odds with Washington State's climate commitment.

Jenny
Cindy

Holmes
Stein

After the fires that devastated the West Coast, our air quality, our forests and our homes, there is no time to waste. Please oppose this pipeline, and the resulting carbon release. Please. This is our one home.

Krista
Amy

Cushman
Orem

We have only one planet, can we please do everything possible to protect it? Rather than dirtying the air we breathe let's do what ever it takes to protect this important finite resource.
As someone from Kalama I can tell you we do not want this in our area. Thank you

leslee

brooks

tom
lonna

smith
richmond

sue	colucci	
Henry	Roller	
		I would personally be devastated if this project goes though. I want our state to be a leader of the future, investing in clean energy instead of big polluters.
Henry	Roller	As a lifelong resident of the Pacific Northwest, and a Washington state tax payer, I implore you to listen to our concerns. As not only a national, but global leader of climate change prevention, this must be stopped, for all of us, and our futures.
Natalya	Johnson	I live in Kalama, within site of the proposed methanol polluter, and I urge you to stop another source of climate change. Please help.
Steven	Wright	
Carol	Patton	
Christie	Sanders	
Heather	Jolma	
Gerald	Johnson	
Sophia	Reinhardt	
		Please, please, do not authorize contributing further to destroying the environment. We are learning what we can do with wind and sun--and leave our Earth more intact! Thank you. Christine Weber-Kearney Portland OR 97216
Christine	Weber-Kearney	
Sammy	Low	
Craig	Skinner	
Tom	Tripp	
Solveig	Gustafson	
Eveline	Tapp	
		Methane is so bad for our already polluted air and climate, as is the water-polluting fracking used to mine the gas for its production. I am so worried for our children and grandchildren over the added pollution this proposed plant would contribute.
Jean	Aslakson	

Jean	Aslakson	I am so worried about the many ways this plant would add to the heavy carbon burden our earth, skies, waterways, and climate are carrying from fracking & burning of fossil fuels, especially methane which is many times worse for our environment.
Steve	Knoll	
Stan	Isley	
Krista	Reiff	
Perry	Weber	
Perry	Weber	The Weber Family I am in Portland, OR where I am sick from breathing toxic hazardous air for the last week. I cannot believe, knowing that the devastation we are living through is caused by climate change, that you would even consider another fossil fuel project. I may be a resident of Oregon, but this proposed refinery would hurt all living beings in the Pacific Northwest as well as the world. Climate chaos is upon us. We cannot afford one more step in the direction of this kind of dirty energy! NO REFINERY! Fossil fuels are contributing to climate change and polluting the natural resources of my region. My children and I need clean air and water and a safe home, we support green jobs and renewable energy, not the NWIW's archaic Kalama Refinery plan.
Anna	Fritz	
Anna	Fritz	
Jean	Rosenbalm	
William	Ryerson	
Brian	Baltin	
Bonnie	Mitchell	
Julene	Weaver	
Debra	Moser	Every opportunity we have to reduce emissions must be taken. In regards to new facilities the solution is so very simple. Don't build them! It's a no brainer!! Please do the right thing here.
Bettina	Anter	
Karen	Ireland	
Chuck	Gehling	

Bill Hinman

NWIW's dangerous project would set our region back decades in the fight against the climate crisis. Now, more than ever, we need to be ramping down our fossil fuel consumption and preparing for a just transition of existing infrastructure.

Elijah Cetas
Ann Atwater

It's been proven time and again that sooner or later projects involving fossil fuels eventually fail. And when they fail, they fail in a huge way. The risks far outweigh the benefits. Let's invest in renewable energy instead.

Jef Gunn
Paul Blackburn
Kelly Kirk
Colleen Weir
Forest Shomer
JoAnne Metzler
Cheryl Gavin
Jessaka Shroy
Christina Tseu
Howard Wade
Rye Rayne
William Crawford
Annie Richardson
Kathy Bradley
Deanna Owen
Carrie Swank
Letitia Tarver

Kristin Conrad-Antoville
Elizabeth Powers
Georgeanne Delahanty
Alan Bartl

As a survivor of the Oregon Wildfires of 2020, I thank you for your consideration.

Cathy	Gunstone	Please don't agree to contribute to our current climate problems for short-term gain. There are more and better ways to create sustainable jobs in this area. C'mon, please. Let's do something smart instead of moving ahead with this refinery.
Jeanne	Puerta	
Julia	Allen	
Josh	Garrido	Saving the planet from our filthy habits is imperative for any type of human survival. The rush to kill our planet is abominable. If something is not done now, the Earth will not support any life of any kind.
Josh	Garrido	
Frances	Parson	
Terry	Hansen	Delaying addressing climate change is almost worse than denial. We cannot continue investing in fossil fuel infrastructure that will poison our environment for decades. I approve of this message and apologize for the grammatical error in the third sentence which should read,'NWIW misled your agency' past tense rather than present tense.
Terry	Hansen	
Bob	Shippee	
Linda	Avinger	
Blake	Garner	
Eric	Adman	
Kellie	Smith	
Teetle	Clawson	
Ellen	McCann	
Jane	McGraw	Thanks for all you are doing!
Rod	Tharp	
Robert	Bresky	
Kenneth	Deffenbacher	
Karen	Pickering	
Don	Young	
Don	Young	

jill	Wyatt	this dirty industry must be shut down - support the Green Revolution I beg you to please stop this proposed methanol refinery. It would be disastrous for our climate and local people. Also, this plant is Chinese owned and does nothing to benefit the American people. I say NO! Please support us in this fight!
Tina	Wells	
Tina	Wells	
Vanessa	Hartman	
Donald	Kiesling	
Deidra	Smith	
		Green energy is a much more sustainable way to provide jobs to Northwesterners. There is no good reason to go forward with such a project, which threatens our environment needlessly!
Jean	Brodahl	
Don	Thompson	
		This would certainly appear not to be good for any of us, whether fish or fowl, as the saying goes.
John	Wienert	
Lawrence	Magliola	
Meaghan	Stuke	
Esther	Garvett	
		Methane is a long term danger. We can no longer establish fossil fuel infrastructure. We have no time for "bridge" fuel. Money must be spent on the future and not line the past. This would be a disastrous step in the the midst of our climate crises.Please stand up for our air,our water,our disappearing wildlife.It's up to us.WE who love the northwest must do everything in our power to preserve it. Fracking gas and creating methanol is old technology that contributes to climate change. Don't add more pollution to the lower Columbia River region. Please do this for all of us in the PNW! Please no greenhouse gas refinery
Jill	Paulus	
Lisa	Caine	
Teresa	DeLorenzo	
Helena	Wald	
Jeff	Brady	

Jeff
joshua
Elizabeth
Peggy J.

Brady
paterno
Roberts
Printz

I am a Californian that has traveled to Washington on many occasions. I have appreciated the beauty and ecological diversity of your state and I feel I must speak up to protect that ecological balance. Please stop this horrific project.

Barbara
Barbara

Harper
Harper

I am a concerned California resident that has visited the State of Washington many times. I have always appreciated the beauty of the state and the governor's positions on the environment. I strongly urge that this is researched and rejected.

Barbara

Harper

The fuse is lit on this total conflagration bomb hovering over the entire West coast of this hemisphere . The Climate Fires we have/are suffering is a small foretaste of what is coming for all of at least seven states plus British Columbia. Wake up !

David
Dana
Garrett
Kevin
Howard

Medford
Bleckinger
Bennett
Silvey
Cohen

One of the easiest...and most effective...ways for the U.S. to become a better player in the global fight against climate change/global warming is to STOP THE EXPORT OF FOSSIL FUELS FROM THIS COUNTRY!

James M
Rebecca
Kristen
Saphira

Wallrabenstein
Reynolds
Hernandez
Rain

Duncan
Nancy

Baruch
Cushwa

Have you not noticed all the climate fires? Now is the time to bring fossil fuel extraction to a full halt. Right now.

Nancy	Cushwa	<p>This refinery is INSANE.endangering lives and the environment to send poisonous gases to China to make Plastics (another polluter). We are destroying our earth for GREED! How stupid !!!!</p> <p>The earth is at a tipping point! We no longer have the time to allow fossil fuels to create more greenhouse Gases nor do we want more plastic in the environment Which this methanol would create in China. There is not one good thing about this .</p>
Nancy Holly	Cushwa Bard	
Holly	Bard	I live a short distance from the proposed site and I can assure you that YOU wouldn't want to live close to a fracked gas-to-methanol refinery.
Ron	Ennis	Climate saving is critical.
Ron	Ennis	Equal rights for all
Ron	Ennis	Clean water is critical as is stopping climate change
Laura	Herndon	
Chris	Sullivan	
Steven	Lindstrom	Show the world how it's done.
Steven	Lindstrom	
Ann	Tyson	<p>Dear Gov. Inslee, You are doing a great job! Please oppose this refinery. As a Washington State resident, I feel we must continue to lead the way on environmental protection and reduce global warming for future generations. Sincerely, Ann</p> <p>Dear Director Watson, I wanted to add my voice to those opposing this refinery. As a Washington State resident, I feel we must continue to lead the way on environmental protection and reduce global warming for future generations. Sincerely, Ann</p>
Ann michelle Emily	Tyson swinehart Van Alyne	

Marilyn Julia Eric Linda	Veomett Minugh Robson Sandahl	I grew up in the Northwest, left for graduate school, then worked & raised a family in the Midwest for 35+ yrs. Upon retiring, I returned to the Northwest which is still one of the most beautiful locations on this planet. Let's keep it this way.
Linda christy christy Richard	Sandahl thompson thompson Shepard	I believe the methanol refinery will detract from the quality of life in Kalama and Cowlitz County. Let's focus on clean energy! I hope Washington continues to create a future with clean energy.
Charlotte Elena John	Sines Rumiantseva Schenck	This project is unwanted and unneeded. It will benefit no one but a few already rich investors and it will do lasting damage to our air, water and the entire planet as it increases our climate problems.
Lys	Burden	In an era of millions of dollars spent to bring salmon back to our rivers and increasing climate impacts from burning fossil fuels, my family & I (four voting and tax-paying residents of Washington) want no more fossil fuel projects built in WA.
Lys	Burden	The new EIS analysis reveals what the project's backers have long denied: that the refinery would cause more methanol to be burned as fuel in China PLUS result in significant methane pollution from fracking, a double whammy... NOT acceptable now! Please be for Economic Justice, Environmental Justice and Social Justice. Large corporations un-proportionally make money at the social, economic and environmental detriment of the rest of us. Please Heed the call! thank you. t.s.
Tamara Morgan	Shannon Rivasplata Newton	

Morgan Rich	Rivasplata Newton Bauer	Fracked gas only continues to harm our earth when we need to be saving it!!!! We only have 7-10 years to turn around climate change please do your part in helping to stop fracked gas to methanol refinery's in our state!!!
Rich Pauline Laurie Jennifer Julia	Bauer Igoe Blair Scott Cranmer	As a health care professional I urge you to consider the long term health effects of this refinery. Mounting evidence links air pollutants at current allowable levels to long term negative health effects. Protect our air, water and soil. Say no! Laurie Blair
Merilee	Frets	Fracking is a filthy industry with short-sighted goals and long-term horrible effects. Protect our precious Columbia River, its people, its salmon, its beauty from this industry and this refinery. Invest in clean energy! In addition to the above well-stated argument, may I add my personal pleas to protect our precious Columbia River, its salmon, its people, its beauty from the hideous possibility of a spill or an explosion. It's a filthy industry. Stop it!
Merilee	Frets	We are running out of time to stop a tsunami of Climate Change. We cannot keep making excuses!
Ann Andrea	Mathers Pellicani	
Mark Helen Doug Ric	McCormick Anderson Landau Chapin	Fracked gas is not sustainable energy, and it's impacts will undo any progress to keep the state on track to meet modern pollution reduction goals. I'm counting on Ecology to dismiss NIWW's misleading claims, our PNW communities deserve as much~!

Judith	Cohen	Fracking can poison groundwater, cause earthquakes (witness Oklahoma), and have other deleterious environmental effects. Please help protect the environment in Washington, in Oregon, and in other parts of our country. Thank you.
Judith Tiffany Georgia	Aftergut Baker Shankel	This project is bad for Kalama, and the region! Please do anything in your power to help stop this project. Your legacy of being a champion of environmental Issues is on the line! We support you. We need your help! Please.
Jacob	Mumford	This project is bad for Kalama, and the region! It is also expanding our reliance of plastics and petroleum. It's time for something different. We need to preserve our towns and environment. Please do anything in your power to help stop this project
Jacob Merna Kimberlie	Mumford Baker Blagg Hanes	The Columbia River, wetlands and Pacific Ocean must be protected from further pollution and warming - this is no place for a refinery!
Nancy Rachel Rachel Zachary Mary Laurel Jan Robert Charles Charles ANN	Cable Matsuda Matsuda Arquette Keithler Boucher Stone Farrell Carroux Carroux Shang	Nancy Cable Stop this refinery from being built! Bad on our environment. Please stop this refinery from being built. Save our environment. Please do the right thing!

ANN Willem	Shang Broekhof	Let us together move forward, not backward, in preserving a clean environment.
Richard Mike Lawrence Stephen Casey Jessica Karen	Dickinson Seely Nagel Mudrick Cunningham Cresseveur Berger	Thanks for your consideration, Richard Richard Dickinson 13737 SE Ellis Street Portland, OR 97236 Thank You Mike Seely
Bonnie Kian	McLean Daniel	Please protect our precious Pacific Northwest heritage and our rich natural diversity.
Rae Nancy Jan	Blackbird Peterson Verrinder	I am 17 years old living in Portland Oregon, where we currently have the worst air quality in the world. Please do not let this become my life. Show up for my future and fight against climate change- do not go forward with NWIW's refinery.
Jan	Verrinder	Thanks for all you do. We support you. I used to live up there on the cliff just north of Kalama. You do realize that the hillsides up there have slid down a few times over the years. That aside, you know that we need to just get over the petroleum/gas industry. Its time has come
Jan	Verrinder	We have the worst president in history, POC killed one after another, people without food or housing and suffering physically and mentally, global warming, fires, smoke and no breathable air. And Kalama wants to do what? Are they nuts?
Teresa Teresa	Flynn Flynn	We are residents of Kalama, Wa. Please put a final STOP to this proposed Methanol Refinery.

Patricia
Elizabeth
Jennifer
Aileen
Diane
Denise
Stephanie
Cindi

Horter
Wanderer
Lockwood
Taylor
Berliner
Mills
Edwards
Lund

I live in a houseboat upriver from Kalama. The long-term ecological harm from this refinery and the cost of remediating the river when the Cascadia earthquake happens overwhelms by millions of dollars the relatively tiny short-term financial benefits

Patricia
Richard
Fred
S

Newton
Rothstein
Coppotelli
Burkemoore

I appreciate your indepth analysis of the issues but feel that creating a methanol plant still adds large amounts of GHG and ties us the northwest into a greater, not lesser, pollution cycle. I feel the comparison should be to green options.

Eliza
Roy
Arianna
Kate
Debra
Michael
Theresa
Rita
Susan

Viden
Treadway
Belt
Hermann-Wu
Lutje
Shaver
Sturgill
racioppo
DeWitt

We must end our dependence on fracked gas, not build more gas infrastructure. The fate of the planet depends on transitioning to clean, renewable energies. Washington State has the potential to lead the way towards this clean energy future.

Theresa M Sturgill Camas, Wa 98607

Tessa Julia Lin	Carpenter Skelton Reedijk	My family relocated our children & business to Kalama for a better future for their health & happiness. The refinery is against EVERYTHING we want for our children! Please do not allow this to continue to move forward in our community.
Nancy	Hannah	As we are now experiencing the worst air pollution due to the fires in the west I find it hard to believe that we are even considering using more fossil fuels in the future, and finding ways to make and distribute them is unconceivable. Data shows that investment in sustainable infrastructure is more lucrative than fossil fuels (Forbes). Consider disruption to education, employment, family and community because of cancer clusters, asthma, and poor air quality (evidence: Aliso Canyon NO Methanol!
Hannah Carol Carol ernest	Skutt Marier Marier boyd	Please don't pollute the world any more for money and power. Soon our lives on this planet will not be sustainable.
Valerie Anthony Joseph	Blackmore Kimbrow Chasse	I have lived on our beautiful Columbia River for 73 years. It is too essential for too many species to risk the lower River and estuary for a few American jobs and big bucks for China. NO METHANOL REFINERY AND SHIPPING TERMINAL All of our efforts right now must be focused on climate justice. That means reducing dependence on fossil fuels and reducing pollution. As a parent in nearby Portland, OR, this project is very concerning and I'm counting on you to do the right thing.
Mulysa Susan	Melco Allen	

Howard	Shapiro	<p>Your decision will clearly affect the quality of lives of my grandchildren and great grandchildren to either enjoy or attempt to survive. You can help make a difference!</p> <p>Gov. Inslee, I live in La Center, WA. Kalama is our neighbor. The wildfires this year are a wake up call to quickly move to only renewable green energy! A methanol refinery would add fuel to the fire! Please reject NWIW's proposal. Kathy W.</p>
Kathren	Walling	<p>Director Watson, I live in La Center, WA. Kalama is our neighbor. The wildfires this year are a wake up call to quickly move to only renewable green energy! A methanol refinery would add fuel to the fire! Please reject NWIW's proposal. Kathy W</p>
Kathren Angie	Walling Dixon	<p>We must stop using polluting fossil fuels and turn to renewable non-polluting energy sources. No fracked gas to methanol refinery! It is highly polluting of our air and water. Since we know this, why is it something that is being considered? Stop it.</p> <p>STOP THIS INSANITY</p>
Angie Sa Damon Damon Susan Lucy SHANNON	Dixon Re Lee Lee Burns Gragg CYPHERT	<p>We need to invest in clean energy....</p> <p>Lucy</p>
Charles Rania M	Brexel Sr. Spade Leszczynski	<p>Thank you for stopping this dirty, dangerous fossil fuel export project.</p>
Linda	Curry	<p>This refinery would be located right next to the Columbia River, I-5 freeway, the train tracks and residences. It scares me so much I'll do anything to put it down. Please consider the harm this refinery can do. Fracked gas is not a good thing.</p>

Linda
Travis
Valerie
Sandra
Sally
scott
I.

Curry
Peterson
Pflug
Joos
Mackey
massinger
Engle

This proposed refinery scares me to death. Why would anyone consider putting something this dangerous right next to the Columbia River, I-5 freeway, the train tracks and residences. We need something clean not dangerous. We can do better.

health over money /

Environmental protection must be the top priority. NWIW doesn't care about health of the public, the fish or the river. Only money. Their greed & lies should not be rewarded. Thank you for seeing the bigger picture & long range effects.

LEE
Arnold
Richard and Patricia

SNOW
Martin
Kallunki

We are originally from Longview and Kelso, WA and I grew up in Carrollâ€™s, WA which overlooks the Port of Kalama WA property and the Columbia River. We also have a cabin at the mouth of the Kalama River just down stream from the Port of Kalama.

Richard and Patricia
Fritzi

Kallunki
Cohen

From Columbia Rivr Prtlnd, We are all connected and recent fires prove that things can go up in flames in an instant. Please don't bring explosive gases that ruin the atmosphere when invisible, and are clearly a fire hazard to our vulnerable home.

Melinda
Anandi
Dale
Rena
Martin
Mark
Shantara

Messore
van Diepen-Hedayat
Castle
Jones
Herrera
Aziz
Grace

Please, ASAP.

Nancy Gail	Mogielnicki OHara	I recently moved to Kalama, my wife and I thought it was a beautiful place to live. It already has industry. We feel this fuel project is dangerous and harmful to Kalama present and future.
Ailon Eli Eli Carolyn	Eastman Galvan Galvan Eckel	Please stop it. Ailon Eastman This is for our kids. Please. Please don't sell us out for big corporate interests.
Donald	Springer	Governor Inslee, Please do whatever you can to prevent this monstrosity from being built and endanger the people and the environment of my town, Vancouver, and my neighboring town of Kalama, and certainly the entire state of Washington Currently, we are blessed with clean air in the Northwest, Washington, and certainly Vancouver and Kalama. PLEASE DO NOT LET THIS MONSTROSITY BE BUILD TO ENDANGER OUR CLIMATE AND OUR HEALTH. Thank you in advance for this consideration.
Donald Susan	Springer Porter	
Bobbee	Murr	The worst fire season in the western states is happening now. This project proposal must be quashed with prejudice.
Susi	Hulbert	I live in this area and do not want our environment ruined. Please do not let it be put it here.
Susi	Hulbert	I live in this area and I want it to be safe and healthy atmosphere for all of us. Please do not let this come and ruin our environment.
Dan	Schnabel	Hi Jay. My wife has MS and I have COPD. We don't need any more pollution generated threats to our health and the health of our neighbors. Thanks for all you are doing to save our state and nation. Rev. Dan Schnabel

Dan	Schnabel	I live just north of Kalama. I have COPD and my wife has MS. We don't need any more pollution sources that threaten our health.
Kathy	Garrett	Thanks. Rev. Dan Schnabel Please stop this ! Methanol will contribute greenhouse gas emissions and will not benefit the PNW and world climate. Fracked gas leads to encroachment on people's property and compromises commitments to our Indigenous neighbors and contamination of air and waters.
MICHAEL	YADRICK	
Rick	Ray	This issue is very important to my family.
Rick	Ray	Please do everything you can to slow global warming.
Pat	Wolff	
Joan	Qazi	Washington State is a leader in climate action, why would we do this in our state and contradict our efforts to fight climate change? Thank-you for being a climate leader!
Joan	Qazi	Washington State is a leader in climate action, why would we do this in our state and contradict our efforts to fight climate change?
Ms	Zentura	
Lisa	Ceazan	It is clear that fossil fuels contribute to global warming. We are living with the consequences of global warming right now. We simply must not invest in any more fossil fuel projects! They are a threat to human survival. Deny permits for building the world's largest methanol refinery in Kalama. 4.6 million tons of greenhouse gas per year is wrong. Please lead us to a future of clean air we can breath, cool, clear water, thriving forests and a future for our children.
Deena	Grossman	
Norman	Traum	
Julie	Lockwood	

		It's time to look at sustainable ways to invigorate the economy and sustain our communities well into the future. Building the world's largest fracked gas-to-methanol refinery in Kalama is dangerously detrimental to all Columbia River communities.
Carole	Scholl	
Sandra	Whitmore	
Katherine	Nelson	
Jack	West	
Jack	West	Please. For the future of us all.
Jeffrey	White	You can fight climate change or be an idiot. Your choice.
Jeffrey	White	
		Stop the project. If you need more data please ask for it. Dr Mary Barr
Mary	Barr	I cannot say more than what is described above. Does it take more catastrophes for you to recognize the seriousness of our situation?
		Please stop this project Dr Mary Barr
Mary	Barr	We must move on climate change now!
Leslie	Martinsen	Barb P.S. The last thing we need to do now is add 'gas' to the atmosphere. Please deny all permits because WA state is trying to REDUCE gases, not add them to the air.
Barbara	Rider	
Ben	Basin	
Eric	Edwards	
		We can't afford the climate impacts of this project. Its direct climate contributions, plus the demand it will drive for more fracked gas, are far too dangerous.
Josh	Hetrick	Climate action and climate justice must urgently frame every step that we take. This project will move us farther from the necessary divestments in fossil fuels that must happen to safeguard our future in the Northwest and the world.
Josh	Hetrick	
Amy	Van Schijndel	
		This is going in the wrong direction. We don't need more fossil fuel projects on the Columbia, in the PNW, or anywhere! Thank you.
Bernadette	Rodgers	

Joel	Fischer	You know building this is wrong. Do the right thing. Lead with your heart and belief in science. Lead with your compassion for a livable future. Lead knowing that plastics is the next frontier of the fossil fuel industry and they will never stop.
Barb	Drake	The events of the last week must be evidence enough that we need to reduce our carbon footprint to slow our climate catastrophe.. keeping fossil fuels in the ground is a big start to this problem that is all to visible to us in the PNW right now..
cheryl	waitkevich	In gratitude, Heather
Heather	Chapin	
Heather	Chapin	
SHAWN	LOONEY	
frank	belcastro	
Rolando	Rodriquez	Methanol export is about to be obsolete, is outdated and destructive to the environment and community. An investment of this sort is a squalid waste of money for an industry that is overdue to die.
Gina	Norman	Please stop this awful and polluting project. Allowing this huge polluting refinery to go forward is not what we want happening on the Columbia River or anywhere in the Pacific Northwest. Please reject this project. Thanks, Willis Heavenrich
Chris	Loo	
Willis	Heavenrich	
Willis	Heavenrich	The states on the West Coast are fighting climate change by reducing climate pollution. Stopping this fossil fuel export project is an important part of protecting our ecosystem, our climate, and the city of Kalama. Thank you for your consideration.
jeff	kipilman	
Patricia	Remsen	
Kathryn	Esser	
Wesley	Stoker	
Judith	Anderegg	

Kathleen	Roche	As an ecologist, I urge you to reconsider this project. I would like to see it rejected for lack of strong mitigation and for undesired effects on the Columbia River. Water is life. Clean air here and globally is important!
Kathleen Randall Wally Maxine Tim	Roche Nerwick Bubelis Dunkelman Emineth	I am an ecologist who lives in Oregon and relies on the Columbia river for clean water for fish and people. It is a great and beautiful river. It deserves better treatment than to site a methanol refinery with questionable mitigation.
Collin Elizabeth	Murphy Baker-Smith	I was shocked to learn of this outrage at such a late date. This refinery is a threat to the ecosystem and well-being of Washington, Oregon, and the entire world. We are well past the tipping point for climate change, but must do all to slow it.
danny Carol Hillery Janet Justin	percich Majewski Krebs Roxburgh Hosford	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.
Justin Martin Caitlyn Shirley	Hosford Fisher Plemens Rogers	“When the last tree has been cut down, the last fish caught, the last river poisoned, only then will we realize that one cannot eat money.”

Peter
Jennifer

Guerrero
Knauss

The Pacific Northwest is currently experiencing terrible wildfires which is also causing the worst air pollution this area has ever seen. If this isn't enough of a wake up call to cut the cord on fossil fuels I don't know what is.

Nancy
Nancy
Sandra
Jeanne
Dana
Joel
Phoenix
Todd
Joseph A.
Karen
Hannah
Cortni
Mary Jo

McRae
McRae
Couch
Schlatter
Weintraub
Porter
Oaks
Atkins
Yencich
Wood
Baker
Morris
Coblentz

Amber

Purdell

Please! This is our home. It's beautiful here, please protect our community!!!
Please! This is our home and recreational place. Keep it beautiful and clean. The way it should be!

Amber
Rhonda
Robert
Robert
Nina
Keren
Jane

Purdell
Walker
Jones
Jones
Diamante
Kumar
Nicolai

Jane Judith	Nicolai Rimbey	Beginning where the gas is fracked, then as the pipeline rips through lives and homes by eminent domain, each of the tributaries and the banks of the Columbia River are degraded, made barren, and laid waste. Deny this permit.
Dianne	Ensign	The fate of the environment is the defining issue of our time, and protecting the environment is my highest priority. Please stop this regressive, damaging project.
Dianne	Ensign	The fate of the environment is the defining issue of our time. It transcends culture, economy, political borders, and ideology. Protecting the environment is my highest priority--I want clean air and water, and healthy habitat for other species.
Dianne Phil Yonit	Ensign Harris Yogev	The fate of the environment is the defining issue of our time. This project is regressive and will contribute to the ecocide of our planet. Please do your part to protect the future of life on earth and reject this harmful project.
Barbara Barbara Susan	Bernstein Bernstein Linden	I applaud the SSEIS for accounting for the vast amount of GHG emissions from upstream and downstream activities but am dismayed that you accept NWIW's deceitful claim that the methanol will not be used for fuel. Science & economics points otherwise.
Patrick Chelsea Leslie Carolyn	Bushart Blakeley Zega Villanova	We have 10 years (maybe) to make the changes that will start to reverse all the damage. Help save the planet and reject this outrageous proposal. Patrick Bushart

Amanda	Dickinson	<p>We live in a shared environment. From wildfires, to poor snowpack, to increased erosion and threat to salmonâ€™orcasâ€”climate change is affecting us all. Fossil fuels in any form are simply too deadly to further support or extend. Environmental protection and stewardship for future generations must be the paramount concern in this decision. Countless examples have demonstrated time and again that this form of infrastructure causes harm to the environment at every point. This refinery would spell disaster for the PNW and the global climate crisis</p>
David	Robison	
Jane	Smiley	
Jane	Smiley	
Adele	Reynolds	
Lynn	Olafson	<p>Fracking is a environmental disaster. The entire industry is a abject failure in every aspect. A cancer both above and below the ground. The mere thought of a terminal along our beautiful Columbia River is offensive. Altogether unprofitable! STOP!!</p> <p>Please say no.</p> <p>Fossil fuels will be obsolete very soon. No methanol refinery in my backyard.</p>
Jill	Hamilton	
Timothy	Holley	
Mark	Hollinrake	
Jan	Hicks	
Laura	Riddell	<p>Thank you Governor Inslee for standing strong against fossil fuel pressures. Methanol from fracking is poisonous to our earth. We cannot allow this methanol plant to be built. Bring in fossil free technology to Washington State. We need this for our children and every generation after.</p>
Laura	Riddell	
Pamela	Keeley	
Arlin	Crane	
Arlin	Crane	

Darren	Wright	<p>We have jobs and clean air here. We do not need an Asian Plastic company polluting our childrens air. We have Chemical Plants here. Our children deserve fresh air and water to live healthy. Not promises of jobs that they won't have. Let us be clean!</p> <p>Please allow us to raise our children here without a Methanol plant. We already have Chemical Plants here. I do not want my children to have to live with anymore pollution. Let our next generation decide this. Why pollute our kids air for plastics?</p>
Darren T	Wright Garmon	<p>NWIIW speculates that this plant would reduce the use of 'dirtier' fuel to produce methanol worldwide. We know without speculation, however, that it greatly increases greenhouse gases here in Washington. That should be enough to deny the permit.</p>
David Noah S.	Summers Wittner Nam	
Mary	Guenther	<p>Think of the children! We must be working to transition to green jobs if there is to be a future for them!</p>
Richard	Jaffe	<p>I have been following this for a long time. Please do the right thing by making sure this project never happens. Thank you</p>
Richard Jason Timothy James Matthew	Jaffe Thoennes Mullen Mulcare Barmann	<p>I agree with Columbia Riverkeeper on this issue, and urge you to give this careful consideration.</p>
Dennis	Colombo	<p>Governor Inslee, Please demonstrate your commitment to reducing GHG emissions by publicly opposing the Kalama Methanol refinery.</p>
Dennis	Colombo	<p>I do not believe for an instant that this facility would actually reduce GHG emissions. It is all 'smoke and mirrors' perpetrated by a Chinese company.</p>

Liz Liz	Campbell Campbell	You must reject this project if you believe global warming is real. Any money we receive allowing this project will be nothing compared to the money spent on fire fighting, mudslides, drought, floods and other climate catastrophe it causes.
Liz Nancy Kyle	Campbell Carl Rolnick	Washington, Oregon and California are burning, our skies are smoke filled and the air is almost unbreathable. This is global warming. It is absolutely irresponsible to allow the methanol plant to go forward. Stop this project now.
Michael Jennifer Kristen Michelle	Stevens Elling McAlpine Sheldon	We need to focus on the futures of our children, grandchildren, and great-grandchildren. This project is a travesty. Washington state already has Hanford cleanup for the next 100+ years. Another ecological disaster, fracking, is unconscionable.
Ruth Michael janet	Allen Tucker forman	We as humans have limited time now to act-please do your part for future generations. Thank you
Gavi	Stevens	Having this refinery will just add to the already devastating effects caused by fracking by increasing the pollution levels markedly and encouraging more fracking which has been shown to cause earthquakes in areas that have never had them before. What's a The Racket? its due to FrackiN. once you take it out, of the earth, there is OnLy one, and that's it. as To a BaLLoon or A Beach BaLL, with a Slow Leak... UnBalance what's beneath, and Mother EarthQuake will Tremble to reAdjust.
edwin melissa	ballas rehder	

Gabe stephen	Wilcox curry	
Elizabeth	Sheppard	As a former citizen of Washington, and current resident of Portland, I am concerned for the health of the people of this region and globally. Please carefully consider the projected social, economic and ecological results of this project.
David David Tobiahs Eileen Esther	Michalek Michalek Shapiro Perfrement Friedman	I don't live in WA but will breath the pollution this plant will generate. I want clean air. Go renewable!
Bradley	Thompson	I know you know the science of global warming, and I know you know that we don't have 40 years left to continue spewing methane + carbon dioxide into the atmosphere. You brought this project to the PNW and that will be your legacy unless you stop it. I'm counting on the Department of Ecology to be ecologists. You know the science of global warming, and you know that we don't have 40 years to continue spewing methane and carbon dioxide into the atmosphere. Do your job and deny this permit.
Bradley Mark Angela Thom	Thompson Bradley Bellacosa Peters	
Thom Sage Christine Anita	Peters Johnson Ashmore Brandariz	Really, isn't Department of ecology supposed to protect our state's ecology?
Alina	George	Washington is the most beautiful and gifting of it natural beauty, fracking is devistating for all humans and the state please stop this plan.

Alina	George	NWIIW hypes this project as a "net green project"™ that is good for our environment. If this refinery is the environmental panacea NWIIW claims it to be, why is every NW environmental organization opposed to it? Please deny the permit.
Linda	Horst	
Linda	Horst	
Sharon	Longyear	
william	davison	It is naïve to think that China is acting in good faith. My experience working with the Chinese government has shown me that they don't usually come to the table looking for a win win.
Lacey	A	This project is no different. The US & Cowlitz Co. lose here. I do not want any kind of chemical plant near a habitat filled with critically endangered species, as well as being less than 40 minutes away from two densely populated areas. I don't want a toxic vapor release or chemical spill risk near my home.
Liam	Doucet	
AIXA	FIELDER	I no longer want to read of the Ecology being destroyed by big companies like yours, only the big CEO's make the money, your employees sacrificing with their health for the good of a company polluter. Can you try harder and spend in new technology.
AIXA	FIELDER	
Nancy	Huff	
Sue	Stoeckel	
Arthur	Lapite	
Leslie	Brown	When presented with issues like this, I think of our legacy: what are we leaving for the next generation and the generation after? Dirtier air? More pollution to clean up? This isn't what I wish to give to my young nieces. Block this project NOW!
KRISTY	OVERTON	
Lori	Benton	

Lori	Benton	Many of us enjoy visiting the McMenamins in Kalama and swim and kayak in that area. I'm concerned for our health and safety, especially since fracked gas also worsens climate change, which will negatively impact the future for my granddaughter. Do the right thing for our children's sake, stop this proposal. I was involved at Hanford nuclear for 14 years but the negative mess is left is for all of the future. It will be the same sort of action at Kalama, my family's home area.
Maryellen Susanna Georgeann Susan James	McFadden Askins Courts Bistline Noordyk	
Haney	Jones	Please help the people of Kalama stand against this refinery. We must stand up against the fossil fuel industry which has exploited the earth and it's inhabitants long enough. Please do not allow them to continue to exploit your constituents. Haney Director Watson, Please stand with the people of Kalama and SW Washington to reject the proposed methanol refinery. Tacoma has blocked the proposal. The oil companies have hurt humanity enough. Let's take a stand. Haney Jones
Haney Joan John Steven Tabitha Sarah Kate JL Terrance Elizabeth Vokouhi Philip	Jones Bini Prellwitz Vogel Thomasson Sercombe Skolnick Angell Ryan Watts Hovagimian Shook	

Roland
Camila
Steve
Claudia
Denise
Maureen
Robert
CHRISTOPHER

Mayer
Luiz
Sheehy
Kaplan
Lytle
Knutsen
Strelke
HIATT

Linda
Mary
David
Sylvia
Moraima
A.L.
Jane

Gannon
Blackburn
Nez
Nelson
Suarez
Steiner
Butler

As a homeowner further downstream, I urge you to deny NWIW's dangerous proposal.

Kristina

Soman-Faulkner

I am a physician member of WPSR. I have an urgent ask. I am asking the Dept of Ecology to block the Kalama Methanol Refinery. The risk is too great both for the community of Kalama and for our planet. Please do not allow this planned refinery.

Cynthia

Kelley

This is the worst idea ever. We do not need this refinery poisoning our air and water. Look at the temperature this summer, Climate Change is only getting worse and this sure won't help. Thank you for listening. Cynthia Kelley

George

Lawrence

Fifth assessment report of Intergovernmental Panel on Climate Change, AR5 of the IPCC, plus informatidon from the 2018 IPCC special report on limiting the planet to 1.5Â°C + multiple other papers in peer-reviewed journals make fossil fuel risk clear.

Tania
Tania

Malven
Malven

HELL NO!!!!!!!!!!!! BAN FRACKING BECAUSE OF AIR AND WATER POLLUTION!!!!!!!!!!!!!!

Cheryl	Dzubak
Douglas	Cooke
Stephen	La Serra
Alexandra	Pappano
Laurie	Dils
Emily	Ross
Megan	Shear

Megan	Shear
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Aurora	del Val
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Marcella	Chandler
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Marcella	Chandler
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Marcella	Chandler
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Marcella	Chandler
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Fracking is dangerous and should not even be a thing. We have a responsibility to take care of natural resources for future generations, why are we fixated on ruining the planet for our children and theirs? This must stop, and it must stop NOW.

I live in the Gorge and in Cathlamet, WA along the Columbia. Show real leadership and protect Kalama and the Columbia from this disastrous proposal. We need to reduce fracked gas production, not increase it to address climate change.

Please continue to lead Washington and the rest of the country to clean energy, and show the country how to protect the air, water and land . Please speak against this fracked gas Project from being built in Washington

Remember the 7th generation. How will history look upon us in the future if we allow big corporate fossil fuel companies to destroy our climate and environment. This is our time to make a difference. You have that power now.

Please continue to lead our region and our country in the vision of clean energy. History will remember us all in this fight against Fossil Fuel kindly.

This is an oppurtunity to lead the country how to reduce green house gasses and pollution adding to the climate crisses.

Kirk

Leonard

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. We want clean air and water.

Northwest Innovation Works' refinery would cause a huge amount of climate pollution. We are at a tipping point in this climate crisis. The SSEIS should focus on the significant pollution impact of this proposed refinery, please deny the CUP permit

Kirk

Leonard

Andrew

Friedman

Gill

Fahrenwald

Anthony

Buch

Tammy

King

Chris

Hazynski

Kathleen

Findlay

Steve

Rauworth

Robert

Wohlberg

Art

Bogie

david

Pelto

I see why the frackers would be drawn to Kalama, with its rail lines and shipping route to China. But the whole operation is flawed in terms of doing the right thing for our planet. It would be going in the opposite direction of renewables.

Catherine

Pake

Cassidy

Spicer

Barbara

Greenwood

Mark

Youd

Mary

Daniels

Thank you for being such an intelligent supporter for protecting the citizens of Washington from Climate Change. I know you'll oppose KXL.

Kate

Butt

Kate	Butt
Paul	Palla
Paul	Palla
Heather	Price
richard	smith
Melissa	Moore
Scott	Bishop

It is unconscionable to continue to push fracking when it is so detrimental to the environment. STOP IT!!!
FOSSIL FUELS = DEATH! STOP HELPING THEM KILL US!!
FOSSIL FUELS = DEATH! TIME'S UP TO STOP THIS GENOCIDE!!

Roxanne	Boyle
---------	-------

You present yourself as the environmental politician. This project is not consistent with that stance. Protect us from the pollution, the heat, the risks! We count on you to help this region, not poison. (I am a Washington voter.) Thank You, R Boyle
We are already choking on the toxic smoke caused by overheated forests. We need to fight global warming, not embrace it. This facility would put countless PNW residents at risk. Stop this project before we regret another bad mistake! Roxanne Boyle

Roxanne	Boyle
Carmela	Micheli
Janice	Rogerson
Lyle	Larson
Natalie	Niblack
Deborah	Bancroft
Heide	Coppotelli
Nicole	Waters
Donald	Shaw
Michael	Mongerson
Joan	Yater

Liz	Kearny
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I am an ordained pastor in Cowlitz County, where this refinery is being proposed. This refinery would be a huge step in the wrong direction. Some jobs are not worth a multi-generational facility that will continue the degradation of our planet.

Liz	Kearny	As a pastor in southwest Washington state, I oppose this methanol refinery in Kalama on moral grounds. We have a responsibility to go in the opposite direction of practices like fracking so that our children can have clean air.
Andrea Mike	Pepitone Rummerfield	The iconic salmon may never return to Washington rivers. We already know that the fossil fuel industry has ruined the planet. Now is the time to transfer technologies solar, wind and nuclear. There should be no consideration of this project.....
Mike Jared	Rummerfield Cornelia	I don't understand why you continue giving this project any consideration. NWIW has already lied and misrepresented facts on their applications, and they have lied to the public. You only lie when you have something to hide.
Debbie John Chris Sherry	Spitzenpfeil S Lima Davis	I raise my grandchildren and we live across the river from this proposed project. I also own a business that I will close and we will move out of the state because of the hazard if this is built. You will have ruined our future if this is approved.
Sherry Hilary Patricia	Davis Keyes Warner	We have so much to protect. Green jobs are the future for this planet.
Anna Diana Meghan	Petry Saxon McCutcheon	A methanol plant on the banks of the Columbia would be a disaster for so, so many reasons!
Perry	Gx	Time Is Now To Address Issue Proper Before A Catastrophic Event Occurs In Just A Matter Of Time.

Perry	Gx	NWIIW has not been clear with us from the start! First methanol for plastic and will now be used as gas for cars too! China's NWIIW's Fracked gas to methanol is not reducing pollution, it's simply moving it to our side of the Pacific. No Thanks
Ellemien	Winther	NWIIW has not been clear from the start! First methanol for plastic and will now be used as gas for cars too! China's NWIIW's Fracked gas to methanol is not reducing pollution, it's simply moving it to our side of the Pacific. No Thanks
Ellemien	Winther	NWIIW has not been clear from the start! First methanol for plastic and will now be used as gas for cars too! China's NWIIW's Fracked gas to methanol is not reducing pollution, it's simply moving it to our side of the Pacific. No Thanks!
Ellemien	Winther	We don't need more fossil fuel infrastructure. We need to invest our resources in carbon-free infrastructure.
Richard	Bixby	Earth first. Succeed to put your education to new innovations.
Linda	Chapman	
Benita J.	Campbell	
Alexander	Meeder	
Rachael	Pappano	
Robyn	Bluemmel	
Kay	Reinfried	
Jamie	Green	
Lloyd	Vivola	
Richard	Weiss	
Ryan	Bauer	This message is of utmost importance.
Nancy	Combs	
Christopher	Sprinzyk	
Monica	Gilman	
Alice	Dugar	
Kathryn	Rose	

Bobby	Righi	It would be a crime to add even more plastic to the world and that is the function of this plant.
Bobby	Righi	We do NOT need more plastic and that is all this plant is for.
		It is time to plan for the future, not continue using fossil fuels that have proven to destroy our planet Earth. Think about future generations.
Jean	Culp	Please do not allow our beautiful rivers to be used by foreign companies for profit. And please don't allow the use of fracked gas for any purpose. We have to get to 100% clean energy, and the time is now. Thank you for committing to our future.
Rebecca	Erickson	
Hannah	Lemke	
Jennifer	Moore	
debra	poscharscky	
Elizabeth	Stratton	
Paul	Reyes	
Juan	La Torre	
		A recent University of California at Berkeley study showed that for populations living within SIX (6) MILES of fossil fuel operations, signadverse pregnancy effects were found, tending to affect low-income and minority populations.
David	Burns	The demand for fracked gas that this refinery will create means that people in Colorado and other states will suffer the direct impacts of local fracking, including air pollution, water pollution and adverse health impacts.
David	Burns	
Karleen	Olsen	
Brianna	Comstock	
Deborah	Lipman	
Christopher	Brentano	Thank you.
Janet	Wright	
Bob	Steininger	
George	Latta	

Debbie
Harold
Teresa

Krapf
Robinson
Iovino

As a supporter of all of the issues surrounding the 'Green New Deal', I must resist the negative environmental impact such a facility would introduce into the area! We have overwhelming evidence right now that we have pushed our planet too far!

Donna
Donna
Stephanie

Leavitt
Leavitt
Winn

We need to protect our planet. The recent smoke from fires is only the beginning of the destructive effects of climate change. We are running out of time. Please stop this from happening.

Clara

Sciortino

The Washington Department of Ecology (Ecology) just released a new draft analysis showing that the world's largest fracked gas-to-methanol refinery would be a major climate polluter. This is terrible and must not happen.

Caroline

Skinner

There are better ways to create jobs along the Columbia River.
Debrah Miles 35517 Gustafson Ln Astoria Oregon 97103

Debrah
William

Miles
Young

Please continue to protect our waterways and natural resources from corporate polluters who have no interest in Washington State - other than the hope of making money at the expense of our environment. Thank you.

Pamela
Pamela

Barber
Barber

Please take steps to protect our communities and our environment by rejecting any and all attempts to build fracked gas methanol refineries in or near Kalama. Save the Columbia and surrounding wetlands from further industrial pollution. Thank you

Pamela

Barber

Pamela
Terrie
Noah
Jessica

Barber
Williams
Jenkins
Christensen

Please protect our community and our environment by rejecting any and all proposals for fracked gas or a methanol refinery in or near Kalama. Save the Columbia River from the additional pollution that this industry will bring. Thank you.

dwayne
Jeanne
Maryann

hedstrom
Poirier
Rudy

the lifting and movement of smoke from the recent fires has me feeling overwhelmed and chuckling that this project is even being considered. what are the benefits other than \$ which of course is not breathable. stop the madness

Maryann
Gregory
Sharon
Diana
Cindy
Gabriela
Lorenz
Ryan
Patricia
Cornelia

Rudy
Penchoen
Benveniste
Rowell
Feist
Garcia
Steininger
Schrader
Fleetwood
Teed

Fracking is an unconscionable threat, a clear cause of climate change and destroyer of our water tables. And the methane leaked is 80 times worse than CO2.

Jennifer
Kristen
Lynn

Johnson
Eberlin
Sussman

Do not allow development that INCREASES GHG in the state of Washington to 'theoretically' decrease it globally. Do not allow a refinery that will emit millions of tons of carbon pollution every year. Stop this refinery project in Kalama! J Johnson

S.F. Raul John	Brown Garrido Roche	Keep PEOPLE First!!! Keep Kalama Green!!! When I think about the massive wildfires weâ€™re having right now, I think about how important it is to stop climate change. And to do that we have to stop fossil fuel production, NOT increase our capacity to produce and use more fossil fuel. Climate change is real. Planet over profit. You are going in the wrong direction! Please do what is right to change course.
Chiquita	Rollins	
Katherine Victoria	McKinsey Holzendorf	
Janet Benton	Williams Elliott	Stand up for our future generations and reject this project. Thank You.
Benton	Elliott	The science is in, our environment is suffering, and we need to change by stopping fossil fuel production. Please say no to NWIWâ€™s proposed refinery in Kalama. I grew up in Kalama, and my parents and brother still live there. I join my family, who are leaders in the community, in opposing the project.
Allison	Ciancibelli	Say no to fossil fuel projects! Please deny NWIWâ€™s proposed refinery in Kalama. I grew up in Kalama, and my parents and brother still live there. I join my family, who are leaders in the community, in opposing the project.
Allison	Ciancibelli	Say no to fossil fuel projects! I grew up in Kalama, and my family still lives there. I firmly believe this project would be bad for the community, Washington State and the global environment. Please do not allow this project to go forward. It is for the good of all.
Allison James	Ciancibelli Hubbard	
John	Flynn	Governor Inslee - Please remain steadfast in your opposition to this project. Help us protect the health and environment of Washington. Thank you.

John	Flynn	Governor Inslee, you have come to the realization that this project is not consciously sustainable. We are relying on you to again speak out against this project and protect the citizens of Washington State from fossil fuel pollution. Thank you.
John	Flynn	Department of Ecology has a moral responsibility to protect and preserve Washingtons environment as well as the health of its citizens. I ask Ecology to accept this responsibility and deny any and all permits for this project. Thank you. John Flynn
John	Flynn	I again ask you to step up and speak out against this polluting project. You publicly denounced this project before, it is time for you to publicly denounce it again. Thank you.
John	Flynn	Department of Ecology needs to focus their attention on what they can control. The 4.6 MMT of green house gas emissions from this project per year would make it one of the states top polluters. Do not lose focus on what D of E can control.
John	Flynn	We know you invited these projects, and were fooled by their plans and thought you could mitigate the harm. Now you understand the impact and say you won't allow projects that cause harm to the waters we all depend on. Please take the action needed.
Danon	McMahan	As Washingtonians who know what is at stake, all we love.
Danon	McMahan	We have just sept the past week forced inside because of hazardous air quality throughout our region. Climate change is here now and requires we take steps that will expand the use of renewable zero carbon energy and infrastructure.
Rafe	Pilling	The decision you make on this will effect the entire region adversely for several generations. Do you really want that as your legacy?
Jean	Wyman	
John	Barger	

Linore	Blackstone	Well, Director Watson, what is your ethic? You know that it's very late and we must stop doing 'target management' to exploit the earth and its life. My God, what the hell does it take to change humanity's behavior? We are very ignorant and greedy. We don't need, nor should we allow, more polluting companies destroying our planet. Concentrate on other ways that are environmentally friendly and retraining workers for these new, earth friendly methods of acquiring clean energy. Please think with a 21st Century mind! The earth is crying out for humanity to stop the pollution destruction! This COVID pandemic is screaming for us to slow down! Please listen.
Margaret	Mogg	
Lucy Eugene Eric	Schneid Majerowicz Lambart	
George Robert	Jacobs Edstedt	It is time to stop this madness, please. It's very clear that the fossil fuel industry owns public policy in this country, it is now left to the public and people in empowered positions such as yourself to not allow any more disastrous facilities.
Richard	Craig	No 'Fracking' in the Northwest, most Power generated is sold to 'California or Nevada.
Richard Debi	Craig Holt	Do not need any more potential environmentally hazardous situations in the Northwest region.
Keisha Keisha Keisha Clifford Cheryl	Landers Landers Landers Provost Scrivens	Please do not allow this refinery in Washington. No amount of money is worth damaging our environment. Drastic action needs to be taken IMMEDIATELY to slow climate change. Please stand up and do the right thing for our state, country and future! Please make the right decision to protect our state!

Karen Sherry Adam	Stansbery Wade D'Onofrio	You must take a stand and deny this NWIW proposal for the sake of future generations. This is a reckless affair to make money for big business with no benefits for the citizens of Washington and Oregon.
Aleks	Kosowicz	We can no longer afford our dangerous dependence on fossil fuels. Our resources are being jeopardized and we're running out of time to take action toward mitigating the worst effects of climate change. Please help us move toward a future now! The last thing our state needs is a methanol refinery! All of America must work toward a fossil fuel free future. Washington can be a leader by refusing to permit NWIW's profit driven but ecology- and climate-wrecking 'refinery.'
Meryle A Heidi JOHN Joseph	Korn Perry MARIER Welch	
Pamela	Mcdonald	Considering the multiplication of natural disasters around the world, the implementation of what would be THE WORLD'S LARGEST methanol refinery is not only reckless, but damaging not only to the surrounding site, but the world at large. What a TERRIBLE place for not only a Chevron plant, but a PIPELINE?? Kalama is ON the Columbia River, and if either Chevron or the pipeline suffers a breakdown or leak, the resulting damage would affect not only the surrounding area, but the river
Pamela Drew Tika Justin Sandra Eric Nancy	Mcdonald Bradbury Bordelon Grover Middour Markewitz Hiser	

Lorie	Lucky	More than anything I do not support NWIW due to the Pipeline will go right through my families property that is a rock pit. Immiment Domain=Public use requires that the property taken be used to benefit the public rather that specific individuals.
Susan	Powell	We have just experienced the world's worst air quality. Please do not add NWIW pollution to Kalama's Air, all to make Methanol for the Chinese for Fuel. NWIW has not been honest from the beginning of their application, they will continue to lie.
Susan Kris	Powell Hughes	The real costs of using fossil fuels, including emissions, must be considered in any project such as this.
John Amy Elaine Robby	Gastineau Dyer Fischer Stern	We are acting like the island society that depended upon trees to make their canoes for inter-island transportation and trade, yet cut down its last tree -- and ultimately went extinct. It's shocking how short-term gain is blinding us too.
Laura M. vana Norm Pat Angie	Ohanian spear Enfield Copenhaver Sieb	Earth is already in the midst of its sixth mass extinction episode. https://pnas.org/cgi/doi/10.1073/pnas.1704949114 Please do not accelerate that disaster.
Virginia Dennis	Curtis Lee Smith	Please help stop poisoning our resources, they are our responsibility. Listen to Indigenous people if you need help.
Ruby Luiz Felipe Marilynne	Falciani Nogueira Taylor	

Preston	Eberth	Watching the west burn at historic rates this summer should have made this message even more clear, WE CAN NO LONGER AFFORD TO DO MORE HARM TO OUR PRECIOUS ENVIRONMENT. This
Natalie	Lawrence	project would prove disastrous, short sighted, and harmful to all. Watching the west burn at historic rates this summer should have made this message even more clear, WE CAN NO LONGER AFFORD TO DO MORE HARM TO OUR PRECIOUS ENVIRONMENT. We must
Natalie	Lawrence	put an end to fracked gas!! To do what is best for the next generations, we cannot sell out their futures by allowing a fracked gas-to-methanol refinery anywhere, especially in Kalama, Washington. The refinery process is unsafe, using precious water, polluting it.
Lorraine Maxine Evan	Dee Clark Krichevsky	
Terry Katharine Katharine Patricia	McClain Cotrell Cotrell Holm	Thank you for the Ecology info/FAQ. OR and WA citizens are working hard for climate resilience and we need companies that honor sustainability. I'm concerned about more methanol...and plastics production-we're already drowning in it. I hope and believe you will oppose this project. Thank you! This is your job to do. Please do it.
Patricia Beth Jean Michael Cheryl John Carolyn	Holm Darlington Bails McCartin Bruner Dunn Treadway	We are in a climate emergency, now, Ecology must not allow more fossil fuel to be burned. We have more than enough right now... This is an extremely important issue.

Steve
Lori
R. David
steve
Rebecca

Hocker
Agar
Goldberg
bloch
Berlant

Dear Laura Watson - My family and I are strongly opposed to this fracked gas project. This is a very dangerous endeavor and the effects on our environment could be even worse. We are not in short supply of energy. Thank you! The Hocker Family

renewable energy is the smart future.

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.

Bruce

Porter

Bob David M	Triggs Bly Langelan	There is no need for such a project. We don't need this refinery. America needs clean energy, now! We are in the middle of climate change and it is killing our planet. If everyone dies then what is the need for this refinery?
Paula Jordan	Morgan Hunnicut	Jay- Big supporter of you and the job youâ€™ve done. I always stand up for you when I hear the uneducated bashing you. Please, please, please do not let this refinery into the Kalama area. We have enough pollution in the area as is. Please save us!
Cort	Carpenter	Allowing this refinery would be the biggest mistake possible. Kalama and the surrounding areas has enough pollution pumping into the air, and this can only make that worse. For the next generation of kids, PLEASE do not let this happen! Thank you!
Cort fred Erika bert alan	Carpenter karlson Kane corley unell	This is way to risky. Builders always claim it is safe but the US and Canada have many recent lines that leak. We cant afford it. Please stop it
alan Anne marilee	unell Doane dea	As a mom, I wonder if anyone in Kalama has asked the YOUTH of that community if they are concerned about this project. We have a moral imperative to stop the fossil fuel conglomerates from continuing to destroy the environment. Do the right thing.
Sherri	Dysart	

Sherri

Dysart

Heather
Teaghan
Mha Atma
Robert
Mary
Tina
Liz
Carolyn
toni
evelyn
Aleesha
Diane

Broderick
Phillips
Khalsa
Posch
Stratton
Brown
Terhaar
Haupt
syring
murphy
Kaundal
Sullivan

As a mom, I wonder if anyone in Kalama has asked the YOUTH of that community if they are concerned about this project? We have a moral imperative to stop the fossil fuel conglomerates from continuing to destroy the environment. Do the right thing. Now more than ever we're seeing the effects of short sighted choices on our environment. Please consider the future of our earth, & any hope for a healthy future for younger generations over short term financial gain. Thank you, Heather

Linda

Leonard

Linda
Greg
Rachel
Sharon
Rhett

Leonard
Valitchka
Berezecky
Parshall
Carpenter

We cannot keep building fossil fuel export infrastructure and expect to address the dangers of climate change. The level of pollution is inconsistent with achieving our climate goals for Washington state.

We need DOE to deny the proposed fracked gas to methanol refinery here in Kalama. The moral responsibility is to protect public health and reduce this region's climate pollution by not allow this massive petrochemical refinery to be built.

Rachel Berezecky

Rhett Susan	Carpenter Walsh	This privatized monstrosity is an absolute slap in the face to local residents, their health, environmental health in both acute and chronic impacts. Ecology and wa state government must stand firm to protect local citizens and environmental health.
Amanda Amanda Amanda Kacey Candace James Sharon Rebecca Lisa	Eastman Eastman Eastman Donston LaPorte Klein Burge McDonough Canar	My husband and I moved to Kalama this year, bought a house and were amazed, surprised, disappointed to hear that this project is being considered. I feel this will impact my quality of life here in Kalama. thank you Amanda Eastman We are counting on you to take care of people, not corporations. Take care of people, not corporations.
Linda	Gillaspy	Please put people before corporations. We must stop fossil fuel use if we are going to have a habitable planet. America must move quickly, we have 8 years to cut our emissions in half. The world has 8 years to cut our GHG emissions by half or our children will not have a habitable planet. Why are we discussing continuing to expand fossil fuel usage? When is the science going to be acknowledged?
Linda Ellen justin Drew brad Larry Eric Matthew	Gillaspy Koivisto stief Miles kalita Morningstar Esposito Weaver	

Lisa	Lybarger	
Steve	Graff	
		So many people and organizations have spoken up with facts and anecdotes concerning the negative impacts of the Kalama project. Please listen to them instead of basing the project on magical thinking about the future of fossil fuels. Thank you.
JOANA	KIRCHHOFF	
J	Lukas	The public must be protected from the dangers of fracked gas! Climate pollution must be reduced. Say NO to climate pollution! A dangerous fossil fuel project is a terrible idea.
J	Lukas	
Tami	Linder	
James	Rust	
Amy	Graham	There are other ways. Be part of the right side of history.
Iris	Moore	
Jamie	Melton	
Janine	Vinton	
Rebecca	Chamberlain	Stop! Do not go ahead with this. It endangers everything.
		Stop do not go ahead Stop! Do not go ahead with this. It endangers everything.
Rebecca	Chamberlain	stop this plant now. We cannot let this plant go ahead and destroy our rivers. we cannot let this plant go ahead and contribute to global warming. Please stop it now. Governor Jay Ensley, please stop this now.Laura Watson, please stop this now.
Rebecca	Chamberlain	
ELIZABETH	SLOSS	
		As we sit trapped in Very Unhealthy Air Quality during this period of record fires--- we as a whole must wake up to that change in our ways is a MUST. It is beyond essential. It is critical. Rejecting this NWIW proposal is mandatory.
Geoffrey	Prentiss	
Lauren	Murdock	

Katherine	Spence	Jay, You ran for president on a climate change platform. Fight for slowing down climate change NOT accelerating it! Require a thorough and solid EIS for the proposed fracking refinery in Kalama!
Katherine	Spence	We are trying to slow climate change NOT accelerate it. Don't allow a fracked gas refinery to go in at Kalama without a thorough EIS. You owe that to the people of Washington!
Kathie Rosemary	Zodrow Blakemore	The future of the planet is in our hands. Take heed. You know what is the right thing to do. Kathie
Amy Janice	Robison Klinski	Amy Robison P.S. I'm asking you do all you can to protect the quality of our air and water from further catastrophic damage like what we just lived through.
Janice	Klinski	It is imperative that we NOT add further to climate collapse. This huge project will only hasten our own demise, in our lifetime, we may see the collapse of all life on earth...please do not support this Doomsday Project, in fact, PLEASE STOP IT!!
Janice	Klinski	CLimate collapse is upon us now, all life on earth is threatened...this is a Doomsday Project. Please do not enable the end of all life on earth. We do not have another chance, billions of years before - if - we can even reincarnate here as amoeba...
Katrina Sean Mali Juanita David B. Hillary Diane	Spade Cearley Fischer-Levine Dawson-Rhodes Nichols Chan Ostrow Shaughnessy	I am a business owner, parent, and Seattle resident. Thank you for doing the right thing.

lindy	vivas	In this day and age of extreme climate change, which has resulted in unprecedented fires and adverse consequences on our communities and environment, how can you possibly even consider this project? Do your JOB and protect American lives.
lindy	vivas	
Robyn	Reichert	
Kimberly	McConkey	
Dineen	O'Rourke	
Tedd	Ward Jr.	
Rachel	Ulrich	
Judy	Bumbarger-Enright	The planet is on fire. Let's take a step to stop this refinery.
Judy	Bumbarger-Enright	
Tracy	Cole	
Tom	Csuhta	
		I live in Portland, Oregon and am breathing the WORST AIR I have ever experience in my ENTIRE LIFE. Please DO NOT let this happen. Do you understand what will happen if we don't stop this? Look at our air! We have to stop harming the planet. Ruth
Ruth	Cortez	NWIW's goal is to make money for themselves and their shareholders. They don't care about the negative impacts this pollution plant will create. Protect the health/environment of Washington communities, don't allow the methanol refinery to built.
Virginia	Tarango	
Paul	Eisenberg	
Jay	Johnson	
		For the sake of future generations and the economy we must invest in clean energy from renewable sources. Washingtonians need to take the lead when it comes to reducing our dependence on a fossil fuel economy.
Charles	Law	
		For the sake of future generations and the economy we must invest in clean energy from renewable sources.
Charles	Law	

Maria	Nowicki
Melody	Smith
Genevieve	Shank
francis	mastri
Susan	Samuelson

Brent	Rocks
Ryan	Provonsha
Tanya	James
elmar	Niewerth

The carbon age is coming to an end and by the time this is built it will be Old tech and heading to the scrap pile.

Very bad for our environment please rethink this

We really need to change how we deal with resources and it is insane to send our energy resources with big use of polluting refinery action and additional polluting energy to China, to receive plastic back in exchange, which is a big polluter too.

elmar	Niewerth
Kevin	Walsh
kathy	grieves
Graig	Hill
Jan	Polychronis
Steve	V.

Pat	Christiansen
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Fred	Greef
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Fred	Greef
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Environmental stewardship is more important than ever, ie. critical with extreme weather becoming common place; wildfires , floods, hurricanes. We don't need to add methane gas emissions to the mix, further ravaging our planet's ecosystem. Thank you Longview already has poor air along the River. Diesel barge and tug boat engines will add much more daily diesel exhaust to Longview's airshed. The giant plant operations, are also directly upwind. Please help my elderly friends in Longview breathe Huge upstream methane releases (fracking) will feed the world's largest methanol factory. They cannot be mitigated, due to the 'Dick Cheney loophole.' The downstream CO2 emissions are not mitigated either. Climate change matters, not Chinese profits

Michelle	Trosper	Dear Gov. Inslee, I voted for you because I believed that you are an environmentalist. PLEASE, do all that is in your power to do, to stop this methanol refinery in Kalama. I am heart sick to think that, this day and age, we are even considering such
Michelle Ronald	Trosper Clayton	Have you listened to Sir David Attenborough recently? At 94 years of age, he is the world's greatest authority on what humans are doing to the planet, and much of it has come in recent years from fracking! https://www.bbc.co.uk/programmes/p08sq5w2 Our world, this planet, needs protection and restoration from the damage that humanity has already created. Please, take every step imaginable to stop fracking; start protecting planet Earth!
Deb	Merchant	
Deb Richard	Merchant Johnson	
Janet	Kirkland	As a resident of the Pacific Northwest and concerned global citizen I urge you to oppose this refinery proposal. The risks to wildlife, habitat loss, human health, and accelerating climate change are not worth it.
Jessica	Becker	My daughter deserves to grow up in a world without fracking
Jessica	Becker	My daughter deserves to grow up in a world without fracking.
Jessica	Becker	Jessica Becker, Mother and Lover of clean air and water
Brenda	Barton	
Danielle	Evansmith	After the trauma of the recent climate-change related fires and smoke, we desperately need to protect our environment and wildlife. No more defiling on behalf of human interests please!
Jude	Green	
Jude	Green	I don't support fracking at all. It's all for corporate profit, doesn't benefit people, an pollutes water.

Kelly	Freeman	For the health and safety of my family, my kids, and the rest of the community, this plant must be denied. Period. For the love of God, please do not let this plant come into our beautiful area. This plant would come with serious health consequences!
Kelly	Freeman	
Myrna	Dunnigan	Please work to ensure a better future for our children.
Bry	Osmonson	
Adina	Parsley	
		I lobbied for the 100% renewable electricity for WA campaign and I believe that building this natural gas refinery goes directly against your law. We need clean energy, not dirty fracked gas that spews destructive methane into the atmosphere.
Rachel	Luther	In 2019, the Washington state legislature passed the 100% renewable electricity for WA bill into law. This refinery would go directly against this legislation by adding more fossil fuels to the atmosphere and
Rachel	Luther	
Gina	Howerton	
stephanie	clark	
Stephen	Durbin	
		this is just one in a long list of trump polluters...the fracking world is so old school that it needs to be stopped immediately. This is just another ploy by trumpets to assuage their big oil and big energy billionaires.WE THE PEOPLE SAY 'HELL NO!!!
Stephen	Durbin	Don't sell our future to Chinese business interests. The world is already on fire, and this is like pouring gasoline. Make a decision with dignity.
Ian	McCluskey	Remember your children.
Ian	McCluskey	
Kimberly	Wiley	
Margaret	Davies	

Wendy
Victoria
Shauna

Tsien
Miller
Sparlin

Fracking has polluted waterways, water wells, groundwater, soils, caused earthquakes and soil slippage, and eroded air quality in countless communities across America. In a time of existential crisis for our environment, fracking must be banned.

Joy
Nora
Karen
Sarah

Caddock
Polk
Kirschling
Jones

Fossil Fuel extraction needs to stop if futures generations will have a livable planet. Projects like this should be criminal as it locks in years of extraction on an already imbalanced ecosystem. As a human and parent I'm against this project.

Nicholas
Pablo
Paul
margaret
Christopher

Mather
Bobe
Halliday
moulton
Buckley

As an Episcopal Priest and shepherd to many in our community including members living in Kalama, we as Christians believe in caring for and stewarding our natural resources in the most economical and safe manner, a standard this project fails to meet

Izabel

Mar

Yo we have KILLED our planet enough. Did you not watch the debate last night??? We owe it to our children and to the Indigenous and Native people we took the land from to treat out land with respect. And this is not this. I hope you reconsider. If WE don't protect our environment WHO WILL... WE OWE IT TO FUTURE GENERATIONS to stop the destruction!!! No more excuses.

Tanette
Griffin
Linda

Landon
Koerner
Whittingham

Jared
Lynn

Howe
Thompson

As the recent wildfires have shown us, we are in the middle of a climate crisis which will only get worse. We need to stop digging the hole that we are putting our children and grandchildren into.

Allyson
Tamara
Elizabeth
stephen
Maureen
Rashid
Lorraine

Dugan
Wecker
Butler
hopkins
DiGiacomo
Patch
Brabham

We are starting to see the cost of climate change in the NW right now. Fires threaten towns in Washington, Oregon, and California. We can expect to continue to deal with these extreme weather events and even worse if we continue to do nothing.

Craig
Donna
Brian
Meg
Ben
Blake
Mike
Theresa

Mackie
Smith
Kirkland
Casey
Martin
Hessel
Brinkley
Nuccio

Please do not allow this project to go forward. This project will end up being a major carbon polluter. It is located on the Columbia River and if anything disasterous would happen, it would probably mean the end of our salmon runs.

Theresa
Laura

Nuccio
Long

We must honor our treaties with the tribes, including stewardship of common resources such as forests, water, and fisheries. These projects are obsolete and about to create another 'rust belt,' only this time it will be in the Northwest.

Lindsay	Clark	It's important that we take action to combat climate change and do not allow additional fossil fuel development to continue. We trust you to support our air, water, planet by opposing this deadly project. Please - save our cities, our state, our planet from further destruction in this manner. You CAN do it . . . move quickly to stop this travesty. Thank you, Jeanne Delle
Jeanne	Deller	Stop the madness - this world cannot tolerate another deadly fracked gas project!
Jeanne	Deller	
Jeanne	Deller	
Sue	Luther	
Eileen	McCabe	
Cale	Christi	
Matt	Brzezinski	
Kathie	Healy	
Marjorie	Johnson	Here in Oregon and Washington we have fought so hard to keep our states safe and physical harm free from oil and gas, it is baffling to me how anyone could set plans in motion to endanger the health and welfare of our citizens. Please vote NO on this
Jamie	Melton	Jamie Melton
Mark	Koritz	
Mark	Koritz	Dear Director Watson and Department of Ecology: Donâ€™t allow the worldâ€™s largest fracked gas-to-methanol refinery to harm our climate and Kalama! Washington should reject Northwest Innovation Worksâ€™ (NWIW) proposal to build and operate the worldâ€™s largest fracked gas-to-methanol refinery in Kalama. NWIW mislead your agency, and the public, about the purpose and impacts of the refinery. We are counting on Ecology to dismiss NWIWâ€™s
Caitlin	Wade	
Philip	Ratcliff	
Sandi	Aden	

Linda	Haseman	I own a home in Kama, WA, and I have small grandchildren that live in that town. I, along with Kalama residents, do not want another toxic industry in Kalama!
Sally	Tomlinson	I think you're terrific, and I cannot believe this is happening on your watch. I trust you are opposed; if not, you are not the man I think you are. Dr. Sally Tomlinson
Sally	Tomlinson	The world is burning. Are you unaware? This proposal must be the political version of madness. Stop it from happening. We have a beautiful state; let's keep it that way. Dr. Sally Tomlinson
Maurine	Canarsky	You know this is not the way to a clean energy future. It is unbelievably destructive and harms people, wildlife and our already badly compromised environment. Take a positive step to insure a healthy life for all of us.
Pamylle	Greinke	
Susie	Cassens	
Michelle	Mayfield	
Lindsay	Pour	
Holly-Marie	St Pierre	
Anita	Melbo	
Russell	Novkov	
Emily	Glanz	
Emily	Glanz	Washington is beautiful <3
jay	Humphrey	
Gregory	Fite	Kalama and the Columbia River need to be protected from this polluting industrial behemoth. The world needs all of us to develop clean, renewable energy resources and keep oil in the ground.
Kate	Murphy	Please stop this dangerous project.
Richard	Nordby	We are counting on you to do the right thing and chose a healthier, safer future by denying this disastrous proposal.
		We donâ€™t need or want this additional fossil fuel infrastructure.
		Now is the time to push for total reliance on renewables.

Richard	Nordby	<p>This is not the time to build more fossil fuel capacity. This plant should have no place in our future energy production. We should be furthering renewable energy sources instead.</p> <p>Like all projects of this type, they are built to spill. They deliver energy, yes, but inevitably poison the land and water too. There is never one without the other.</p> <p>I believe Washington State should be a leader in protecting the environment. Shipping fossil fuels to China is not the way to do that.</p>
Martin	Kilbourne	
Anne Michael Marshall	Elkins Rynes Goldberg	
Tracey	Loyd	<p>I am a disabled Vietnam era veteran that has lived in this area for nearly all of my 64 years. Gov. Inslee I voted for you to put a stop to this very thing...please don't make me regret that decision. Keep the Northwest clean and liveable!</p> <p>I have lived in the Puget Sound area for almost every one of my 64 years. I am a veteran that used to delight in hiking, camping and taking pictures of every waterfall I have come across (I am disablednow). I HATE the idea of this refinery! STOP IT!!</p> <p>Governor Inslee you ran your presidential race on a platform of green ideas and the need for CLEAN ENERGY. Well here in Washington state we voted you in as our leader for those same issues. Please don't let this refinery pollute our state!</p>
Tracey Tracey Michael Tomas Sharon	Loyd Loyd Burmester Daly Miller	
Sharon	Miller	<p>Your have been a great advocate for environmental justice, please do not let this project get the permits that will allow it to pollute our beautiful state and eventually the whole earth.</p>

Louise Beth	Quigley Green	Earth needs to stop using fossil fuels NOW. And fracking equals trading clean water for dirty gas. Do NOT allow this monstrosity.
Paul Denee Bill Francis Becky	Brennan Scribner Metzler Lenski Haas	There is grave concern that moving forward with the Kalama fracking project will be harmful and detrimental to the residents of Kalama, those of the Northwest, and the entire world. If long term effects are considered, science will show it's dangers.
Ashley	Osler	Keep the Columbia River safe from potential harm. Becky Haas As a engineer focused on sustainability and water resource impacts, we need to thoroughly assess all environmental risk of any proposed project. Washington is loved for its clean air and water. Jeopardizing that puts us all at risk.
Tammy Wendy Freya Richard Ladislao	Lettieri Bowman Harris Stern Quintanilla	The earth is burning - there is no planet B yet you want to bring more toxic fossil fuels into the mix
RITA Sara Yvonne	LEMKUIL Montour Lewis Fisher	REJECT THOSE TOXIC PUKES!!!!!! WE'RE GOING THE OTHER WAY BEFORE IT'S TOO LATE!!!!!! GET A CLUE!!!!!!!!!!!!
Meadow Patti	Goldman Brent	I rent a slip for my sailboat at the Port of Kalama. The area is beautiful we fish and sail there often. I'm not opposed to development, but this will hurt the salmon and pollute the air. This is not the right project!!!! This is lose lose-lose .

Karen Craig	Jacques Heverly	We are in a massive climate crisis. Do not make it worse by approving this insane fracked gas refinery. We will pass tipping points that can't be reversed unless regulators act responsibly. Deny the permit for this incredibly destructive project.
Ron Robert	Meza de la Cretaz	We need to think not of our present needs for ourselves but of the detrimental consequences these actions will have now and to future generations. Thank you for your attention in this matter.
Valerie Valerie	Moore Moore	My family all lives in Kalama. My parents are next door, my brother and sister live next to all of us on the same street. Kalama is polluted enough by Kalama Chemical and the fumes from that are toxic. Please donâ€™t allow more cancer causing pollution
Grace Grace Jeanette	Neff Neff Kors	Humans are abusing the world beyond recognition and to their own demise.
Melissa	VerDuin	Please make the right decision for OUR CHILDREN AND PLANET. There's no planet B!
Melissa	VerDuin	Please don't allow MORE POLLUTION! We are in a CLIMATE CRISIS! Our people and planet need to heal! Stop the fracking. Stop profits before people! There's NO planet B!
Kathleen David R. Diane	Boylan Edwards Zierikzee Rohn	As a 70 years old woman with underlying respiratory problems suffering today with the worst air pollution in the world, I beg that we MUST NOT add the millions of tons of greenhouse gas pollution that this refinery would spew into the atmosphere This expresses my feelings exactly!

Andrew	Huff	I support Columbia river keepers advocacy for an accurate, transparent and informed process for this type of work that has such broad ranging impacts. We need energy, but we also need to be good stewards of our environmental future.
Susan	Thurairatnam	
Nikki	Dennis	
Mary	Peterson	
Anne	Dickerson	Save the earth and save yourself. Bringing fracked gas to the WA coast carries huge risks to the state's environment. Please take executive action if needed. Using fracked gas with all it's attendant risks to manufacture plastic in China and/or burn it for fuel seems beyond ridiculous. Also the increase in the number of vessels in the Columbia River is a dangerous problem. Deny the permit.
Anne	Dickerson	
Daniel	Jaffee	
Andy	Johnson	
Lisa	Hauge	
Thomasin	Kellermann	
Michael	McAvoy	Dear Gov, What a rough year our dear state has had this year. Given the idiot in WA setting us four years backward on Global Weather change and Science, this refinery is the last thing that should go forward. Pls copy Senator Takko and REp Blake. Please review ALL the science on this refinery in Kalama. It is the last thing we need to do and a most fragile and delicate area.
Michael	McAvoy	Thanks Mike McAvoy
Barbara	Brock	
Jo Anna	Hebberger	As an Ecologist and a citizen, I strongly oppose this fracked gas-to-methanol refinery in Kalama. This is the wrong direction for this country to go. We must divest ourselves from fossil fuels.
Barbara	Miller	
Richard	Bergner	

Laurie	Porter	As a scientist, I strongly oppose the project based on the risk it posed to o human and environmental health as it relates to the increase in GHGs and this only encourages more fracking by providing infrastructure for receiving and exporting.
Laurie Carolyn	Porter Williams	As a scientist, I strongly oppose the proposed refinery. If the wildfires are not a wake up call On the impacts of climate change what will it take?
Gerald	Pink	Don't make SW Washington take one for the gipper. 4.6 Million tons of pollution dumped into my front yard is not a good choice. NWIW has consistently downplayed the effect of the plant. Why should we trust them with our health when they hide facts. I live too close to the project and don't expect NWIW to honestly predict harm. Please protect us and our beautiful local environment.
Gerald	Pink	Too much deception. I fear an invisible cloud and we live too close. Please protect us.
Gerald jean Kylo Nile	Pink cameron Ginsberg Arena	
John Sarah	Comella Kavage	We don't need any more fractured gas. We need renewables or more energy efficiency.
Susan Susan	Holcroft Holcroft	I support you and believe in your commitment to urgently addressing the climate emergency. You canâ€™t let this happen.
Edward	Wolf	From Bellingham, I share the stake in this decision. The NWIW proposal consumes too much fracked gas for the (supposed) purpose of manufacturing plastics that the world does not need. The refinery puts Columbia River estuaries at risk. Just Say No.

Edward
Jeffrey

Jeffrey
Dylan
Katelyn
Susanna
Paul
Bruce
Sandi
Duncan
Carol Joan
Karen
Linda
Janet
Patti
Corinne
Theresa
Virginia
David
Carol
Judy

Ann

Ann
James
Mona

Wolf
Watson

Watson
Tiss
Entzeroth
Blunt
Lapidus
Cratty
Cornez
Brown
Patterson
Shawcross
Bolduan
Neihart
King
Fargo
Shiels
Mendez
Hermanns
Hartman
Fiestal

Dorsey

Dorsey
Bates
Lee

As a Washington resident, I share the stake in this decision. The NWIW proposal consumes too much fracked gas for the (supposed) purpose of manufacturing plastics that the world does not need. The refinery puts Columbia River estuaries at risk. No.

We should be setting an example on how to get away from dirty energy, not allowing it right here in the beautiful PNW!

Susanna Blunt

It is imperative to stop fossil fuel extraction to have a livable future. This project must be denied approval.

Our future depends on ending the use of fossil fuels. Fracking operations MUST stop.

Claudia
Keiko

Devinney
Martinez

carl
carl

Spotz
Spotz

Please a fracked gas methanol plant at this stage of the game is just plane crazy.

Diane
Jill
John
Alicia

Craig
Bremer
Adair
Kern

It is stunning to me that this proposal is even being considered. PLEASE REJECT this proposal and keep our Pacific Northwest communities and people safe from the devastating and harmful impacts of this proposed methanol refinery. Thank you.

William
Craig
Susan

Schoene
Doberstein
Heath

The West is on fire. Climate change is drying out Western landscapes, increasing the frequency, size and rate of spread of wildfires. New fossil fuel infrastructure cannot help our now-critical need to quickly replace fossil fuels.

Dean

Sigler

I worked for an industrial engineering firm. Siting was a crucial part of our consideration in building a new facility. This is terrible, placing a potentially deadly plant on the shores of a major river. Reconsider, for all our sakes.

Kristen
Becky
Aloysius
Alexa

Mcwain
Orf
Wald
Fay

This will do more long term, irreversible damage than we know. Our kids, our grandkids, our great grand kids... they deserve better. PLEASE stop this. YOU have the power to. We don't... which is a truly awful feeling. Do the right thing. Please.

Marjorie Rick	Winzenried Brodner	We need to move away from the high pollution sources of power to sustainable power. Now. For the climate, jobs, health. Do the right thing, stop this project. Marj Winzenried
Hayden Linda Kathryn Aaron Dr. E.	Hendersen Heath Drahota Shilkaitis O'Halloran	I am a graduate student studying leadership for sustainability education so it is my goal to understand how to educate people so they foster within themselves a deep understanding that this earth is what supports us. We must live in harmony with it.
Dr. E.	O'Halloran	Please do the right thing. No more fossil fuels!
Tiffany Mary Jo Heather	Moore Wilkins Dunnavant	We are at a critical time in human history and we MUST immediately transition to a sustainable, clean energy future or face extinction. We must get OFF of fossil fuels now. I've seen the devastating negative effects of fracking in Colorado. I do not support this project!
sharon Michelle	rickman Johnson	1. Fracking is wrong - the study should include impacts of fracking to water sources and aquifers at the point of extraction. 2. The alternative case scenarios are all based on fossil fuels (coal, oil, gas). 3. TRC is not a reputable consulting firm
Michelle Toni	Johnson Rubin	I don't believe that allowing the methanol refinery anywhere in Washington state is worth the damage that fracking does to our environment and our water sources is not right. The environmental impact study is wrong and they should not support this.

Kyle Den Mark	Purdy Wichar	Laura, The salmon cycle is a pinnacle aspect of PNW heritage. If we allow big gas to operate at the outlet of such a massive watershed, we will be doing injustice for generations to come. Lets take Covid as a chance to reverse our ways!
Andrew Kathie Steve Lynn	Mack Takush Robey Shoemaker	For crying out loud. When we will begin to make some effort to save the planet from the relentless assault of the fossil fuel industry. This is not just a Washington state issue. We all live on the same planet. Do the right thing.
Janet Lindsey	Weil Stevens	Kalama is one of the most beautiful places along the lower Columbia River. Don't allow this horror to happen.
Lindsey Paula	Stevens Shafransky	I occasionally visit the Kalama waterfront. When I'm there I see many people enjoying fishing, swimming, having time with their families. I'd be very sad to see the community lose this and for the area to become polluted.
priscilla	martinez	We need to take better care of what is left of our environment, for people, wildlife, and marine life. This proposal to build and operate the worlds largest fracked gas-to-menthol refinery in Kalama would cause large amounts of not needed pollution to spread through the air.
Ayden Heidi	Brannon Welte	Fracking puts our entire world at risk. Its production makes it the dirtiest fossil fuel available, although it has been incorrectly sold as a transition fuel. The danger of transporting this volatile LNG and refining it into methanol puts us at risk
Susan	Haywood	

Susan	Haywood	<p>The Kalama project will affect all of the Pacific Northwest---and the world. The transportation of LNG /methanol and the refinery at Kalama are dangerous and polluting. That's why NWIW has misled the public.</p> <p>The risks and the amount of pollution from this project make it unreasonable to approve. When we harm the air/water/soil, we make our planet unliveable. We undermine the industries that are already in place in the Pacific Northwest.</p>
Susan Judy Shin Steven	Haywood Anderson Lee Yochim	
Steven	Yochim	<p>I feel that the refinery in Kalama Wa would make a negative assault on the quality of life a environment on not only. SW Washington but the whole world also would increase the amount of oil train coming through the Columbia Gorge and Vancouver, At this point in time projects which increase greenhouse emissions such as methane production are undeniably destructive to future life on this planet.</p>
Franklin Franklin Holly Thomas Mary Debra	Colbert Colbert Marczak Gilmore Maul Nelson	
Grete Charles Cynthia	Heimerdinger Townsend Marrs	<p>There should be better ways to create jobs, then gas to methanol refinery, which pollutes the air, uses resources. So that some big companies which may not even be US companies make lots of money. Why else would they propose. Money and economy!!!</p>

Diane
John
Mike
Mike
Raso
Maureen
Joel
Tyler
Karen
Elizabeth
Polly
Karen

Kintrea
Martinez
Conlan
Conlan
Hultgren
Watkins
Kleinbaum
Wagner
Trumper
Berggren
Wood
Spradlin

liza

Michaelson

liza
William G
Jennifer
Barbara
Sandra
Patricia
Daniel

Michaelson
Gonzalez
Poste
Rosenkotter
Christopher
Baley
Hawley

Susan

Moore

Please respect Native American rights to this area and its waters.
Indigenous people deserve to have this area kept free from
dangerous pollution and so do the rest of us.

Pollute WA so China can make more plastic??? We all LOSE!!

Please reject this filthy, out of date, and dangerous project.

Thank you Governor Inslee, for the relentless work you do to
protect our environment. This plan for Kalama is a No- Brainer. It
is bad from one end to the other . Please don't let it happen! Liza
Michaelson San Juan Island

Please use your position of power to protect the environment and
the people of this region, and the world. Lives are in your hands.
Think of the next generation, and the water and air we want to
offer them.Thank you.

Clean water is a requirement for all life on this planet. This is a
huge threat. Please reject this proposal.

John
Dianne
Sarah

Shirley
Douglas
Landwehr

Look at what climate change caused wildfires have done to the west coast this year. This refinery will only add to the problem.

Cory

Mack

We are dealing with a climate crisis here. Three of my family members just lost their homes in wildfires driven by erratic weather patterns caused by climate change. This is costing people their lives and livelihoods. Enough is enough.

The madness of climate impact has to stop NOW. You can help to make it happen, please.

Susan
Susan
Jonathan
Sara
Susan
Adonai
Mark
Melissa

Atwood
Atwood
Gottlieb
King
Preston
Booth
Darioenzo
Rice

We need More CLEAN Energy to help with the Worlds Global Warming!!! This Project is Not Doing That AND is going In the Wrong Direction!!!! Please reconsider doing this damaging project!!!!

Mary
Mary

Davis
Davis

Fracking is an invasive and destructive process. The only ones who benefit are those making financial gains. Everyone else-the planet, wildlife, and people all lose as their environment is polluted along with other problems that will occur.

Kate
Nancy

Kenner
Stamm

Investing in renewal energy is a far more responsible strategy than continuing to use fossil fuels. The impacts of climate change are blatantly obvious and costing us all too much. I only have to think about how difficult it was to breathe recently.

Kathleen

O'Reilly

Antoinette
julieann
Deborah
Barbara
Kathy

Bonsignore
palumbo
Strahan
Schwartz
Oppenhuizen

Margaret

Akin

Margaret

Akin

Larry

Siglin

Walter
Joy
Charles
Hashi
Linda
Marco

Englert
Green
Young
Hanta
Rudman
de la Rosa

Hugh
sharon

Cochran
lacy

Brooke
Dolly

Kavanagh
Sutherland

I have lived in Washington my whole life and this does not represent our values!! Margaret
As a lifelong WA resident this goes against all our values, no matter how much money you make! Margaret
We have reached the tipping point and cannot justify any additional pollution generating projects that will push us over the climate cliff. Please reject this project.
This is a refinery that should not be built. The effects of carbon dioxide and other greenhouse gases on our atmosphere are catastrophic, and we must do everything we can to reduce carbon emissions and develop new sources of clean energy.

Washington State has seemed the leader in ecological management in the years since I moved to the NW. Let's keep up that good work in this dire instance. Our globe is needing all the help it can get. Thanks for all you do for it. Hugh Cochran

Climate-change-fueled fires are currently burning down homes, businesses and towns across our region. People have died, are exposed to toxic smoke, have contaminated water supplies. Our ecology is one. Reject this proposal to protect and preserve.

Laura	Goldberg	We MUST keep fossil fuels in the ground and focus instead on CLEAN GREEN ENERGY!!!!
Laura josh Kaitlin Abigail	Goldberg chandler Grammer Houghton	We MUST keep fossil fuels in the ground and focus instead on CLEAN, GREEN ENERGY!!!! Thanks for your good work!
Stephen	Pew	We are better than this
		This refinery would be bad for our environment. Please reject it and the lairs who promote it.
Barbara	Haga	Dear Director Watson, et.al., We have learned over the years, fracking in itself is an environmental hazard. Ethanol production adds a horrific level of dangerous environmental impact. Especially in time of Climate Crisis! Thank you! Barb Haga

Dear Director Watson and the WA Department of Ecology:

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

PORTLAND OR 972

3 OCT 2020 PM 3 L



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Hannah Liu (360) 334-1077
 NAME PHONE
 3008 NE 141st Street, Vancouver, WA, 98686
 ADDRESS
 hannahstormliu@hotmail.com
 EMAIL

Columbia Riverkeeper

1125 SE Madison
 Suite 103A
 Portland, OR 97214

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- ☐ Sending in comments about the state's draft environmental review
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- ☐ Sharing pre-written social media posts on specific dates

97214-360031



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KAREN TOMS

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3350 45th St, Washougal WA
ADDRESS 98671
karentoms@comcast.net
EMAIL

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NAME PHONE
Scott Daly 360-673-1422
ADDRESS P.O. Box 1307
skatteringemindspring.com
EMAIL

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NAME MARY BSIEGEL PHONE 360-723-0638

ADDRESS 2109 NW6th STREET

BATTLE GROUND WA 98604

EMAIL

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NAME Janell Chandler PHONE 360-606-2502

ADDRESS 13007 NE 110th Ave Vancouver, WA 98662

EMAIL

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30 SEP 2020 PM 4 L



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Greta Sutton 366-909-0198

1157 Officers Row Vancouver Wa 98661
garbo0198@gmail.com

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PORTLAND OR 972

29 SEP 2020 PM 2 L

Thinking



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Stephene Ratulien Hulick

NAME PHONE

16607 N.E. 197th Ave., Brush Prairie WA 98606

ADDRESS

Kaweah50@gmail.com

EMAIL

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Randy Thompson

NAME PHONE

8712 NE 159th St

ADDRESS

Bothlegrund wa

EMAIL

Randysdog@outlook.com

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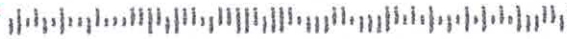
Jeanne Vollmer 210-601-7045

6525 NE 106th CIR Vancouver, WA 98686
jeannevollmer@gmail.com

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Cheryl Dotson
2605 North N. Street
Washougal, WA 98671

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KIMBERLY HIGGINS
NAME PHONE
PO BOX 2173
ADDRESS
LONGVIEW, WA 98632
EMAIL

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Paula Overholtzer/Jane Overholtzer
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paula.ko@centurytel.net
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OVERHOLTZER
24016 NE Dole Valley Rd.
Yacolt, WA 98675



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NAME

PHONE

ADDRESS

EMAIL

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28 SEP 2020 PM 3 L

Thinking



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25 SEP 2020 PM 5 L

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NAME Avi Haviv PHONE 360 213 3641
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EMAIL avi@avimuzo.com 98625

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Portland, OR 97214

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NAME Cathleen Murphy PHONE 360 256-0052
ADDRESS 12306 NE 17th Circle Vancouver, WA

Columbia Riverkeeper

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Portland, OR 97214

EMAIL

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JoAnn Lusky
NAME PHONE
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ADDRESS 98686
JoAnn@JoAnnLusky.com
EMAIL

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26 SEP 2020 PM 5 L

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B. Bayle Cain
NAME PHONE 509-710-6493
27005 NE Yacolt Rd, Yacolt, WA 98675
ADDRESS
travelingtwo@gmail.com
EMAIL

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Barb Thorpe 360-451-5420
NAME
10013 NE Hazel Dell Ave, Vancouver 98685
ADDRESS
EMA

I want to

☐ Attend in person

☐ Attend virtually
Joining in Ecology's draft environmental review
You are invited to attend the virtual hearing
Sharing pre-written social media posts on specific dates
PORTLAND OR 972
22 SEP 2020 PM 4 L
Thinking of you
Mail a smile



Columbia Riverkeeper

1125 SE Madison

Suite 103A

Portland, OR 97214

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PORTLAND OR 972

24 SEP 2020 PM 5 L

Thinking of You



FOREVER / USA

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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.

Rita Gillespie 1 360 673 2554

279 Confer Road Kalama WA 98625

ritavino@kalama.com

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- ☐ Sharing pre-written social media posts on specific dates

97214-350031



Columbia Riverkeeper

1125 SE Madison

Suite 103A

Portland, OR 97214

Dear Director Watson and the WA Department of Ecology:

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

PORTLAND OR 972

23 SEP 2020 PM 4 L

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Denise Schatte Wayne Kiefer Family

8610 NE 15th Ave. Vanc., WA 98665

Climate change forecasts are exceeding far more rapidly than expected. With the wildwires a constant part of life now. The ability the absorb CO2 is gone and the release of CO2 is creating a double impact. It is beyond ridiculous to even consider fracking

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emissions.

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STEVEN GUY

NAME PHONE

3601 NE CAVITT RD

ADDRESS

STEVEN GUY 7@HOTMAIL.COM

EMAIL

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Emma Turton

NAME PHONE

1221 SE Ellsworth Road, Apt 206, Vancouver, WA

ADDRESS

empinkflamingo@gmail.com

EMAIL

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Mr. & Mrs. Greg Gibson
NAME PHONE
1219 BILLINGS CT
ADDRESS
VANCOUVER, WA 98661
EMAIL

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☐ Sharing pre-written social media posts on specific dates
PORTLAND OR 972

PLACE
STAMP
HERE

Columbia Riverkeeper
1125 SE Madison
Suite 103A
Portland, OR 97214

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DON FILIPPO 503-318-6723
NAME PHONE
18802 NE GABRIEL RD.
ADDRESS
YACOLT, WA 98679
EMAIL

I want to help by:
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Barbara Stanley 360 430 8192

517 Phoenix Way Vancouver WA 98611

south4545@gmail.com

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24 SEP 2020 PM 3 L

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James DeRosso 503-381-1801

4107 N.W. Spruce St. Vancouver 98660

james3d@easystreet.net

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NAME **K & L LEONARD**

ADDRESS **217 PEBBLE LANE**
KALAMA, WA 98625

EMAIL

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NAME Justine Templeman PHONE
ADDRESS 23000 N.E. Kaskillah Dr.
B6, WA 98604
EMAIL jtempleman.70@gmail.com

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NAME Jamie Wick PHONE
ADDRESS 144 Kalina Ct. Kalama, WA 98625
EMAIL

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CAROL TURBEON 707-330-2395

NAME PHONE

PO BOX 872015, VANCOUVER, WA 98687

ADDRESS

CAROLTURBEON@MSN.COM

EMAIL

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Helen Murray 360-287-3470

NAME PHONE

4555 NE 26th Ave Apt. 304

ADDRESS

EMAIL

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Maurice Knutson

NAME

PHONE

9119 NE 316th St LaCentu, WA

ADDRESS

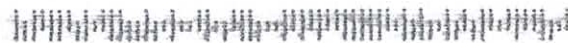
mfnkntec@gmail.com

EMAIL

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Karen Elliott 360-749-9876

NAME

PHONE

270 Kari Jo Lane

ADDRESS

Karenelliott663@gmail.com

EMAIL

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Patricia Freiberg

NAME PHONE

3300 NE 164th St H2

ADDRESS

Ridgefield WA 98642

EMAIL

am helping

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Andrea Carrey

NAME PHONE

360-882-1215

5815 NE 82nd Court, Vancouver, WA

ADDRESS

andrea7135@centurylink.net

EMAIL

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WILLIAM + PATRICIA CHRISTMAN

108 SW 4TH Ave, KELSO, WA, 98626

WILCHR195066@MAIL.COM

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1125 SE Madison

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Portland, OR 97214

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Diane L. Dick

13 St. Helens Lane, Longview, WA 98632

Columbia Riverkeeper

1125 SE Madison

Suite 103A

Portland, OR 97214

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Susi Hulbert 360-4231313
NAME PHONE
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ADDRESS
susi1313@yahoo.com
EMAIL

Columbia Riverkeeper
1125 SE Madison
Suite 103A
Portland, OR 97214

I want to help by:

- ☐ Attending a virtual hearing - not sure Have not had good experience with these zoom
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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.

Robert Percy 360 606 3525
NAME PHONE
2616 NW 289 St Ridgefield WA
ADDRESS
EMAIL

Columbia Riverkeeper
1125 SE Madison
Suite 103A
Portland, OR 97214

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57214-360031

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NAME Margorie Nichols PHONE 360-414-5937
ADDRESS 391 Aaron Dr. Kels, WA 98626
EMAIL jnick7777@aol.com

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PS I am a Republican but I agree with this issue as I was also against the Coal Port.

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NAME R. Ellison PHONE 510 502 3160
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EMAIL methuselah90@yahoo.com

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William Canada 360-673-6878
NAME PHONE

115 Stepping Stone St, Kalama, WA
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Firestar11406@gmail.com
EMAIL

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Deborah Kramer 360-896-1264
NAME PHONE
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Sam Mackenzie 360-694-5914
NAME PHONE
PO Box 2753, Vancouver Wa 98668
ADDRESS
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Sarah Ruhl 360-931-0113
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Sruh1.lilsw@gmail.com
EMAIL

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Charlene O'Day 503-320-0753
NAME PHONE
700 W 32nd St. Vancouver WA 98660
ADDRESS
cher.oday@charfcontrols.us
EMAIL

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NAME MRS D DREYFUSS PHONE _____
ADDRESS 7104 NW 127th ST VANCOUVER WA 98685
EMAIL _____

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NAME JOHN BAUGHER PHONE 360 606-8267
ADDRESS 13907 NW 50th AVE, VANCOUVER WA 98685
EMAIL jpbaugher@msn.com

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Renee Cousineau 360-247-6410

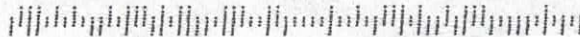
1242 Yale Bridge Rd, Ariel WA

dcprtlldstudio@hotmail.com

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Susan Guderjohn (503) 791-5920

3308 H St., Vancouver WA 98663

too many

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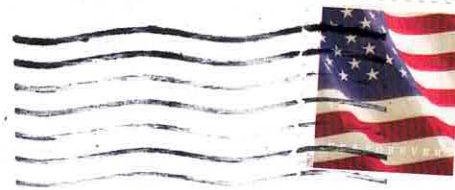
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DONALD & MAUREEN SACKER
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ADDRESS
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EMAIL 10mickster@comcast.net

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Ms Bonnie Kaufman
26110 NE 209th St
Battle Ground, WA 98604-9657

Ecology:
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Bonnie KAUFMAN
NAME PHONE
26110 NE 209th St, 98604
ADDRESS
EMAIL

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Michael HERRON
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JOSEPH RAB
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HOMER@1CFRANTIER.COM / 98671

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CRAIG V SKIPTON 360-696-4271

8901 Mt. Jefferson Ave

SKIPdrips@msn.com

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SUE RUTHERFORD

2114 35th Avenue

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SUE RUTHERFORD 1951@hotmail.com

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Lori Benton 971-444-2905

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loribtn30@yahoo.com

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Karen Dahl 360-695-1019

3015 "K" St Van. WA 98663

dahlhouse1956@gmail.com

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Dear Director Watson and the WA Department of Ecology:

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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.

GRACE TEIGEN - DGENE
360-735-5901 WIGGLESWORTH

NAME

PHONE

1308 N.E. 151 AVE

ADDRESS

TEIGEN GRACE 68@GMAIL.COM

EMAIL

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Aven Caravero
3215 Laurel Rd Longview WA 98632

NAME

PHONE

ADDRESS

Didguy1225@gmail.com

EMAIL

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Rick & Worene Tolmie 360-673-7508
NAME PHONE

5464 Kalama River Road, Kalama, WA
ADDRESS

rickworene@kalama.com
EMAIL

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Michael G. Sousa 360-425-7063
NAME PHONE

934 22nd - Longview WA. 98632
ADDRESS

EMAIL

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Shelley Swartz 360-673-6192
NAME PHONE
PO Box 1783 Kalama WA
ADDRESS
s152jiggilyput@aol.com
EMAIL

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Anita J. Thomas
NAME PHONE
701 Columbia St. #713, Vancouver WA
ADDRESS 98660
EMAIL

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NAME Loz Kearny PHONE 425 223 1095
ADDRESS 23120 Olympia Way, Langview WA 98632
EMAIL loz.ann.earny@gmail.com

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NAME June Yamrick PHONE 360 624 2239
ADDRESS 6109 NE 5557 Ave Vancouver WA 98661
EMAIL kokaeuwok@6mail

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Rose Woodruff (360) 356-4986
NAME PHONE
6002 NE 105th Ave Van WA 98662
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rosie98662@aol.com
EMAIL

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Royce Wells 360-901-3275
NAME PHONE
275 Hope Lane
ADDRESS
Kelso WA 98626
EMAIL

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NO

CHINA
GO HOME



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LARRY JORDAN

2360 38TH AVE LAKEVIEW WA 97122

EMAIL

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Joanne Fitzwilson 360-693-7654

700 Washington ST. #823 Vancouver WA 98660

jfitzwilson@msn.com

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NAME

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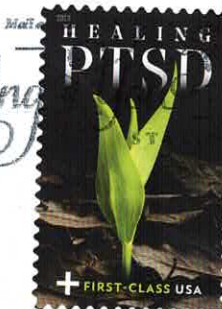
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Rae Gholson 8323591769
NAME PHONE
1317X St #16, Vancouver, WA 98661
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dorothea.gholson@gmail.com
EMAIL

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Kirk Gholson 5126369582
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Raychel Coleman
1317 X St Apt 16
Vancouver, WA 98661-4109

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Mr Kirk Gholson
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Vancouver, WA 98661

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NAME

BRUCE A. JENSEN

ADDRESS

2901 SE Village Ln.
Vancouver, WA 98683

EMAIL

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Linda Mather

NAME

PHONE

1709 NE 78th St, #138/Vancouver WA
98665

ADDRESS

shindi44@gmail.com

EMAIL

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NAME Julius & Patricia Scoggins PHONE _____
ADDRESS 5709 Texas Drive
Vancouver WA 98661
EMAIL _____

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NAME Ricky Herriges PHONE 360-600-2694
ADDRESS 701 GRADE Street Apt 42
Kelso wa. 98626
EMAIL _____

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climate and Kalama!

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Marrene Jenkins 360-673-3440
NAME PHONE
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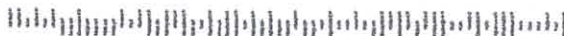
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1125 SE Madison
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97214-360031



Dear Director Watson and the WA Department of Ecology: **PORTLAND OR 972**
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Angela Vahsholtz-Andersen (360)
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V Rosales
Box 87772
Vancouver, WA 98687

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EMAIL

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Grant Wienker 360-694-5661

NAME

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EMAIL

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Regina Patterson 360-560-3225

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gpatterson13000@msn.com

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Ed Griffith

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BLACK HERITAGE



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PORTLAND OR 972

Ed and Harriet Griffith
1000 17th Ave. APT 306
Longview, WA 98632-2358

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FOREVER / USA

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Portland, OR 97214

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Jessica McConnell

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Bethany Glenn 360-673-3233

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Mail a smile



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Beth Bergman

15211 N.E. 19th Ave.

Vancouver, Wa. 98686

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Pamela Lorrie (360) 891-6618
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EMAIL

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Lonnie Lane 503.933.0655

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DeAnn S.

P.O. Box 823, Ridgefield WA 98642

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Brittney Harold 503 729 2347
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Portland, OR 97214

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57214-35003

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Ann Holaday
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PLACE
STAMP
HERE

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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.

LINDA CURRY 360-577-1515
NAME PHONE
253 CRESCENT DR, Kelso
ADDRESS WA 98626
Lskcurry@comcast.net
EMAIL

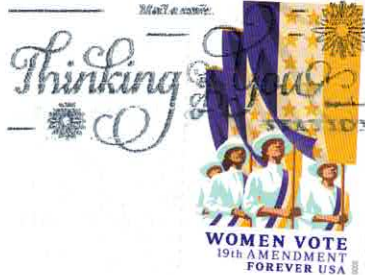
I want to help by:

- ☒ Attending a virtual hearing
☒ Sending in comments about the state's draft environmental review
☐ Volunteering to recruit others to attend the virtual hearing
☐ Sharing pre-written social media posts on specific dates

97214-360031

PORTLAND OR 972

22 SEP 2020 PM 6 L



Columbia Riverkeeper

1125 SE Madison
Suite 103A
Portland, OR 97214

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NA
AD
Ms. Judith Edwards
17407 N.E. 224th Ct.
Brush Prairie, WA 98606-8106

EMAIL

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97214-360031

PORTLAND OR 972

22 SEP 2020 PM 4 L



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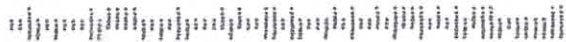
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Diana Jung 713-995-4791
NAME PHONE
4107 NE 35th, Vancouver 98661
ADDRESS
pmdiana7@gmail.com
EMAIL

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97214-360031



Thinking & Writing



Columbia Riverkeeper

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Suite 103A
Portland, OR 97214

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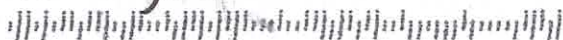
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Dan Bolton 360-784-0575
NAME PHONE
582 E. Anderson Rd. Sequim Wa. 98382
ADDRESS
turquoisesequima@gmail.com
EMAIL

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- ☐ Attending a virtual hearing
- ☐ Sending in comments about the state's draft environmental review
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97214-360031



TACOMA WA 983
OLYMPIA WA
22 SEP 2020 PM 2 L

Thinking & Writing



Columbia Riverkeeper

1125 SE Madison
Suite 103A
Portland, OR 97214

Tell them to get the
Frack out of
Washington

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Gerald+Julie Blair 360-335-8445

NAME PHONE

3782 P Street, Washougal, WA 98671

ADDRESS

no computer

EMAIL

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- ☐ Attending a virtual hearing
- ☐ Sending in comments about the state's draft environmental review
- ☐ Volunteering to recruit others to attend the virtual hearing
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97214-360031

PORTLAND OR 972

14 SEP 2020 PM 3 L

Thinking



Columbia Riverkeeper

1125 SE Madison

Suite 103A

Portland, OR 97214

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Josh Johnson

NAME PHONE

2987 MADRONA DR, LONGVIEW, WA 98632

ADDRESS

joshrobertjohnson@gmail.com

EMAIL

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PORTLAND OR 972

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Thinking



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Robert Hoffman

NAME PHONE

4201 NW Columbia St, Vancouver, WA 98660

ADDRESS

RWHOFFMAN1776@gmail.com

EMAIL

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Trent Corey 360 600 1086

NAME PHONE

1912 NW 144th St Vancouver WA 98685

ADDRESS

trentcorey@yahoo.com

EMAIL

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Sandy Hayslip 360-693-5595
NAME PHONE
711 1st Street
ADDRESS
s.hayslip@comcast.net
EMAIL

I want to help by:

- ☒ Attending a virtual hearing will try
☒ Sending in comments about the state's draft environmental review
☒ Volunteering to recruit others to attend the virtual hearing
☒ Sharing pre-written social media posts on specific dates
not good at tech



Columbia Riverkeeper

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Timothy J Shepski 360-687-9360
NAME PHONE
804 SW 21st CT. Battle Ground WA 98604
ADDRESS
dastardly duo 94@g.com
EMAIL

I want to help by:

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Tucker Goggin
NAME PHONE
12020 N.E. 132nd Ave Brush Prairie
ADDRESS WA 98606
Gogginfarms@gmail.com
EMAIL

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PLACE
STAMP
HERE

Columbia Riverkeeper

1125 SE Madison
Suite 103A
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Kathleen Martin 360-673-1120
NAME PHONE
221 J.E. Johnson Rd Kalama WA
ADDRESS 98625
EMAIL

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- ☒ Attending a virtual hearing
☐ Sending in comments about the state's draft environmental review
☐ Volunteering to recruit others to attend the virtual hearing
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97214-360031



Columbia Riverkeeper

1125 SE Madison
Suite 103A
Portland, OR 97214

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15 SEP 2020 PM 5 L

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BILL Hinman 541-991-2756

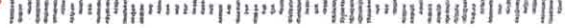
2955 Cypress St Longview, WA 98632

hinmanwilliam@yahoo.com

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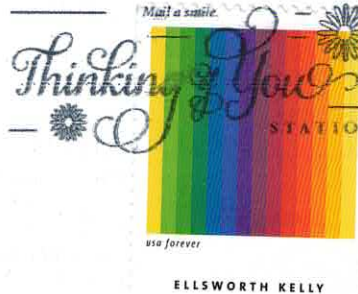
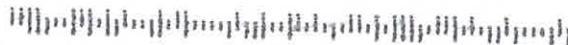
Ms. Dorethea Simone
2828 NE Everett St Unit 20
Camas, WA 98607-9204

light1lamp@gmail.com

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Gary + Barb Wills 360-718-0689

3321 NW View Rd. Vancouver WA 98685

garybarbwills@aol.com

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Thinking



Columbia Riverkeeper

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Timothy John Speirs 360-356-4088

712 W 21ST ST/Vancouver, WA

tssock@hotmail.com

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- ☒ Attending a virtual hearing
- ☐ Sending in comments about the state's draft environmental review
- ☐ Volunteering to recruit others to attend the virtual hearing
- ☐ Sharing pre-written social media posts on specific dates



36000111161245



FOREVER

Columbia Riverkeeper

1125 SE Madison
Suite 103A
Portland, OR 97214

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Summer Bradley 503-333-0473

NAME PHONE

7911 NE 151st Ave

ADDRESS

greenteafacu@gmail.com

EMAIL

I want to help by:

- ☒ Attending a virtual hearing
- ☐ Sending in comments about the state's draft environmental review
- ☐ Volunteering to recruit others to attend the virtual hearing
- ☐ Sharing pre-written social media posts on specific dates



FOREVER / USA

Columbia Riverkeeper

1125 SE Madison

Suite 103A

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CAROL MARIER

NAME PHONE

3419 Greenmountain Rd.

ADDRESS

Kalama, WA 98625

EMAIL

I want to help by:

- ☐ Attending a virtual hearing
- ☒ Sending in comments about the state's draft environmental review (one)
- ☐ Volunteering to recruit others to attend the virtual hearing
- ☐ Sharing pre-written social media posts on specific dates

97214-360031

PORTLAND OR 972

15 SEP 2020 PM 4 L



Columbia Riverkeeper

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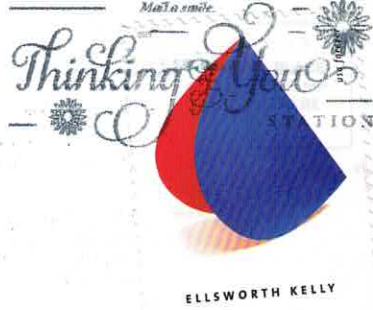
NAME: Jim & Margie Crossley
PHONE: _____
ADDRESS: 18407 NE 28th Street
Vancouver, Wa. 98682
EMAIL: _____

I want to help by:

- ☐ Attending a virtual hearing
☐ Sending in comments about the state's draft environmental review
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97214-360031

PORTLAND OR 972
14 SEP 2020 PM 5 L



ELLSWORTH KELLY

Columbia Riverkeeper
1125 SE Madison
Suite 103A
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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.

NAME: Karen Janke
PHONE: 360.326.9283
ADDRESS: 2100 NE 79th Ave Vancouver
98664
EMAIL: paisitalindagordie@gmail.com

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Columbia Riverkeeper
1125 SE Madison
Suite 103A
Portland, OR 97214

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 Den Mark Wichar
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PHONE 360 694 3703
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NAME Mike Phillips PHONE Kalama WA 98625
ADDRESS P.O. Box 305
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NAME Grace Smith PHONE 817-454-9078
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Frank Johnsen
12719 NW 35th Ave
Vancouver, WA 98685-2214

Department of Ecology:
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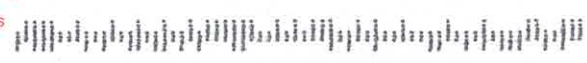
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Dwayne Sheets No
NAME PHONE
3720 E 18th St Vanc WA 98661
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No
EMAIL

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BILL WOODARD 503-709-6482

NAME PHONE
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billandnita@hotmail.com

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Jeff + Bev Hamlik

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Cristi Wikstrom 360 992-0711

NAME PHONE
404 NE 107th Street Van, WA
ADDRESS 98685

EMAIL

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PETER McREYNOLDS
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1703 N.W. 103rd ST. VANC.
ADDRESS WA

EMAIL

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NAME LISA HIBBERD PHONE 360 518 6102
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NAME TINA BARROWS PHONE
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Terry Glatka 360-695-8170
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NAME

Sarah & Jeff Thorsen

ADDRESS

5702 NW 149th St. Vancouver, WA 98685

EMAIL

scarlyle01@msn.com

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97214-360031



Columbia Riverkeeper

1125 SE Madison

Suite 103A

Portland, OR 97214

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15 SEP 2020 PM 5 L



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STEVEN R VAN VRAKEN 360 693 3859
NAME PHONE

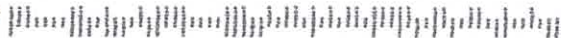
115 NW 56th Cir Vanc. Wash. 98663
ADDRESS

EMAIL

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Marilyn Martinyak
NAME PHONE

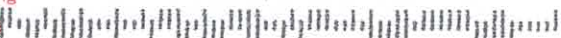
809 Manzanita Way, Vancouver, WA 98661
ADDRESS

mmartinyak@yahoo.com
EMAIL

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Mary and Andy Todd 360 687-0317
NAME PHONE
24701 NE 22nd Circle, Battle Ground WA
ADDRESS
marytoddnp@yahoo.com
EMAIL

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Aaron Corvin 360-834-6514
NAME PHONE
19902 SE 42nd St. Camas, WA
ADDRESS
corvin aaron 25@gmail.com
EMAIL

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A8 16705 17225752

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Steve Hayslip (360) 567 9452
NAME PHONE

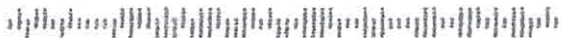
12802 NE 17th ST VANC, WA 98684
ADDRESS

frostcreek83@outlook.com
EMAIL

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Sack Trice 360-635-8660
NAME PHONE

4105 NE Tacoma Ct
ADDRESS

SackchneF24@hotmail.com CANAS 98607
EMAIL

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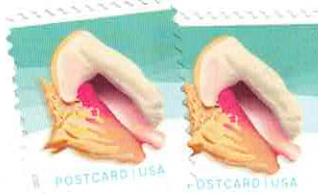
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George + Jan Hail 360 666 4724
NAME PHONE
22201 NE 19th Ct Battle Ground, WA 98604
ADDRESS
janandgeorge@yahoo.com
EMAIL

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LYNN POTEET
NAME PHONE
P.O. BOX 183 Amboy, WA 98601
ADDRESS
EMAIL

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JOHN C JAMROG 360-314-2274

7417 NW VISTA AVE., VANCOUVER, WA 98665

jamrogsp@comcast.net

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Save Vanishing Species
Amur Tiger cub
USA
FIRST-CLASS

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VICKIE ROBISON

805 NW 41ST STREET

VANCOUVER, WA 98660

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NAME MAKA GIBSON PHONE 808.291.2034
ADDRESS 711 NW 4th St. Vancouver, WA 98660
EMAIL maka@cfsww.org

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NAME Greg Flaks PHONE 360 579-7027
ADDRESS 13111 NE Fifth Ave Vancouver WA 98685
EMAIL flaks24@gmail.com

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Susan L. Swanson (360) 695-0898

4117 N.E. 45th Ave - Vanc, WA 98661

ADDRESS

EMAIL

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EUNICE SCHROEDER

508 NW 134th CIR, VANCOUVER, WA 98685

ADDRESS

EMAIL

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Nancy Casey
NAME PHONE
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ADDRESS
nancy.designmatters@gmail.com
EMAIL

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Judy Decker
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16002 NE 165th Ave Bush Prairie
ADDRESS
judydecker60@gmail.com
EMAIL

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1125 SE Madison
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Portland, OR 97214

Thank You for doing your part to take good care of the Pacific N.W. - God's given us our Heaven on Earth. He is watching.

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CHARLES HOUGHTEN
NAME PHONE
16909 NE 227th AVE BRUSH PRAIRIE
ADDRESS WA 98606
CJHOUGHTEN@GMAIL.COM
EMAIL

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Linda Horst 360-442-3059

1020 Kool Road, Kelso, WA 98626

lindahorst45@gmail.com

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can do only by phone - no computer

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Sandra Davis 360 577-1043

1002 Abernathy Creek Rd

Longview, WA 98632

abernathyfarm@a.com

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ELLSWORTH KELLY

Columbia Riverkeeper

1125 SE Madison

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Abigail Brathwaite 971-988-8747

NAME PHONE

31812 NW 71st Ave Ridgefield, WA 98692

ADDRESS

abbyb@pnfarm.com

EMAIL

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Dennis Beveridge

NAME PHONE

3508 NE 16th Street Ridgefield, WA 98642

ADDRESS

Beveridge22@MSN.com

EMAIL

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Keneth Lutz 360-425-0305
NAME PHONE
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ADDRESS
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EMAIL

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Clarice A. Zundigland 360-366-3666
NAME PHONE
2004 Lewisiana St., Apt. B
ADDRESS
Longview, Wa, 98632
EMAIL

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Gloria Nichols
NAME PHONE
125 Cedar Falls Dr Kelso
ADDRESS wa 98626

EMAIL

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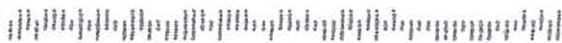
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GARY BACHLE 360-892-3048
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Mary Blackburn

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Elaine Sharp 360 909 5549

11609 22nd Ave Longview WA 98632

besharponedcomcast.net

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97214-360031 There are too many "its" to this project.



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Once built and environmental impacts develop - it's too late!

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Richard Osmon 971 330 2459

2726 NW Valley ST Camas, WA 98607

ADDRESS

EMAIL

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NAME  Ruth Dean
3902 Gardenia St.
Longview, WA 98632

EMAIL *envision_peace@hotmail.com*

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Ben Bierman
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ADDRESS
ben_bierman@outlook.com
EMAIL

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GARY LINDSTROM 360.431-8653
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Ms. Lyndee Cunningham
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Camas, WA 98607-1268

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Mail a smile



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Sheryl L Harding

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K. EATON 360/687-1295

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NAME

Pat Doyv 360-635-3816

ADDRESS

P.O. Box 1093, Hissou, WA 98622

EMAIL

~~Pat Doyv~~ pat@olyperm.com

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NAME

PAT FORGEY

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SORRY - too OLD

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Barbara + Andrew Chen 360.993.2096

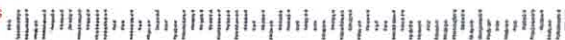
302 Phoenix Way, Vancouver, WA 98661

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Cathe Pearson 502.654.3090

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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.

Loriss McLean

NAME

PHONE

160 Beacon Hill Dr, Longview, WA

ADDRESS

NA

EMAIL

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- ☐ Sharing pre-written social media posts on specific dates

unable - God Bless You

PORTLAND OR 972

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Thinking



Columbia Riverkeeper

1125 SE Madison

Suite 103A

Portland, OR 97214

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Jenny Dinas

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jennyraedesigns@yahoo.com

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JAN MARIE FORTIER 503-319-8033
Gerald H Colbaum 360-751-6232

all Wapiti Lane
jannmarie.fcd@gmail.com
gkcolbaum@gmail.com

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Sandy L. Rasmussen 360-636-9108

1002 ALLEN Drive KE/30 WA 98626

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Debbie LANGENDOERFER 360.910.8960

2609 NW 23RD AVE CAMAS WA 98607

debbielangendoerfer@comcast.net

Columbia Riverkeeper

1125 SE Madison

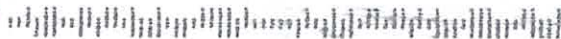
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Carol Redmill 360 423 0869

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Merilee Frets 509-209-3248 98683
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merilee.frets
EMAIL

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STAMP
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Columbia Riverkeeper

1125 SE Madison
Suite 103A
Portland, OR 97214

Thank you!

Jean Avery

>> Good evening, this is Jean Avery, I'm a resident of Vancouver. 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 Southwest Washington are at risk with the NWIW project because of air pollution and increased vessel traffic.

Several of these natural areas are designated as IBAs, Important Bird and Biodiversity Areas. IBAs are internationally recognized as globally important for the conservation of bird populations. The Washington State Birding Trail includes these IBAs close to Kalama. JB Hansen National Wildlife Refuge, 6,000 acres of Columbia River islands and slews, Chinook County Park and the 1,900 acre Cape Disappointment State Park, Richfield National Wildlife Refuge, 5,000 acres of wetlands, grasslands, and woodlands. Also Vancouver Lake Park and Columbia River lowlands.

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. Thank you, and good evening.

Marcella Chandler

My name is Marcella Chandler, and I'm a retired nurse and mother of two sons. I live in downtown Vancouver, Washington just blocks from the Columbia River. The Pacific Northwest and the river have been an important part of my life since I can remember. The Pacific Northwest has always been a part of who I am and the Columbia River, its heart. I've been a part of this movement to stop the building of the world's largest methanol refinery for the last five years. In that time, we've talked about impacts on the climate, six million metric tons of greenhouse gas produced each year, and the likelihood of a pipeline expansion because of the enormous demand for gas. The refinery would consume more fracked gas than the region's biggest cities combined.

We have talked about safety. The refinery would be storing explosive methanol on dredged up sand that has a moderate to high risk of liquifying in an earthquake or exploding in a wildfire, leak, or other accident with the knowledge that there are three schools within the blast zone. We have talked about the impact on our water.

This refinery will use five million gallons of water from the Columbia and Kalama aquifers daily with potentially six tankers per month transporting methanol to China. Spills that will happen deplete water off oxygen potentially creating dead zones beneath them. The refinery will not just affect Kalama, but most of the Columbia River, all the towns, cities, farms, wetlands, forests, and wildlife.

It will also have an effect on the waters and marine life off the Washington and Oregon coast. I can tell you this, if this refinery is built, I will be extremely concerned for the health and safety of my children, our grandchildren, friends, community, and our beautiful region. Northwest Innovation Works has not been honest with us. I ask the Department of Ecology to reject the methanol refinery and deny any shoreline permits for this project. Thank you.

Amanda Swenson

My name is Amanda Swinson and I'm an Operating Engineer, Local 701 member. I am the mother of two beautiful little girls and the wife of another operating engineer that works on the Columbia River, maintaining safe travels. I started in the operating engineer apprenticeship in 2008 and became a crane operator through the program. I am very concerned about our environment and very concerned about our economy and this project goes above and beyond in addressing those concerns for me, as well as creating a community of empowerment, setting the highest standards, and respecting all government regulations.

I am in support of the Kalama project, and I appreciate the review done by the Department of Ecology. I am apprehensive about those who are out there that want to ignore the science and I believe more than enough study has been done to continue. I ask and believe that this is the time for the department to permit the project and proceed and move forward with all the benefits it will provide. Thank you, Department of Ecology. Good work, and please move forward swiftly.

Amy Tejcka

My name is Amy Tesca. I live in Woodland, Washington about 12 miles downwind of the proposed methanol refinery in Kalama. I am begging you, please do not allow Northwest Innovation Works to build a methanol refinery in our backyard. We have wildfires currently raging right here in our midst. These ferocious fires are becoming more prevalent. Proponents claim that it is safe to pipe in megatons 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.

What happens to us if the East wind decides to blow 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 Northwest economy and way of life? What about the real possibility of a Cascadia mega earthquake? What about five 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 are likely to tank locally, including my own here in Washington if this plant is approved. Folks are going to love the unsightly Clunes of hazardous vapor clouds billowing up higher than those blown from Mount St. Helens eruption in 1980. Who wants to live near that? This proposal is absolutely ludicrous. It's so dangerous.

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 Southwest Washington. My grandchildren are five and seven 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's your job to protect us. Please do not grant this permit. Thank you for listening.

Ann Waendelin

I'm Anna Vendilin. I live in Camas, Washington, and I'm speaking in opposition of permitting the Kalama methanol refinery. I wholeheartedly support the reasoning of the prior speakers in opposition of this project.

I simply want to add, we in the West are keenly aware of the effects of a changing climate, and we do not want or need tons of additional carbon pollution in the earth atmosphere. We do not need more pollution in the state of Washington. 200 permanent jobs or whatever it is, don't justify added local pollution. What we need to do is to promote and support green sustainable energy, and we need to do it fast before the effects of climate change get any worse. That's all I have to say. Thank you.

April Matzenbachar

Hi. I'm a registered nurse. I've lived all over the nation. We fought fracking in Colorado as well because what I learned about fracking is even though this company is saying that they're going to have zero water pollution, from the studies I've read, that's actually not proven to be the case. From the long history of gas and oil companies, what I can say is that the environmental costs are huge, and especially in the communities where they operate. Apparently, they become cluster zones for increased rates of cancer, increased infertility, birth defects, lung diseases.

Of course, with this being a high earthquake zone, there's no guarantee that all that pollutant won't come out into the local waterways and air and just really toxify people. Of course, they would lose their houses, not to mention their health. I wanted to say to the people that are in the oil and gas industry, that I do appreciate that you do need a good-paying job, but now's the time when our country we have to evolve, we have to change and support more green industries that get our energy from other sources, perhaps carbon sequestration, alternative plastics.

In closing, I would like to finish this with a Native American comment. We know that the white man does not understand our ways. One portion of the land is the same to him as the next, for he is a stranger who comes in the night and takes the land, whatever he needs. The earth is not his brother, but his enemy, and when he has conquered it he moves on. He leaves his father's graves and his children birthright is forgotten. Thank you. Bye.

Brandon Bowersox-Johnson

My name is Brandon Bauersox Johnson. I have been a Washingtonian for four years and before that was an Elected City Council member for eight years in Urbana, Illinois, where I grew up. I'm not just a policymaker, also a father, and I don't want my son growing up in even worse wildfires that destroy communities in Washington and beyond, or these raging tropical storms hitting the Gulf coast now. It is obvious that climate change is already here. I'm speaking tonight to urge you ultimately to deny this project and in this second SEIS project and process, please eliminate this dangerous myth that this plant somehow is good for the environment, just because it might displace dirtier energy.

That's simply absurd on its face. The idea that we should build a new fracked gas methanol refinery and lock-in pollution for 40 more years because somehow if we don't someone else will, that's absurd. That's a race to the bottom and it is planning to fail as the earlier speaker said. That displacement is a dangerous myth. It's obvious to anybody, we can't solve climate change by expanding fossil fuel infrastructure and investments. Furthermore, we can't predict as the market analysis does that in the next 40 years, there won't be cleaner technologies that might make plastics or fuel.

By investing now in fossil fuels, we're actually slowing those investments that need to go into cleaner sources for plastics or fuels, those investments in cleaner energy or green jobs to help the workers and communities switch to a cleaner greener economy. Please remove this displacement theory, put that myth to rest. Instead, please give a full accounting of this plant without the displacement and a path for Washington to meet its carbon budget. Please stand with the science, the native tribes, and the youth, the 15-year-olds on this call. Throw out that displacement theory and deny this. Thank you.

Brandon Campbell

my name is Brandon Campbell. I'm a war veteran out of the United States Air Force. I'm a small business owner. My company is in Vancouver. I live about six months out of the year on the Kalama River and I'm a lifelong Pacific Northwest center absent the time that I spent in the service. I don't support this plant for very varied reasons not just to include the environment. I've smelled burning trash pits, and that was a good use of my time in defending this country. The environment is not the only reason. The assumptions that this study seems to be built on are based off of Chinese perspectives that I think can't be verified.

There's nothing backing up this company and the assumptions that are inherent to it as to the reductions in greenhouse fuels that will necessarily increase these pollutants in Southwest Washington in our backyard. China seems to have a problem with their air quality and we should be supporting China in bettering their local air quality and not to the detriment of our own. These Chinese methanol demands and requests for providing materials necessary to produce plastics can be built in China. They have the technology to build these plants in China. We don't need to be supporting fracking in Clark County and in Cowlitz County in Southwest Washington.

We don't need to be subsidizing our air quality or the Chinese air quality with our own. The Southwest Washington is built on fishing and hunting and also production. I support logging. I support manufacturers but I don't support Chinese air quality being benefited by a detriment to our own. Let's keep tight lines, go out there and fish and that's all I got to say.

Donald Watt

The Kalama Methanol Plant proposal is a horrible idea for Washington, for the Columbia River, and for our planet. But even more than that, the Kalama proposal represents a Pandora's Box of destructive precedents that it would set for our region and for the world.

We would be horribly naive to think that the Kalama Methanol proposal would be the last request to expand exports of fossil fuel energy to supply markets in Asia, or that it would be the last request to build new petrochemical facilities along the shores of our beautiful lower Columbia River, or that it would be the last time the fossil fuel industry would pressure the Department of Ecology to allow a massive increase in greenhouse gas emissions.

No! If approved, in each of these cases the Kalama Methanol Plant proposal would prove to be just the first in a long list of proposals for projects that would further degrade our river, our region and the climate of our planet.

Left unchecked, the fossil fuel and petrochemical industries could easily turn the Columbia River, between Portland and Astoria, into a new "Cancer Alley" rivaling what we see along the Mississippi River between Baton Rouge and New Orleans. Producers of petroleum from the Alberta tar sands and Bakken oil shales and of fracked gas from British Columbia are desperately seeking shipping routes to bring their products to markets in Asia. The Columbia River would provide that route along with abundant fresh water to feed their industrial processes.

Sadly, all of that development would come at a horrible price through the loss of the unique ecosystems of the lower Columbia and by sacrificing the livability of this beautiful region. As residents of this state and of this uniquely beautiful part of the world it is our duty to do all that we can to protect these natural treasures from the predatory forces of the fossil fuel industry. If we do not act to preserve these treasures that we have inherited, no one else will. There may be no second chances.

If the Department of Ecology is serious about protecting the environment in this region and serious about limiting greenhouse gas emissions then it must deny approval of this Kalama Methanol Plant proposal. Approval of this proposal would set a horrible precedent for future, increasingly destructive proposals.

The proposed site at Kalama is a prime industrial location. However it does not have to be used as a welcome mat announcing that the Columbia River is open for business for the destructive fossil fuel and petrochemical industries.

Please live up to your calling as protectors of the natural environment of the State of Washington please reject this Supplemental Environmental Impact Statement for the Northwest Innovation Works Kalama Methanol proposal.

Rebecca Nimmons

Thank you for your work to protect Washington's 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 NWIW's 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 NWIW's emissions that will occur overseas. The mitigation framework is too vague for Ecology 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 as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIW's 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 Washington's climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIW's 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.

David Hupp

Washington State Department of Ecology:

I testify yet again in opposition to the proposed Northwest Innovation Works (NWIW) Kalama Manufacturing and Marine Export Facility in any form. This is a followup to my previous comments, dated September 19 and October 7, 2020, respectively. This comment again refers to the "Draft Second Supplemental Environmental Impact Statement", Publication 20-06-011, dated September 2020.

I am taking the unusual step of submitting the content of another's comments already submitted to you. My purpose is to make sure you do not miss the vital and essential points Linda Horst is making. She reveals that NWIW is a shell corporation playing a shell game and has taken the trouble to dig out information that Washington State government should have already considered and highlighted. In this I urge what in business is called "due diligence".

Linda Horst has already submitted the following:

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 almost 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.

Submitted in support of Linda Horst's concerns,
David Hupp
Hood River OR
October 9, 2020

Denise Banker

My name is Denise Banker and I live in Port Townsend, Washington. Thank you for this opportunity to testify against the Kalama Manufacturing and Marine Export Public Hearing. I call on Ecology to do the right thing for the people and the planet in voting to reject Northwest Innovations Works proposal in building Washington State's largest fracked-gas-to-methanol plant in the world.

Why is this specific issue important to me? Overall, this is a spherical planet, we breathe the same air, we all depend on the earth stability and its ability to support life. I am particularly tired of witnessing billion-dollar companies obfuscate data and future speculation and mitigation schemes to hoodwink busy and underpaid regulators. It's unfortunate that Ecology's current study relies on speculative mitigation and an unenforceable market analysis to paper over the impacts of this nerdy climate wrecking proposal.

Here, it's why Ecology needs to reject Northwest Innovation Works dubious proposal. The people don't want the proposal approved. We know the hazards associated with fracking gas, we know carbon emissions drive global climate change. We know methane leaks are underestimated in this proposal. We know that cost benefit analysis do not take into consideration all the healthcare, loss of livelihood, infrastructure and insurance costs associated with noxious air, rising sea levels, intensified storms and fire seasons. This project is not in keeping with Washington State's clean air goals.

This company has consistently made false, misleading, and dubious claims. I call on Ecology to reject Northwest Innovations Works proposal to build the largest fracked-gas-to-methanol refinery in the world. We don't need any more greenhouse gas producing energy systems. We don't need expansion of fossil fuel development and production, we need to focus solely on expansion of sustainable, renewable, clean energy systems that don't use fossil fuels.

Cynthia Svensson

Good morning. I'm Cynthia Swenson, a homeowner in Kalama, Washington. Thank you for giving me the opportunity to comment. The SSEIS repeatedly assumes an expanding market for methanol. If this is true, then the Kalama facility is adding to emissions, not replacing any at all. It doesn't have to predict it by the predicted expanding market, that should signal the end of this project. Even if we assume there is replacement, though we know most likely there will not be, then we should not assume it will replace any Chinese [inaudible] methanol.

The study states that " Within China, there is likely a preference for expanding domestic production where feasible and so expanded low-cost, coal-based methanol is expected to make up the largest share of increased methanol supplies in the coming year." We see that this is actually, most likely that any replacement would be in the important methanol sector, which is far more expensive than the Chinese coal sector, and only slightly more expensive and produces only slightly more GHGs than the Kalama facility. It's evident that the Kalama facility is most likely to add a huge amount of GHG to the atmosphere with only a remote chance that it will decrease GHG at all, so please deny this permit on the basis of your own research study. Thank you.

Margo Rolf

Please do not permit the construction of the Kalama Methanol plant. The use of vast quantities of fracked gas will present major danger to our environment and will contribute to disastrous change to our global climate. It will require more gas than that used by all the power plants in Washington and "under every set of assumptions, the project would be one of the top polluters in our state... "with the equivalent of 4.6 million tons of CO₂ pollution each year." (Sightline) That does not include the damaging methane consequences. Such facilities are built for 40 years. We only have until 2030 to make a difference in the right direction. Please do not accept the speculated benefits presented by Northwest Innovation Works, LLC when we are certain of the damaging consequences. Margo Rolf

Association of Firefighters, local 4447

Hello. Thank you for the opportunity to speak today. My name is Dan Alrich, I'm the president of the International Association of Firefighters, local 4447. We are the full-time members of the Cowlitz County Fire District number 5, here in Kalama, Washington. As the first responders for the area of the proposed methanol plant, our members are fully supportive of the building of the methanol plant. Thank you for your time.

Sharon Miller

Good morning, everyone. I'm Sharon Miller, a lifetime resident of the state of Washington, currently living in Vancouver. I am strongly committed to preserving our environment for my family, including six grandchildren who are learning of the devastating changes we see daily from the changing climate. What we hear from scientists is being validated by what we are seeing, the smoke we are breathing, the documentaries we view and the news reports, which are quite frankly frightening.

As a young child I lived in Longview, Washington, and I knew of Kalama as the small Riverside community, which featured Keith Liliska, who carved totem poles and clear view from the freeway. His totems are now displayed very near the side of the proposed Northwest innovation works methanol refinery. The tallest totem is 140 feet tall and is reportedly the tallest single strand carved from one single tree totem in the world. Not only is this totem a reminder of the native people who live and have rights to this land, but also to the trees that were thriving there when he was carving.

We are now aware of a proposed foreign company locating in this community that will produce upstream pollution exceeding 1 million tons of greenhouse gas pollution each year, and 5 million tons of additional greenhouse gas pollution in Kalama. Why would we allow this? This is totally counter to our State's efforts to move towards a clean energy economy.

I am calling on the department of ecology to reject the methanol refinery and deny the shorelines permit for this project. Right now is the time to protect our communities for our children. Thank you for this hearing today that empowers all of us to have input into your decision and thank you for doing the right thing.

Carolyn Atkinson

Hi, my name is Carolyn Atkinson and I work at an elementary school in Seattle. I'm a young person who struggles with the climate related mental health effects described earlier. 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 climate plan 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 the significant 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 and assuming business as usual indefinitely is an absurdity.

These ecological and political instabilities that break the 40 year speculation of the environmental statement is caused by the climate crisis and this instability is caused by fossil fuel expansion. The instability is caused by projects exactly like this one, and it is exacerbated by the commitment to dishonesty of so many fossil companies, not necessarily excluding Northwest Innovations, which has wasted DOE time with data so optimistic and inaccurate that the whole environmental impact process had to be repeated.

We don't want to work with careless firms when the stakes are this high. VIS should accurately account for historical failures of this industry to clean up after themselves and prevent leaks and close Wells. 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 my generation and future generations. Thank you.

Don Watt

Hi, my name is Don watt. I live in Chehalis, Washington. I'm a retiree from the department of Ecology, where I worked for 25 years in the air quality program, as an air quality monitor and also worked in the environmental assessment program, doing stream flow monitoring. The Kalama Methanol Plant proposal is a horrible idea for Washington, for the Columbia river, and for our planet. Even more than that, the Kalama proposal presents a Pandora's box of destructive precedence that it would set for our region and for the world. We'd be horribly naive to think that the Kalama Methanol proposal would be the last request to expand exports of fossil fuel energy to supply markets in Asia, or that it would be the last request to build a new petrochemical facility along the shores of our beautiful lower Columbia river or that it would be the last time the fossil fuel industry would pressure the department of Ecology to allow a massive increase in greenhouse gas emissions.

No, if approve,d in each of these cases, the Kalama Methanol Plant would prove to be just the first in a long list of proposals for projects that would further degrade our river, our region, and the climate of our planet. If we are serious about protecting the environment in this region and serious about limiting greenhouse gas emissions, then we must deny approval of this Kalama Methanol Plant proposal. The industrial site at Kalama's prime location, but it does not have to be used as a welcome mat, opening the region to the destructive fossil fuel and petrochemical industries.

Sariah Zambrano

I am a birdwatcher and outdoorsman who loves my state for her glorious natural wonders. Please deny the construction of a methanol/fracked gas facility in Kalama, Washington. I depend on the aquifer that would be affected by this methanol plant for my own drinking water, as does our local craft beer industry. Too many fragile ecosystems would be harmed by allowing this plant to list here, as I am sure you are aware. Please refer to local Scientists and a majority of residents, who agree that a methanol processing plant would be a toxic threat to my own health, that of my neighbors and our environment. Fossil fuels are an antiquated resource whose extraction, transport and deadly by-products have already damaged our whole planet. This is common fact, but if you need sources please consider data released by National Geographic, the Audoban Society, Columbia Riverkeepers, Ducks Unlimited and the Sierra Club. Thank You for your time in reading this.

"No" to Kalama Manufacturing and Marine Export Facility.

Kristine Edmark

Hello, my name is Kristine Edmar and I live in Battleground Washington. Thank you very much for the chance to comment and thank you for requiring that the supplemental EIS be redone. I'm very much against the building of the Kalama Methanol Refinery because we're in a climate crisis and we must stop use, and the world must stop use of fossil fuels as soon as possible. I love hiking, kayaking, studying nature, I believe in science, I worked as a clinical hospital dietician, and a secondary school science teacher.

I sent a few specific changes draft in, but the fact is that the present draft reveals that there's still an enormous amount of greenhouse gas emissions that would be produced by the refinery. It's also a fact that the refinery would create a demand, which encourages drilling, fracking at a time when it's imperative that we decrease and stop extraction. That increase in fossil fuel extraction would continue 40 years, which is far beyond the time that we have available to prevent climate disaster, which is already happening.

The world is already feeling the consequences of the warming climate. My daughter-in-law's family lost a beloved home this month in a fire in Oregon, but this is really nothing compared to all the devastation that is happening right now to so many people and species, and our atmosphere all around the world. Please deny the shoreline permit on the basis that it's unacceptable unmitigatable greenhouse gas emissions. Thank you.

Jean Avery

Thank you so much, Fran. I want to thank Neal for showing the slide that clarifies there'll be 0% mitigation outside of Washington. My name is Jean Avery, I live in Vancouver. 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. Even if NWIW mitigated for upstream emissions, would this be sufficient to mitigate for other damages, such as two lands occupied by indigenous tribes or private land owners?

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. This 10,000-mile round trip would be completed approximately once a week. Although the SSEIS includes plans to mitigate for emissions within Washington, we have heard that there will be no mitigation for any damage outside the state and will there be any mitigation for non-emission such as marine fuel?

In conclusion, one, the enormous reach of this project across the continent and across the globe would be hugely impactful even beyond the stated GHG emission. Two, the SSEIS fails to provide a complete multi-dimensional plan for mitigation. Three, the scope of this project seems far beyond the regulatory purview of one state's Department of Ecology. The climate clock is ticking, please deny this project. Thank you.

Sierra Club

My name is Stephanie Hellman. I'm a campaign representative with Sierra Club. I want to thank you for the opportunity to comment today. I really appreciate all the powerful comments that have been given today in opposition to this project. As others have said before, we know you've heard the scientific facts, and I know you're going to receive a lot more of them in writing. So I want to take this opportunity to express my frustration and concern in listening to a debate on whether or not we take part in helping burn down the planet basically, just maybe a little bit slower. It was especially hard to listen to this last week, as we were all choking on wildfire smoke.

This analysis offers a false choice here and I really hope that that is recognized. It's disappointing also that a state that is considered to be [inaudible] leader with strong climate goals that recognize our need to drastically cut emissions, that we're considering approving a hugely polluting project because we think it might be better than a slightly more polluting one. We need the Department of Ecology to be a leader here and just say no to this permit. This is not okay. Again, I thank you very much for this opportunity.

Brian Bonlender

>> Hi, my name is Brian Von Lander. Can you hear me okay?

>> We can, thank you.

>> I just want to point out a couple of things. The displacement analysis in this greenhouse gas lifecycle analysis is consistent with how greenhouse gas lifecycle analysis are done on many projects. Sound Transit, for instance, will do this to determine whether or not investing in diesel buses, which emit greenhouse gas emissions, of course, displays more greenhouse gas emissions than the cars that they will take off the road. That's how these things are done and sometimes those analysis come back and say that they reduce emissions. Other times they say they're going to increase emissions.

In the case of this project, it very clearly shows that this project is going to reduce a lot of greenhouse gas emissions equal to about them out of the TransAlta Coal plant. I think it's worth pointing out that the market in China is not a mysterious market with regard to their coal to methanol projects that they--coal to methanol to olefins or plastics, which they launched in 2011 and are growing every year. They have about 50 projects from which they make olefins from coal-based methanol. Those are very defined identifiable projects. They have several others on the drawing board. This project will disrupt either those that are on the drawing board or make uneconomical existing coal to methanol to plastics. Right now we have no alternatives to form these materials, to decarbonize these materials. This is going to be a great opportunity to have lower carbon materials and add renewable materials to that mix.

Diana Gordon

I am very concerned about the amount of greenhouse gases that will result if the Kalama methanol refinery is built. The GHG's are a real problem, especially if the methanol is used largely for vehicle fuel instead of for plastic, as we suspect it will be.

The proposed refinery in Kalama will increase Washington's greenhouse gas emissions and make it harder for us to meet our GHG emission goals as set by our legislature in 2008. In addition to the sizable amounts of methane that will result from fracking, the pipelines, and the plant itself, the refinery will also release more than 1,000,000 tons of carbon dioxide every year, among other things. The huge ships transporting the product to Asia will also be responsible for considerable releases of CO₂ from fuel combustion.

The problem is that CO₂ combines with water to create a mild acid which affects the ability of shellfish to form shells. This acid affects oysters and, even more important, shell-forming marine plankton which is critical in basic marine food chains. These effects start in the higher latitudes and gradually move toward the equator.

Ocean acidification is a huge problem for the economy of our state. It affects one of our major industries, one that earns an estimated \$270 million a year for the state coffers, the shellfish industry. People expect outstanding seafood when they visit Washington State or buy oysters from here. More and more we are hearing that oyster farmers are in trouble. Some have already moved to the less acidic waters of Hawaii.

This project will have significant adverse environmental impacts here in Washington State and around the world. Coral reefs, an important support system for fish stocks, and marine food chains will suffer as a result of further ocean acidification.

This terminal is counter to the economic interests of just about everyone except the Chinese and the Canadian oil industry. It will cost Washington and the Pacific Northwest jobs from the fishing industry and affect the ability of the oceans to produce food used around the world.

Anthropogenic greenhouse gas emissions have been one of the major drivers of climate change so far. This year alone, in real time, we have witnessed drought-driven wildfires with adverse health effects, extraordinary wind events, early hurricanes and floods, etc., and we have had less than 1 degree C of global temperature rise. We are about to add more major food shortages if we do not get a hold on the acidification of the oceans.

We cannot ignore these harmful and unmitigable outcomes if we go ahead with this project. Please deny the Shoreline Permit for this extremely dubious venture.

Nancy Danoff

As a pediatrician, I am concerned that the proposed Kalama methanol plant will be the source of leaked methane, which is many more times potent than carbon dioxide as a greenhouse gas. As the Pacific Northwest has faced unprecedented wildfires and resulting hazardous air quality in the past three years, now is not the time to introduce a facility that will surely contribute to increased greenhouse emissions, given a greater than 3% methane leak (which would likely occur during fracking, transportation, processing into methanol).

Timothy O'Donnell

My name is Timothy O'Donnell. I'm from Tacoma, Washington. I've spent many years working in and around the Longview Kalama area. I'm an outdoorsman avidly, a hunter and a fisherman. I'm also a construction electrician. I believe in this project, and I believe it needs to go forward. I do represent electricians in the construction industry. As everybody on this call knows, our pensions are under attack. They're vitally under attack and a lot of the people that have already spoken I understand are retired teachers who come to us all the time in support of their pensions.

We're trying to build things and to keep our pensions alive. All of these green jobs in the green economy everybody refers to does not exist. These jobs aren't there, this job is there. We need to build it. We need to keep our pensions strong. We need job replacement. This is a very good job to replace the jobs that we've been losing, especially in the timber area, especially in the Longview Kelso area. I'm wholeheartedly behind this. I thank the state for their commitment in this study. Thank you.

DeAnn Fields

Thank you, Fran. My name is Diane Fields, and I'm a market rep with the Laborer's Union in North America. I've lived in Southwest Washington my whole life. Right now we live in Battleground. I'm here listening to testimony and it sounds like a lot of folks from California, Oregon, Seattle and elsewhere, are weighing in on something that they don't understand or respect and that's our community here.

We live in a beautiful place and we appreciate that. That's been left behind by the economic opportunity that the rest of the state has experienced. Our communities were founded on innovating, and cutting edge industrial development. This project provides the opportunity for Southwest Washington to return our proud legacy by creating family-wage jobs and making a meaningful contribution to tackling climate change.

If we are to confront climate change, we must invest in new clean ways to manufacture the things we use every day. We can't solve climate change through inaction. We must be led by science, not personal bias. This study from Ecology has answered the question it was asked and should be the final answer. It's time to make progress for both people and the planet.

Also, by listening to people, I've come to the realization that this project is the next step in moving forward in a safe way. Everything moves forward with the production and emissions that are going to be reduced. It's going to reduce emissions. It's incredibly naive for people to believe that we can immediately stop using fossil fuels and methanol. We use these products every day produced by methanol. In closing, I'd like to say that I really urge you to approve this project. Thank you very much for your time.

Mark Uhart

My name is Mark Euhart and my wife and I live near Kalama and I don't think I'm naive. I have a degree in wildlife biology, a minor in biochemistry, backgrounds in nuclear engineering, computer science and operational research and analysis, I am not anyone's fool. I live in Kalama and I am dead against this project. I would like to see jobs come to our area but I'm against any more fossil fuel projects in our state. The fossil fuel industry calls natural gas a green renewable resource, it is not. The only thing green about using natural gas is the color of the money that will line the pockets of those who support this project and its investors. This project will be calamitous, Chernobyl.

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 the upstream operational and downstream emissions. I documented my review and I am submitting multiple comments, referencing all my sources.

This project under cuts GHG because it doesn't mitigate upstream and downstream GHGs outside of the state 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 cherry picks information from fugitive methane research papers, such as [inaudible] and Alvarez paper and others.

It presumes the use of ultra-low emissions, ULE technology that has not been approved by the EPAs for the application of prevention of a significant determination PSD permit for GHG admissions. It purports that ULE will admit 38% less GHGs in CR technology and I found several articles that indicate that the savings is only around 31%. ULE was first used in a power plant in Australia in 1994-

Thomas Gordon

There are many problems associated with the proposed methanol refinery to be built in Kalama. One is the amount of methane released from the fracking sites in Canada and the United States to transport to the refinery in Kalama. The number of sites where leaking can occur are myriad. Some can be easily seen as at the wells where the methane is extracted to unseen slow leaks in the pipelines on the way to Kalama.

Sight Line, on September 23, 2020, suggests a solution.

"The only way to accurately capture methane leakage like this is to use satellite-based "top-down" methodology, which the Kalama SSEIS dismisses. And adding insult to injury, the SSEIS also uses a global warming potential for methane about 30 percent lower than the figure recommended by the IPCC's most recent report, which has the effect of further downplaying the Kalama project's climate problem."

However, wild fires rage to our south in California, Oregon, and here in Washington, made much worse with the drying from drought caused by climate change. The best solution seems to me to not build this methanol refinery with its attendant pollution from the manufacture of methanol. The pollution is not minuscule: it is expected to be in the millions of tonnes according to the SSEIS. Why should we put our homes in even more danger with exacerbated levels of green house gases from this unnecessary refinery?

Please deny the permit and project and not endanger our homes more.

October 9, 2020

Washington Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Submitted via the Washington State Department of Ecology's KMMEF DSSEIS web portal

I am submitting these comments in response to the release of the Washington State Department of Ecology's publication of the Draft Second Supplemental Environmental Impact Statement (DSSEIS) for the proposed "Kalama Manufacturing and Marine Export Facility" (Publication 20-06-011).

The results of the Department's DSSEIS analysis, "indicate that the KMMEF would slow the global increase in emissions arising from methanol production and use."ⁱ The analysis performed by the Department is complex with many variables. I am specifically focusing these comments on the use of coal to methanol manufacture in China.

As the DSSEIS explains, China is the world's largest methanol market, accounting for 60% of the entire globe's use and production.ⁱⁱ While the largest consumer, China is not the only factor in the increase in supply and demand for methanol. As the DSSEIS notes, global methanol use increased by 24% between 2015 – 2020.ⁱⁱⁱ And as the DSSEIS delineates, a large driver in the increase in demand is associated with increased use of methanol to produce olefins, which increased by 58% over this same time period.^{iv}

Nowhere is this trend more readily observable than in China where over half of the methanol consumed is done so for the purpose of producing olefins^v, where 76% of domestically produced methanol is derived from coal.^{vi}

The DSSEIS does a thorough job analyzing and delineating the market forces driving this development, noting that of the three feedstocks Chinese producers primarily employ to produce methanol, that the use of coal as a feedstock is the most profitable for them.^{vii} While market forces are undoubtedly a primary factor in understanding methanol production trends in China, Chinese government policy plays an important role as well.

Chinese President Xi's latest remarks to the United Nations General Assembly included a commitment on his part to have China achieve carbon neutrality by 2060. While some might debate the merits of Xi's articulated timeframe, it's what else he has committed to with regard to Chinese emissions that is really worth paying attention to in the near term, namely, that China has a goal of hitting peak carbon emissions in 2030 – ten years from now. And they have not committed to what level of emissions that peak will be. In the meantime, China's emissions continue to grow.

What is a large factor in driving this increase in emissions? China's continued *growth* in its use of coal. Despite China's commitment to the Paris Climate Accord and Chinese government leaders articulation of efforts to combat climate change, China's use of coal continues to rise.

To be sure, as Columbia University's Center on Global Energy Policy's "2019 Guide to Chinese Climate Policy" ("the Guide") points out, "The Chinese government has adopted short- and medium-term goals for limiting emissions of heat-trapping gases and a wide-ranging set of policies that contribute to

meeting those goals. Those policies are shaped in part by other objectives, including promoting economic growth, cutting local air pollution and developing strategic industries.^{viii}

The “2019 Guide to Chinese Climate Policy” also states that in 2018, China’s carbon emissions rose approximately 2.5%, the largest annual increase in five years. This increase was driven, in part, by China bringing 30 GW of new coal-fired power capacity online in 2018. Capacity additions for coal fired power plants continued at the same pace in the first half of 2019 and China continued to lead the world in financing new coal fired power plants around the world.^{ix}

That’s why one of the conclusions of the report is, “For these reasons and more, stated policies—while important—are just part of the picture when it comes to understanding the Chinese response to climate change.”^x

China has articulated several broad climate change goals including:

1. achieve the peaking of carbon dioxide emissions around 2030, making best efforts to peak early;
2. lower carbon dioxide emissions per unit of GDP by 60%–65% from the 2005 level by 2030;
3. increase the share of non-fossil fuels in primary energy to around 20% by 2030^{xi}

Despite these goals, China’s reliance on coal continues to be unshaken. The Columbia Center’s Guide details how China continues to use more coal than the rest of the world combined, with just over half of global consumption.^{xii} In 2018, approximately 20% of all global CO₂ emissions were from Chinese combustion of coal.^{xiii} While Chinese coal use declined 2014 – 2016, it rose again in both 2017 and 2018.^{xiv}

China’s policy landscape regarding coal usage cuts both ways: while decreasing the use of coal is a stated objective of the government, several government policies also promote its use. In particular, the Chinese government continues to develop policies that promote the use of their abundant coal resources for high value industries, most notably, for production of methanol to feed the chemical industry. This policy tension at the national level also operates in an environment where provincial governments remain under tremendous pressure to continue to drive economic growth and productivity. The engine many provinces rely on to help drive that growth is China’s abundant coal resource.

The on the ground trends described in the Columbia Center’s Guide continue unabated in 2020. According to a recently published report by The Global Energy Monitor, the central government’s relaxation of restrictions on new coal plant development has meant huge investments into coal infrastructure. The 249.6 gigawatts of coal-fired capacity currently planned or being constructed in China represents a 21% increase over 2019 and the capacity *under development* is more capacity than is currently online in either the United States (246.2 GW) or India (229.0 GW).^{xv} In addition to new plant capacity coming on line, China’s coal production has also swelled in 2020 with production increasing to 1.5 billion tonnes, an increase over 2019.^{xvi}

All available literature and government policy publications suggests the Chinese government continues to view coal as a valuable asset in producing petrochemicals.

China has moved aggressively to advance its coal-to-chemicals industry, deciding in 2010 to build the world’s only significant methanol derived olefins industry – and produce that methanol from coal. In

2010, the production of olefins from coal was near zero. The Chinese Government's 12th Five Year (2011-2015) plan listed coal- to-chemicals productions as a top priority. And China's National Energy Administration's 2015 "Action Plan for Clean and Efficient Use of Coal (2015 – 2020) promotes the coal chemicals industry.^{xvii}

The current 5-year plan (2016-2020), China's 13th, continues to call out and highlight the importance and significance of the coal-to-chemical industry in China.

Chapter 6 of the 5-year plan, titled "Ensure Innovation in Science and Technology Takes a Leading Role" contains Box 3 on page 25 – "Program's for Sci-Tech Innovation 2030." This chapter identifies projects that will be "carried out" and includes those related to the "Clean and efficient use of coal."^{xviii}

Later in the document, in Chapter 22, titled "Develop China into a Manufacturing Powerhouse", page 65 contains Box 7 which outlines "A complete set of advanced chemical machinery," including:

"with the support of projects demonstrating upgrades to the modern coal-to-chemicals industry, work toward the independent design and production of a complete set of advanced chemical machinery, focusing on coal classification, coal gasification, syngas purification, energy utilization, wastewater treatment, and other key areas,"^{xix}

For 10 years, Chinese government policy has prioritized the utilization of coal for the purposes of manufacturing methanol and other petrochemicals and that policy has been backed by massive capital investment in expanding physical plants.

As the maps (Figures 1 and 2) contained at the end of these comments make clear, China's coal methanol to olefin industry is not a black box of uncertainty. The industry and its growing use of coal is in fact incredibly clear. Since 2010, coal to methanol production has increased every year by an average of 6.77 million tons per year.^{xx} The number of coal methanol to olefins facilities in China also grew from zero that year to 29 today. There are 30 other coal-to-methanol-to-olefin facilities currently at some stage of construction, permitting, or other planning. Five coal-to-methanol-to-olefin facilities were launched in 2019, four were slated to begin operations in 2020, six for 2021, 3 for 2022, and a dozen slated for 2023 – all in China, all making or using coal derived methanol.

A few months ago, it was announced that one of those new facilities just came online with the largest methanol output of any plant in the world at the time.^{xxi} As the press release details, the new plant is just the latest development of Ningxia Baofeng Energy and describes the company's business plan and how it fits into the larger economic policy environment:

The company's production base is located in the national energy & chemical base – Ningdong Energy & Chemical Base in the northwest China and relies on China's energy deployment, which is 'Rich in coal and poor in oil and gas'. The plants are taking full advantage of local coal resources to build a product chain of "coal – coke – methanol – olefins – fine chemicals" in the Ningdong chemical complex of 14,000 acres.

The Chinese Communist Party's Central Committee is now in the process of writing the country's new five year plan. The five year plan is a pretty reliable indicator of what the Chinese government attempts to do. Ten years ago they said they were going to create a coal-chemicals industry, and they did. Every indication suggests China will continue to its investment in the coal-to-chemicals industry.

The Department's focus on alternative methods of methanol production and how methanol produced from KMMEF may substitute for those alternatives is an appropriate and important part of the environmental review. All available data suggests that if KMMEF is not allowed to proceed, that the "business as usual" scenario playing out across the globe as we speak means only one thing: more harmful greenhouse gas emissions affecting our entire global community will be released.

Washington State should be a leader in demonstrating a new level of transparency, accountability, and mitigation when it comes to manufacturing the products every one of us consumes. We should demonstrate what a responsible regulatory environment can produce when it seeks to bend the emissions curve on the foundational underpinnings of our global economy. The Department of Ecology's Draft Second Supplemental Environmental Impact Statement for the Kalama methanol facility accomplishes all of those things. We should proceed with the Kalama methanol facility.

Sincerely,

A handwritten signature in black ink, appearing to read "R. Desimone", followed by a long horizontal line extending to the right.

Richard Desimone

Figure 1
Chinese Coal Methanol to Olefin Facility Growth
2009 - 2015

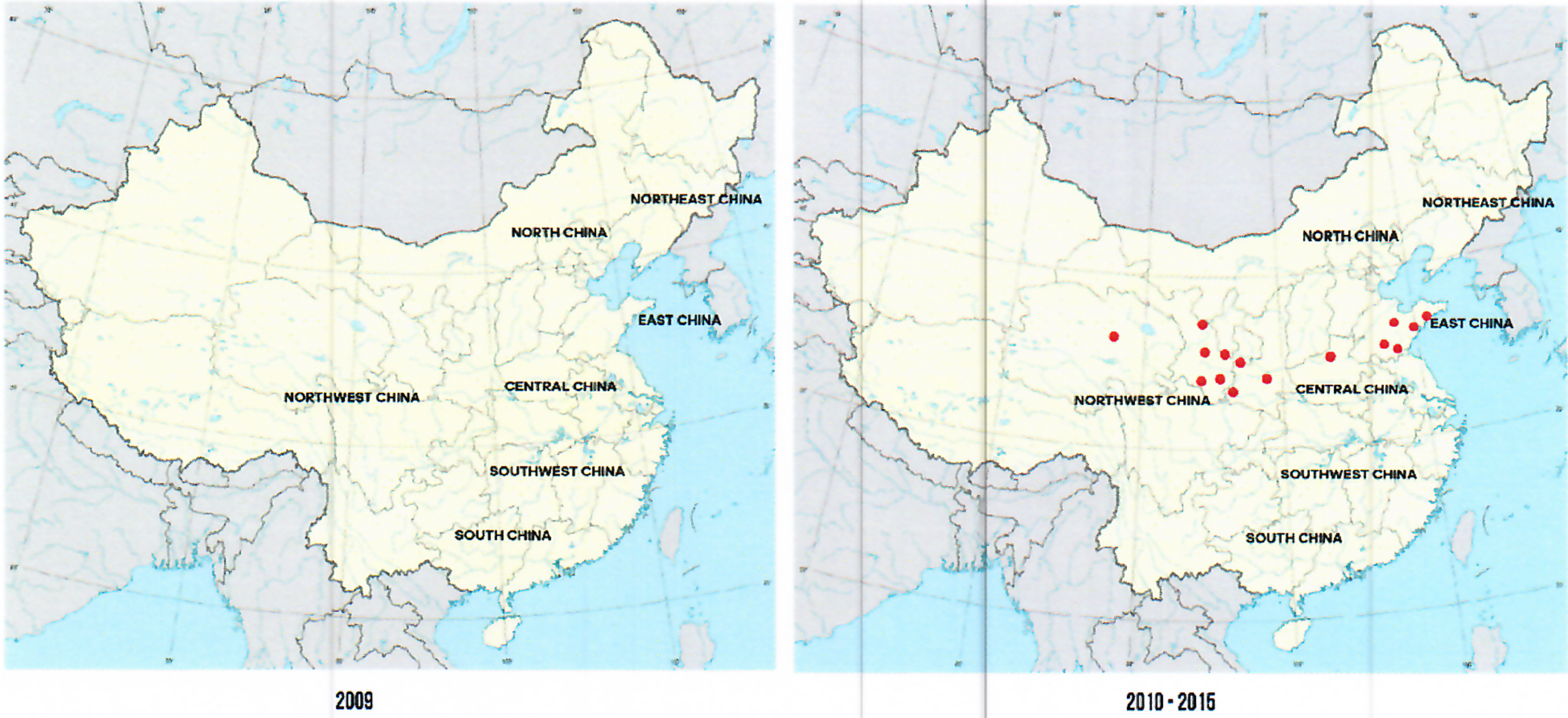
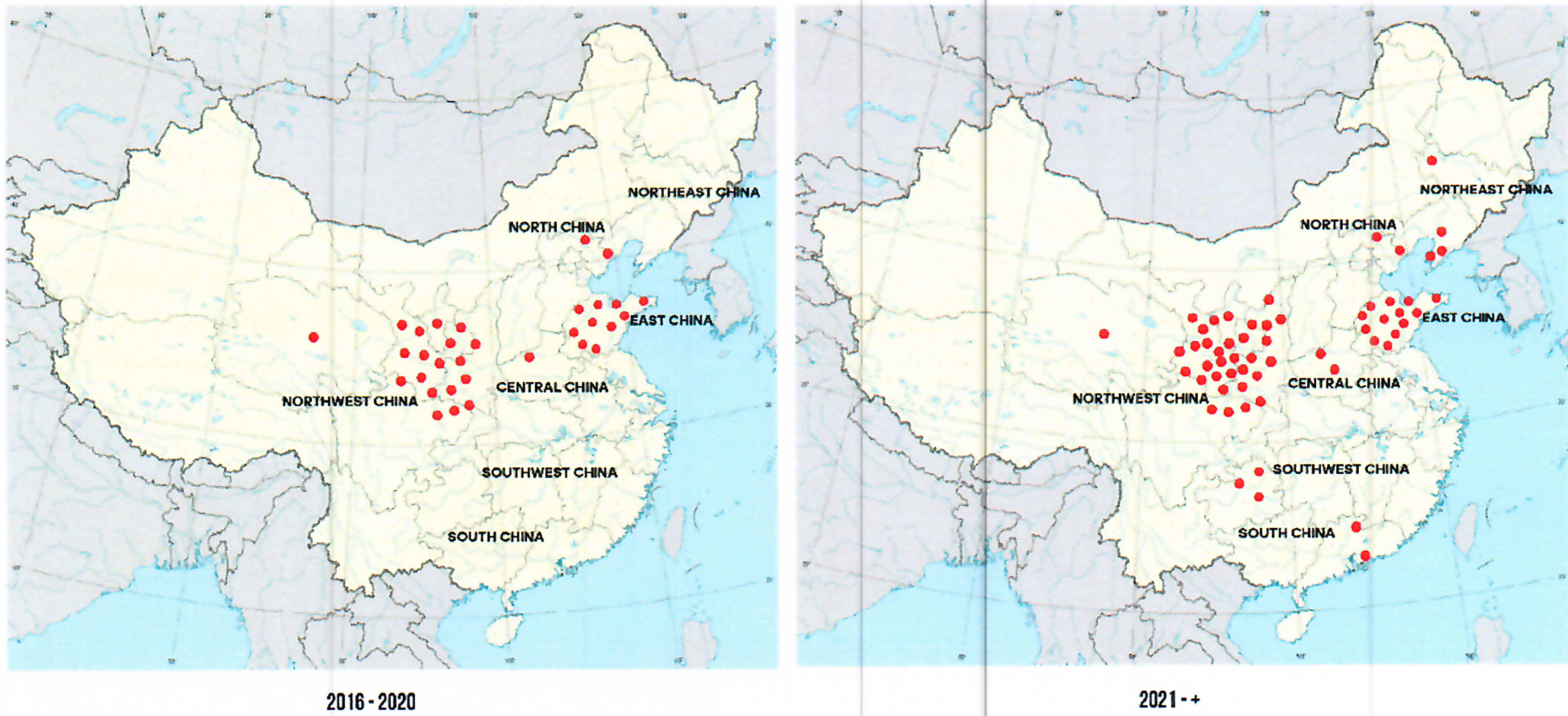


Figure 2
Chinese Coal Methanol to Olefin Facility Growth
2016 – 2020 and Beyond



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- ⁱ Draft Second Supplemental Environmental Impact Statement for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 104: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ⁱⁱ Draft Second Supplemental Environmental Impact Statement for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 68: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ⁱⁱⁱ Draft Second Supplemental Environmental Impact Statement for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 65: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ^{iv} Draft Second Supplemental Environmental Impact Statement for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 65: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ^v Draft Second Supplemental Environmental Impact Statement, Appendix B, for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 8: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ^{vi} Draft Second Supplemental Environmental Impact Statement for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 58: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ^{vii} Draft Second Supplemental Environmental Impact Statement for the proposed “Kalama Manufacturing and Marine Export Facility” (Publication 20-06-011), Washington State Department of Ecology, p. 71: <https://fortress.wa.gov/ecy/publications/documents/2006011.pdf>
- ^{viii} “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p.5: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^{ix} “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p.3: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^x “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p. 6: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^{xi} “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p. 39: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^{xii} “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p. 57: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^{xiii} “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p. 57: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^{xiv} “Guide to Chinese Climate Policy 2019” by David Sandilow, Columbia University Center on Global Energy Policy, p. 58: https://energypolicy.columbia.edu/sites/default/files/file-uploads/Guide%20to%20Chinese%20Climate%20Policy_2019.pdf
- ^{xv} “A New Coal Boom in China” by the Global Energy Monitor of the Centre for Research on Energy and Clean Air: <https://energyandcleanair.org/wp/wp-content/uploads/2020/06/A-New-Coal-Boom-in-China.pdf>. The Global Energy Monitor is a nonprofit research organization developing information on fossil fuel projects worldwide. Through its Global Coal Plant Tracker (GCPT) project, Global Energy Monitor has provided biannual updates on coal-fired generating capacity since 2015. GCPT data is used by the International Energy Agency (IEA), the OECD Environment Directorate, UN Environmental Programme, U.S. Treasury Department, and the World Bank.
- ^{xvi} “China Expands Coal Plant Capacity to Boost Post-Virus Economy,” by Thomas Hale, *The Financial Times*, June 25, 2020: <https://www.ft.com/content/cdcd8a02-81b5-48f1-a4a5-60a93a6ffa1e>

^{xvii} “Coal chemicals: China’s high-carbon clean coal programme?” published in Climate Policy by Chi-Jen Yang from Duke University’s Center on Global Change, 2016

^{xviii} https://en.ndrc.gov.cn/newsrelease_8232/201612/P020191101481868235378.pdf

^{xix} https://en.ndrc.gov.cn/newsrelease_8232/201612/P020191101481868235378.pdf

^{xx} <http://www.asiachem.org/en/coalchem>

^{xxi} Johnson Matthey press release, “Johnson Matthey achieves successful commissioning of largest methanol plant in China;” June 23, 2020: <https://matthey.com/-/media/files/press-releases/johnson-matthey-press-release-baofeng-ii-methanol-plantfinal.pdf>

Boilermakers Local 242

Good morning. My name is Brett Stevens, I'm the president and assistant business manager for the Boilermakers local 242. I support this project on many fronts. First, jobs. A thousand construction jobs are expected, 200 permanent and another 500 indirect jobs not to mention \$30 to \$40 million a year in tax revenue.

Secondly, the technology to produce methanol from natural gas is far better than from coal, which is what the Chinese are doing without the regulations that we require. Methanol is not going away, we want them these products, but we want these facilities in someone else's backyard. It's always easier to say no, rather than to work together. To say all we care about is jobs is false, all of our members care about the environment just as much as everyone else. We hunt fish and enjoy the Pacific Northwest, just as much as everyone else who chooses to live here. If we truly care about climate change on a global level, then we must build this facility here simply because we have the strictest regulations and oversight. If not, it will be built somewhere else and the climate on a global level will suffer.

Bryant Mullin

Thank you for allowing this. My name is Brian Mullen and I am an inside IVW Construction wireman. I'm going on record in support of this project. I'd like to point out that everybody on this call today has enjoyed things made from the refining of methanol that has probably come from another country with less regulations. Methanol is prevalent in our everyday lives and will continue to be. Let's build this project and provide jobs in a responsible project for Washington. This job is ready to go.

I would also like to point out that there is currently a wind project that is being built in Lewis County. I was at a hearing, and there was opposition to this green project, a wind project that had opposition. How can we be against a wind project and against a responsible project. I'd just like to close by thanking everybody for their comments. I am once again in support of this project. Thank you for the time.

Cathy Spofford

Okay. Thank you. My name is Cathy Spoford. I live in Portland, Oregon. I have two young granddaughters whose future I'm 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've seen some of the worst forest fires in the history of Washington and Oregon, and scientists 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 gas emissions each year, further contributing to the climate crisis and undermining Washington's greenhouse gas reduction roles. 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. The 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 this project. Thank you.

Columbia Riverkeeper

Hi, my name is Daniel Steris and I'm the Conservation Director with Columbia Riverkeeper. Ecology should set its sights on protecting the future we can live in rather than contributing millions of tons of carbon pollution each year [inaudible] the big justification that someone else might do something similar or worse anyway.

On this basis, recognizing that the project will produce 4.6 million tons of pollution each year or more, Ecology should deny the project. A central premise of the new EIS is that all of the factors- economic growth, technology, climate policy, trade regulations, et cetera- affecting the production and consumption of methanol will remain fundamentally unchanged for the next 40 years. This prediction about the next four decades is unfounded and almost certainly wrong. None of these factors have remained static over the last 40 years. Pretending that time will stand still for Northwest Innovation Works is illogical, and the displacement theory, which relies on that illogic, is not reliable.

In every case Ecology presents, methanol production dramatically increases from fossil fuels and pollution increases. Ecology's analysis bleakly predicts that coal-based methanol will increase regardless, and the displacement analysis that comes to paper over the pollution from the fracked gas-based methanol coming from Northwest Innovation Works by comparing it only with other fossil-based forms of methanol. The analysis fails to make comparisons for competing cleaner alternatives, such as electric vehicles, which may be displaced by fossil-based methanol being used for fuel. The SSEIS also fails to consider cleaner ways of producing methanol that may develop over the next 40 years. Cleaner forms of methanol production are technologically feasible now and may become commercially feasible during the next 40 years.

Washington must plan for something better. The analysis should involve a case that actually aims for reducing carbon emissions in absolute terms, and works toward limiting global warming in line with Washington's goals towards limiting global warming below two degrees.

Bill Josh

Thank you so much for allowing me to speak today. I do support this project. There's a lot of people within our community here in Cowlitz, and within Southwest Washington that do support this project here in Kalama. We've been having this discussion regarding whether or not we should build this for years- for as long as I can remember- and we need to get this done.

The project has taken far too long to get approved. The goalposts have continued to move, not just for this project, but other projects within Southwest Washington. It would be a great economic boon for our community, for our county. It would provide needed tax dollars for us to help provide for crucial services within our community and within the county. It would be a great opportunity for local unions and workers within Cowlitz County, and would provide opportunities for families that will help our economy and help improve the quality of life here in Cowlitz County and Southwest Washington.

Far too often, we are faced with a government and a state bureaucracy that just continues to say no to everything. We have the highest standards of any state, and potentially in the world, to develop and build the project like the Northwest Innovation Works project. If Washington State says no to this, you are essentially going to shut down any and every opportunity for Southwest Washington to create and provide jobs in an industrial manner in the future. If you say no and if they say no, then what else can we do? What else can we build? What project will be good enough? Thank you.

Elijah Cetes

Greetings. My name is Elijah [inaudible]. I live in Portland, Oregon. As a young person, a conservationist, and a fisherman, I strongly oppose this project. Although the risks and impacts to endangered salmon and steelhead runs on the Columbia River should make it a non-starter, I understand why Ecology has included this 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. Did this agency lack the imagination to assess other potential futures that might not include releasing 40 million tons of added CO₂? Because I think we need to remember that whatever the potential offsets are, that amount is equivalent to 8.6 million new vehicles on the road. It's equivalent to 10 new coal-fired power plants.

One likely and dismal future you might have explored is one where global plastic production increases. China continues to produce methanol from coal, while new pipelines are still built to supply Kalama. [sound cut] New plastic facilities open. The plastic industry, which is notoriously a haven for fossil fuel companies clinging to profits, continues to undercut sustainable alternatives to plastic and our oceans continue to be choked with debris. Meanwhile, we in the Pacific Northwest will still see the price of gas in our homes increase, driven up by this project's monopolistic control of our gas supply lines.

Then again, another scenario could be the opposite occurs. At much cost to local East Coast systems and clean water, the facility is [sound cut] built and operates for five years. Then before the coal plants can go down in China, a climate disaster, a pandemic, a wildfire, or a plastic alternative emerges driving down demand for fracked gas while the supply lines become glutted. Eventually, the project closes after a short lifespan. 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-

Nate Stokes

Well, thank you. My name is Nate Stokes and I live in Clark County. I'm a Field Rep Supervisor for the International Union of Operating Engineers Local 701, and a father of five and a grandfather of one. People have been talking about this global environment. If we care about our environment, then we need to approve this project so it doesn't get built somewhere else.

I want to make a couple of points since the opposition is stating stats. This project sets a new, high, unprecedented, inspirational standard for development in Washington State. This project has been under review for almost seven years now. This is the third time the government-led process has been undertaken. In the meantime, while we've continued to study this, climate change keeps happening and science shows that every year we delay this project, another year will allow more carbon to be added to our planet.

In addition to global GHG reduction, Northwest Innovation will mitigate for 100% of its in-state emissions, even those not directly tied to its facility. This will create investments renewable natural gas development, saving and improving forest lands and practice driving other innovative GHG-reducing technologies and opportunities locally, regionally, and globally. Washington State can and should be the highest standards-lead other states, our nation, other nations. Please approve this project as a great example to drive those high standards.

We must act now to address the climate change and this project is an important step to do that. I do support this project and thank you Department of Ecology for the good work, and please move swiftly.

Mike Reuter

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

Questions about the company's spokesmen having concerns were already being looked into years ago.

Methanol proposal arrived in Tacoma after extensive Inslee ... The newstribune
Apr 9, 2016 —

Email records obtained by The News Tribune show the proposal arrived in Olympia with high-caliber names on board: an acquaintance from the governor's years in Congress and a controversial Chinese political scion.

The acquaintance, California businessman Mike Tao Zhang, worked for Northwest Innovation Works. He introduced the project with a March 2013 email to Inslee staff member Sam Ricketts, who passed it along to other administration officials. Zhang wrote of "clean energy plants" slated for somewhere in the Pacific Northwest.

Attached were photos of what Zhang called "the good old time" he and Inslee had at a Washington, D.C., meeting in 2009, during Inslee's time in Congress.

Zhang, who is no longer affiliated with Northwest Innovation Works, declined via email to answer further questions.

In the email, he wrote the joint effort of China's government and the oil giant BP (which since has sold its interest) had made "good progresses (sic) in Oregon," including meetings with then-Gov. John Kitzhaber about possible plants there. The company, he added, would rather build in Washington to save money on piping in natural gas.

He also dropped a heavyweight name: Jiang Mianheng, the son of former China president Jiang Zemin. A follow-up email identified Jiang Mianheng, then a top official within the Chinese Academy of Sciences, as "the sponsor of our company" who was headed soon to the United States to gin up business deals.

It did not mention a series of news stories the year before that identified Jiang Mianheng as a "princeling" whose connections had made him millions as a businessman.

Less than a month after the email was sent, the New York Times won a Pulitzer Prize for China-related stories the prize committee labeled a "striking exposure of corruption." The series included a May 2012 report on how Jiang Mianheng had profited from his family name despite China's laws to prevent leaders' families from accumulating power and wealth.

Mike Tao Zhang-

President of Hoku Materials Inc

Hoku Materials, made the Chapter 7 filing Tuesday, the Idaho State Journal reported.

Hoku Materials started building the \$700 million plant five years ago as interest in solar energy grew and polysilicon prices rose. The company said it would bring hundreds of higher paying jobs to Pocatello.

Board Director of the Hoku Corporation

Financially troubled Hoku Corp. announced today that it has completed its voluntary delisting NASDAQ Global Market.

09-28-2016

INDUSTRIAL PIPING, INC., Plaintiff, v. WEI XIA,TAO (MIKE) ZHANG, DAYI (SEAN) LIU, and TIANWEI NEW ENERGY HOLDINGS CO., LTD., Defendants.

Jiang Mianheng

Son of Former Chinese Leader Jiang Zemin Said to Be Under House Arrest
BY LARRY ONG September 29, 2016

Jiang Mianheng, the elder son of former Chinese Communist Party chief Jiang Zemin, is presently under house arrest, according to a source close to the Party disciplinary inspection branch in Shanghai.

The source told the Chinese language edition of Epoch Times that Jiang is being held under house arrest in a secret location on the outskirts of Shanghai. He is only allowed outside the residence for fresh air, the source said; the source said he had personally seen Jiang at the location, using an "observation device" to confirm a tip-off.

The detention of Jiang Mianheng by the Party's anti-corruption investigators is the culmination of probes conducted over about the last 18 months into prominent companies and institutions that Jiang is associated with. The development also points to the possibility that Party leader Xi Jinping's intends to bring the anti-corruption drive to its endgame, with the arrest and punishment of the senior Jiang, whose effective control over the communist regime extended until 2012.

The Shanghai disciplinary inspectors want from Jiang Mianheng a complete account of his personal and family financial affairs, the source, who is close to the investigators, told Epoch Times. Based on what inspectors currently know about the Jiang family's property, assets, and wealth secured through illegitimate and obscure means, the source said, "it's enough to feed and water the Chinese people for several years; the figure is eye-popping!"

I have questions about the team at NW Innovation Works experience and why these two people were chosen to be the president and vice president when NW Innovations was brought to the NW.

I wonder why the company didn't hire an ex-executive from a methanol refinery, or even someone at least worked for one. This is why I believe that it was a speculative venture from the get-go.

Governor Inslee Briefing Memo 1 FROM: Schuyler Hoss PHONE: 360-239-1317 MEETING: MEETING WITH REPRESENTATIVES OF THE CHINESE ACADEMY OF SCIENCES DATE/TIME February 12, 2015 11:30 am to 11:50 am LOCATION: ATTACHMENTS: Governor's Office Tan Tieniu, Deputy Secretary-General of the Chinese Academy of Sciences and the Director

General of the CAS Bureau of International Cooperation 2. Wu Lebin, Chairman, China Academy of Sciences Holding Company 3. Simon Zhang, CEO, CECC and NW Innovation Works 4. Vee Godley, President, NW Innovation Works 5. Joe Smith, Vice President, NW Innovation Works 6. Charla Skaggs, NW Innovation Works 7. Ed Sapin, NW Innovation Works 8. Rick Desimone, NW Innovation Works 9. Mei Zhang, NW Innovation Works

Murry "Vee Godley President of NWIW

According to an article called -Meet Northwest Innovation Works January 22, 2014

Northwest Innovation's president is Murry "Vee" Godley 54, a North Carolina native who said he has more than three decades experience in the construction industry.

This is his first methanol project, but he is hiring a team with experience in the industry.

On linkedin it lists prior experience

1993-2005

Vice president Luwa Mechanical Specialties. Luwa Mechanical Specialties is a plumbing, heating and air conditioning company.

2010-2013

Sr. Project Director-Industrial Piping Inc.-

2013 to present

Chief Development Officer-Pan Pacific Energy- The parent company of NWIW-

2014 to present

Chief Development Officer- NW Innovation Works

Joe Smith vice president NW Innovation Works

Linkedin information

Specialties: documentation, forklift operator, graphic design, ids, leadership, mark, organizational skills, personnel, process engineering, repair, supervisory skills, swing, technician, training, training materials, upgrades

Experience

D&L Foundry

Safety Manager

Company Name D&L Foundry

Dates Employed Mar 2019 – Present

Employment Duration 1 yr 8 mos

Location Richland/Kennewick/Pasco, Washington Area

NW Innovation Works

Vice-President

Company Name NW Innovation Works

Dates Employed Jan 2013 – Sep 2017

Employment Duration 4 yrs 9 mos

Location Vancouver, WA

Hoku Materials

Dates Employed Jan 2009 – Aug 2011

Employment Duration 2 yrs 8 mos

Currently working with commissioning team. While working with the commissioning team, I will be creating procedures and commissioning procedures, reviewing P&IDs, working with engineers and attending model reviews and Hazops for each of the processes in the plant. Organizing with construction for turn over packages. Overall goal with being with the commissioning group is have a documentation and be organized and ready to commissioning and start up the new process equipment.

Skills

When I was working for ASIMI, I was asked to travel and help Commission a new 800 million dollar plant, in which I spent a total of nine weeks during the commissioning and start up.

Hoku Corporation

TCS Production Project Manager

Company Name Hoku Corporation

Dates Employed Feb 2009 – Jan 2011

Employment Duration 2 yrs

Location Pocatello, Idaho Area

AE Polysilicon

Technology Superintendent

Company Name AE Polysilicon

Dates Employed Oct 2007 – Feb 2009

Employment Duration 1 yr 5 mos

Weyerhaeuser

Supervisor

Company Name Weyerhaeuser

Dates Employed Jul 2003 – Jul 2007

Employment Duration 4 yrs 1 mo

During my time at Weyerhaeuser my job was working on swing shift and direct the maintenance work and also the shift cleaning crew. The shift cleaning crew cleaned and maintained the machine. My accomplishments at Weyerhaeuser was to center line the machine so setup time was reduced and the cost of manufacturing was also reduced. The goal was accomplished by showing team

leadership as well listen to the operators by setting all dials to a (ZERO) mark which would allow them to be able to run a one box setup.

REC Silicon 5-29-07- 10-03-07

(REC Silicon ASA is fast approaching its effective exit from the solar market after revealing in its second-quarter update it had sold off the last 62 MT of PV-grade poly produced at its plant in Moses Lake, Washington, which has been shuttered for over a year.)

Currently working with commissioning team. While working with the commissioning team, I will be creating procedures and commissioning procedures, reviewing P&IDs, working with engineers and attending model reviews and Hazops for each of the processes in the plant. Organizing with construction for turn over packages. Overall goal with being with the commissioning group is have a documentation and be organized and ready to commissioning and start up the new process equipment.

REC Solar

Plant Trainer

Company Name REC Solar

Dates Employed 1989 – 2006

Employment Duration 17 yrs

ASiMI

Feb 11, 2005

Company Name ASiMI

Total Duration 15 yrs 2 mos

Title Plant Training coordinator

Dates Employed Feb 1997 – Jun 2003

Employment Duration 6 yrs 5 mos

My job while doing the training coordinators job was not only to develop training materials for the plant but also train all plant personnel as well as tracking the training performance.

- Title Research and Development Team leader

Dates Employed Jul 1996 – Feb 1997

Employment Duration 8 mos

To develop a new process to make the same product but faster and using less people.

This including traveling to different vendors to insure proper equipment would come to the plant.

This also included commissioning a new section of the plant. Which included developing new operating procedures.

- Title Silane Operator

Dates Employed Nov 1988 – Jul 1996

Employment Duration 7 yrs 9 mos

Monitor equipment, lock and tag out equipment. Clean and prepare equipment for maintenance. Pull sample for the lab. Complete minor repairs such as change valves and rebuild sample station. To become a certified operator in the Silane Unit you went through a three year certification program with included but not limited to drawing sketches of equipment and location taking writing test and test your skill by actually completing the task. During my time as a silane Operator I became a Supervisor Upgrade. That included during an incident in the plant I became the incident commander and would take control of the emergency and call all appropriate people. Also during my time as a Silane Operator I was asked to go to Butte Montana to help start up the new facility.

- Title Reactor Technician

Dates Employed May 1988 – Nov 1988

Employment Duration 7 mos

Remove product from reactors (poly silicon). In order to remove the product we must have been certified to use the overhead cranes. Also this job required you to become certified as a reactor technician I completed it within two months.

Anne Kroeker

October 9, 2020

Dear Department of Ecology,

Thank you for drafting an SEIS focused on a full analysis of the GHG emissions, upstream to downstream, for the proposed Kalama methanol facility and for accepting public comments. Climate change is not only ramping up all around the globe but is here now for us, as we all continue to experience poor air quality in the region everyday, filled with smoke from this year's record-setting forest fires in the Pacific Northwest and California. And as expected, those who can least afford to shelter for long periods of time from the smoke, and who may have additional health challenges already, due to economic uncertainty and lack of regular healthcare, are most affected. To add insult to injury, the carbon emissions we have already introduced to our planet continue to compound, so our future air quality does not look any better. We simply cannot add one more stick to this fire, which creating a methanol plant will do.

Humans are not the only creatures to experience respiratory issues with poor air quality; species of all sorts, domestic to wild, are also affected. Birds are especially harmed by atmospheric pollutants, such as with "the canary in the coal mine" example, with results yet unknown in long-lasting smoke-filled air. And with the continuing precipitous rise in climate pollution causing biodiversity to plummet at even faster rates, this otherwise offsetting support creates additional negative consequences for human well-being.

As regards the evaluation of potential mitigation and displacement for methane pollution contained in this supplemental analysis, the conclusions are still misleading and concerning in its reliance on speculative – such as when and how much methane will leak - and unenforceable – such as presuming a single source gas from British Columbia (referencing the breakdown experienced last year) - assumptions. To allow such conclusions to elicit a statement from NWIW, claiming that "Ecology's best estimate is that NWIW's Kalama facility will result in a global net reduction of over six million metric tonnes of GHGs every year" is tantamount to giving the green light to this project, when in reality, no such reduction can be presumed, let alone expected.

This proposed facility, if allowed its permits, will cause millions of tons of greenhouse gas pollution each year, for 40 years. Regardless of the fact that this choice is antithetical to Washington State's legislated carbon emission goals, it brings on a future which will compromise the health and even kill, thousands of Washington State residents, along with the region and nation. Our choices today determine what happens tomorrow.

Morally, ethically, scientifically and practically, you must reject this proposed plant which will become our State's greatest source of climate pollution, adding to the degradation of the public good and diminishing the quality of life to all of its species.

Sincerely,
Anne Kroeker

Darlene Johnson

Okay, Darlene Johnson, and I live in Woodland, Washington, which is about eight miles south of Kalama. I'm a grandmother. I have eight grandkids and another seven, if you count the grandkids of our exchange students. I entirely support this project. When I listen to some of the testimony, I'm wondering if anyone believes what our state agencies are saying. They say that this actually reduces pollution. They do not say that it increases it. Why wouldn't everybody be in favor of reducing pollution?

Also, I hear a lot of people talk about that climate change has caused forest fires. Well, I live in an area where we've had a lot of logging and what really causes forest fires is unmanaged timber, and we need to get back to managing the timber. So, I don't think they can use that as a reason for not allowing this development.

Inaction is really an action. The longer we keep having inaction on supporting this, the longer we go with increasing pollution. I just wholly hope that you approve this project, and especially approve it for my grandkids, all of whom live in Washington. Not too many in Woodland, Washington or Kalama because there aren't as many job opportunities here. They live in Seattle or Gig Harbor. So, I'm just hopeful that this gets approved. I'm also on the board of directors-

Gary Lindstrom

Yes, thank you very much. I am Gary Lindstrom, retired Director of Marketing for the Port of Longview and a property owner in Kalama. The proposed methanol refinery is of grave concern because life on this planet is being impacted by global warming. Kalama is not a refinery city. It is a quaint, waterfront town on the Columbia River with a good working port, light industry, small-town business, and surrounding recreational areas.

I'm disappointed that the Port of Kalama is fostering greenhouse gas emissions by allowing the world's largest frack gas-to-methanol refinery to be built on the shores of the Columbia River for the benefit of China. When Trump withdrew the US from the Paris Agreement to counter global warming, Governor Inslee, along with other Governors, committed to a US Climate Alliance to reduce greenhouse gases. I am committed to this endeavor and fully support whatever we, the State of Washington, can do to keep the planet from warming two degrees Fahrenheit.

The devastation from [sound cut] [inaudible] wildfires is further evidence of climate warming; the challenge for all of us. Ecology's analysis shows that the refinery would produce 184 million metric tons of carbon pollution during the lifetime of the refinery. It is a fact that our lives are insulated from the perils of the sun by a very thin layer of atmosphere. I ask Ecology to find that the refinery's output of greenhouse gases is beyond the threshold and our state's passionate commitment to preserve that thin layer; and that Ecology deny the Shoreline Permit. Thank you very much.

Scott Strickland

My name is Scott Strickland, and I'm a Special Project Counsel for the International Union of Operating Engineers. I have many friends and family members who live and work in Washington. I feel that climate change is the number one threat to our economy and our way of life, our civilization, everything this planet. I feel that as such, I am extremely supportive of any attempt to shift our economy and the world economy to a more sustainable and reliable way to be able to provide for everyone equitably.

I see this project as an example of that. A shift in international finance and productivity to be able to provide family wage jobs for folks, to provide hundreds of millions of dollars of economic benefit and increase taxes, to provide for more regulation, for more technological advances to further drive us towards a better economy for everyone; including all of the ecosystem entirely. I urge the committee to approve this, and would like to see all of the folks that are speaking out against this and every other project; if there is a better alternative point to it.

I've heard about electric cars, I've heard about electricity and other things, but I haven't heard any of the criticisms that are typically lobbied against those because of the cobalt mines and other issues in South Africa and everywhere else. There is an environmental cost to everything we do. It is our responsibility to find a way forward to lessen that to better it for everyone. I thank you and yield the rest of my time.

Jane Nicolai

Thank you Department of Ecology for taking my comments. I'm Jane Nikolai, a lifelong resident of Washington State. The dangers, threats, and outcomes of this proposed project are known. The current EIS does not take into honest account of each step in the process that is a step down in the well-being of our earth and all that lives in her bounty. Your decisions here do not fall lightly. They spread and ripple effect across the whole world from their origins here. Whether the outcome is degraded land, air, water, sickness, barrenness, and death; or clean flowing rivers, healthy children, and an abundant earth.

You are in a position of power that most of us do not have. The decision hanging in the balance is between destruction and well-being, between greed and generosity, between courage and a soul forever disquieted by the knowledge of what you have done. As you are in possession of such power, celebrate life; full, generous, well-fed, wholesome life. You have the ability to make the world a better place; use it. Thank you.

Janeen Provazek

Hi. My name is Janeen Provazek. I've been a resident of Washington State all my life. I live in Tacoma, and volunteer for 350 Tacoma; a non-profit climate organization. I am here because of my grave concern regarding the proposal for this methanol refinery. In September of 2019, thousands of top climate scientists had a climate conference. Their subsequent report and message was urgent and very clear; we have a climate emergency. If we want to have a sustainable future on this planet, we cannot keep fracking and expanding fossil fuels and expanding gas pipelines and deforesting our lands and building methanol refineries, which make plastics; the last things we need more of.

This proposed methanol plant would cause millions of tons of greenhouse gas pollution, use millions of gallons of water daily from an aquifer connected to the Columbia River, pollute the air with cancer-causing emissions, and pose a serious safety hazard during an earthquake. This is about urgency, scientific evidence, common sense, and not giving in to the immediate gratification of economics.

We are putting ourselves and future generations at serious risk by refusing to change. We need to not ignore the scientists and continue to pollute our air and land and water. We need to focus now on smarter and cleaner and sustainable ways to generate power, fuel, and products. My plea is to the Department of Ecology; please have the courage and awareness and integrity to reject the methanol refinery. Be the hero for us.

John Flynn

My name is John Flynn, and I live in Kalama. In 2008, the Washington State Legislature established limits for reducing greenhouse gas emissions in Washington. Those requirements can be found in the Revised Code of Washington, RCW 70.235.020. In its 2019 update, Ecology recommended the following updated statewide reduction goals for GHG emissions. By 2020, reduced overall emissions of greenhouse gases in the state to 1990 levels. By 2035, reduced overall emissions of greenhouse gases in the state to 25% below 1990 levels. By 2050, the state will do its part to reach global stabilization levels by reducing overall emissions to 50% below 1990 levels.

The Department of Ecology issued its Washington State Greenhouse Gas Emissions Inventory Report to the legislature in December, 2018. The key findings of this report were; Washington's 2015 total greenhouse gas emissions were 97.4 million metric tons. Washington's 2015 total greenhouse emissions were 7.4 million metric tons higher than the 1990 baseline.

Today, Department of Ecology is considering whether to de-grant or deny a permit for the construction and operation of a fracked gas-to-methanol refinery in Kalama that would add 4.6 million metric tons of greenhouse gases per year. We know that in 2015, we were 7.4 million tons over the 1990 baseline. By adding an additional 4.6 million tons, that would equate to 12.0 million more than 1990.

Anonymous Anonymous

Carolyn [inaudible] here.

>> 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 methanol refinery in Kalama 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 massive amounts 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, fracking, and new regional pipelines that lock in future fossil fuel use for decades.

We don't have decades. Fossil fuels produce large quantities of carbon dioxide when burned, carbon emissions trap heat in the atmosphere which leads to global warming. Extreme weather events like wildfires and hurricanes will only become stronger and more frequent in a warmer world. With heat comes drought and more air pollution; both particularly harmful to children. Governor Inslee strongly agrees with the 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 those levels.

Ecology's own website states, "We're proud to protect, preserve, and enhance Washington's environment for current and future generations." Ecology, your decision impacts so much more than Kalama. You have a responsibility to aid in the phasing out of fossil fuel reliance in favor of clean energy-

Angus Duncan Duncan

Please see my comment letter, attached.

angus duncan
2373 nw johnson street
portland, or 97210

October 9, 2020

Laura Watson, Director
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' Methanol Refinery and Export Terminal.

Director Watson:

I am writing to dispute the energy supply and demand market arguments and conclusions put forward by the Northwest Innovation Works (NWIW) in support of its proposal for a gas-to-methanol refinery at Kalama, WA.

Generally arguments for substituting lower-carbon fossil fuel-based energy projects only have merit when they are positioned in a narrow enough context. Thus the emergence of low-cost fracked gas supplies accelerated the termination of the country's already aging coal generation fleet, much of it already superannuated and due for retirement. While this temporarily flattened the curve of greenhouse gas (GHG) emissions in the utility sector, it did so at the grievous price of locking many US utilities into a new generation of gas combustion turbines. That new capital investment in gas-fired power facilities will have a projected operating and cost-recovery lifetime of 30 to 40 years, resulting in either millions of dollars of stranded assets, or additional decades of fossil-based GHG emissions.

Likewise substituting lower-carbon methanol for a higher-carbon-content product in China will enable and extend that country's reliance on methanol in its energy mix. The effect of the exports from this single plant will be incremental and negligible globally -- although not for Washington's efforts to meet its state-level goals -- but the cumulative effect of many such decisions is continued dependence on fossil fuels that will persist for decades and lock in more resistance to meeting global GHG emissions reductions.

There is also an upstream effect of the proposed Kalama plant on fossil fuel production in the United States. Every increase in market pull for additional wellhead gas will support such production by spreading overhead costs across more therms of gas. When gas and oil are co-produced, as they are in many well fields, the economics of oil production are also strengthened at the margin for each additional therm of gas byproduct pumped and sold.

The first internal flaw in the logic of building new lower-carbon energy resources to displace older higher-carbon such resources is the inference that we can build our way out our dependence on fossil fuels by locking it in for another 40 years. But the next several decades will determine whether, if we

succeed or fail in arresting and reversing the GHG emissions curve, we will have a habitable planet at the end of that time.

The second internal flaw is the implicit presumption that today's fuel and technology supply curves can be projected in linear fashion into the future. The likelihood that methanol exports will continue for the next several decades, supported by future market clearing prices comparable to today's, is a far less likely future than is one in which reliance on methanol, and fossil fuels generally, is disrupted by new low and zero carbon energy technologies. We have seen such disruptions play out with particular vigor in recent decades: low-cost energy efficiency displacing central station power plants; fracking technology dropping gas prices by $\geq 75\%$ in ten years; wind, solar and battery technology cost declines of $\pm 80\%$ in the same decade; decline of coal from $>50\%$ of US generation to $<25\%$ in 15 years; etc.

But every existing fossil-based facility with unrecovered capital costs and forward profit potential will be driven by those factors to resist termination.

These documented effects notwithstanding, we might hesitate to intervene in a private company putting its capital at risk in this plant but for the externalized costs such investments impose on the rest of us. We have experienced some of these effects with particular severity in the Northwest the last several years: heat, drought, forest wildfire, declining snowpack, with their attendant regional economic and public health effects. Ecology might note my address above – I'm writing from across the river in Oregon – but as your Governor has so eloquently argued on both regional and national stages, the effects of decisions like these cross rivers, continents and oceans. Oregonians will suffer from the externalized costs of permitting this methanol plant (as citizens of Washington will if Oregon and FERC permit a proposed LNG export facility in Coos Bay, Oregon).

If we wish to attenuate these effects in this country, we need a carbon cap more inclusive nationally than Washington's very admirable Clean Energy Transformation Act (CETA) which, however, fails to restrain the large step backwards that this NWIW facility represents.

If we wish to reach across national borders to encourage GHG limitations globally, we can return to the Paris Accord and follow it up with trade and other limitations on countries that fail to limit and reduce their emissions.

Allowing this facility to proceed to construction and operations would proceed in the opposite direction entirely, to the discredit of the State of Washington.

Sincerely,

Angus Duncan

(former) Chair, Oregon Global Warming Commission

(former) Chair, Northwest Conservation and Power Planning Council

(former) Director of Energy Policy, US Department of Transportation

Columbia Riverkeeper

My name is Kate Murphy, and I'm a Community Organizer with Columbia Riverkeeper. The irony of meeting virtually to protect public health while discussing this potential disaster should not escape anyone. There are many reasons Ecology should deny the permit for the world's largest fracked gas-to-methanol refinery. This morning, I want to focus on the fact that Northwest Innovation Works has provided little meaningful detail about how it will actually mitigate the impacts of this project.

The SEIS states that the impacts can be mitigated, but offers few details on how they will accomplish its stated goal of fully mitigating all of the in-state pollution from the project. Northwest Innovation Works identifies no specific projects or measures that will address the enormous greenhouse gas pollution impacts of the proposed refinery. You are about to make a critical decision about the future, and to accept such vague promises without evidence from a company that has proven itself to be untrustworthy is a massive disservice to the region and a favor to the fossil fuel industry.

In the face of overwhelming opposition to this project, Ecology must require real, detailed information and enforceable plans before assessing that impacts on this scale could be mitigated. Northwest Innovation Works plan for a plan falls far short of the standard. We can all easily envision a scenario in which Northwest Innovation Works builds the plant with a vague, unsure, and voluntary mitigation framework fails to produce the hope for mitigation, or a scenario in which commitments made by Northwest Innovation Works are not honored by future owners of the facility.

These are just a few examples of why Ecology cannot base its decision on a framework that fails to identify any real projects, and that proposes to set up a Northwest Innovation Work-friendly team for oversight. This is a recipe for failed mitigation. You've been tasked with making this decision about our future. We're calling on you to fulfill your role in assessing this project with an objective eye, one that examines the actual evidence before you, and we're counting on you to make a decision based on what we know and not what we can speculate about.

Someday, you'll have to answer to your grandchildren when they asked you what you did to protect the air, the water in their lives. What will you tell them?

Margie Van Cleve

Hello, my name is Margie Van Cleve. I live in Seattle, Washington. Why does someone from Yakima County care about the proposed Kalama methanol plant? On August 31st, the Evans Canyon Fire started. By evening of September 1st, I could see the glow from that fire to the north of our house. Later that evening, we received the first evacuation warning from Yakima County Emergency Management. By Labor Day, the fire had grown to 75,000 acres. Luckily, we did not need to evacuate and firefighters did amazing work.

We planned to go camping in a national forest after Labor Day, but cancelled due to high fire danger. Instead, we rescheduled for the Central Oregon Coast because, hey, it's always beautiful there in September, right? We made it to Newport, Oregon before deciding camping was a bad idea due to the hazardous air quality from the Beachie Creek Fire. Instead, we went to our friend's home in Springfield, Oregon. Within four hours of arriving, we began getting evacuation alerts from Lane County Emergency Preparedness for the Holiday Farm Fire. The next day, we assisted our friend in preparing for evacuation that luckily never came. We looked at the orange sky and watched the ever-present ash fall the entire time we remained in Springfield. I hope I never have to see anything like that again. We were back in Seattle by September 10th, restricted to indoors for the next eight days due to hazardous air quality from smoke and fires.

What does this have to do with proposed Kalama methanol plant? Everything. Governor Inslee called the fires climate fires, not wildfires. Erica Fleishman, Director of the Oregon Climate Change Research Institute, noted this fits into a many-year Western United States pattern of more large fires and more destructive fires. I don't want best wishes or thoughts and prayers about fires. I want action. Action means a decrease in the burning of hydrocarbons and a decrease in emissions from greenhouse gases.

Instead, the proposed Kalama methanol plant increases by a huge amount the burning of hydrocarbons, and increases by millions of tons per year for 40 years, greenhouse gas emissions that will contribute to still more climate change. I urge the Department of Ecology to reject the refinery. Thank you.

RoseMary Siipola

My name is Rosemary Siipola, and I live in Kalama, Washington. For the past six years. I've been supportive of the Northwest Innovation project, and I have submitted comments to the Department of Ecology. I have a few today. For every year the plant isn't operating, we lose a chance to reduce millions of tons 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.

Number one; 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 standards for environmentally safe and sound industry. 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 over the past 37 years, and a member of the Lower Columbia College Foundation Board of Directors, where we assist students who are changing their lives and want to live and work in their communities, 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. I really ask that the Department of Ecology approve the permit for this project. Thank you very much.

Sam Kern

Hi, my name is Sam [inaudible]. I find this SEIS insufficiently convincing. As the presentation speaker noted, global demand over 40 years is very hard to predict, and I'm skeptical that we can rely on current market conditions to hold stable. Within the last year alone, large global buyers like Amazon, Google, and Microsoft have announced that they are taking large steps toward fully sustainable operations.

Similarly, BlackRock Investments is encouraging investors to move away from emissive industries. Years ago, these announcements coming from some of the largest and most risk-averse players in the global economy would have been completely unthinkable. The climate, [chuckles] I guess- excuse the pun- is changing really fast.

Due to activist pressure changing market conditions and changing global priorities, these announcements are coming faster and faster. With Google announcing only last week that their operations would be fully carbon-free by 2030; something that only the year prior they refused to commit to. So, I'm really skeptical that we can rely on the projections in the SEIS of demand to hold stable over a 40-year period, when we can't even predict what the largest global players will do within a one-year time frame.

Another commenter pointed out that this would set a dangerous precedent in the region. I completely agree. This facility would establish a foothold in the region for further natural gas infrastructure. I think this is the wrong precedent to set. This facility wouldn't spin up tomorrow. This is an investment and it represents an investment in the wrong path for both our state and for the planet.

I also want to weigh-in on the topic of mitigation. I did read Appendix D of the SEIS that purports to detail the mitigation plan, and I see no plan other than purchasing carbon offsets. This does nothing to mitigate the effects of this project on the Washington local environment. You cannot mitigate the effects of cancer-causing chemicals emitted locally, and you can't mitigate the enormous water dependency of such a facility. So forgive me for being uninspired by this non-existent mitigation plan. Thank you.

Laura Rogers

Greetings. I'm Laura Rogers, an attorney who practiced law for more than 30 years. I live in Portland, a mere 40 miles south of the site where the proposed Kalama Manufacturing and Marine Export Facility would be located. As a fourth-generation Oregonian, my happiest years were spent as a child in a lumber town in the Cascade. I care deeply about the environment of our region.

The proposal to be sited in earthquake country would; one, pollute the air with cancer-causing emissions; two, emit 4.6 million metric tons of greenhouse gas pollution each year for 40 years; and three, each day use millions of gallons of water from an aquifer connected to the Columbia River. I join countless other citizens in standing in fervent opposition to the proposal.

Others have articulated the many flaws in the proposal and the SSEIS. Here, I touch on just one key concern. We must not put the profit of private investors over the inevitable damage this proposal would cause to our environment, which proposal would actually accelerate the use of fossil fuels. Ecology must face the risks of this proposal head-on, and not rely on a speculative market-based analysis that compares the proposal with vague alternatives. All of the high-carbon paths are unacceptable. A low-carbon future demands that we make investments in lower-emitting processes.

I'd like to say that the work of those of you in Ecology are doing on this proposal is vitally important for our region. You have the opportunity to seize the opportunity to make a difference. Thank you.

Thomas Gordon

Thank you. The proposed Kalama Methanol Refinery is a bad idea; from being an explosive danger to Kalama, to creating a potentially huge amount of greenhouse gases released. If an earthquake destroyed a filled storage tank or tanks at the completed Kalama Methanol Refinery, the released methanol would create a gas and a spark from downed-power lines or even a malfunctioning cell phone could ignite the gas. The exact amount of greenhouse gases would depend on how much methanol is released and the number of ruptured tanks. The blast and the resulting destruction could include Kalama and I-5.

Kalama, Washington and the surrounding area has a huge earthquake risk, with a total of 598 earthquake since 1931 alone. Another USGS database shows that there is a 33% chance of a major earthquake, 5.0 magnitude or above, within 31 miles of Kalama, Washington within the next 50 years. The largest known earthquake within 30 miles of Kalama, Washington was a 4.4 magnitude in 1980. No one knows where all the faults are in the area. In fact, one reason among others, the Trojan Nuclear Reactor, six-tenths of a mile from Kalama, was closed down due to a fault being discovered beneath the reactor.

The refinery would have an incoming feeder gas line, which would provide methane used to create the methanol. An earthquake could rupture this gas line or the main supply line or any of the other gas lines in the area. Together, these gas lines would be another source of greenhouse gases and explosions. The Kalama Methanol Refinery should not be built. My wife would like to comment, too.

Sally Keely

I do not understand how the Department of Ecology can be so misled.

Northwest Innovation Works (https://nomethanol360.com/images/graphic_who-ownsNWIW.gif) is a shell company, a company on paper only, with no current employees, no active Washington State UBI number (L&I contractor search: https://nomethanol360.com/images/graphic_nwiw_landi.gif). NWIW is a controlled foreign entity (<https://assets.documentcloud.org/documents/6111358/2019-4-18-Letter-CFIUS-NWIW.pdf>) of the Chinese Party State (the CPC, https://www.washingtonpost.com/world/asia_pacific/command-and-control-chinas-communist-party-extends-reach-into-foreign-companies/2018/01/28/cd49ffa6-fc57-11e7-9b5d-bbf0da31214d_story.html) the only company the Chinese Academy of Sciences Holdings (CASH, <http://english.holdings.cas.cn/cp/>) has spun outside China. NWIW has never build or operated a methanol refinery (despite lies in an NWIW presentation to the NWGA in 2016 about methanol on the Columbia River https://nomethanol360.com/images/graphic_HistoryMethanolCR-annotated.jpg). They propose to use a new production process (ULE <https://nomethanol360.com/docs/20160623ULERefiningProcess.pdf>) never tested on this scale.

Ecology – you are being sold a bill of goods, don't fall for it!

President Trump wrote in an Executive Order on August 6th, 2020, "... the People's Republic of China (China) continues to threaten the national security, foreign policy, and economy of the United States."

Vice President Pence stated in a debate with Senator Kamala Harris on October 7th, 2020, the Chinese government "did not play straight with the American people."

The Netflix documentary _The American Factory_ describes how a similar Chinese communist party owned company took advantage of a small rural town, not unlike Kalama, and its people, leaving workers high and dry with low wages, no health care, no sick pay, no workers rights that we have come to expect here in the United States.

The same executives including NWIW's Vee Godley tried to start a manufacturing plant, similar to the current proposed methanol refinery in Kalama, in Pocatello, Idaho, leaving it in shambles in 2013 (<https://www.nytimes.com/2013/11/06/us/idaho-town-struggles-after-pinning-hopes-on-failed-factory.html>).

Do we really want the Chinese communist government having computer-driven control of 72 million gallons of volatile methanol stored on dredged soil at moderate-to-high liquefaction risk? That is a huge BOMB just a couple of miles from 3 schools, a day care center, and a retirement village that the China could set off at a moment's notice if aggravated by our government and their trade wars. This proposal a gigantic NATIONAL SECURITY RISK. Don't let the wool be pulled over your head! Save our county. Save our state. DENY the shorelines permits.

Diana Gordon

Hi, I'm Diana Gordon. Northwest Innovation Works wants to build a new methanol refinery here. It will emit at least 4.6 million tons of greenhouse gases every year. They're telling us this methanol will be used to produce olefins necessary to produce plastic and this method will replace manufacturing them using coal. We know, however, that there are other ways to produce olefins using naphtha or ethane. These other methods are cheaper, produce fewer greenhouse gases, and use more readily-available feedstock.

China is trying to move away from coal, owing to poor air quality, so they'll probably not be building any new coal plants. As a result, China will produce most of the plastics using something other than methanol, and will likely use at least 40% of the Kalama methanol for fuel. Fuels release more greenhouse gases than olefin production. The end result will likely be an increase in greenhouse gases.

We cannot say for sure what the Chinese will end up doing with this methanol, but we do know for sure what they'll do here. This refinery will pour many tons of greenhouse gases into our atmosphere; thus, endangering Washington's climate goals and possibly acting as an anchor project for a second pipeline from Canada.

The SSEIS provides a link to several IPCC Reports. One report says that as more and more greenhouse gases are emitted, the ocean's carbon sequestration capacity is reduced. Waters become more acidic and harmful to shellfish and coral reefs, rivers warm and deplete salmon runs. The list goes on and on, and all of it is harmful to the quality of life and the health of everyone in our region. This is the time to say no to this project. Please send a clear message to the fossil fuel industry and the rest of the world; deny this Shoreline Permit.

Tim Baer

Yes, thank you for doing this. Although as I sit here, I have no prepared comments, I find myself wondering about the use of this venue. It seems to me that I'm hearing two main arguments; one that favors the status quo and the other is a little bit more visionary. It occurs to me that we actually can make changes. If you listen to the status quo argument, it seems to indicate that we are powerless and that we are not able to change our addiction to things like plastic.

I think that's not true, and I would call on all of us, and specifically upon the Department of Ecology, to live up to the promises that we have been given about a cleaner future. That's where it boils down to for me. We can actually change that behavior. I would use our current pandemic as an indication of how easy that actually is with willpower. Worldwide, we've made some staggering choices that no one would have thought were possible.

I think that we are in an environment where more change like that is going to happen more quickly over the next 40 years.

So the ridiculous studies that we can come up with just remind me of that old fibs, lies, and statistics that says the worst of those statistics. I cede my time. Thank you

Ronald Hawk

The SEIS shows that pollution caused by the Kalama methanol facility would be equivalent to 4.6 million tons of carbon dioxide pollution each year. That's staggering. It means that this one project would be equal to around 5 percent of the state's total climate emissions from all other activities combined. In short, it's a scheme that is wildly out of step with every Northwest climate-related statute and aspiration on the books. And it gets worse, because different assumptions (for gas transportation leakage rates, end-use for the methanol, time-frame for evaluation climate potency, and other factors) show that it is possible the facility's all-in carbon pollution could be as much as 9.4 million metric tons per year.

So where are the alleged climate benefits coming from? In a word, speculation.

The project backers are making claims teetering on the flimsy premise: that if Washington fails to supply vast quantities of gas-derived petrochemicals to China then Chinese manufacturers will do something even worse. (Namely, that China will make just as much olefin material, but do it with even-dirtier coal.) If that sounds like tortured logic, it's because it is. It is essentially saying that scientific alarms be damned: we should double-down on climate pollution over the coming decades in the hopes that someone else won't triple-down on it. That's a morally reckless approach to the climate.

Also, on the economics front the SEIS fails to consider the lower price competition that will result from the new very large Russian methanol plant being planned at the Baltic port of Vysotsk. Clearly, no permits should be issued for the proposed Kalama Methanol plant.

Kelly O'Hanley

Hi, my name is Kelly O'Hanley. I thank you for this opportunity. Actually, I have someone right here with me who is anxious to talk. [mimics] Please do. Allow me to introduce myself. I'm [inaudible] fugitive methane emission. Usually, I'm floating around the fracking field having a lovely time. I've taken solid form to talk with you about- well, about myself and the EIS, and I'll make this quick. Apparently, some overachievers have been trying to correct a perfectly good EIS. Those people simply can't seem to live well enough alone.

For example, they're saying that methane emissions- meaning me- are being underestimated; that we need top-down not just bottom-up measurements. I love those terms. I would think they'd have come from Scientific American or Proceedings of the National Academy of Science. But seriously, enough is enough. I say let's stick with the EIS's very optimistic methane calculations. After all, doesn't the world need a little bit of optimism right now? Well, of course, it does. Oh, dear. I'm turning back into gas. I'm glad we chatted. Stay in touch. Stay optimistic.

Well, this is Kelly O'Hanley, again. I guess I don't have much to add to that. Thank you very much.

Linda Leonard

This is very good. Linda Leonard, I am a resident of Kalama. Northwest Innovation Works states it will voluntary mitigate 100% of all in-state direct and indirect greenhouse gas 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 D2 reads; NWIW is undertaking research, how to configure and account for the voluntary mitigation program, including consideration of forming an independent non-profit 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 analysis in regard to this project? Northwest Innovation Works identifies no specific projects or measures that will address the enormous greenhouse gas pollution's impact. Please deny this permit. Thank you.

Mike Reuter

All right. Thank you for letting me speak here today. I am speaking here as an individual and not as a Mayor of Kalama. I want to just address the jobs aspect of this refinery. No matter what gets built at the site, it will provide jobs. Whether it is a widget manufacturing company or a McMimins, all of the projects will provide jobs. This is an irrelevant point.

The short term construction jobs will be mostly for putting the infrastructure in and erecting the refinery when it arrives from China. That is why the project uses a short less than two year construction window to be constructed. If this company really cared about construction jobs, they would build a refinery here and not in another place. That way you employ hundreds more local union workers and for a longer term employment.

How can we make sure that this plant is built and inspected and licensed by quality workers using quality components. For long-term employment metrics, we need to look no farther than Woodland, the nearest port to Kalama. This port has a five person per acre minimum standard for industrial development. The Kalama refinery even with the over-exaggerated full buildout of 200 employees will provide only approximately one job per acre which includes the footprint from the refinery and the 90 acres needed for mitigation.

We should look for multiple value added light industrial manufacturing companies for this site and not keep forcing another speculative fossil fuel product that would lock us into long-term emission production. The jobs created for these multiple manufacturing companies would also diversify the property tax and jobs provided and not on one highly volatile commodity market. The site is one of the last Greenfield deep water port properties in the Columbia. That's it. Thank you.

Richard Voget

Can you hear me? My name is Richard Voget and I am a life long resident of Washington State. I feel that it's immoral to enable preventable time of death. The IPCC says that to limit warming to 1.5 degrees centigrade, climate emissions must fall by about 45% by 2030. That is reducing emissions yet your report states that the project would increase carbon pollution by 4.6 million tons each year for its 40 year life cycle.

You are the Department of Ecology, your own goal is achieving Washington's climate goals, not undermining them by allowing more climate pollution. The voluntary mitigation framework is too vague for Ecology to conclude that 100% of the project's in state emission in the [inaudible] will be mitigated. You just admitted in this morning's presentation with half of the projects emissions that are from British Columbia and China will not be mitigated.

Severe conditions will warm the atmosphere, dry out the forests, lead to bigger wildfires and fill Western Washington with smoke from unhealthy air quality as well as create hotter and longer heat waves. Mitigation can [inaudible] over a long period of time. 4.6 million tons of pollution today can be mitigated on paper by planting enough trees, but it will take 40 years for the trees to be able to [inaudible] emissions will increase in the short term and if climate change isn't addressed in the short-term, one of those is going to become irreversible.

If emissions don't fall by 45% by 2030. Don't allow more climate pollution which will cause hotter and longer heat waves. Do enable the [inaudible] to die in heat waves. People's--

Dr. Ann Turner

Hi, my name is Dr. Ann Turner. Please deny Kalama's Shoreline permit to prevent environmental injustice to Kalama and Cowlitz County residents from climate change. I come to this work for my work as a physician caring for migrant and seasonal farm workers. Last week farm workers in Oregon were expected to work in the most polluted air in the world. The result of disastrous wildfires, which were the direct result of climate change.

The SSCIS states that the Kalama project would result in the emission of 4.6 tons of greenhouse gases every year for 40 years. This displacement theory is pure speculation. We know that climate change has a disproportionate impact on vulnerable populations. Kalama and Cowlitz County residents are the most vulnerable. Using Washington tracking networks, vulnerability to climate change index Kalama has an index of seven and nearby Longview 10 with 10 being the highest.

Cowlitz County experiences significant socio-economic and health disparities including lower median income and higher percentage of persons living in poverty than Washington State as a whole. The County's health disparities include a higher age-adjusted mortality in higher mortality from cancer, heart lung disease and diabetes. The negative impacts of climate change will have an outsized effect on the residence of Kalama and Cowlitz County. We must not authorize any new fossil fuel projects.

Methane, fracked gas, methanol is not bridge fuel, it's not even a bridge to nowhere. It's a bridge to climate and human disaster and results in environmental great environmental injustice. Please deny this permit and this project. Thank you.

Marrene Jenkins

Hello, I'm Marine Jenkins and I appreciate all that has been said. Many of the negative commentators, thank you very much and strictly to the direct subject greenhouse gases, but there's no greenhouse pollution. If we have ground zero here in Kalama didn't have to be subject to many detrimental effects first. This is a small town and it only has seven miles of shoreline. This isn't the industrial town, even though the Commissioners have designated part of the shoreline for industry.

The commissioners are often re-designating over the 12 years that I've lived here as suits their economic need but if they build this concentrated plant, I as a former nurse formerly living in the Midwest and seeing grey skies know the clouds of pollution and its effects on the respiratory system. You can't adjust for listening to the whistling sound of the lungs and seeing the faces of anxiety when an asthma person comes in distress.

You can't deny that the rustling sounds of the lungs when a person has chronic obstructive pulmonary disease. Many of the doctors who have commented before know what these are, nurses know what they are. It doesn't exist here because it's a clean state. Don't change, keep this plant on.

Adam Davis

As stated, my name is Adam Davis and I live in Castle Rock, Washington with my wife and three children. While a lot of you have heard from me in the past, as recent as last week, I thought it was important for me to take time to give additional testimony. The most frustrating thing about this process for a lot of us is the continued shift of expectations and stories of false narratives being drummed up by the opposition.

Several opponents to this project have asked, what if the analysis uses a higher methane leakage rate? Ecology use a 3% leakage rate as required by the environmentalists, and lo and behold, the plant will still result in a global reduction of 5.48 million tonnes of GHGs annually. Another popular question. What if the methanol is used as fuel instead of olefin production?

While this is not the project's intent, Ecology's study found that if 100% of the methanol produced of the proposed facility was used as fuel, we would still see a reduction in global GHGs annually to the tune of 6.7 million tons per year.

Lastly, the opposition has attacked supporters of the project claiming we are only interested in the jobs and we are ignoring the bigger picture. To that I say, we now have two studies before us that prove just how beneficial this project is for Washington and the globe. With this project, we can have a greener future, increase local tax revenue, and 1,000 plus jobs that will help people like me from the trades, reduce our own carbon footprint by cutting down on our everyday commutes to other communities or even out of state. Let's take this win together. Thank you for your time, and I urge you to please approve this final permit.

Jeff Berskin

Hi, my name is Jeff Berskin. I have been a resident of Cowlitz County for 44 years with my wife and two daughters. I have worked in the piping industry for 25 of those years, and on many projects across the United States. Our local jobs that pay a living wage have decreased in the community for many years. We are very fortunate to have an opportunity to take part in the project that will help clean up the environment on many levels.

If we do not have a place like this world-class facility that is regulated by the best in the industry for safety and near-zero emissions, we are not leaving much for our future generation to contribute to our society in terms of tax revenue, for all the things that the general public benefits from. I would also like to state as an avid outdoorsman and a steward of our land, there's no proven science, just speculation from unfounded sources that it's going to harm the environment.

The world cannot achieve its goal of keeping global warming well below two degrees Celsius by taking a not in my backyard approach to carbon reductions. Opponents want their kayaks, their tents, their fleece jackets, their automobiles, computers, and airplanes made up synthetic material, and they want other countries to produce that material in the dirtiest possible ways. That is the recipe for failure to achieve climate change goals.

In closing, I would like to see this project approved to move forward because it is the beginning of an end of growth for our future generations if it's denied. Thank you for your time.

Cameron Wilkinson

Hello, my name is Cameron Wilkinson. I was raised in Kelso and live in Kelso. I'm a third-generation steamfitter with United Association Local 26. My wife and I have two sons, 11 and 14. My grandfather moved his family here in 1976 from Southern California to continue his career as a steamfitter after working five years on the construction of the Diablo Canyon Nuclear Power Plant.

The Cowlitz County area was a flourishing community for a blue-collar worker to raise their family with a great wage and benefits. It's unfortunate to see a small community and the impacts we've seen from the closing of production facilities like RNW paper and Reynolds Metal Company. We continue to see a decline in our family-wage jobs in this community with the Uberization of their industries.

It is unfortunate to see a project that is leading their industry globally with an environmental conscious approach being demonized with miss. The next leaders in Olefin production is 38% more polluting in Northwest Innovations proposed facility. We could turn our back on in NWIW, and have this other leader polluting our oceans from another country or we can embrace their continued work on improving this facility.

It's sad not to get the same shake in life as the past generation when they try to create an infinite loop on a stopwatch on permitting a project, but don't bat an eye at an 80-year-old dilapidated facility the next generation is constantly putting band-aids on daily in my industry. Thank you for letting me take the time to comment on this. Thank you.

Kate Martin

Hi, I'm Kate Martin. I live in Kalama. I've been lucky enough to live here just for a short while. We moved here because it's a very small rural area and it's one of the things we were looking for when we came here. What I hear regularly from other people is that they're coming to this area because it's small. Granted, as we move in, it will not stay small and businesses will follow.

One of the things Kalama looks to be doing is heightening its tourism attraction. Somehow I'm thinking a huge plant right on the river sucking up millions of gallons of water a day is not a tourist attraction. I for one would never come to see a huge plant on the river. We do fish quite often and enjoy having our boat out on the river. [sound cut]

Jack Miller

My name is Jack Miller. I'm from Oregon City and I support this project wholeheartedly. Union jobs are key to building equity in our community for our children's future and with COVID, we need jobs more than we've ever needed them before. Thank you for your time and that's all I have to say.

Joan Roberts

My name is Joan Roberts and I am here as a pediatrician, a parent, and a cancer survivor to stand in staunch opposition to the proposed Kalama Methanol Plant. The public health risks proposed by this plant are numerous, terrifying and preventable.

I would like to add my voice to the many others speaking out against this development. The process of hydraulic shale fracturing, the transportation of liquid natural gas, the massive consumption of the waters of the Columbia and subsequent leakage into our watershed, the inherent land use and industrialized presence of this plant, the cargo ships moving the methanol from the sound and the creation of plastic as an end product with a carbon and other greenhouse gas outputs involved at every stage.

There are no steps in this pathway that do not result in damage to the local, regional, and eventually global environment. The human and environmental costs associated with the release of carbon, chemicals and heavy metals into our water and air and the increased presence of plastic in our ocean for centuries to come all represent immediate reasons to prevent this project from going forward.

Yet here we are with the Department of Ecology apparently contemplating that these costs might be worth incurring. What is in the balance? Do we think that the jobs for this plant will outweigh the job losses from tourism, fisheries, and shellfish that will be injured in the coming years? I implore you to consider our welfare as humans, we're all subject to the same frailties and needs.

Our bodies are affected by plastics which are proven to change the hormonal balance and promote cancers driven by those hormones. Please, for the health of our people, for our beautiful Columbia River and the Salish Sea, do not allow this plant to move forward.

Samantha Grieger

Thank you. Hi, I'm a 25-year old Southwest resident and biogeochemist in environmental science, and I'm just really concerned about the proposed refinery. After reviewing the data and most recent environmental assessment report, I wanted just to state as a local that I strongly oppose the construction operation of this refinery. We have just experienced two weeks of highly hazardous air quality from wildfires burning across Washington, Oregon and California.

These wildfires in the research I have done have been proven to be worsening with climate change and increased greenhouse gas emissions. Most recent EIS draft reported that this refinery would increase Washington's annual carbon CO₂ equivalent emissions by over a million of cubic tons a year.

This on top of the huge water use coming from the Columbia river, the inevitable gas leaks, the impacts on local indigenous communities up and downstream from the plant, the potential and inevitable groundwater and water quality degradation within the Columbia river itself, this plant cannot be built in good conscious and benefits to people who call this place home.

This is also being proposed to be built on sacred land without the consent of the indigenous tribes who reside there, and we really need to try to do better in that because we messed up a lot in the past. We are at the moment in time here where we need to be moving away from fossil fuels and finding new alternatives regardless of what direction the global market is moving in, and it's changing really fast.

Who's to say it's slow and steady for the next 40 years. Look at how much it's changed in the past 40 years. We need to create jobs by becoming less dependent on fossil fuels. Washington should be leaders in this transition to renewable energy. Please look beyond the immediate monetary benefit of this plant, and think of the impact it will have on the next six generations. We are in a crisis. We must actively combat it, not just promote it. Thank you so much.

Neal Anderson

After the smoke last week, all of us in the West Coast are well aware that we set a new record this year of the number of [inaudible] burned. People in the Midwest know about the record flooding there, and the millions of acres of crops it destroyed, and if you live in the Southeast you know we run out of names for hurricanes and are using Greek letters now.

No matter where you live, you're seeing the effects of climate destruction because for 40 years we've ignored the warnings of scientists, [inaudible] building more refineries and adding more carbon pollution to the atmosphere year after year. It's becoming increasingly clear to everyone that we can't continue with business as usual. Yet, business as usual is exactly what this document assumes.

It accepts as a given that the world will continue burning fossil fuels [inaudible] increasing. It assumes that humanity will just accept worsening disasters and ever increasing casualties as one of the costs of doing business. It argues that this is a slightly cleaner than other forms of methanol production which to me seems like a doctor diagnosing a patient with lung disease [inaudible] because quitting seems like too much to ask.

The baseline scenario shouldn't be business as usual, it should be rapid decarbonization, and fossil fueled derived methanol has no place in that future. Assuming business as usual can no longer be the framework we use to evaluate [inaudible] would add 40 million tons of carbon pollution over its lifetime, and when we're already in a climate emergency that's all the reason you need to deny this project.

Also, I want to address those making the argument that this needs to be built for economic reasons. The current forecast is that by 2050, cumulative [inaudible] from climate change will reach \$8 trillion. In addition, increased hurricanes, floods and fires, this is the financial cost that we're asking the next generation to pay. Thank you.

Terry Casey

My name is Terry Casey [inaudible] local 701 [inaudible] in Washington. I support the project wholeheartedly. Union jobs are key to building equity in our community for the children's futures. Speaking on children's futures, the unions and trade unions in the area have long lasted built many of the facilities on and around the Portland and southwest [inaudible] area.

Those kids that have come into the trades, have gotten their education and their wealth of knowledge by learning from others that have done that. If we don't have these projects to build, these people have the jobs that have gotten them to the point where they are today. Thank you very much.

Camp Kalama RV Park and Campground

Perfect. My name is Charlene de Rocher. I live in Kalama. My family home is the closest year-round residents to this proposed plant. Our family business is the closest non-industrial business we own and operate Camp Kalama RV park and Campground. Our southwest region is known for its beautiful mountains and the serenity of our views. We are known for our rivers, lakes, fishing, boating, and a multitude of outdoor activities.

Our family business is fueled by these outdoor activities, attracting visitors, and return customers. This plant would negatively impact our business. It will pump dangerous pollutants into our air and put our rivers at risk. Waiting for sunsets that will only be obscured by the 10,000-foot plume emitted from this plant. Sitting around the fire waiting for darkness and the stars to come out is going to be difficult because the light from this plant will always be on.

These same lights will impact the natural movement of fish. Currently, things are happening on the Kalama River and hopes to increase fish numbers and improve and provide more habitat. Any spill or leak could destroy this environment. How will they mitigate that? How would they mitigate my home life because this proposed plant is literally in my backyard? If permitted, we will look at towering pillars spewing steam and pollutants 10,000 feet into the sky every day we walk out our front door and every night when we return.

Mount St. Helens is over 8000 feet Mount Hood over 11,000 this plume will compare and height only with these mountains, but will have a devastating impact on us in our family. We will not pick fruit from our orchard or eat food from our gardens. Will our well last and will our water remain safe? Kalama should not be forced to live in the shadow of this monstrosity to risk all the dangers.

Kalama should not be defined by the world's largest methanol plant. It has no place in this community. Please, as your mission states, protect, preserve, and enhance Washington's environment. There is nothing about this plant that will enhance our environment. We need you to help us protect what we as a community have built and help us preserve and create a better cleaner Washington. Thank you.

Chris Montgomery

Thank you. My name is Chris Montgomery I work for the Operating Engineers Local 701. Northwest Innovations Works is setting a brave new standard with its commitment to both the community and the environment. This project will build cleaner and with more job site equality than any region project to date. I fully support this project and the hundreds of millions of dollars that it will bring to our community and its state agencies.

This money can be used further to support the environmental and social progress, which the people who oppose this project don't quite understand. If we do not have an alternative, no progress will be made. I just want everyone on here to understand that this is progress. Those jobs and those families need to be taken care of as well to feed their children to sustain their livelihood. It is important not only are we caring about the environment but caring about families that need these good-paying jobs. Thank you.

Tom Luce

Thank you. My name is Tom Loose. I am a lifelong Washington State resident. I want to first start off by thanking Ecology for a report and an analysis that I think is sound rigorous and comprehensive. When you take a look at the project here from when it was first proposed six to seven years ago now, one of the things reading through the supplemental SCIS that I was struck by, was according to ecologies best estimate now, every year that this plant would operate, we would be able to claim a roughly six million metric ton per year reduction in global greenhouse gas emissions.

To put that in perspective, that's twice the amount of emissions the entire city of Seattle emits annually. I think beyond that, it's important to look at what the delay in permitting this project has caused environmentally. Opponents of this project have slowed progress, sued us in court to get the very study that they now say is too speculative. When you think about it, the four-year delay they've caused in this process has had the effect of adding a cumulative total of 24 million tons of GHGs into the atmosphere.

When you think about it in those terms, no one who claims to be an environmentalist, can really support the claim not to build this project on environmental merits. Their merits are simply not in my backyard NIMBY arguments. I just would urge anyone who opposes this project not to try to deny 1,000 jobs \$30 to \$40 million in new tax revenue, and a clear defensible reduction in greenhouse gas emissions globally.

Sierra Club

Hi, my name is Victoria Lissman. I am an organizer at the Sierra Club. I'm also the field director of a regional coalition called power past fracked gas, as well as a member of the Progressive Workers Union. I just want to as we come to the end of the hearing today, name this false dichotomy of jobs versus the environment that we're hearing. We increasingly face the severe impacts of environmental challenges, like climate change, and need to adapt to an interconnected global economy.

We can't choose one versus the other and that's a false dichotomy that's being painted here. Sierra Club, we're unionized. We're union staff, we are part of an organization called the Blue-Green Alliance where we work to find solutions together. This project is not one of them. I know that there are tons of pressures and all things that ecology has to weigh in deciding about this permit.

The truth of it is that there aren't going to be able to have these conversations if we continue to perpetuate how dire we know the climate crisis is. We've seen that just so recently but the horrible impacts of the wildfires and it's really sad to see this conversation of what the truth is and what science is. I know that you all at Ecology, understands that this FCIS [inaudible] evaluate the scenarios in which we don't get to two degrees. We need you to make the right decision. Deny this permit, please, for all of us so we can find jobs when we defeat climate change.

Laura Bauer

I am submitting the attached comments addressing just one of my many concerns with NWIW's proposed methanol plant in Kalama, WA.

October 6, 2020

Dear Director Watson and Department of Ecology ,

I am writing today to ask you to deny the necessary permits for NWIW's proposed methanol plant in Kalama, Washington. I have written and spoken publicly at hearings in the past about the air pollution and related public health concerns that would result from this refinery.

There is grave concern regarding the pollutants both upstream and down caused by fracking, pipeline transport of natural gas as well as ship transport of the finished product. Equally important is the direct effect of air pollutants from the refinery's immediate emissions on the citizens of Kalama and nearby communities.

Carbon dioxide, Sulfur dioxide and Nitrous gases, heavy metals and particulate matter will be discharged into the air above Kalama. CO₂ is the topic of much discussion related to the health of the local and global climate. Of particular concern to me are the particulates, especially the fine particulate pollutants known as pm 10's and pm 2.5's. Particulate matter, especially as it is related to diesel fuel consumption is addressed in the SEPA. I urge you to consider that current "acceptable" exposure levels are based upon modeling and projected emission levels, not any actual measured data from a similar plant in a similar location. A growing body of evidence suggests that current acceptable exposure levels, despite the margin that is built into the models to accommodate sensitive populations is too high. Health issues attributed to exposure over time to pm 10's and 2.5's include respiratory and cardiac disease, cancer of the lungs and blood cancer, low birth weight and premature birth. Studies conducted in the last 10 years suggest that the damage cascades that lead to disease occur at much lower levels than previous data from a decade earlier indicated.

Multiple publications and meta-analyses published in peer reviewed scientific and medical journals between 2012 and 2020 underscore these threats to human health as well as other species. Despite exhaustive literature searches, I find a paucity of research documenting the safety of human health at current levels of short and long term exposure to the air pollutants discussed here. Additionally, since NWIW submitted projected emission levels based upon untested technology, they have been able to avoid direct air quality monitoring in Kalama. The citizens of Kalama at least deserve reliable, direct monitoring of the emissions this plant would create.

Kalama is a lovely small community on the Columbia River. Along with shipping and other industrial river traffic, significant rail and highway arteries run through the community. The Port of Kalama, local small mill operations, Steelscape and the Chemical plant all contribute to current local emissions levels. These existing sources are likely to grow substantially independent of the methanol plant. Mitigation for those sources is likely to be limited to the development of more fuel efficient highway traffic. Today we breathe whatever emissions are generated by these existing sources. Adding a methanol refinery would push those levels to an unacceptable level for the health of Kalama citizens not only today but for 40 years into the future.

What recourse would the citizens of Kalama have if healthy levels are much lower as indicated by more recent research? What recourse would the citizens of Kalama have if the actual emissions from the plant are higher than projected? Our experiences along the Columbia with Hanford, Reynolds Aluminum, and other industries engender no trust they will protect our environment and our health.

I urge you, for the health of the citizens of Kalama to say no to permitting the NWIW Kalama Methanol Refinery.

Sincerely,

Laura Bauer MSN RNC

Peter Ullrey

Thank you and good afternoon. My name is Peter Alright and I'm an operating engineering and cancer survivor with Local 701. I am in support with the department of Ecology on the construction of this Kalama project. I would like to thank those individuals that have done hard work on the actual science and safeties and immeasurable benefits laid out for us were this project come to completion.

People that have not done the research, I implore them to find out how positive this will affect their communities, and their natural areas for years to come in that zone. This project has been under review for nearly seven years now and I fully stand with the department of Ecology for the progress that this project will create not only for the local people, the workers, the millions of dollars of revenue it will generate in the local communities further.

Also, for the environment and the surrounding ecologies and I'd also like to add before I go Ecology's analysis shows that the Kalama project will reduce global greenhouse gas emissions every year by an estimated six million tons were this project to go through. Thank you for your time.

Uriah Chipman

Hi, my name is Uriah Chipman, I work for the Operating Engineers Local 701. I live in the center of Washington. I am also a cancer survivor. I want to express my support for this project. My union job provides me the opportunity to support my family and engage with my community and support the causes that I will ensure a more equitable environmentally friendly future.

Without my union job, my union family and my community we would be struggling far more than we already are. Union jobs build America and they ensure that all people have the opportunity to succeed and I definitely approve this project. Thank you.

10/9/2020

SUBJECT: Comment to Washington Dept. of Ecology on the KMMEF

Comment by Mark Uhart, Kalama, WA

Although these comments are not directly related to the SSEIS, they are provided with respect to the overall analysis of the KMMEF project by Ecology, codified in the KMMEF EIS and FSEIS. The methanol manufacturing facility, export facility, and lateral pipeline are inextricably linked and the project cannot go forward without the pipeline. These comments concern the potential use of eminent domain by any governing entity to acquire the necessary lands, and or rights-of-way, for use by Williams-NW Pipeline LLC for the purpose of constructing a natural gas pipeline for private use. The natural gas will be used solely by a private entity, Northwest Innovation Works (NWIW), for the production of methanol to be exported for use by a foreign government.

The question of seizing private land owners' property by eminent domain, for the purpose of building the lateral natural gas pipeline to support the KMMEF, may not meet Washington constitutional law, and supported by Washington case law. Construction and operation of the proposed pipeline will affect numerous property owners along the route, to include Cowlitz County Cemetery District #6 and homeowners. I believe the seizing of private property for private gain is not consistent with the Washington State Constitution:

"SECTION 16 EMINENT DOMAIN. Private property *shall not be taken for private use, except for private ways of necessity, and for drains, flumes, or ditches on or across the lands of others for agricultural, domestic, or sanitary purposes. No private property shall be taken or damaged for public or private use without just compensation having been first made, or paid into court for the owner, and no right-of-way shall be appropriated to the use of any corporation other than municipal until full compensation therefor be first made in money, or ascertained and paid into court for the owner, irrespective of any benefit from any improvement proposed by such corporation, which compensation shall be ascertained by a jury, unless a jury be waived, as in other civil cases in courts of record, in the manner prescribed by law. Whenever an attempt is made to take private property for a use alleged to be public, the question whether the contemplated use be really public shall be a judicial question, and determined as such, without regard to any legislative assertion that the use is public: Provided, That the taking of private property by the state for land reclamation and settlement purposes is hereby declared to be for public use. [AMENDMENT 9, 1919 p 385 Section 1. Approved November, 1920.]"*

The question is, is the natural gas pipeline, the gas delivered to the KMMEF by the proposed Kalama Lateral Project, for "public" or "private" use? Washington case law indicates it may be interpreted as being for use by a private entity, for private gain.

In the 1903 decision "*Healy Lumber Co. v. Morris*, 33 Wash. 490, 74 P. 681," Justice Dunbar, who was a member of the Constitutional convention committee of 1889,

expanded and proposed the final version of Section 16. He offered crucial guidance on the distinction between “public” and “private” uses in one of the first opinions interpreting the provision: *Healy Lumber Co. v. Morris*, 33 Wash. 490, 74 P. 681 (1903).

“From a consideration of all the authorities, and from our own views on construction, we are of the opinion that the use under consideration must be either a use by the public, or by some agency which is quasi public, and not simply a use which may incidentally or indirectly promote the public interest or general prosperity of the state. Id. at 509 (emphasis added). In the Healy Lumber Co. v. Morris decision, the Court concluded that the company’s proposed logging roads, which would not actually be used by the public, could not qualify as a public use under this test—despite the gravity of their public benefit. Id. at 511.”

Likewise, the KMMEF lateral pipeline will not actually be used by the public, or directly benefit the public. The project’s economic development assertion, being it of public benefit, portends the use is for a greater (community) good. Section 16 forbids such private use, regardless of how desirable it might be, *Hogue v. Port of Seattle* 54 Wn.2d 799, 838, 341 P.2d 171 (1959). In the Brief of Amicus Curiae Institute For Justice, Supreme Court No. 95813-1¹, the Court further states, “Then, in *Petition of Seattle*, the Court (citing *Hogue*) rejected the City of Seattle’s attempt to take private land and lease it to private shops and entrepreneurs to (again) promote economic development, reasoning: “It may be conceded that the [project] is in ‘the public interest.’ However, the fact that the public interest may require it is insufficient if the use is not really public. A beneficial use is not necessarily a public use. *Hogue v. Port of Seattle* 96 Wn.2d 616, 627, 638 P.2d 549 (1981.)”

In fact, the GHG emissions from the consumption of the natural gas delivered by the pipeline will be detrimental to Ecology’s goal to reduce greenhouse gas emissions to protect Washington’s economy and environment from the effects of climate change. Therefore, the application of eminent domain to seize private property for another entity’s private use is not in the public’s best interest. The negative economic impact of not achieving State GHG emission reductions may exceed the asserted local economic benefit. “In this State it is settled that public use means “public usefulness, utility or advantage, or what is productive of general benefit; so that any appropriating of private property by the State under its right of eminent domain for purposes of great advantage to the community, is a taking for public use.”² This author asserts that the KMMEF provides a greater utility and advantage to a foreign government than to Cowlitz County.

Ecology, and the State of Washington, should follow the law and deny this project.

¹ Supreme Court of the State of Washington, CHONG and MARILYN YIM, KELLY LYLES, BETH BYLUND, CAN APARTMENTS, LLC, AND EILEEN, LLC, *Respondents*, v. CITY OF SEATTLE *Appellant*.

² *Olmstead v. Camp*, 33 Conn. 532, 546; *Todd v. Austin*, 34 Conn. 78.

Keith Weir

This is Keith Weir. I'm sorry Eric forwarded me the invite so I may be popping up as Keith Weir or as Eric Vein. My name is Keith Weir.

Yes ma'am. I'd like to thank you all for your consideration and your diligence in looking over this matter. I'm Keith Weir with IBW local 46. I'm a journeyman inside wireman and a construction worker. We're not climate deniers. Green-collar jobs are blue-collar jobs, we always joke about that our collars have been green on the inside for a very, very long time.

We work to build more sustainable and equitable futures for not only our families and our members and our unions but society as a whole. Through the laborious process of this dragging on so long, inaction I would say could equal action. Good or bad, however that falls on that, and for this to have dragged on so long, the amount of metric carbon that has been emitted that could have been mitigated in the past several years of this project has been going through review, that's something that should be taken into consideration in my mind's eye as well.

We either act or we don't and our world is warming, our glaciers are melting and we could sit around and toss stones and do nothing about it or we can work together and have a sustainable and equitable peace to address the things in our very own backyard, starting with our state, the community, the state, and our nation, first and foremost, before we worry about the rest of the world, and tying all that in.

With that being said, I'm in favor of this project. Please let it move forward, let it benefit the community, and those folks who deserve it the most. With that, I'll end my comment. Thank you.

Rachael Hogan

Thank you for hearing me. I am opposed to this project. I just wanted to respond to a few things that I heard. There was the comment made about environmental costs and what alternatives do we have? If we want to use less because of the way this analysis was set up in this bad versus the lesser bad of the methanol refinery versus world markets of what could happen if we don't build the methanol refinery.

I just want to also echo the gentleman who talked about we are very amazingly poised to address change in our culture and in our present with not just information we have about climate change but having really been experiencing it in a massive scale in so many fronts. I think there's hope there, there's also this part of me as a parent that knows that we do have this addiction to things like plastic and our kayaks, our plastic and our clothes are plastic and we do have these awful addictions.

I for one, am willing to say no to this drug that we've been mesmerized by, and that we've been fooled into thinking this is about our way. We could do it in an endless way without any repercussions. Now that we see the damage and we're so young in that frame of mind, we really do need to all work together to change that and I think we can. Anyway, I just wanted to put that out there. I also wanted to say that as far as-- oh, I'm running out of time. Well, see you next time. Thanks.

Mark Canright

Thank you for your work to protect Washington's 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 NWIW's 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 NWIW's emissions that will occur overseas. The mitigation framework is too vague for Ecology 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 as we continue to build out the fossil fuel industry.

Even with all of its flaws, this analysis confirms that NWIW's 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 Washington's climate goals.

The evidence in this draft SEIS demonstrates that Washington should deny NWIW's 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.

Mike Reuter

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

This enclosed letter is from a natural gas engineer that echoes my concerns about the gas supply infrastructure and how the only way that this refinery will be able to operate if there is an expansion of the Northwest Pipeline.

Natural gas engineer says 'no' to Kalama methanol plant

By David Taylor Feb 14, 2017

I would like to start off by stating that I am opposed to the construction and operation of a Chinese funded methane to methanol plant in the Port of Kalama.

One thing that I have not seen addressed is the effect this plant will have on the long term economy of the Pacific Northwest — British Columbia, Washington and Oregon. The load being proposed in this plan appears to be 3.2 million therms of gas daily. To put that quantity in perspective, that amounts to slightly more than 50 percent of the most recent cold weather peak daily send out of the gas company serving the area from North Clark County to Roseburg, Oregon. The proposed plant would require that amount on a daily basis, 365 days a year, not just in cold weather periods

The issue that I think needs to be addressed is system capacity of the pipeline and the effect of this plant's load in relation to the existing system. In order to carry this added load to the residential customers for heating, industrial loads are cut back by contractual agreements. On a day-by-day basis the line runs at near capacity. The size of the load proposed would be a firm load and not allow curtailments based on the continuous process.

In order to serve the load adequately, it would be necessary to increase the capacity of the line. That would mean the construction of paralleling pipelines in certain areas and the addition of compressor stations to move the gas south to Kelso from the source in Northern British Columbia.

Not having access to the engineering data on the pipelines, I can only surmise that such a capacity upgrade may require an investment as much as the cost of the plant; at least several hundred miles of upgrades and several hundred million dollars and up.

Who will pay for those upgrades? Us the consumers. Williams' fee for transporting gas is based on their investment in the pipeline that they have to pay back to their lenders and an operating fee plus some profit. That fee is spread over all the users of the system. The methanol plant will pay its pro rata share based on the quantity transported and we as gas consumers in our homes will pay our share based on the new higher cost of operation.

The second reason that I do not want this plant built is that it will consume Northwest gas and send it to China to fuel their industry. In the ground, natural gas is a fixed quantity. Granted the fields are large and the quantities are large, but they are still finite. No additional gas is being added to those wells. The issue here is just how long will that supply last? Twenty years, 40 years? Who knows?

A look at the pipeline supply routes for gas to the Northwest are very sparse compared with the rest of the country. Our region has two and maybe three sources. Canada, in Northern British Columbia, and the Four Corners and Wyoming area. Fully 70 percent of the Oregon and Southwest Washington gas is Canadian sourced. Adding a plant with a load the size of a major city will have a definite impact on the life of the field. For me, the British Columbia gas is NW gas and should remain as NW gas. It should not go to China at our future expense.

For me, the British Columbia gas is Northwest gas and should remain as Northwest gas. It should not go to China at our future expense. I think not.

Editor's note: David Taylor is a natural gas engineer and has been involved in the location, design, construction and operation of a very large Natural Gas distribution system serving the Clark County, Portland Metropolitan, and Willamette Valley for over thirty years of his working career. He has forty-five years of Natural Gas Engineering.

Anne Bennett

I writing to register my opposition to this project. As difficult as it is to turn away jobs, particularly now, I believe that this project should be rejected for these reasons.

Whether one believes climate change is human caused or not we should do all in our power to slow it. The SSEIS indicates that the Kalama refinery would generate 4.6 million tons of pollution annually, equivalent to 5% of Washington State's total emissions-thereby becoming one of Washington's biggest emitters. Furthermore, the product will be shipped to China. My belief is that once it leaves our shores we will have no control over how it is ultimately used. In fact- early reports claimed all would be used to make plastics. The SSEIS indicates 40% will be used for fuel. I do not trust that we will have any control over this and subsequently, how this will actually reduce world wide carbon emissions by replacing "dirtier" coal.

In addition, fracked natural gas produces methane is indicated as GHG 86 times more potent and warming to our atmosphere than CO2. We should invest in projects that move us away from fossil fuels not ones that continue our reliance on them.

To add injury to insult we will use our resources for the manufacture of plastics which we will then buy back. Our oceans are glutted with plastics. Our world would be better served by investments in innovations/manufacturing of products to replace plastic (corn based products?).

Last- this venture will be owned and operated by the Chinese government. I understand the Chinese government owned Chinese Academy of Science Holdings is seeking a \$2.1 billion of tax payer money to build the Kalama Refinery. This is unacceptable. In my opinion, this project is shortsighted. It lacks the vision and resolve to embrace strategies that protect the environment. Our resources and tax incentives should be used for this purpose and for US owned or majority owned investments -not in a manner that benefits China over our own interests.

Respectfully submitted,
Anne Bennett

Mike Reuter

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

I asked David Taylor if I could send his letters of concern to the Department of Ecology to help show that thousands of workers and businesses that depend on this one natural gas pipeline are at risk if this refinery gets built. This is the second one that he had sent as an op-ed to The Reflector.

Opinion: Methanol plant isn't all it's cracked up to be
David Taylor Feb 8, 2019

I am opposed to the construction of the Kalama methanol plant on the basis of its impact on the Northwest's supply of natural gas and how it would impact the Northwest economy.

Energy is one of the keystones of a vibrant and growing economy. This project would have a significant negative impact on long-term growth and stability of the economy. The amount of gas to supply the operation of this plant is equivalent to the send-out of any of the four natural gas local distribution companies (LDC) serving Western Washington and the Willamette Valley.

The plant would consume 320 million therms of natural gas daily from the existing transmission line from the wells in Canada via a Canadian pipeline to the U.S. border and by the Williams pipeline through their transmission line to the local distribution companies in Oregon and Washington. A residential equivalent for heating is approximately one therm an hour.

Consider also all of the businesses and industries using gas. Through peak heating periods there is not enough capacity in the existing transmission lines to serve all of LDC's needs, for this reason they use peak shaving storage such as LNG or depleted natural gas wells that are refilled each summer to augment the pipeline supply. Flow in the line is relatively steady throughout the year because of this ability to replenish storage supplies closer to home.

Job creation has been a point that proponents of this plant have used. The Kalama plant would have an employment base of just over 100 employees in operation. More during construction, but that is short when compared with the operating life of this plant. Consider also that the plant will be of Chinese design and similar to the 11 other plants they have built around the Pacific Rim. While the civil works for this plant will be built here on site, the reforming equipment will be designed and built in China and barged to the Kalama site. Thus not all of the 2 billion dollars this plant is supposed to cost will be spent here. If built in China the labor rates are substantially lower. The plant will also have to meet Washington requirements of the heat and pressure equipment.

One of the biggest problems I see is the increased demand on the pipeline capacity all the way to the source. That means new pipelines and compressor station facilities will be required. Those costs will surely be passed on to us in the forms of increased transportation rates. Secondly, is the growth and development of new industry in the face of the possible constraints on the pipeline imposed by this plant? Industry will not develop or expand with an unsure energy supply, either at the well head or in transmission. Industry growth is what stimulates residential and commercial development. Problems in energy supply will chase the development elsewhere. Note here also that this plant,

besides producing a paltry 100 jobs, does not contribute tax revenues to Washington. The gas is purchased in Canada and owned by the Chinese when it crosses the border and as an export product it is not subject to a sales tax. Furthermore, Cowlitz County is proposing significant property tax reductions for the plant. In effect we will be giving the Chinese a free gift. In the meantime, we will reduce our long term supply at the wellhead by about one third.

I would like to see an independent study on the economic impact of this plant on the entirety of the Northwest economy. My expectation is that the study will show that negative impacts of this plant far exceed its benefits.

About the author

David Taylor moved to Ridgefield in 2005 and presently serves on the Ridgefield City Council. Taylor has 45 years of natural gas engineering experience.

Den Mark Wichar

Projects such as proposed by NWIW in Kalama amaze me by how proponents feel that they have the right to affect everyone in the world by their very localized decisions. If environmental affects of the proposed facility were to remain solely within Cowlitz County at the Port of Kalama, well, fine. However, the affects would not be so contained. Most recent version of the EIS does not recognize that. It should be re-done, with emphasis on realistic estimates of affects, not on corporate-friendly best case scenario. I do not believe for one second, for another objection, that it's true that methanol produced at the facility would displace coal. I also do not accept the gigantic amounts of water needed for the facility, nor the conservative estimates of gas leakages, both upstream and down. This is an enormous proposal, with enormous negative consequences. The proposal should be rejected as both dangerous and unnecessary.

Barbara Howe

While the claim is the emissions of the world will be reduced, I am not willing to increase the toxic output in the area I live to achieve that. I am against this plant being built and operated in my back yard.

Greetings,

My name is Desiree Hellegers. I teach at WSU Vancouver and am affiliated faculty with the Collective for Social and Environmental Justice. I am writing to express my strenuous opposition to the massive fracked gas to methanol plant proposed for Kalama. In the wake of the wildfires this summer, as smoke filled the Pacific Northwest, as the AQI skyrocketed over 500, I found myself wearing a paint respirator to simply walk to the curb with the recycling, and looking warily at our lovingly tended vegetable garden where for days the fuzzy leaves of a sage plant had been steeped in smoke and toxic particulate matter. Is this the dystopian and wholly avoidable future that we want for ourselves and our children? For the Pacific Northwest, one of the most beautiful regions in the U.S., a magnet for ecotourism and the “creative class” to be home to the world’s largest methanol plant that will create millions of tons of greenhouse pollution, drain aquifers and destroy the ecology and beauty of the region? For these fossil fuels to continue to the rising temperatures of the Columbia River and the inevitable salmon die offs? What do we imagine ourselves eating and drinking in the future? While coal and oil are verging on going belly up and receive billions in bail outs, while wind and solar are growing exponentially? Just say no to this monstrous proposal and let’s get on with the business of building green sustainable industries and living wage jobs in this region. The future is sustainable or there is no future!

Sincerely,

Desiree Hellegers, Ph.D.

Shari Bush

Dear Director Watson and Department of Ecology,

Please do not permit the world's largest fracked gas-to-methanol refinery to harm Kalama, the Columbia River, and the global climate.

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. Upstream, the refinery will create more demand for fracked gas to be extracted and transported to SW Washington, resulting in over one million tons of greenhouse gas pollution each year, using even the most conservative estimates of methane leakage. Downstream, NWIW has misleadingly claimed that this methanol will not be burned as fuel, which your own draft study has shown to be untrue. The contribution of potent greenhouse gases from these activities will be greatly harmful to the PNW and to the global climate. Not to mention the local effects on the health of the river and the poor safety record of NWIW that will endanger the workers and residents of Kalama.

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 for your time,
Shari Bush

10/9/2020

Submitted by: Mark Uhart, Kalama, WA

SUBJECT: Deficient KMMF SEPA Environmental Assessment and Risk Analysis

After reviewing the SSEIS I find it to be deficient in its risk analysis of the proposed project and each of the alternatives, except for the no-action alternative. The Environmental Impact Statement (EIS), required by NEPA Section 101, requires the submitting entity "to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony (emphasis added), and fulfill the social, economic, and other requirements of present and future generations of Americans (emphasis added.)" 42 U.S.C. 4331(a). Entities submitting an EIS must prepare a detailed statement on: (1) the environmental impact of the proposed action; (2) any adverse effects that cannot be avoided; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitments of resources that would be involved in the proposed action. 42 U.S.C. 4332(2)(C). The KMMF original EIS, FSEIS and this SSEIS, referred to as the "EISs" do not adequately describe the relationship between the short-term uses of man's environment (40 year methanol plant lifecycle) and the maintenance and enhancement of long-term productivity, how it will affect Washington's economy in the long term as a result of irreversible climate change.

Title 40, Chapter 5, Part 1502 (Environmental Impact Statement), §1502.15 Affected Environment states, "The environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. ... Data and analyses in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced. Agencies shall avoid useless bulk in statements and shall concentrate effort and attention on important issues. Verbose descriptions of the affected environment are themselves no measure of the adequacy of an environmental impact statement." NWIW's data and analysis inadequately described the importance of the impact of increased GHGs on Washington's economy with respect to the affected industries. The EIS authors could have reached out to various Washington departments and agencies, our indigenous people, communities, and non-profit organizations that are stakeholders in the Washington marine ecosystem. The posited questions should lead to quantified information on projected lost resources and natural resources due to decreased water flows as glaciers retreat in British Columbia, hotter and drier weather, increased ocean temperatures and acidity leading to damage to our fisheries, forest fires, rising sea levels, and increased PM2.5 pollution from direct and indirect sources.

[NOTE: Most of concerns brought up in this comment were brought up by numerous people during the FSEIS comments period, codified in Appendix D, Section 3, parts 1 and 2, yet not addressed in subsequent EISs; reference Kevin Kane's comment on December 28, 2018 4:25 PM.]

The scope of the EISs appears to be intentionally restricted to the Port of Kalama, and as expanded in the supplemental EISs, to include GHG emissions from upstream methane releases. They DO NOT

address the potential effects on the increased GHGs on Pacific Northwest fishing and shellfish, manufacturing, timber, agriculture, healthcare and recreation industries. The GHGs emitted in all alternative plans, with the exception of the “no-action alternative,” will impact all these industries and the economics of the City of Kalama, Cowlitz County and Clark Counties, and the State of Washington.

Required by Part 1502 §1502.16 Environmental Consequences, this section “forms the scientific and analytic basis for the comparisons under §1502.14. It shall consolidate the discussions of those elements required by sections 102(2)(C)(i), (ii), (iv), and (v) of NEPA which are within the scope of the statement and as much of section 102(2)(C)(iii) as is necessary to support the comparisons. The discussion will include the environmental impacts of the alternatives including the proposed action, any adverse environmental effects which cannot be avoided should the proposal be implemented, the relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and any irreversible or irretrievable commitments of resources which would be involved in the proposal should it be implemented. This section should not duplicate discussions in §1502.14. It shall include discussions of (a) Direct effects and their significance (§1508.8); (b) Indirect effects and their significance (§1508.8); (c) Possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies and controls for the area concerned. (See §1506.2(d).); (d) The environmental effects of alternatives including the proposed action. The comparisons under §1502.14 will be based on this discussion. (e) Energy requirements and conservation potential of various alternatives and mitigation measures. (f) Natural or depletable resource requirements and conservation potential of various alternatives and mitigation measures. (g) Urban quality, historic and cultural resources, and the design of the built environment, including the reuse and conservation potential of various alternatives and mitigation measures. (h) Means to mitigate adverse environmental impacts (if not fully covered under §1502.14(f)). [43 FR 55994, Nov. 29, 1978; 44 FR 873, Jan. 3, 1979].” We don’t see that these requirements were addressed outside the local (Kalama) area.

Although NWIW states in the Aug 30, 2019 SEPA Final SEIS that the EIS was prepared in consultation with the City of Kalama, there is no evidence the City of Kalama was requested to provide any information other than what was required to access City of Kalama Water Dept. resources and to obtain permits (water extraction, fill and grade, critical areas, and right-of-way.) Had NWIW truly consulted with the City of Kalama, it would have included a summary in the FSEIS on the direct and indirect effects of each of the plan alternatives on the City of Kalama, and their significance IAW §1508.8 (a) and (b); any possible conflicts between the proposed action and the objectives of the City of Kalama land use plans, policies and controls for the area concerned (§1508.8) (c); and the environmental effects of alternatives, including the proposed action (§1506.2 (d). The comparisons under §1502.14 will be based on this discussion. The financial benefits and economic impact to the Port of Kalama and Cowlitz County are apparent but unknown for the City of Kalama and surrounding residents.

Neither the KMMEF FSEIS nor SSEIS adequately addressed the potential impact significance and conflicts between the proposed action and the objectives of Federal (USFWS) regional, State, and local land use plans, policies and controls for the area concerned. The FSEIS minimizes the effects of global GHG increases by stating in Section 3.5.1, “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.” Data is available from a variety of Federal and State agencies and department databases that quantify the potential effects of climate change in Cowlitz County and Washington State. On page 3-3 of the FSEIS it does state that the “U.S. Geological Survey (USGS) National Climate Change Viewer (NCCV) indicates that in Cowlitz County minimum temperatures are likely to rise by 3.8 to 4.3 degrees Fahrenheit and maximum temperatures by 4 to 5.4 degrees Fahrenheit (2.2 to 3.0 degrees Celsius) by 2040. Precipitation changes reported in the NCCV show both increases and decreases in precipitation.” (The yearly mean temperature is projected to increase 5 degrees Fahrenheit within the next 40 years.) The FSEIS and SSEIS don’t elaborate on the probable impact of this increase of 5 degrees, which would result in and higher river and ocean temperatures, increased acidification and changes in ocean currents. From everything I’ve read shellfish, salmon and steelhead won’t survive in this environment.

We also believe some information was not accurately stated in the FSEIS. In Table 2-1. Permits and Authorizations Required for the Proposed Project, listed is a NOAA Biological Opinion issued 10/10/2017 and a NOAA Environmental Assessment issued 10/24/2016 with a “Finding of No Significant Impact” in the FSEIS. This is not a true statement.

I read the NOAA Biological Opinion and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Response for the KMMEF, dated Oct 10, 2017. In the last table this question is asked, “Would the action adversely affect the Essential Fish Habitat (EFH)? And the response was “YES.” In the table titled “Affected Species and NMFS’ Determinations” the Endangered Species Act (ESA) status is identified as threatened (T) or endangered (E) next to 28 listed species. To the right of the ESA-Listed Species and the ESA Status columns is a column with the heading/description, “Is the action likely to adversely affect this species or its critical habitat?” A “Yes” in this column, for each of the listed species, indicates the species or its critical habitat will be adversely affected by the action (the KMMEF). Twelve (12) threatened species and seven (7) endangered species, or their habitat, will be adversely affected by this project. Of these 19 species listed as being impacted, six (6) salmon and five (5) steelhead are listed as threatened. The remaining two (2) salmon, four (4) whale and one (1) turtle species are listed as endangered. How can NWIW state that there will be “No Significant Impact” to these 19 species when they are listed in the report as being impacted? The amount and extent of the accidental “take” of these species were not codified in the NOAA Biological Opinion, but it was stated that some species would be injured or die from increased predation, elevated sound levels during construction, eulachon eggs entrained during dredging, increased wake stranding of eulachon and juvenile salmonids, piling strikes and ship strikes. It would be counterproductive to approve this shoreline permit and allow the KMMEF to be built when our local and State government is committing so much money and effort toward the recovery of these threatened and endangered species. It defies logic.

Section 3.0 of the SSEIS covers the GHG LCA Emissions, Displacement Analysis & Climate Change. It states, “It is not meaningful to link a specific climate change directly to a specific emissions source (USFS 2009; USEPA 2009; California Air Pollution Control Officers Association 2008; Council on Environmental

Quality 2016; USFWS 2008; IPCC 2007; NMFS 2017).” It also refers to the IPCC 2018 report on climate change and its general effects on the global environment:

- Global temperature increases.
- A rise in sea levels affecting coastal areas and cities.
- Increased ocean acidification.
- Reduction in snow cover and sea ice.
- More intense and frequent heat waves, tropical cycles, and heavy precipitation.
- Impacts to biodiversity, drinking water, and food supplies.”

All of these effects will have a profound effect on our economy and way of life. I read the latest (1/29/20) [Climate Impacts Group \(CIG\) report titled Shifting Snowlines and Shorelines](#), a special report on the ocean and cryosphere, and implications for Washington State. I recommend Ecology read the latest report and apply that knowledge to the decision on this project. (The SSEIS only refers to a 2018 CIG report.) As stated above, climate change will have a profound effect on Washington fishing and shellfish, manufacturing, timber, agriculture, healthcare and recreation industries. There was no attempt in the FSEIS or SSEIS to quantify these economic and lifestyle effects, probably because NWIW is still backing the GHG displacement assumption and only plans on mitigating “in-state” GHGs.

Another document I found that would have been useful to NWIW in developing the “importance of the impact” of this project was the [Marine Spatial Plan for Washington’s Pacific Coast](#) (published Oct 2017 and revised June 2018). It was jointly authored by the Washington Departments of Ecology, Natural Resources and Fish & Wildlife. The relationship between climate change and climate forces (El Nino events, the Blob, and Pacific Decadal Oscillation) that impact the Pacific Northwest ocean conditions, and their effects on Phytoplankton, Zooplankton, cold and warm-water Copepods, Pteropods, must be fully appreciated in Ecology’s decision on this project. As stated in the referenced report, “Pteropods can serve as an indicator for ocean acidification because they are experiencing shell dissolution as acidification increases, and they are a key food source for herring, mackerel, salmon, and other fish species (Chan et al., 2016). Gelatinous Zooplankton are also an important part of the pelagic food web. Jellyfish compete with forage fish and juvenile salmon for similar food items, so changes in jellyfish abundance can impact community structure (Andrews et al., 2015).” Many factors affect the survivability, nutrition, and health of juvenile salmon and steelhead in fresh and saltwater. For the last 50 years we have witnessed the decimation of our fisheries. Anthropogenic climate change is increasing fresh and saltwater temperatures, acidification, and affecting climate forces. Building this methanol plant will be adding another nail to the coffin.

Lastly, NWIW’s assertion that the KMMEF will not have an environmental impact on the indigenous people of Washington State is not accurate. 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 is not my intent to speak for the Indigenous People of Washington State, but to bring out the potential effects the KMMEF project will have on climate change and the marine environment of which our Indigenous People depend.

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 tribes Puget Sound interior tribes that 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.

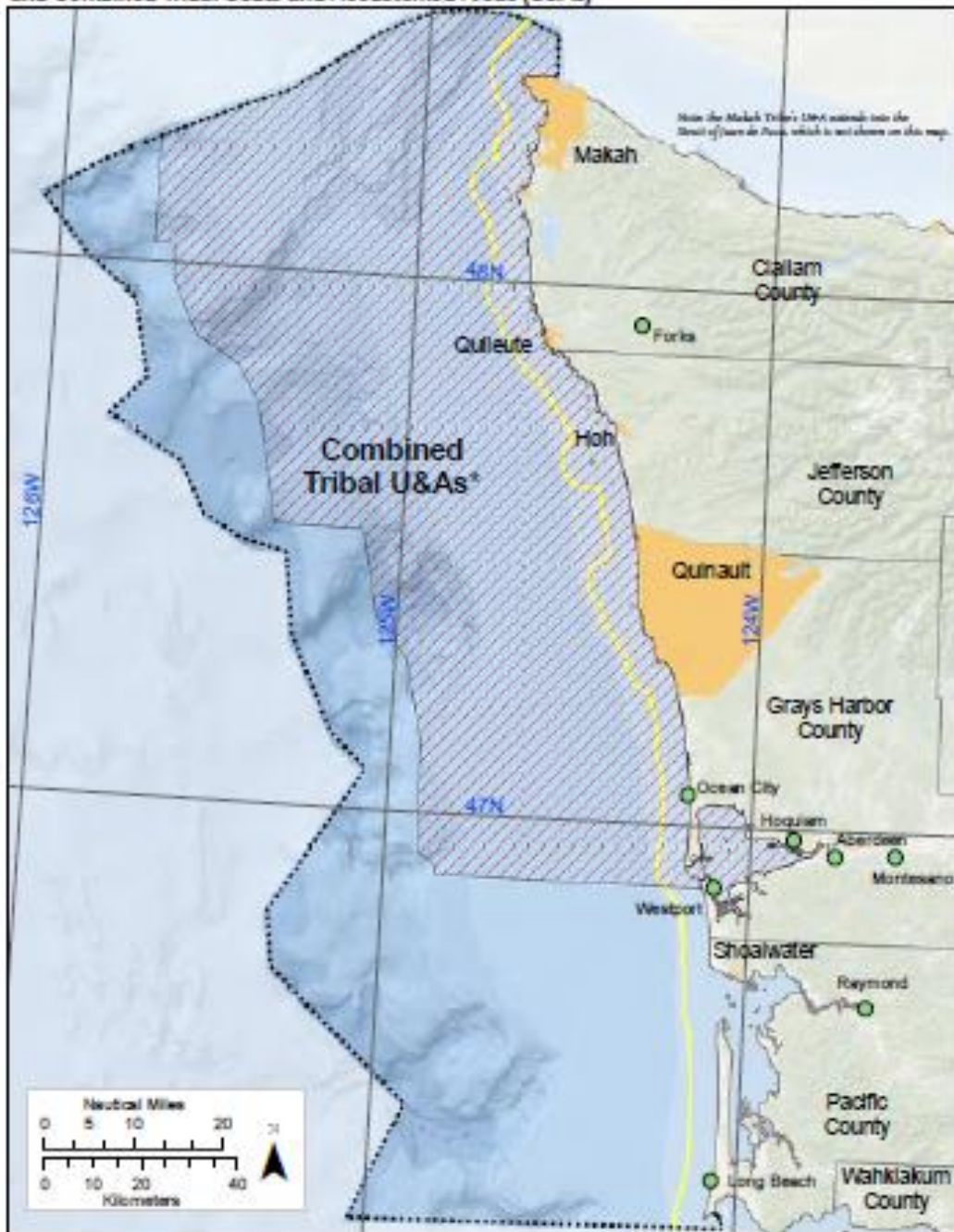
The regulatory context used in Chapter 11 of the EIS was described as “the cultural resources within the Area of Potential Effect (APE) for the proposed project, and probable impacts on such resources.” The APE used was the approximate 100 acres of the KMMEF building site, Kalama Lateral Project (the 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 KMMF, indirectly through its unmitigated GHG emissions and the effects it will have on climate change, may deny the tribes of Washington their fundamental treaty rights. Although tribal rights allow the taking of 50% of the forecasted returns, decreasing salmon and steelhead returns mean fewer fish with each coming year.

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 completely 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 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. It is time for Ecology to follow our Governor's lead and deny the shoreline permit.

Mark Uhart
LTC, USA Ret.
Kalama, WA

Don Steinke

I don't know if you have the same authority as EFSEC, but EFSEC can add provisions to a permit.

If you approve the permit:

- require that NWIW be fully insured for a worst-case scenario
- require that NWIW pay for independent monitoring of air quality at the plant
- require that NWIW pay for pipeline monitoring and repair
- require that NWIW build to withstand a worst-case seismic event

Sally Keely

I've been working to stop the methanol refinery for almost 5 years. I've read EVERY word of every EIS, related document, and public comment. There are only 2 reasons ever given to build this monstrosity: the "displacement" theory and jobs, jobs, jobs.

(1) The displacement theory in the DSSIES is completely bogus, and everyone knows it. There is NO guarantee China is going to stop burning coal to make methanol. And if NWIW, the Port of Kalama, and Cowlitz County legislators cared one inkling about coal emissions they would have been against Millennium Coal terminal in Longview but instead supported it 100%. The entire displacement theory is completely speculative and should be disregarded.

(2) Ecology's "displacement" argument in the DSSEIS assumes China is never going to work toward a better climate future, so why should Washington. SO INFURIATING! The people of Washington, the Governor of Washington, and I had (mistakenly?) thought the Dept. of Ecology in Washington all "got it" ♦ that we were going to work together toward a clean green future with massive REDUCTIONS in GHG emissions as we QUICKLY transition to sustainable carbon free energies. But the DSSEIS assumes we carry on the "status quo" of fossil fuel use for another 40 years. YIKES! Even doing so for another 10 means "game over" for humanity per the IPCC and other well documented scientific reports. Ecology ♦ you can't really believe spewing 4.6 million metric tons of CO₂e every year for the next 40 years can be "displaced" or "mitigated" can you? Come on!

(3) Jobs. Hmph. First off NWIW is lying. The people of Cowlitz County aren't getting living wage jobs ♦ not temporarily in construction (the facility is modular, built in China, assembled here), not permanent (Kalama has not a single Mandarin fluent methanol engineer). NWIW already applied for H1B Visas to bring workers over from China. The rest would come from the gulf coast. And even if we were to get 200 permanent jobs and 1000 temporary, what use is a job when you cannot breathe the air? Or your family member is dying of cancer from 59 toxic pollutants spewed into the air (cite: SEPA 2016)

DENY the shorelines permit and quickly so we can get on with the business of finding a sustainable business to build on the Port's vacant 92 acres. Enough is enough!

Date: Friday, October 9, 2020
To: State of Washington Department of Ecology, Attn: Rich Doenges
From: Robert Briggs¹, 9514 SW Burton Drive, Vashon, WA 98070
Subject: NWIW SSEIS Comments

The Draft Second Supplemental Environmental Impact Statement for the Kalama Methanol Project (SSEIS) contains sufficient information on the project for the Department of Ecology to reject permits for the project. The project would dramatically increase greenhouse gas emissions in the state at a time when we are in a climate crisis and need to be dramatically reducing those emissions at the fastest rate humanly possible.

There are egregious errors and unsupportable assumptions in the study. Many of these are pointed out below.

The most fundamental problem with the study is captured in the following two sentences, which appear on page 49 of the SSEIS:

“This analysis [*the new economic analysis*] is based on current policies and market trends. Scenarios with substantially different global policies (fossil fuel/plastics phase outs or bans for example) are too uncertain to include in this analysis.”

Far from being “too uncertain to include in this analysis,” the policy and technology developments that the study ignores are so profound and far-reaching that the analysis is virtually worthless without considering them.

For example, the Chinese government committed in a recent announcement to bring their net carbon emissions to zero by 2060.² The universal assumption among those who closely watch the development of climate policy globally is that emission commitments will become more ambitious not less, as the cost of reducing emissions continues to drop and the catastrophic nature of climate impacts becomes clearer. From my reading of the study, “the current policies and market trends” are to have emissions from the fossil-based methanol industry essentially unchanged over the 40-year life of the Kalama project. This is preposterous.

On what basis is it appropriate for this SSEIS to assume that the public policy commitments of the Chinese government to reduce their GHG emissions to zero within the life of the Kalama facility will end in no reductions at all and an utter policy failure. It is an unsupportable position for Ecology to be embracing. A far more reasonable reference case would be to assume that China will honor its international commitment and will implement the policy on a consistent linear basis over the coming 40 years.

¹ Robert Briggs is a retired research scientist from Pacific Northwest National Laboratory. He works with Vashon Climate Action Group, which is a founding member of the Renewable Hydrogen Alliance.

² Somini Sengupta, *China, in Pointed Message to U.S., Tightens Its Climate Targets: President Xi Jinping pledged, among other goals, to achieve “carbon neutrality by 2060.” It was China’s boldest promise yet on climate change*, NY Times, September 22, 2020. <https://www.nytimes.com/2020/09/22/climate/china-emissions.html>

Once the Kalama project is evaluated against a plausible future in which economies around the world are transitioning to carbon-free energy and the use of greenhouse-gas (GHG) emissions-free chemical feedstocks, the enormity of the climate costs of this facility become clear. Far from offsetting higher emitting sources of methanol, this project will compete directly with those GHG-free chemical feedstocks making it more difficult for these preferred feedstocks to acquire funding and to gain market share.

It is entirely inappropriate for Ecology to be evaluating permits for an enormous new greenhouse gas emitting facility in the state of Washington in a public policy and technology development vacuum. There are technological developments proceeding around the world that are likely to make Kalama Methanol obsolete before it ever operates. Renewable hydrogen producers in Australia are projecting cost declines that will make hydrogen from electrolysis using wind and solar at prices competitive with that from steam reforming of natural gas.³ Major manufacturers of electrolyzers like Nel Hydrogen are only now automating production of equipment that has historically been made by hand, and the prices for industrial-scale electrolyzers are now plummeting.

The chemical processes capable of making methanol from fossil methane obsolete are well understood and have been applied in locations around the world for decades. Many of the key chemistries needed for olefin, methanol, and ammonia production are roughly one hundred years old; e.g., Fischer–Tropsch process (1925), Sabatier reaction (1897), and Haber–Bosch process (1910). The advent of inexpensive renewable hydrogen will soon make synthesis of these feedstocks cost-competitive with those from fossil sources.

The social cost of carbon mandated by CETA for use in utility planning and acquisitions more than triples the commodity cost of natural gas.⁴ I don't believe that the social costs of Kalama Methanol greenhouse gas emissions are even mentioned in the SSEIS. Why not? Including the social cost of carbon in the evaluation of this facility, as is required for other large emitting projects in Washington, would appear to offer a useful lens for understanding the true cost of Kalama GHG emissions and whether the facility has a realistic prospect for being able to compete with non-emitting feedstocks in the future.

In many locations around the world, electricity from solar PV is now cheaper than electricity from natural gas. A recent study by Ramez Naam documents these historic cost trends and projects prices for electricity from solar to drop below \$20/MWh in virtually all locations by 2040—even before Kalama Methanol will have seen half of its expected life.⁵ At those prices, it will be cheaper to synthesize chemical feedstocks using renewable hydrogen than to continue to use fossil sources. Puget Sound Energy's own projections for power prices out of the Mid-Columbia market show large numbers of hours in every month of the year with prices below

³ Joshua S Hill, *Rapid fall to parity predicted for Australian renewable hydrogen costs*, Renew Economy - Clean Energy News and Analysis, 28 August 2020. <https://reneweconomy.com.au/rapid-fall-to-parity-predicted-for-australian-renewable-hydrogen-costs-11266/>

⁴ The current rate in use is approximately \$76 per metric ton.

⁵ Ramez Naam, *Solar's Future is Insanely Cheap* (2020), May 14, 2020. <https://rameznaam.com/2020/05/14/solars-future-is-insanely-cheap-2020/>

\$10/MWh emerging over the next two decades due to the build-out of renewable energy sources. Renewable sources of carbon for methane synthesis in Washington are plentiful in forestry, agricultural, and municipal wastes, among other sources.

There is so much going on in the field of low-emission feedstocks, particularly in Europe, that claiming that developments are “too uncertain to include” is willful ignorance. It is simply not reasonable to assume that fossil-based methanol introduced into the world market from Kalama will simply compete against even more polluting sources of methane and continue to do so for the next 40 years. Far more plausibly, Kalama methanol will compete slightly more effectively than dirtier sources with emerging climate-safe substitutes, meaning more climate forcing not less. The net emissions aspects of this analysis in this study is highly speculative and very cynical. It should be rejected.

The introduction of Kalama methanol into China seems unlikely to displace automobiles operating using even more polluting methanol-fueled from countries like Iran. Rather, Kalama methanol will adversely affect the climate by competing with electric vehicles that will increasingly be fueled using fossil-free sources. The economic and technological trends driving this are evident throughout the world.

How conceivably can this SSEIS pretend that these changes are not taking place or that somehow they will stop and that China is going to remain stuck using costly, highly polluting internal combustion transportation technologies for the next 40 years? Given cost of ownership trends that favor electric vehicles, the notion that in 2050 Kalama methanol is going to be providing a climate benefit by displacing dirtier methanol in passenger vehicles is absurd. But even if this did happen in some small percentage of cases, the climate benefits of cleaner methanol is marginal in comparison with the large climate benefits from electrification.

On page 53 of the study I see this: “Because methanol will increasingly replace higher-emission transportation fuels such as gasoline and bunker fuel for ships...” This unreferenced speculation appears to stand at odds with the quoted statement above that scenarios with different market trends would be “too uncertain to include.” The International Maritime Organization (IMO) has made commitments to decarbonize shipping. Industry leaders like Maersk are committing to be carbon free by 2050, long before Kalama has reached the end of its planned life. How is methanol from Kalama going to reduce emissions from shipping at a time when the maritime industry is rushing to find a GHG-emissions-free path forward. Major shippers are rejecting LNG in spite of its current attractive price.

Kalama methanol will not be displacing bunker fuel for ocean shipping but will be competing with one or more of the non-emitting candidate fuels for maritime use, which include hydrogen, ammonia, DME, or some synthesized alkane blend, among others. Far from offsetting dirtier fuel, Kalama will serve to impede the nascent transition now underway to decarbonize ocean shipping.

There are numerous additional errors in this SSEIS. The errors are all in the same direction, in that they serve to understate the severity of the climate impacts from Kalama Methanol. At the very least, Ecology should provide justification for using out-dated values or for failing to

provide adequate sensitivity values for assumptions on which there is legitimate uncertainty or grounds for disagreement.

Why does the SSEIS use GWP values from AR-4, when values from AR-5 have been available for years? The values were updated in AR-5, because the values in AR-4 were shown to be inaccurate. Governor Inslee's Directive 19-18 requires use of up-to-date science. I believe the Department of Ecology knows this. What is the justification for using these out of date values? The SSEIS needs to provide that justification.

Why does the SSEIS use a 100-year GWP for methane at a time when the IPCC has said with great clarity that we have just ten years to dramatically reduce GHG emissions to avoid very dire and likely irreversible climate impacts? The SSEIS makes no attempt to justify the use of this assumption, which diminishes the impact of leaked methane by roughly a factor of three for the policy-relevant time frame.

The assumptions for upstream leakage rate as a percentage of methane delivered are similarly skewed in the direction of minimizing climate impacts. The addition of the 3% leakage rate is appropriate, but it would be more appropriate to declare it the high sensitivity in lieu of the current 1.46 value. Even the 3% rate does not account for the global spike in atmospheric methane concentrations that many believe attributable to the hydraulic fracturing boom. The legitimate purpose of sensitivity analyses is to bracket uncertainty, and there certainly is high uncertainty surrounding the role of non-routine methane leakage and the source of unexplained atmospheric methane that has accumulated over the past 15 years.

Kalama Methanol has all the appearances of a stranded asset in the making. It is an investment in yesterday's technology that MUST be shut down if we are to have a livable climate. Building a facility that will be idled early in its life will not be good for Kalama, it will not be good for the state of Washington, and it will not be good for NW Innovation Works. There is great irony that a Chinese company is now bringing to the United States a high-polluting industry and obsolete technology in order to extract natural resources to be used in high-value manufacturing back in China. This kind of exploitative relationship has historically been reserved for third world countries.

Ecology should reject the permit but suggest to NWIW that they will get a far more positive reception in Washington if they come back with a new proposal that involves using cutting-edge technology to produce carbon-free methanol from renewable hydrogen and carbon from the region's forest and agricultural residues or other readily-available sources of non-fossil carbon.

Don Steinke

The law requires you to consult with the tribes.

More than that, we should begin to right centuries of wrongs.

The Cowlitz and Chinook Tribes occupied this area.

The Cowlitz and Chinook had to fight for Federal recognition for years. The Cowlitz were successful, but the Chinook still fight on.

The Cowlitz oppose the methanol plant.

Let's not screw them one more time.

Sally Keely

Why does the DSSEIS contain outdated stats and cherry-picked outlier rates?

The DSSEIS uses GWP values from IPCC AR-4. Why not the more recent AR-5 values? The more recent assessment with more accurate current data has been available for years. Doing so makes the 4.6 MMT CO₂e that KMMEF is shown to emit far, far worse.

The DSSEIS uses a 100-year GWP for methane even though (1) the project is expected to be in operation for 40 years, and (2) the IPCC and other scientists worldwide have proven we have just ten years to dramatically reduce GHG emissions to avoid irreversible climate catastrophe. Over the next 20 years methane has a GWP 86 times that of coal and would make the 4.6 MMT CO₂e that KMMEF is shown to emit far, far worse.

The DSSEIS uses a 0.97% methane leakage rate from pipelines. Why cherry pick such a low outlier rate when more accurate rates of 2-3% have been proven again and again? Doing so makes the 4.6 MMT CO₂e that KMMEF is shown to emit far, far worse.

Don't permit our climate emergency to become far, far worse. DENY the shorelines permits!

Julia Mottet

Comment written on 9/23/2020

I grew up, work and live in Cowlitz County, WA.

We have all been affected by the wildfires on the West Coast this year. We have seen the footage of the golden gate bridge obscured by smoke with a blood red sky. Portland had the worst air quality in the world last week. The fires have killed many people. Heartbreakingly, children as young as 1 year of age are among the victims. A thirteen-year-old boy died trying to save his grandmother. In the end, he was found alone, burned to death in a car with his beloved dog on his lap. Two years ago, we all watched in horror as the Camp Fire in Paradise, CA killed 86 people in a most terrifying manner.

According to Wikipedia, the 2020 Atlantic hurricane season, with 23 named storms so far, it is the second most active Atlantic hurricane season on record, only behind only the 2005 Atlantic hurricane season, (of Hurricane Katrina fame). Tropical Storm Cristobal and 19 later systems have broken the record for the earliest formation by storm number. In addition, this season is the first to see seven named tropical cyclones make landfall in the continental United States before September. September is not even over, and we've just experienced the most active September on record. With hurricane season not officially over until November 30, we may break the record yet for the most active hurricane season ever.

Last Friday, 9/18/2020, the rain came down so hard and fast that I had to use sandbags to keep the water away from my garage. I live half way up Columbia Heights Road. I am living in a house a block away from where I grew up. I've been here since the 1970s; my grandparents moved here in 1940. We have NEVER had to use sandbags in our lives up here on the hill. I only had the sandbags around to secure a portable basketball hoop for my children.

So between the pandemic, hurricanes, flash flooding, and a smoke-filled orange sky obscuring the sun, it feels like end times. Our face masks, bought for the pandemic, are doing double-duty due to the smoke. I do not know how to comfort my 14-year-old and 9-year-old daughters. I would like to be able to tell them that things will be okay, that people will realize what is happening and make big changes to prevent the destruction of our planet. But I cannot tell them that in good conscience. Global warming is happening; it's affecting our weather, which in turn affects our fire and hurricane seasons, and no amount of hand wringing, shoulder shrugging, head shaking, or hoping things will improve on their own is going to make it go away.

The proponents of the methanol refinery would have you believe that the refinery would decrease the amount of methanol derived from coal-based methods, thus creating a net reduction of greenhouse gases being produced. However, the Chinese have made NO written promises to decrease their coal-based activities if the Kalama methanol refinery were to be built; and even if they did make a written promise, it would be absolutely IMPOSSIBLE for us to enforce. Most certainly, they will simply add the methanol to all their other fuel stocks and coal will continue to be burned at the same rate in China. 'Displacement' is wishful thinking at best and false logic and deceptive propaganda at worst.

For years, NWIW claimed that the methanol would solely be used to produce feedstock for olefin production. This lie was told to make their numbers look for better. Well, there are less environmentally-destructive methods of producing feedstock than fracking natural gas, piping it over many hundreds of miles, refining it into methanol, and then shipping it half a world a way; therefore the comparison of fracked-gas-to-methanol vs. coal-to-methanol was always a sham comparison.

Now they finally admit that some of the methanol could be burned as fuel in China or elsewhere. Well no sh**, Sherlock! Methanol is a commodity and once it is manufactured and sold, the seller has no control over how or for what it is used. We should assume 100% could end up being burned as fuel, since we have no control of it once it leaves our shores.

The question is whether this proposed project is a net gain or net loss regarding greenhouse gas emissions... i.e. does it meet the current laws and standards that we have on the books to safeguard ourselves from planetary destruction?

When you consider all upstream emissions of this fracked gas project and how the methanol may end up being used, it is every bit as bad as coal, the very source NWIW claims to be replacing. This refinery would be a very significant contributor to greenhouse gas emissions. We cannot 'mitigate' our way out of the damage it will do to our planet. The damage would be immediate and ongoing; any so-called mitigation, such as planting trees that take decades to grow, would be too little, too late.

Taking into account ALL upstream emissions, the fact that the methanol may be burned as fuel, and no decrease in China's use of coal-derived methanol due to the aforementioned reasons of no-promise/no enforcement, this becomes a very bad project indeed.

I'm also very concerned about the additional tanker traffic on the Columbia River and what that will do to our salmon and other native fish.

Lastly, I think this refinery is an explosion hazard and too near families with children. All we need is a big earthquake and any safeguards put in place to prevent the methanol from coming in contact with oxygen will be breached. My 14-year-old daughter informs me that we are more than 50 years overdue for a big Cascadia subduction zone earthquake. Apparently we have become forgetful and complacent sometime during the last 300 years since the last one. We cannot afford to build a refinery on hope, as in "We hope the Big One doesn't hit during the lifespan of this refinery" or, "We hope the Chinese will burn less coal like they promised." As the framed wall poster that hung in my high school guidance counselor's office used to say, "Hope is not a form of birth control."

Julia Mottet
Longview, WA
9/23/2020

Robert Erwin
10505 NW 2nd St Apt B
Portland, Oregon 97231

October 8, 2020

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

RE: Kalama SSEIS e-Comments

To Whom It May Concern,

I am an electrical apprentice who works in cowlitz county. As a parent and resident in the Northwest region, I have concerns about the SSEIS for the proposed Kalama methanol plant because:

- The sources provided in the SSEIS seem cherry picked, and deserve local review. The sources which purport to show some evidence of greenhouse gas emission reduction cite data from mainly Chinese universities. While normally this wouldn't be an issue, considering the significant amount of Chinese money pumped into this project, and considering that the product being shipped from this proposed plant is going to be sold in markets across the pacific it is prudent for the Washington Department of Ecology to request an independent environmental review by a Washington university or another local state funded institution.
- The greenhouse gas mitigation proposed by NWIW has no teeth contractually, it's done on a volunteer basis. As this seems to be a central argument to the supposed benefits of this plant it would be imprudent to permit this empty pledge to fill in for actual tangible benefits. It is simply bad business to accept an empty promise for a job this large. The people and governments of Cowlitz County and the City of Kalama will not be able to hold this company to their promises when the time comes to offset the significant greenhouse gas emissions.
- The so-called 'zero liquid discharge' technology touted in this report has not been proven. The Columbia River is our region's greatest river and the technology proposed deserves

significantly more review than done here. It does not guarantee zero waste water discharge into the Columbia River in spite of its name.

- This study also doesn't address the pending mandate by the Chinese government to require fuel for cars and trucks to contain 15% methanol. The proposal overlooks foreign interests and drivers while making many optimistic predictions of other Chinese actions. The optimistic forecast ignores the reality that the Chinese government and its state owned businesses will use the methanol produced here in whatever way it pleases, and those greenhouse gas emissions won't be accounted for in the plants proposed 'voluntary' mitigation.
- This methanol plant is a bad inheritance. For the sake of my son and millions of other children I find it irresponsible to consider these haphazard assessments prudent enough to allow the project to go forward for the sake of 1,000 temporary jobs.

Thank you for considering my concerns. I appreciate your time and effort in these matters.

Regards,

/s/

Robert Erwin

Mark Keely

The Port of Kalama wants to marry up to the China government-backed Northwest Innovation Works, a limited liability company (whereby the owners are not personally liable for the company's debts or liabilities). Why, if they are so sure of themselves? The China government company that's backing NWIW, known as the Chinese Academy of Science Holdings (acronym CASH), along with the Port of Kalama and Northwest Innovation Works, has applied for monies that would cost the US taxpayers 2.681 Billion dollars to install the world's largest methanol refinery in Kalama so China can burn the methanol as fuel for transportation.

The Port of Kalama applied to the federal government for 11.5 million dollars for a dock & road for the refinery. The Port of Kalama applied to Washington State for another 11.5 million dollars which is "double-dipping" for the same cause and it's against the law. Do they know what they're doing? The Port of Kalama asked for a federal loan for 15 million dollars to build a well for NWIW that would take over 5 million gallons of water a day from a freshwater aquifer next to the Columbia River. NWIW lobbied for state tax loopholes valued at 143 million dollars. NWIW wants the US taxpayers to bear the full financial burden of 2.1 billion dollars if the methanol refinery fails. NWIW wants to use Washington public employees retirement funds to build the methanol refinery.

That's 2.681 billion dollars total for taxpayers to be on the hook.

This is U.S. taxpayers cash and the Cash Always Stays Here. Our tax monies are ours for our own improvements on air, water, land, and the health of all the people. Taxes should certainly not be spent to emit 4.6 million metric tons of CO₂e per year for 40 years.

The DSSEIS displacement theory is based on pure speculation using cherry-picked data. All for a shell company that wants to exploit our natural resources and garner profits for a foreign country. DENY the permits. No petrochemical company in Kalama!

Mark Keely

Referenced in the DSSEIS: 3.3.1.1 Paris Agreement, 3.3.2.1 Federal Clean Air Act, 3.3.3.1 Limiting GHG Emissions (RCW 70.235), 3.3.3.2 Washington Clean Air Act (RCW 70.94), 3.3.3.3 GHG Emissions ♦ Baseload Electric Generation Performance Standards (RCW 80.80), 3.3.3.4 Washington State Efficiency Environmental Performance (Executive Order 18-01), 3.3.3.5 Washington's Leadership on Climate Change (Executive Order 09-05).

NWIW has not shown any just adherence to these standards or any clear mitigation for the harm and pollution through the operations of this petrochemical refinery. In fact mitigation of 4.6 million metric tons of CO₂e is IMPOSSIBLE!

Ecology WA -- your mission statement states, "Ecology is Washington's environmental protection agency. Our mission is to protect, preserve, and enhance Washington's land, air, and water for current and future generations. Our innovative partnerships support environmental work throughout the state." Please abide by it! Adding new fossil fuel infrastructure, obligating us to 40 years of fossil gas consumption, and adding 4.6 MMT of CO₂e to our already overburdened atmosphere for even 10 years is a climate disaster from which we cannot overcome. Do your job. DENY the shorelines permits.

del hamilton

No to methanol refinery. This plant would open the floodgates for fracked gas refining in the PNW, polluting our air and water.

faye allen

No to the kalama methanol refinery. This plant would require massive amounts water to operate and spew out wastewater and heavy metals filling the air with toxic pollution.

Diana Gordon

NWIW will never be able to mitigate the vast quantities of greenhouse gases that the Kalama Methanol Refinery will produce.

Mitigating only the GHG's produced in our state is simply not good enough, anyway. If they are planning to mitigate their emissions, they need to mitigate ALL of their GHG's, PERIOD. They plan to look for mitigation 'opportunities in communities that will suffer disproportionately from a changing climate'. Seriously?

Why should anyone suffer from the effects of climate change that they have contributed to? What on earth do they have in mind? - maybe building a fire brake around some drought-stricken community so they won't be swallowed in an enormous approaching climate fire?

They are proposing a voluntary program that they will develop as they go along. We have considerable evidence that shows this particular company has not been 100% truthful regarding how they are planning to use this methanol. Using the methanol for vehicle fuel instead of plastic manufacture will produce more GHG's. Will they remember to add a little more mitigation on for that? Why should we trust them to maintain a VOLUNTARY 40-year commitment?

Greenhouse gases are a global problem. They are already driving climate change around the world. Witnessing the fires, hurricanes, floods, winds, drought, and so on caused by climate change does not whet my appetite for some window-dressing type half-measures for 'mitigation'.

Mitigation is hard, very hard, and we are going to have enough work before us to curb our GHG emissions and slowly turn the climate ship onto a more sustainable course. It is dismaying that forests are burning instead of sequestering carbon. It is dismaying that the ocean has already absorbed so much carbon from the burning of fossil fuels that it is not the reliable carbon sink it once was, reliably absorbing about one-third of our CO₂.

I feel that we should not pin our hopes for an improving climate future on folks like NWIW. The few jobs they are promising cannot balance the harm that would be caused by this plant. The climate goals for Washington State are to reduce GHG emissions 45% below 1990 levels by 2030, and 95% below 1990 levels by 2050.

We can do it. We can meet those goals. Let's go for it and start by denying the Shorelines Permit for this plant.

Michelle Johnson

I strongly oppose the construction of the world's largest fracked gas-to-methanol refinery in Kalama or anywhere in Washington State. We should not allow KMMEF or any company to come in and permanently destroy our environment. Ecology needs to re-examine its conclusions that the refinery will have a benefit to our climate. It would not be the first time that an EIS came back favoring a company proposal instead of what the department is supposed to stand for and protect the environment and the climate. We do not need this in our community.

Cambria Keely

I recently took a job that involves the analysis of a decade's worth of Reuters articles. I noticed that one recurring theme of every economic recession is that oil prices drop extremely low, sometimes into the negative, leaving investors with thousands of barrels of oil that no one wants due to supply far exceeding demand.

Section 3.5.2.5 of the DSSEIS discusses the price of methanol, which made me realize that methanol could very likely follow the same trends as oil if you permit this facility to ramp up methanol production. When the price of methanol inevitably eventually drops, where will we store all the overstock? Will it simply be sitting in Kalama for months, years, decades, waiting for an earthquake or a fire to cause a disaster?

There are far too many unanswered questions and unconsidered situations that go along with this facility. After a year of the world proving to us that anything could happen at any time, the last thing Kalama needs is for this project to introduce so much uncertainty and risk. Please say NO to the KMMEF.

Cambria Keely

Section 3.5.2.2 of the DSSEIS discusses China's methanol usage rate over the past couple of decades. It states that China used around 60 million metric tons of methanol in 2018, 6 times that of a decade prior. With the use of methanol growing at this rate, how could anyone believe this is truly just a "transition fuel?" The use of methanol is going up and will continue to grow as more facilities are built. Methanol is not a transition, it is the new coal—simply a regurgitation of the same fossil fuels we have been protesting for years. If we want change, we must simply change. The fossil fuel industry is dying and we must not allow this refinery to keep it alive for any longer. Please deny the KMMEF.

Cambria Keely

Over my four-and-a-half years spent researching the proposed Kalama methanol refinery, one of the statistics I felt has been widely ignored is the deoxygenation of water by methanol. One gallon of methanol can deplete 198,000 gallons of water of oxygen, the most essential resource for marine life. This means that even the tiniest of spills--say for instance a tablespoon, which would deplete 773 gallons of water—would be devastating to the river. Take a moment to let that sink in. Spills that small are nearly impossible to avoid when filling each tanker.

Section 3.5.1.3 of the DSSEIS discusses the marine transport (MT) vessels. The low and medium emissions estimates are based upon the concept of 100,000 tankers annually, contributing to the emissions of 197,344 CO₂e per year. If 100,000 tankers spill a mere tablespoon of methanol per fill, over 77-million gallons of water would be deoxygenated. Is contributing to forty years of polluting our ecosystem really the way to respect our River, our town, and our future? I find it truly disturbing that this statistic was discussed nowhere in the DSSEIS.

Terry Teigen

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.

Having spent almost all of my 66 years near and on the waters of this region, I have seen the measurable, increasingly dire consequences of our reliance on fossil fuels. There is a tragic irony in these plans for Kalama as they will impact, potentially on a devastating scale, the health of The Columbia and that ecosystem. At the same time, taking us faster and further down the road to catastrophic consequences of climate change.

Fortunately, our state can be part of the solution. My grandchildren and yours will thank us. This is what we are called to do as thinking and caring people living in this critical moment. So much depends on us and our actions.

Please attend to the statement below.

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. Terry Teigen
5029 36th Ave SW Seattle, WA 98126-2805
terrypteigen@gmail.com

Jessica Taylor

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,
Jessica Taylor
2114 12th Ave E Seattle, WA 98102-4137
Jltaylorsp@yahoo.com

Anonymous Anonymous

Sacrificing my local environment quality is not worth the improvement of global environment quality. It also seems redundant for a foreign-owned company to operate a plant outside their country, just to have the product shipped back to them for their use... most likely in goods that are sold back to us.

James Plunkett

Director Watson:

We have to take every opportunity we have to stop GHG emissions. The plant's incidental methane leaks in the upstream supply are too great. Methane is difficult to capture and seal in pipes and pumps and valves. The fossil fuel industry and gas frackers especially have only admitted grudging responsibility for their system's leaking of raw methane. My concern is that as clean energy displaces fossil gas, gas fields will not be maintained, they'll be allowed to leak even more and then they'll be abandoned like Canada's thousands of orphan wells. Please deny this permit.

thank you

MARRENE JENKINS

Dept. of Ecology,

I hope you are feeling overwhelming grateful for the tremendous response to the SSEIS. I am a resident of Kalama for only 12 years;but this was to be my forever/retirement move after 9 homes in a 40year span. On hearing about this proposed Methanol refinery, I was filled with sadness,anger, and at least a determination to at least fight it.

I wasn't going to be alone. There were agencies today to protect us. They came about in the 70s when a very big need to stop and reverse the pollution of cars and industries was identified. Amazing! Departments of Ecology in many states and the EPA were so successful. The work will never end and most of the work will be prevention. So thank you to the many hundreds who joined us here in Cowlitz County. Each letter of opposition conjured up memories of a filled convention/fairgrounds center, a sea of red shirted folks united in opposition. Thank you to the scientific brains who were able to separate facts from fictitious speculation. You were able to supply evidence of the enormity of this plan from the source to completion.

In the end, the final is that this refinery will contribute 4.6 million tons of GHG emissions yearly IF built. There's no mitigation because there are NO binding contracts with the Chinese Government. The Chinese Government fails to honor contracts, bullies neighboring free territories-Taiwan and Hong Kong. The Chinese Government has both a recent and long standing record of lieing and bullying. Until they reverse this and for decades, our Port of Kalama dealings with them should stay in grain,food,and wood.

In the future,if America needs plastic manufacturing for uses here in the USA, it should be done here, close to the source of product. We have high standards in the US and manufacturing plants have no place in densely populated locations along the Columbia River

Future generations will have to be responsible for defining how to accomplish renewable energy and what products will be necessary to accomplish this and be sure what America needs is made in America..Thanks to the leadership of CRK,Sierra Club, Earth Justice, etc., the work to protect our corner of the world and planet as a whole successfully continues.

I pray daily truth will prevail. It's been a long 41/2 years. May it finally be done and buried .

Bill Adams

Please do not let this Kalama methanol refinery project go any further. Should you allow it to happen, its voracious appetite for up to 130 million cu. ft. of natural gas a day will simply mean more fracking to satisfy this demand. Fracking forces high pressure water with chemicals, many of them toxic, into the earth's shale formations to fracture the shale to release the gas. Besides causing ground water contamination, requiring large amounts of fresh water that when reclaimed, can only be used for more fracking and causing earthquakes in areas where earthquakes are not the norm, fracking causes methane leakage. Methane leaked into the upper atmosphere traps the earth's heat and contributes to global warming. Reducing this leakage by reducing fracking and eventually eliminating it altogether by transitioning to clean, green renewable energy, will result in less heat being trapped. Less heat means we'll have a very good chance of passing a planet that's livable and sustainable to our future generations.

But that can't happen if we keep building refineries like this one that so heavily depend on a fuel that requires fracking to make its product. This is not in our state's best interest nor the entire planet's for that matter. Please reject it. Thank you, Bill Adams

Theodora Tsongas

Please see attached file. Thank you.

Attn: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47600, Olympia, WA 98504-7600

Comments on: Draft Second Supplemental Environmental Impact Statement (draft SSEIS) on Northwest Innovation Works' Proposed Kalama Methanol Facility

I am an environmental health scientist with more than 40 years' experience in environmental public health in state and federal agencies and in university teaching. I am commenting on the proposal to permit this methanol facility because of my concerns about the folly of this proposal and the harms it will inflict on the public. It is my sincere belief that this project is not in the interests of the people of the State of Washington, the Northwest, the country, or the world.

Regarding the draft SSEIS for the proposed Kalama Methanol Facility, it is apparent that the Washington Department of Ecology is not taking science seriously when a spokesperson for Ecology concludes that greenhouse gas emissions would be reduced more if this plant were operating than if it were not. This conclusion depends on other less efficient plants ceasing operations if this plant were operating. There is no way to know this, so operating this plant would, in fact, increase greenhouse gas emissions!

Everything we know says we must eliminate the use of fossil fuels in order to have a livable future. The fracked gas to be converted to methanol in this plant is primarily methane, a potent greenhouse gas. The intergovernmental agency on climate change has cautioned the world on the basis of scientific consensus that we have 10 or fewer years to make drastic changes in our way of doing things in order ward off the worst effects of the global climate disruption.¹ We are seeing these effects manifested every day in increased storms, flooding, heat, droughts, wildfires and their devastating effects on all our life support systems: loss of clean water, increased air pollution, disrupted crops, food insecurity, destruction of species, disruption of ecosystems. The effects on human health and livelihood are devastating!

How can a public agency charged with protection of the environment of the state ignore the overwhelming evidence that we are in a crisis that demands an end to the "business-as-usual" that brought us to this point?

We are in the midst of a triple public health crisis for which we must take urgent steps to prevent continued and increased threats to health and life. Catastrophic climate disruption, a global pandemic of lung disease aggravated by air pollution, climate change induced wildfires adding to the unbreathable air and increasing susceptibility to pandemic disease, displacement of thousands of people regionally, (millions worldwide), without shelter to reduce exposure

¹ IPCC. 2018. Special Report. Global Warming of 1.5 Degrees C.
<https://www.ipcc.ch/sr15/>

either to the polluted air or to COVID-19. These are related to continued emissions of greenhouse gases including methane.

We have had plenty of warnings! It is past time to take the warnings seriously and stop taking half measures. That is what this proposal is: a misguided plan that would increase the demand for and production through extreme extraction of fracked gas, lock us in to 40 years of fossil fuel use when we could be using our scarce resources to expand development of real sustainable (including sustaining human life) clean and renewable sources of energy.

The use of fracked gas also has adverse impacts on all the communities across the US that are suffering from the public health and safety impacts of fracking,² Our understanding of the adverse health impacts on communities near fracked wells increases as this extremely damaging process continues to be used. Water and air are contaminated, aquifers are drawn down, and the wastes from this process are indiscriminately dumped. The proposed Kalama methanol project does not exist in isolation. Its upstream and downstream impacts go far beyond Washington State and these will not and cannot be mitigated by NWIW. No consideration of these true costs of this facility was given in the draft SSEIS. This is unconscionable.

Our survival on this planet will not allow us to extract, transport, process and use fossil fuels for the next 40 years, the proposed lifespan of this facility. We won't get a chance to undo this terrible mistake.

Please deny the Shorelines permit and reject this project!

Theodora Tsongas, PhD, MS

² The Compendium of Scientific, Medical, and Media Findings Demonstrating Risks and Harms of Fracking (Unconventional Gas and Oil Extraction) 6th Edition. 2019. Concerned Health Professionals of NY and Physicians for Social Responsibility.
<http://concernedhealthny.org/compendium/>

Katherine Muller

Washington should reject Northwest Innovation Works' (NWIW) proposal to build and operate the world's largest fracked gas-to-methanol refinery in Kalama. According to NWIW, their mission in pursuing this project is "to produce the world's cleanest methanol in order to make everyday materials a part of the global climate solution." The assumption that the methanol produced by NWIW would displace other, dirtier methanol in China is purely speculative and must not be used to claim that NWIW is helping foster "climate solutions". There is absolutely no way that this project would be part of the "global climate solution". I am asking that Ecology look beyond NWIW's misleading claims and accurately evaluate the entirety of the project's climate pollution.

Mike Reuter

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

This is how fast the NW can have devastating natural gas caused by consumers and businesses not allocating and prioritizing natural gas capacity. The two articles below show how it took just two years to go from an abundance to a deficit in Boston's natural gas supplies.

In 2012 Nstar reduced their rates by 34%, and just two years later, in 2014, NSTAR raised their rates by 29%.

Abundant Natural Gas Means Low Prices, Increased Trade Potential by I E R A P R I L 1 9, 2 0 1 2

Natural gas production in the United States is hitting unprecedented highs, storage tanks are filling, and prices are falling to levels not seen in a decade. American consumers are benefiting from the glut while gas producers are looking toward oil to keep profits from plunging for their stockholders. This leap in natural gas production is caused by American ingenuity applying hydraulic fracturing and horizontal drilling technology to natural gas previously locked in shale formations. Hydraulic fracturing uses water, sand and trace amounts of chemicals to break open shale rock and release natural gas and oil deposits that could not be produced economically with conventional drilling methods. Private industry in the U.S. has, literally, drilled our way to lower natural gas prices, and these lower prices have ignited a new flurry of new proposals for the use of abundant, affordable natural gas supplies.

As the price of natural gas has plummeted, consumers have benefited from lower electricity rates and the lower cost of manufacturing, creating thousands of jobs.

In February, Boston-based utility NSTAR announced to its business customers that it will reduce their retail electricity rates this spring by 34 percent, to 5.5 cents a kilowatt-hour down from 8.5 cents. In May, the company expects to announce rate reductions for residential customers.

NStar seeks a 29 percent hike in electric rates.

By Jack Newsham Globe Correspondent, November 7, 2014, 10:49 p.m.

NStar blames the cost of supply, because of an overwhelmed pipeline network, for the price hike. "Because of the current gas pipeline capacity issues, this supply rate is considerably higher than it has been over the past several years," said Mike Durand, a spokesman for NStar.

NStar's parent company, Northeast Utilities, proposed a major pipeline project in September.

If permitted, this natural gas export methanol terminal would supply Asian markets. Washington State customers will be competing with buyers in Europe, Asia, and other markets currently paying far higher prices. Under this perverse outcome, Washingtonian customers would subsidize billions in pipeline construction costs to facilitate exports that would drive domestic prices substantially.

We would have a natural gas addiction ♦ Increasing our pipeline capacity, and consequently increasing our reliance on natural gas, would only further expose us to

market volatility.

I know that the Department of Ecology has no say in natural gas security. However, I also know that this refinery needs an expansion of the pipeline to run it 24 hours a day, 365 days a year. The expansion is part of the study when it comes to the environmental review process. Is there really 500 Dtpd capacity in the pipeline on an average day. What is an average day, and how many of them are there? What about winter months, what kind of capacity is there?

Mike Ellison

See File for my comment with better formatting (PDF_.

Kalama Methanol Refinery Comment on the Draft Second Supplemental Environmental Impact Statement
10/9/2020

I am Mike Ellison of Vancouver, WA. I moved to Vancouver when I was 6 weeks old and have lived here almost all of my life. I have a PhD in Environmental Sciences and Resources.

Every day I enjoy the beautiful environment and the community that supports me here in Washington. I want those who follow me, including my children, to live as enjoyable a life as I have. Global warming threatens this, so I have a responsibility and a desire to respond. I've been privileged to benefit greatly from the long history of GHG emissions that have brought so much prosperity to the developed world. I also recognize that there are many in the developing world that are missing out on these benefits and are already experiencing the brunt of climate chaos. Their plight also motivates me to speak out.

I'm going to focus on a few of the flaws I see in my reading of the Draft Second Supplemental EIS's analysis.

The urgency to reduce GHG emissions: The IPCC Special Report about the difference between 1.5 and 2C warming. It is very important that the lifecycle global warming potential (GWP) of the project must be addressed by the DSSEIS because all the GHG emissions resulting from this project impact climate on a global scale and because science and our own experiences tell us we are nearing a dangerous level of climate chaos. And, of course, warming on a global scale impacts Washington state. The IPCC Special Report about the difference between 1.5 and 2C warming released in October reinforces the need to limit global warming to 1.5C at least. This science-based IPCC report tells us that we must achieve GHG emissions reductions of 45% from 2010 levels by 2030 to limit warming to 1.5C. The Draft Second Supplemental EIS must recognize the need for this dramatic reduction in only 10 years. In fact, it does note that we are significantly behind our 2020 goals set by the Department of Ecology. This is not the time to add fossil fuel infrastructure that will lock in at least 4.6 MT CO₂e/year emissions for 40 years.

Furthermore, we need to remember the IPCC has a history of successive reports that have had to admit their earlier predictions underestimated the pace at which climate chaos is coming upon us. In fact, the Guardian reported, "Bob Ward, of the Grantham Research Institute on Climate Change, said the [Special Report on 1.5 C warming] was 'incredibly conservative' because it did not mention the likely rise in climate-driven refugees or the danger of tipping points that could push the world on to an irreversible path of extreme warming." Modeling in the DSSEIS needs to consider much more dramatic cuts than 45% by 2035. The modeling in the DSSEIS isn't adequate to protect the well-being of Washingtonians and our neighbors around the world. We must not take chances with our general welfare, our economy, and our life support system.

Speculative Displacement Assumptions in the DSEIS

Probably the most egregious flaw of the DSSEIS is its highly speculative, but very limited assumptions regarding the range of alternate cases for methanol sources to make olefins absent the KMMEF. These assumptions are central to the justification of the project. These are unreasonably speculative because (a) world is awakening to the downsides of plastics, and may decide to stop using so many, a possibility not considered; and (b) the timeline of 40 years can't be predicted with the certainty needed when making such a grave decision.

We must consider that the possibility that some of the methanol will be diverted to transportation fuels. However, transportation must electrify to meet the Paris agreement goals resulting in reduced demands for methanol as a fuel. Again, the competitiveness of the methanol market can't be predicted 40 years into the future.

The urgency of reducing GHG emissions means that we can't risk our future on such an uncertain market analysis. You could say that depending on this part of the DSSEIS analysis is risking our future on an American-made Chinese fortune cookie message. But, in addition, building fossil fuel infrastructure with a 40 year lifetime, locks in a market momentum that is very likely to drive us past GHG emission levels that will be disastrous.

Treatment of methane emissions in determining the GWP of the project

A 2018 case study report on this project by the Stockholm Environmental Institute points to research that the assumption of 1.46% as an unrealistic upper bound for the upstream methane leak rate. It is more likely this is 2 to 4.5 times greater. New reports indicate that leakage rates in British Columbia are underreported by a significant amount. The assumptions used for the GWP of the upstream methane emissions in the DSSEIS are very important, especially when the near-term GHG emissions reduction required by the IPCC Special Report is considered. As you know, methane emissions exert a much greater radiative forcing than carbon dioxide, but methane breaks down more quickly in the atmosphere. Generally, the GWP of GHG emissions are considered on a 20-year or 100-year basis depending on the

question being asked. Because we understand the level of GHG emissions reduction required over the next 10 years , the 20-year GWP is the realistic assumption. The 20-year GWP (AR5) of methane is 84 times that of CO2. The DSSEIS's use of a 100-yr GWP of only 28 is wildly unrealistic.

In 2014 Jessica Trancik and Morgan Edwards of MIT directly addressed this issue and argued that the 100-year GWP value is not only unrealistic, but dangerous. "The problem is that now we're actually closer to reaching and potentially exceeding the commonly cited climate targets," Dr. Trancik says. "If our time frame for stabilizing radiative forcing is 20 or 30 years, we shouldn't use the 100-year GWP for our analysis."

When you add to this the unrealistic leak rate for upstream methane, it is clear the DSSEIS doesn't fully account for the critical near-term GWP of the methane emissions.

Role of the administration's deregulation of methane

Because the current federal administration is seeking to reduce regulation of fugitive methane emissions from gas wells that are likely to become feedstocks of the refinery, it is necessary to redo the modeling of upstream methane emissions to include regulatory reform in the direction of looser emissions controls in the analysis. This is another way the DSSEIS is incomplete and unrealistic.

Conclusion

Because of the unrealistic assumptions in the DSSEIS that I've noted plus the urgent need for near-term dramatic GHG emission reductions, I believe that there are Unavoidable Significant Adverse Impacts of the project. The Department of Ecology should reject this methanol refinery, and deny the Shorelines Permit for the project.

Sincerely,

Mike Ellison, PhD

4303 NE 14th Ave

Vancouver, WA 98663

Intergovernmental Panel on Climate Change, "Global Warming of 1.5 oC," 2018, <https://www.ipcc.ch/sr15/>.

Jonathan Watts, "We Have 12 Years to Limit Climate Change Catastrophe, Warns UN," The Guardian, October 8, 2018, sec. Environment,

<https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report>. Watts.

Peter Erickson and Michael Lazarus, "Towards a Climate Test for Industry: Assessing a Gas-Based Methanol Plant," Discussion Brief (Stockholm Environment Institute, February 6, 2018),

<https://www.sei.org/publications/assessing-gas-methanol-plant/>.

Emmaline Atherton et al., "Mobile Measurement of Methane Emissions from Natural Gas Developments in Northeastern British Columbia, Canada," Atmospheric Chemistry and Physics 17, no. 20 (October 19, 2017): 12405–20, <https://doi.org/10.5194/acp-17-12405-2017>.

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Morgan R. Edwards and Jessica E. Trancik, "Climate Impacts of Energy Technologies Depend on Emissions Timing," Nature Climate Change 4, no. 5 (2014): 347–352, <https://doi.org/10.1038/NCLIMATE2204>.

Nancy W. Stauffer, "Assessing Climate Impacts of Energy Technologies," Main, December 15, 2014, <https://energy.mit.edu/news/assessing-climate-impacts-of-energy-technologies/>.

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10/9/2020

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Furthermore, we need to remember the IPCC has a history of successive reports that have had to admit their earlier predictions underestimated the pace at which climate chaos is coming upon us. In fact, the Guardian reportedⁱⁱⁱ, “Bob Ward, of the Grantham Research Institute on Climate Change, said the [Special Report on 1.5 C warming] was ‘incredibly conservative’ because it did not mention the likely rise in climate-driven refugees or the danger of tipping points that could push the world on to an irreversible path of extreme warming.” Modeling in the DSSEIS needs to consider much more dramatic cuts than 45% by 2035. The modeling in the DSSEIS isn't adequate to protect the well-being of Washingtonians and our neighbors around the world. We must not take chances with our general welfare, our economy, and our life support system.

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not considered; and (b) the timeline of 40 years can't be predicted with the certainty needed when making such a grave decision.

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the project. The Department of Ecology should reject this methanol refinery, and deny the Shorelines Permit for the project.

Sincerely,

Mike Ellison, PhD
4303 NE 14th Ave
Vancouver, WA 98663
360-696-4840

ⁱ Intergovernmental Panel on Climate Change, "Global Warming of 1.5 °C," 2018, <https://www.ipcc.ch/sr15/>.

ⁱⁱ Jonathan Watts, "We Have 12 Years to Limit Climate Change Catastrophe, Warns UN," *The Guardian*, October 8, 2018, sec. Environment, <https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report>.

ⁱⁱⁱ Watts.

^{iv} Peter Erickson and Michael Lazarus, "Towards a Climate Test for Industry: Assessing a Gas-Based Methanol Plant," Discussion Brief (Stockholm Environment Institute, February 6, 2018), <https://www.sei.org/publications/assessing-gas-methanol-plant/>.

^v Emmaline Atherton et al., "Mobile Measurement of Methane Emissions from Natural Gas Developments in Northeastern British Columbia, Canada," *Atmospheric Chemistry and Physics* 17, no. 20 (October 19, 2017): 12405–20, <https://doi.org/10.5194/acp-17-12405-2017>.

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^{viii} Nancy W. Stauffer, "Assessing Climate Impacts of Energy Technologies," Main, December 15, 2014, <https://energy.mit.edu/news/assessing-climate-impacts-of-energy-technologies/>.

Beth Hamilton

Dear Ecology

A ship just ran aground on the lower Columbia River this week. We have enough traffic on the river as it is. Nothing is forever, things break, miscalculations and human errors happen. Let China deal deal with this mistake when it happens instead of us.

It's not right that companies and builders have been jumping through hoops to comply with state energy standards just to have China come and use as much energy in one day as some do a year. What is it all for?

How is China helping the globe with GHG? Oh by throwing plastic in the ocean and moving their chemical plants to another county.

Watch the documentary The China Hustle. Eye opener.

Thanks for your time
Beth

Anonymous Anonymous

Thank you for this opportunity to comment on the proposed Kalama Manufacturing and Marine Export Facility. I am a member of the Green Team at Keystone United Church of Christ. As such, I advocate for upholding Washington's climate action commitments.

Clearly the proposed project's expected emissions of GHGs in the range of 4.6 MMT/CO₂/yr to 9.4 MMT CO₂/yr would threaten Washington's GHG emissions goals.

Less clear from the SSEIS is the likelihood of the proposed project's displacing more GHG intensive sources of methanol over a 40 year period given the difficulty of predicting such factors as technological developments, Chinese consumer behavior, and global commodity markets.

The SSEIS assumes increasing demand for methanol, failing to consider the likelihood that China will take action to address the climate crisis that would reduce demand for methanol. As analyst David Roberts writing for Vox (9/25/2020) indicates, China is under great pressure to decarbonize: "China has a lot to lose from unmitigated climate change, from catastrophic floods to worsening heat waves and sea level rise [impacting coastal cities like Shanghai by 2050]..."

A report published 11/20/2019 by The Energy Transitions Commission and the Rocky Mountain Institute, entitled "China 2050: A fully developed rich zero-carbon economy," offers a model for China's becoming carbon neutral by midcentury. The model covers decarbonizing across all sectors, most relevantly the chemical sector, including methanol for plastics through greater circularity of plastics and demand reduction. China is already taking steps in this direction with the prospect of reducing demand by 45%.

Also relevant, the model covers decarbonizing transport, including a transition to all electric passenger vehicles, which would eliminate the need for methanol as transportation fuel. Current policies are fostering this transition.

Also unclear from the SSEIS is in what way the potential for the proposed project's possible displacement of other sources of methanol balances or justifies the expected upstream and midstream emissions of the project.

The SSEIS fails to consider the proposed project's large requirement for gas that would almost certainly lead to the expansion of our gas pipeline system, which in turn would result in additional gas-based projects. that would result in more GHG emissions, significantly more in all likelihood. The mitigation plan is insufficient for not covering emissions from fracking in Canada, shipping, conversion to plastics and use as fuel in China.

I oppose the project for its threat to achieving Washington's climate action commitment.

Susan Hildreth

My comments on the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS are included in the attached file "Kalama Methanol Comments.pdf".

I am commenting on the Kalama Manufacturing and Marine Export Facility Second Supplemental EIS. My name is Susan Hildreth. I can be reached at hildreth@seanet.com.

Extracting natural gas, facility operations, and downstream shipping and product uses all contribute to greenhouse gas (GHG) emissions associated with the proposed Kalama methanol facility.

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, and that it is possible the facility's all-in carbon pollution could be more than double that.

The SSEIS then gives equal weight to falsely deterministic economic modeling that is fraught with speculative assumptions in an attempt to forecast a very bleak future 40 years of human development. The final SSEIS should apply weighting factors that are commensurate with the admitted speculative nature and that eliminate the anti-scientific bias that results in the claim that the project reduces GHG emissions. On this basis the project should be denied a Shoreline permit.

The Final SSEIS Should Correct the Assessment of the Impacts from Upstream Emissions

The draft SSEIS claims a full accounting of emissions from the extraction and transmission of the natural gas used in the project, but the estimate is at least 50% low based on the methods used.

By using bottom-up methodology, the SSEIS fails to provide a scientifically serious accounting of methane. The Final SSEIS should capture methane leakage using satellite-based "top-down" methodology <https://www.pnas.org/content/115/46/11712>.

Furthermore, the SSEIS uses a global warming potential for methane about 30 percent lower than the figure recommended by the IPCC's most recent report <https://www.ipcc.ch/assessment-report/ar5/>. The final SSEIS should consider all factors influencing methane emissions—including temporal variation—by using the IPCC's recommended method to provide a scientific basis for this important policy decision.

In addition, while including speculative future economic scenarios favorable to the project, the draft SSEIS neglects economic scenarios related to transmission, including the limited capacity of existing pipelines from Canadian fracking fields to Kalama. The existing pipelines that transport gas south from Sumas, Whatcom County, lack the capacity to supply the plant. This project, if permitted and constructed would incentivize pipeline companies to build an additional pipeline along the length of Washington's Interstate 5 corridor. The final SSEIS should include GHG emissions associated with this pipeline construction and operation.

This pipeline expansion would likely set the stage for a proliferation of even more gas-based projects in the Northwest, everything from LNG to gas-fired power production to fertilizer manufacturing. If the final SSEIS is to include speculative future market scenarios, this scenario should be added.

Furthermore, the final SSEIS should compare the Kalama investments and investments incentivized by the project to comparable investments in wind and solar energy production, and electric transmission grid improvements which move us to a zero-emissions economy. See <http://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf>.

If market analyses 40 years in to the future favorable to the project are to be used, the final SSEIS should add these market considerations as well.

The Final SSEIS should Correct a Faulty Assessment of Emissions Produced at the Facility

The draft SSEIS uses a global warming potential for methane about 30 percent lower than the figure recommended by the IPCC's most recent report and the final SSEIS should correct this error by using the IPCC recommendation.

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.

Mitigation through carbon offsets do not account for the fact that methane traps sunlight most intensely over a period of 20 years and is many times more powerful as a greenhouse gas than carbon dioxide. This gas will accelerate climate change through 2040, exactly the time when we need to be most rapidly reducing emissions to avert the worst effects of climate change. Emissions should be eliminated wherever they can be short term. The bureaucratic morass that would accompany binding and effective carbon offsets is so immense that it should not be a consideration in whether to approve the Shoreline permit. NW Innovation Works' statement that it will voluntarily offset in-state emissions should be eliminated from the Final SSEIS and the Ecology website. The state made these offsets mandatory as part of an early permit. Existing emission sources should be mitigated instead of expanding the fossil fuel infrastructure into the future.

The State's total GHG emissions in 2017 were 97.5 MMT, which is 7.0 MMT higher than the State's 2020 target. The State's GHG emissions increased from 2012 to 2015 due to increased emissions from the electricity sector and the growth of Washington's carbon-fueled economy (Ecology 2018). Comparable investments in wind and solar energy should be made or incentivized by the State instead, if necessary to meet State GHG emissions targets.

The final SSEIS needs to consider the failure to comply with the State's 2020 and the Shoreline permit should be denied. The fiction of needing to use natural gas as a "transition" fuel is long outdated and apparently is leading to the abandonment of State emissions goals. See <http://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf>

The Final SSEIS Needs to Eliminate or Correct a Faulty Assessment of GHG Emissions Dependent on How the Product will be Used.

Section 3.0 of the draft SSEIS is flawed for the following reasons:

1. It selectively accepts future uncertainties favorable to the project over uncertainties unfavorable to the project.
2. It concludes that China will burn only 40% of the methanol against considerable evidence to the contrary.
3. It compares approval and construction of the project to a future "business as usual" scenario that is arbitrary and unscientific, and weighs it favorably to the project as if it is fact.

4. It credits the project for reducing GHG emissions relative to this arbitrary and unscientific future “business as usual” scenario, when in fact the project increases GHG emissions and the imperative is to reduce GHG emissions.
5. The aggregate result of these flaws is that the draft SSEIS confidently asserts that the project would displace future coal-based production and does not explain how it might displace clean energy.

Selective Acceptance of Some Uncertainties Over Others Needs to be Corrected in the Final SSEIS

Complicating factors in forecasts, price volatility, and sources of uncertainty are described in Section 3.5.2.3 (p.68) of the draft SSEIS. Yet Section 3.4.5 states that “Scenarios with substantially different global policies (fossil fuel/plastics phase outs or bans for example) are too uncertain to include in this analysis.” (p.49).

The final SSEIS should include definition of and comparison with a renewable energy future scenario that realizes WA State emissions targets. Instead, the draft SSEIS accounts for changes in future emissions due to substitution that displaces methanol produced from coal and oil, which will be based on the whims of political entities is not **science** and this is itself a cynical political choice. The final SSEIS should elevate the uncertainties that hold out a positive outcome for the health of humanity and the planet, instead of ruling them out.

The future uncertainties that are accepted and applied in Section 3.0 of the draft SSEIS are consistent with climate catastrophe, and the effects of this on “markets” are ignored.

Expanding the fossil fuel infrastructure in order to bail out the natural gas industry scenario for 40 years is a climate disaster scenario that is not even worth contemplating. You don’t need all the modeling to know that relying on natural gas is better than relying on coal or oil. But that does not mean that a transition through a natural gas infrastructure expansion is a climate solution.

A climate solution should be reflected in the final SSEIS. A transition to wind, water and solar (primarily, see <http://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf>) is a climate solution, and investments in natural gas infrastructure delay this outcome. The final SSEIS should include the scenario where demand for wind, water driven and solar electricity increases, because fossil fuel infrastructure is not expanded via the construction of the facility at Kalama, and those like it.

The Final SSEIS needs to compare these life affirming scenarios to the scenario where the Kalama project, and the many other fossil fuel infrastructure expansion projects that will be encouraged by its approval, go forward.

The arbitrary choices made in the draft SSEIS, as described above, reflect a deeply cynical and politically cowardly bias that favors project approval.

The Final SSEIS Should Abandon or Supplement the Assertion that China will Burn Only 40%

Section 3.4.6.2 (p 53) states, “Given a distribution of end uses (split with 60 percent for olefins and 40 percent for fuel) set at the outset of the model, these shares of the total 3.6 MMT of methanol are held constant throughout the 40-year project timeline.”

This is entirely out of the control of the Department of Ecology and flies in the face of logic and evidence to the contrary. And it results in a favorable conclusion for proceeding with the project. Ecology should instead heed its own assessment of China's plans, quoted below from Section 3.5.1.2 (p.64):

"China accounts for the largest vehicle fleet and transportation energy consumption in the world. Traditionally, methanol consumption as fuel has been in the form of methanol derivatives such as MTBE and as fuel blends ranging from M5 to M30 methanol-gasoline mixes (gasoline with between 5 percent and 30 percent methanol mixed in)."

"China has made significant research investments towards methanol use as fuel (CAERC). Figure 3.5-3 shows that China's consumption of methanol fuel has increased dramatically over the past two decades, reaching an estimated 500,000 barrels of methanol and methanol derivatives in 2016. More than 80 percent of methanol used for fuel is currently consumed for transportation. Regardless of how methanol fuel is combusted, whether by mobile or stationary sources, emissions are the same."

In the face of declining coal use and a glut of fossil fuels for methanol, it is hard to explain why the Chinese are pursuing this project. The answer lies in the fact that while the Chinese-funded methanol company was touting the benefits of producing cleaner plastics to gain approval of the Kalama facility, it was telling its investors that the methanol would help fill China's insatiable fuel appetite for other uses, such as transportation. Wu Lebin, chairman of the Chinese Academy of Sciences Holding Company, the main backer of the Kalama project, publicly stated that the fuel will be burned as feedstock for fuel and industries, according to Oregon Public Broadcasting and supporting documents linked here https://www.opb.org/news/article/methanol-plant-kalama-fossil-fuel-china/?utm_source=Sightline%20Institute&utm_medium=web-email&utm_campaign=Sightline%20News%20Selections.

The final SSEIS should apply a scenario based on 100% of the methanol from the Kalama facility being combusted.

The Draft SSEIS Applies a "business as usual" scenario that is Arbitrary and Unscientific

The "business as usual" scenario applied in the draft SSEIS is rife with uncertainty which the SSEIS acknowledges (Section 3.5.2.3, p.68), while it does not respond to the climate catastrophe that is certain to be consistent with its assumptions. This results in a positive assessment of the GHG emissions benefits of the project that are only relative to a nightmarish reference point: that states and nations fail to live up to their climate agreements. The collapse of agriculture and many other outcomes of this scenario are matters of established science. These outcomes will affect demand for methanol and warrant revised economic forecasting in the Final SSEIS.

The draft SSEIS assumes unchecked growth of fossil fuels for transportation and cheap plastic. Then, relative to that catastrophic failure, it selectively uses dubious logic to show that the Kalama methanol would make things slightly better.

This is cynical and politically cowardly.

The Draft SSEIS Asserts that the Project has No Effect on Supply and Demand for Methanol

The Final SSEIS needs to address the flawed assertion that the Kalama project will not contribute to global growth in methanol production related emissions and in emissions resulting from combustion of the product.

The facility increases GHG emissions and expands the fracking industry, and requires construction of a pipeline that will facilitate other uses of natural gas. These are facts.

The draft SSEIS includes a speculative analysis that Ecology states is essential to understanding how the project would ultimately reduce emissions relative to a “business as usual” scenario for markets if the Kalama facility is not built.

The statement on the Ecology website that “Worldwide demand for methanol is likely to increase in the decades ahead, leading to higher greenhouse gas emissions with or without the Kalama facility” indicates an implicit political bias that should be removed from the final SSEIS. It is absurd logic that suggests that another 100 new global suppliers don’t matter either, so Washington State might as well become one of them. Everyone else is contributing to climate catastrophe, oblivious to impacts of climate change, Washington State should also contribute.

The speculation offered in the report could just as well speculate on a scenario that includes the expansion of the use of water, wind and solar energy to produce electricity, accompanied by public expansion of electrical grid to distribute that electricity. But, “Scenarios with substantially different global policies (fossil fuel/plastics phase outs or bans for example) are too uncertain to include in this analysis.” 3.4.5 p.49 . That statement is flawed in 2 ways—it assumes that bans/phaseouts are the only avenues to a renewable energy economy and it ignores climate catastrophe.

The draft SSEIS fails to consider the scenario where feeding more low-cost methanol into global markets would increase demand—and consumption—of methanol. Despite many pages of economics, the draft SSEIS assumes that changes in supply will have no effect on price, and therefore that methanol consumption is fixed. This assumption is belied by the very fact that China is seeking fracked natural gas products from North America.

In addition, the draft SSEIS does not realistically account for the likelihood that the approval and construction of the Kalama facility 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.

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. Instead the Final SSEIS should count the project’s potential for displacement of clean renewable energy.

Increasing Emissions but Not As Much, When The Fundamental Imperative Is To Reduce Emissions

Expanding the natural gas infrastructure is not moving in the right direction. Global greenhouse gas emissions would increase with the addition of the Kalama facility. The assertion that these emissions might be less than if that demand was met by other sources is in the context of climate catastrophe either way.

The analysis confidently asserts that Kalama's new lost-cost methanol would displace future coal-based production it does not even attempt to explain how it might displace clean energy. It does not, for example, acknowledge that an influx of cheap gas-derived methanol for fuel tanks would delay the much-needed transition to clean electric vehicles.

And, it is doubtful that exporting methanol to China will replace the shrinking use of coal to produce plastics. If anything, it will compete with cleaner processes, including future technologies that may produce methanol from the carbon dioxide in the atmosphere. Methanol from fracked gas only serves to delay new, cleaner technologies.

The final SSEIS must not weigh established and irrefutable science on equal terms with speculation about the course of humanity's political and economic future. Table 3.5-13 (p. 84) needs to be modified in the Final SSEIS to include weighting factors that reflect the uncertainties and speculation, or it needs to be eliminated as irresponsible promotion of climate catastrophe, for the reasons described above.

The SSEIS concludes that Kalama's methanol would prevent coal-based competitors from producing more methanol in the future. This is the source of the alleged greenhouse gas "reductions". But this is not actually reducing emissions in any practical sense or even pushing existing coal projects offline, but rather hypothetically decreasing production from coal-to-methanol facilities at some point in the future. It is a dubious proposition.

With approval of the Kalama facility, Washington becomes a helpless third world country at the mercy of market forces and an extraction industry, being played off against the well-being of the planet. Neoliberal economics is not science, your application of it is a political choice.

The draft SSEIS' claim that the project would reduce net GHG emissions assumes and promotes catastrophic climate failure. It is the State's failure to invest in wind and solar energy alternatives, storage and grid improvements that force this bleak assessment.

Washington State needs to act at every level to limit and eliminate GHG emissions by putting its citizens to work building a renewable electricity infrastructure.

Chris Bauer

The Washington Department of Ecology has set a goal of reducing carbon emissions by 40% by 2035. While I do not believe that goal is ambitious enough to prevent the worst effects of climate change, approving this project will send a message that even this modest goal is not a priority for the state.

Furthermore, on a recent call, it was stated that this proposal does not seek to mitigate CO2 emissions outside of Washington State. The Department of Ecology should consider the totality of projected emissions, even if most of the emissions enabled by a project would occur outside of Washington. After all, this 2035 goal was undoubtedly set with the aim of mitigating the effects of climate change ♦ it does not matter if emissions occur in the US, or in China. We can no longer disregard the harm of outsourcing our pollution to other parts of the world.

Finally, this new refinery would necessitate an expansion of natural gas pipelines in Washington state ♦ this investment in fossil fuel infrastructure would be a misplacement of priority and have the negative effect of lowering the barrier to entry for new emission-heavy projects in the state. For all of these reasons, I believe Washington should reject this proposal.

Cathryn Chudy

I have submitted a number of comments, as well as testified at the public hearings regarding the Kalama Methanol proposal, and have read many of the comments as submitted online here.

I am opposed to the Kalama Methanol proposal and believe that the SSEIS sadly and infuriatingly offers proponents a handy talking point ("good for the environment") to bolster their "red herring" argument that jobs are a valid and driving reason to unleash this obvious boondoggle of a project that will ultimately pollute Washington at the expense of all but those out-of-state investors who promise voluntary "mitigation" but whose concrete plan to do mitigate is nowhere in evidence.

I am including in this comment the following "Note to Ecology" submitted to you by Kalama resident Linda Horst. Due diligence by Ecology should include not only the analysis of greenhouse gas pollution impacts of this proposal, but also the soundness of the company proposing the refinery. We are relying on your decision-making to protect our precious shoreline and ensure a good faith "do no harm" outcome for Washington. It is impossible to conclude (after reading Linda's analysis) that NWIW LLC is a reliable and trustworthy proponent that will do right by Washington going forward.

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 almost 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.

I add my voice in support of these observations and concerns as raised by Linda Horst in the above comment.

I believe that the only outcome "good for the environment" that serves Washington is to allow our state to move forward with the climate goals that have been initiated by Governor Inslee (who has stated he cannot support this proposal in light of those goals).

We need Ecology to do its due diligence by taking into account the shaky foundation on which NWIW LLC actually rests, a foundation that clearly appears to be cobbled together on quicksand rather than built on solid ground. Quicksand will no doubt swallow up any lip service that has thus far been offered to voluntarily "mitigate" the actual harms to Washington that Ecology clearly outlines in its SSEIS.

We ask you to keep the faith with the vast majority of Washingtonians as well as those throughout our region who have urged you to deny the Shorelines permit and ultimately reject the project.

Bryan Smith

I oppose any new fossil fuel infrastructure because it is contraindicated by a clear majority of climate scientists, ecologists, biologists, economists and the IPCC. Renewable energy is now cheaper than fossil fuels, so the only reason the fossil fuel diehards won't yield to alternative solutions **MUST BE** because it allows them to continue their decades-long campaign to capture state, local and federal governments, just as they have done in other developing countries. They have been a slow-motion environmental, social and political disaster for people all across the planet. It's time for you to actually represent people, and stop making excuses for representing corporations. Talk is cheap. It's time to act. Now. Corporations don't breathe dirty air or drink fouled water. They don't have children, feel joy, experience love or suffer pain. They do not live, or die, and they cannot be put in prison. Make the right choice. Choose people over corporations.

Sam Kern

Dept of Ecology–

I am writing to ask your department to reject the NWIW application. I called into one of the public hearings and many of the claims made in support of the Kalama facility cited two things: that the methanol would be used in plastics production, and that NWIW would mitigate its pollution in the area.

On the first claim, it appears Ecology is already skeptical that the methanol would not be burned for fuel. The list of "Preliminary Report Findings" on the WA Ecology website on the project mentions the likelihood of this happening.

On the second claim, I read the SEIS and was concerned to see that it did not include a mitigation plan for regional pollution. I am unsure all of the pollution can be mitigated – an emissions increase in the area can not be undone. Cancer-causing chemicals and air contaminants can not be negated; localized pollution is very hard to mitigate. It would not suffice for NWIW to buy offsets, because the air pollution would be happening adjacent to our communities, where it poses a health risk. This can not be mitigated, even if NWIW HAD gone so far as to release a plan in their SEIS (and it is a problem that they did not do this, while still relying on their private mitigation plan as a selling point to the public).

Additionally, I am concerned about the water usage from the Columbia River. This does not seem like the kind of project worthy of disrupting ecosystems, or laying the foundation for future pipeline expansion. NWIW is giving every indication that this is an anchor project and would likely necessitate further natural gas pipeline expansions in the state of Washington, as (it is my understanding that) the existing pipelines are operating at near-capacity.

Investing in more dangerous natural gas pipelines is not something I hope our state will do, as the Pacific Northwest region has recently experienced multiple natural gas pipeline explosions. The Kalama refinery will open the door to expansion of infrastructure that will put our communities at risk, ESPECIALLY considering that most of the Pacific Northwest region is preparing for the inevitability of a massive earthquake.

I don't think the SEIS is accurate in positing that extractive fuel sources will increase in demand at the proposed rate. This seems highly speculative – between the time the first SEIS was filed and the second SEIS was submitted, major changes have been made in the global economy that indicate a shift away from extractive fuels. For one thing, massive investing firms like Blackrock and global buyers like Google, Microsoft, and Amazon have announced transitions away from extractive fuels. China itself has announced new energy plans that indicate a desire to move away from polluting fuels. I do agree that we will not likely see plastic production slow any time soon, but considering it's highly suspect that this is what the Kalama refinery will be solely used for, I think that the SEIS relying on old market trends to justify its necessity is suspect.

As a final point, this is not the kind of investment that signals an interest in public health, public safety, or a responsible future for our state. I urge you to deny the Kalama refinery proposal.

Linda Horst

The following three security issues present significant potential risks not only in Kalama and Cowlitz County, but to our state as well. The common thread tying the three together is foreign ownership and management of the proposed KMMEF refinery in Kalama.

Before discussing the three risk factors, I will clarify who owns and would manage the NWIW refinery.

NWIW LLC (WA Secretary of State ♦ no active L&I license ♦ no covered employees) is majority or wholly owned by a U.S. company called Pan-Pacific Energy Corp. (PPE) Delaware LLC. This corporation is registered with the WA Secretary of State ♦ UBI 603 371 412 as a Foreign Profit Corp. with 11-20 workers. PPE is majority or wholly owned by a Chinese company called Shanghai Bi Ke Clean Energy Technology Co. Ltd. (commonly called "CECC". Most shares (45%) of CECC are owned by the Chinese Academy of Sciences Holdings Co. Ltd. (CASH), which is a state-owned company and the investment arm of the Chinese Academy of Sciences, a Chinese government agency. The other significant (44%) shareholder in CECC ♦ called Double Green Bridge Hong Kong ♦ appears to be composed of managers of CASH. The Chinese Academy of Sciences controls the methanol proposal and merely "uses the dab of Northwest Innovations Works." The Chinese government has legal or actual control over NWIW.

Having learned that this whole endeavor would be owned and operated by the Chinese government, I find the three security risks listed below of grave concern and urge Ecology to address them in preparing for the FSSEIS.

1. Foreign Control of Infrastructure

The future viability of our three key arterials (rail, interstate and water) could be in question if this refinery is built. This threat to our infrastructure systems has to do with size, location and ownership.

There are seven methanol refineries in the U.S. The largest is on 1,000 acres, and the smallest on 230 acres to provide sufficient buffer should there be a spill or explosion. The proposed Kalama refinery is almost as large as all seven existing methanol refineries COMBINED! Knowing this, the size and location of the NWIW refinery could not be worse.

This proposed world's largest fracked gas-to-methanol refinery would be built on a mere 92 acres, literally adjacent to BNSF rail line, approximately an 1/8 of a mile from I 5 and on and in the Columbia River with no buffer protection of additional acreage! Should there be a worse-case explosion at the refinery, all means of transportation (rail, interstate and water) for commerce, first responders and personal use would be destroyed leaving the northern and southern sections of I 5 and BNSF rail completely cut off at Kalama taking years to replace at an astronomical price.

It is important to remember that this is not a harmless widget factory. This refinery could best be described as a toxic, volatile petrochemical behemoth encompassing the entire 92 acre site.

To understand the potential dangers inherent in a facility like this, I will briefly discuss a few of those dangers.

NWIW assures that the methanol storage tanks are designed to withstand a 9.0 earthquake. Considering these eight 105' x 145' tanks, each holding 9.4 million gallons of volatile methanol, would be located on: soils with a moderate to high risk of liquefying in an earthquake; the same fault line that shut down Trojan; 36 years of dredged spoils (fill); a designated floodplain....defies logic! Fill, floodplain, fault line. A true 'perfect storm' for disaster!

BNSF passenger service speeds past the east end of the refinery at 79 MPH. Two of the massive 9.4 million gallon methanol storage tanks are located at that far NE corner of the site close to the BNSF tracks. Train service numbers approximately 39 trips a day of varying types. The thought of one derailment into those storage tanks is horrifying.

Another area of concern is the proposed 24" fracked gas pipeline needed to service the refinery. This line would run under the BNSF tracks and all six lanes of I 5. Soils are questionable in this area concerning movement putting pipelines at risk for rupture and explosion. I vividly remember witnessing the rupture and explosion in 1997 of the NW Pipeline due east on the Kalama River hillside at Mahaffey. The fireball could be seen for miles and pelting rock and debris showered down a mile away.

Tragically, there could also be numerous threats to our beautiful Columbia River from increased shipping traffic to and from the refinery. 800' - 1,000' Panamax ships (unaccustomed to the Columbia River) carrying 14 million gallons of methanol would make 72 - 144 round trips in the river's rather shallow 43' channel. More unsettling is knowing that a minute spill of only a gallon of methanol into 198,000 gallons of River water would kill all marine life!

2. Foreign Control of a Major Energy Asset

If this refinery is approved, another glaring security risk would be the staggering amount of fracked gas consumed each day ♦ more than all gas powered plants in WA; more than all industry in WA; more than all homes; more than all commercial businesses in WA. At this massive consumption rate, WA residents and industry would be competing with the Chinese government for our own resources! This exploitation by China of our natural resources would create long-term impacts on U.S. energy resources creating a national security risk.

The stark reality for Washingtonians is this... if the Kalama methanol refinery gets built, China will control ALL of the excess fracked gas capacity in the state. Thereby controlling ALL new or existing gas industries future plans to build or expand here in WA. Is this the future we want to see for our state?

3. Foreign Ownership and Entanglements

The unvarnished truth: The government of China wants methanol and they are using our money and our resources to get it!

The Chinese government's quest to control the world's technology and energy natural resources by 2030 was recently highlighted by Attorney General Barr: "The ultimate ambition of China isn't to "trade" with the United States. It's to "raid" the U.S."

This refinery proposal is a prime example of Attorney General Barr's remarks. China's voracious appetite for our vital natural resources would unequaled!

To add insult to injury, are China's numerous brazen schemes to make sure Washington taxpayers and U.S. taxpayers pick up the "tab" for the cost of the entire project.

One of the most blatant and outrageous schemes: NWIW wants U.S. taxpayers to bear the full financial risk up to \$2.1 billion if the refinery fails! NWIW is asking the U.S. Department of Energy for a loan guarantee. If NWIW goes bankrupt, the federal government (U.S. taxpayers) could be responsible for paying some or all of the \$2.1 billion cost of building the methanol refinery.

China's evading financial responsibility for the building costs of the refinery go hand in hand with ensuring that financial responsibility for any accidents or any worse-case explosions at the refinery would be minimized and capped thru Limited Liability Co. designations for NWIW and it's parent company Pan-Pacific Energy Corporation, a Delaware LLC. Just one more way Kalama, Cowlitz County and Washington state will "be left holding the bag" courtesy of China!

It should be noted that according to NWIW, the refinery components would be built in China and assembled here. One more half truth promised to local union workers. So much for "Made in America". With China you get "Assembled in America". And with "Made in China" you get China's specifications and quality (?) controls not ours!

I urge Ecology to be mindful of these three security risk issues that I have previously detailed. I believe that they have been overlooked during the entire five-year EIS process.

I thank you for extending the public comment period and ask you to deny the permit.

Dear Department of Ecology,

You have a responsibility to protect public health, the environment and our region's climate pollution. Do what is right and deny this project.

The SSEIS speculates that building this refinery would displace other fuel facilities. The economic model of methanol replacing dirtier production methods and the model that a certain percentage of the methanol will be used as fuel are based on assumptions. There is no evidence that other facilities will be displaced in the near future or within 40 years. Think about how much has changed in the energy market in the last 40 years. We should be working to move away from fossil fuels and away from fracking. These assumptions presented in the SSEIS are far too speculative over such a long period of time.

This SSEIS provides too little detail on the actual mitigation that would be accomplished within the voluntary mitigation framework. And who would actually hold them accountable? The mitigation does not address the full impacts of NWIWs emissions that will occur overseas. The mitigation framework is too vague for Ecology to conclude that the impacts for this project will be mitigated.

The SSEIS confirms that NWIWs proposed methanol refinery would become one of the greatest sources of climate pollution in Washington. It is unacceptable for Washington to build the worlds largest methanol refinery based on speculative analysis and hope of theoretical emission reductions. This would be the cause of millions of tons of greenhouse gas pollution each year, and is inconsistent with achieving Washington's climate goals.

You have a responsibility to protect public health, the environment and our region's climate pollution. Do what is right and deny this project.

Thank you,

Jennifer Johnson

Sally Keely

KMMEF will emit 62 tons of particulate matter annually. Particulate matter is known to carry Sars-Cov-2 virus (COVID-19) per <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7345938/>. Areas of high particulate matter also have high rates of coronavirus infection and death. Ecology should DENY any chemical or petrochemical plant that will increase atmospheric particulate matter so as not to increase pathogenic transmission on the PM particles. PLEASE deny Kalama methanol if for no other reason.

Anita J. Thomas

My friend of blessed memory, Bill Brake, worked in the petrochemical industry for 35 years, gaining considerable expertise in the workings of oil and gas facilities. In his retirement, he often gave expert testimony concerning such facilities. In January, 1980, when he was working the night shift in the Texas Panhandle town of Pampa, he felt the shock wave 50 miles away when a gas refinery in Phillips, Texas, exploded. The people survived despite some damage to their homes, but the explosion took the refinery and the town's economic base when it blew.

Not long before Bill's untimely death in 2017, he was able to examine the proposal for the NWIW facility in Kalama and noted a host of failings that made the whole project a disaster in the making. Even if the proposed facility worked as designed, it would produce unconscionable levels of greenhouse gases as inevitable collateral damage, but greenhouse gas emissions would explode astronomically in case of a tragic accident. The intervening time since Bill's death has seen changes to the NWIW proposal and three EIS statements that leave a fatal flaw at the heart of this facility untouched. The core of the problem is a disastrous disregard for basic safety built into the very concept and design of the proposal. As I am not the expert that Bill Brake was, I can list only the most rudimentary and egregious errors that seem most dire to me.

First, there are daunting external factors that are already accidents waiting to happen. To start with, the proposed site location is on shoreline fill and thus a liquefaction zone in case of significant earthquakes. The risk of ruptures, explosions, and fires is unacceptably high, including attendant increase of GHG emissions.

Next, there is the size of the project, with its massive use of Columbia River water and heating of the river. Fish kills due to overheated water would cause methane and other noxious gas emissions. Further, there is the terrifying risk of a BLEVE (Boiling Liquid Explosive Vapor Event). Even if a BLEVE were triggered by some unaccountable circumstances, such an accident would launch a breathtaking chain of destruction, due purely to the laws of physics. If the BLEVE were released at speed into the former Trojan Nuclear Site, the resultant multiplication of GHG emissions would be incalculable, not to mention disastrous to the people and community affected. Looming over any major accident is the proximity of the railroad, I-5, the community of Kalama itself, and the surrounding forest. In the case of the trees, fires would more than double GHG emissions, since the trees would be transformed from absorbers of CO₂ into emitters of it in the course of combustion.

If the external factors just enumerated were the primary problem, that should be more than enough to stop the project. However, the deeper, inherent problem of human error is all but guaranteed to bring on one or more of the above problems because of the incomprehensible disregard for safety in the design and execution of this proposed refinery. To wit:

Northwest Innovation Works, LLC has no refinery employees.

NWIW has no active license with L and C.

NWIW has no income from methanol sales.

NWIW has no assets.

NWIW has no documentary evidence of credentials.

NWIW has no experience building or operating a methanol refinery. (Components would be

assembled in China and shipped over here.)

NWIW has no EPA approval for the ULE technology which is supposed to decrease GHG emissions. No methanol refinery has ever used both ULE and ZLD technology together.

All the above is horrifying enough, but the staggering incompetence outlined here goes even further. First, the design is experimental. There is only one similar refinery in the world, in Australia, It is not run by NWIW which has no experience with it. Second, according to Bill Brake a facility handling the capacity proposed by NWIW would require a minimum of 500 square acres; the Kalama proposal is for about 98 square acres. Texas has a century of experience with refineries and has come to this well established practice from hard lessons won from previous gas refinery explosions.

So NWIW is proposing to build the world's largest fracked-gas-to-methanol refinery using an untested, experimental design on the equivalent of a postage stamp sized tract of unstable fill half a mile from a nuclear storage facility, with no experience in building or operating a methanol refinery, no refinery employees, no credentials, no assets, no income from methanol sales, no L and C license, and no EPA approval for one of their GHG removal technologies, and no president anywhere for using their two GHG removal technologies together. How in the name of all good common sense has the NWIW proposal possibly made it this far in the process?

The decision you make surely includes an economic cost benefit analysis, weighing the projected jobs in Kalama against possible risks to the health, safety, and general welfare of the local area. It is incumbent on you to do due diligence, weighing the true magnitude of the genuine risk involved against the largely illusory jobs promised.

There is a precedent here which provides a cautionary tale. When the Alaska Pipeline was proposed, Alaskans were promised jobs. However, once that pipeline was approved, most of those jobs went to experienced workers from Texas and Oklahoma, one of whom was my father, a Texan. In an NWIW hearing about 4 years ago, two of the people in the crowd that I talked to were from Texas. Our local people would hardly have a fair chance against experienced workers here.

Finally, the cost benefit analysis should contain liability insurance considerations. I have found no figures available on the proposed liability limits. It is hard to imagine any adequate insurance for the proposed refinery. I fear Washington taxpayers would be on the hook for whatever shortfall there would be. In the case of the gas refinery explosion at Phillips, Texas, the loss of the town's economic base was devastating to its residents. The loss to Kalama and its surroundings would be indescribably worse, possibly on the order of the recent explosions in Beirut, Lebanon. I feel sure I would feel such an explosion at Kalama here in Vancouver. Please, please deny the Shoreline Permit.

This testimony is dedicated to the memory of William Brake.

Thomas Gordom

The leakage rate in the SSEIS does not reflect the conclusions in other studies which go up to 3%. Some of the factors which influence this rate include the number of leaks in the US natural gas distribution system.

The American Chemical Society in Environ. Sci. Technol, Publication Date: June 10, 2020 in the article:

A National Estimate of Methane Leakage from Pipeline Mains in Natural Gas Local Distribution Systems

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While this article does not address the gas line to Canada specifically, it shows that gas line leaks are wide spread.





Also, the following article addresses the pipes themselves:

Supporting information for a national estimate of methane leakage from pipeline mains in natural gas local distribution systems

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Zachary D. Weller, , Steven P. Hamburg,¹ and Joseph C. von Fischer 
Department of Statistics, Colorado State University, Fort Collins CO USA

Our leaks per mile analysis (Section 3 of the main text) indicated that activity factors (. 212  are a function of both pipe material and pipe age. Furthermore, activity factors increase (. 213  exponentially with age. Current PHMSA reporting does require the reporting of the join (. 214  distribution of pipeline age and material, nor does it report the exact age of pipe more than (. 215  80 years. Requiring utilities to report these data would improve our estimates of the total (. 216  number of leaks and thus the total emissions from local distribution systems.

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Activity refers to the leakage

Types of gas lines and the pressure in them affect the leakage rate too.

These pipelines ♦ including flowlines, gathering lines, transmission lines, distribution lines, and service lines ♦ carry gas at varying rates of pressure. The higher the pressure of gas in a pipeline, the more potentially dangerous an accident with that pipeline could be.

Pipelines usually are ♦ buried underground, and pipeline markers do not always sit directly above the pipelines.

Flowlines

Flowlines connect to a single wellhead in a producing field. Flowlines move natural gas from a ♦ wellhead to nearby storage tanks, transmission compressor stations, or processing plant booster stations. ♦ Flowlines are relatively narrow pipes that carry unodorized raw gas at a pressure of approximately 250 pounds per square inch (psi).

Typically, they are buried 4 ♦ feet underground and ♦ can corrode, especially if they are carrying wet gas. They also are ♦ prone to methane leakage. According to the EPA, "methane leakage from flowlines is one of the largest sources of emissions in the gas industry."

Gathering Lines

Gathering lines collect gas from multiple flowlines and move it to centralized points, such as processing facilities, tanks, or marine docks. ♦ Gathering lines are medium steel pipes (usually less than 18 inches in diameter) that carry unodorized, raw gas at a pressure of approximately 715 psi.

Typically, gathering lines are buried 4 ♦ feet underground and ♦ carry corrosive content that can affect pipeline integrity within a few years.

Transmission Pipelines

Transmission pipelines carry natural gas across long distances and occasionally across state boundaries, usually to and from compressors or to a distribution center or storage facility. ♦ Transmission lines are large steel pipes (usually 2 to 42 inches in diameter; most often more than 10 inches in diameter) that are federally regulated. They carry unodorized gas at a pressure of approximately 200 to 1,200 psi. ♦

Transmission pipelines can fail due to seam failures, corrosion, materials failure, and defective welding.

Distribution Pipelines

Distribution pipelines, also known as "mains," are the middle step between

high-pressure transmission lines and low-pressure service lines. Distribution pipelines operate at an intermediate pressure. ♦ This type of pipeline uses small to medium pipes (2 inches to 24 inches in diameter) that are federally regulated and carry odorized gas at varying pressure levels, from as little as 0.3 psi up to 200 psi.

Distribution pipelines typically operate below their carrying capacity and are made from a variety of materials, including steel, cast iron, plastic, and occasionally copper.

Service Pipelines

Service pipelines connect to a meter that delivers ♦ natural gas ♦ to individual customers. ♦ Service pipelines are narrow pipes (usually less than 2 inches in diameter) that carry odorized gas at low pressures, such as 6 psi. ♦ Service pipelines ♦ typically are made from plastic, steel, or copper.

Therefore, the leakage rates are at best estimates so the higher values are closer to the actual amounts lost due to limits in testing, the distances the lines travel, and the size and pressures in these lines.

This refinery contributes to the total green house gases more than can be estimated with the low figure in the SSEIS.

Please deny this permit and the refinery.

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Enji Cooper

I oppose the Kalama Methane Refinery.

There are better ways to produce longterm jobs using green energy, as opposed to short term jobs using fracked methane which has a high capacity to pollute the environment when transported over long pipelines.

I oppose this boondoggle of a proposal.

Jennifer Vinnard

As this is the last opportunity to comment, I'd like to reiterate the facts that have so many of us concerned, some have no bearing on your decision, but they're vital pieces of the risks outweighing any possible rewards.

Knowing that in the event of a leak or explosion, a 17 mile radius would need to be evacuated around this methanol refinery. Of the 7 methanol refinery's in the US, they're all built on lot sizes that include a buffer zone, ranging in size from 230 acres to 1,500 acres...this proposed refinery..the World's Largest..would be built on a mere 90 acres, in extremely close proximity to our only freeway, railway, and shipping lane..there is no buffer zone! Any damage to the I-5 freeway will cripple our transportation system for months, with only a 2 lane HWY on the Oregon side of Columbia River to navigate around the damage..it cannot handle the traffic load of I-5!

NWIW has fought against providing unbiased and accurate data, threatening Ecology to try and force approval of the permit, and has been caught in lies about their intentions for the methanol produced. NWIW's PowerPoint presentation to investors made it crystal clear that fuel is their objective, despite their claims that this refinery would be a methanol to olefin's ONLY plant, that zero amount would be used for fuel, they lied to everyone's face, and yet Ecology has only calculated a scenario of 40% methanol used for fuel..please calculate 100%, or at least 75%, that is a more likely scenario than 40% given China's projected use of methanol for fuel in automotive, shipping, industrial and more fuel applications, listed in the information they used to snag investors. The speculation that this refinery would displace coal use in China comes with absolutely zero evidence to support the claim,there is however plenty of proof that the opposite is true. A recently discovered document exposed China's 5yr economic plan is to build coal power plants in each province by 2023,the Chinese Government approved \$6.7 billion in new coal mining sites just last year, their consumption and demand has only increased each year, including their coal import amounts, and their newly signed plans to achieve carbon neutrality by 2060 does not mean a reduction in carbon/ghg emissions, rather an attempt to emit the same amount of good to bad..so they can emit high amounts of ghg emissions and still give the appearance of trying to help reduce ghg emissions.

With a minimum of 4.6 million tons of ghg emissions per year being pumped into our air, water and land, we will be inundated with a constant barrage of dangerous chemicals entering our lungs every day..how is this in any way acceptable?

Being built atop dredged topsoil, in an area already subject to potential liquifaction during an earthquake, the risk of failure is amplified.

The pipeline, which is already strained, will use more natural gas per day than all of Washington's gas power plants combined..causing shortages and price increases for customers, locking out future potential businesses, and running high risks of ruptures due to the landslide prone hills it's built on, as well as the lateral pipeline to the plant..the pipeline has already ruptured twice in recent years due to land movement..it will continue to occur, not to mention the effects on our electrical grid!

The promise of local jobs was used to lure residents support, those who thought that meant Cowlitz County, but the reality is that few people living here would actually be able to obtain work there.

NWIW has said 10-20% of workers would be local, and the new NWIW/POK lease states a minimum of 80 workers would be employed there..that's 8-16 people who live within an hour and a half drive, the rest will be relocated here from China, Texas and other states with methanol

refinery's.

A projected state tax profit of \$40 million a year, with \$143 million in write offs and tax breaks..that's not worth the risks..we make 10X that on cannabis taxes, without all the negative consequences! My family and thousands of others are adamantly opposed to this refinery, will move if it's approved, we can't watch our amazing town be destroyed by this pollution nightmare. Please deny the permit, let us shed this agonizing stress from our lives..we can and will find better industries for truly local jobs without all the negative impacts. Thank you for your time, please, please deny this permit! Sincerely the Vinnard family, Kalama.

Thomas Gordon

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This refinery contributes to the total green house gases more than can be estimated with the low figure in the SSEIS.

Please deny this permit and the refinery.

Christopher McElroy

My name is Chris McElroy. I am a 23-year-old electrical engineer. I just moved to Redmond, Washington five weeks ago. In large part, I moved here because it's a beautiful natural area and it provides a lot of wonderful spaces for hiking and climbing. I want to live here for a long time, but just after moving here,

the air became so toxic that I feared going outside for almost 10 days.

This is disgusting and embarrassing, and that we have a duty to act. I believe that the current SCIS is flawed because it is based on models that go 40 years out, but still includes significant methanol use decades from now. We don't know what an ethanol use will exist in the year 2060, but this would mean locking a bet that almost nothing will change in the next 40 years.

This is ludicrous goes, against our state goals and sets a terrible example for the rest of the country and for the whole world. The dramatic reminders of climate change this summer are already inspiring dramatic legal action to restrict fossil fuel use around the world and that's likely to just continue and continue accelerating. The bare minimums given by the IPCC report in 2018 require reducing the minimums for fossil fuel use to less than 50% of what it is now in the next 10 years and basically 0% of what it is now in the next 30 years.

These considerations are not included in the SCIS. This represents either blindness to the sociopolitical changes that are clearly coming or a completely disingenuous report. Assuming that methanol use will continue to occur elsewhere at roughly the same rate in the future invalidates this addition to the EIS. I am calling on the department of ecology to reject them methanol refinery. Thank you.

Claire Richards

My name is Claire Richards and I live in Spokane Washington. I'm a nurse scientist, a professor of nursing and a member of the Washington physicians for social responsibility. I am 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.

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 the smoke inside. Even staying inside, I felt so crummy that I worried I was sick with COVID. Many people don't even have filters at all or were forced to work outside, and this is a major issue of health equity.

Many other low and middle income countries in the world are unfairly suffering even worse impacts that 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.

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 the science says about climate impacts, we know that wildfires will increase. It's a fairy tale to describe a staggering increase and create greenhouse gas emissions as a decrease in emissions or a flattening of a curve only because it's being compared to a steep and unrelenting carbon permissions. Thank you.

Columbia River Keeper

My name is Dan Serez and I'm the conservation director with Columbia Riverkeeper. Over the 40 year lifespan of the proposal, the project will cause the emission of roughly 184 million tons of CO₂. That's on the low end. If the methane leakage rate is 3%, the number of tons of carbon pollution is higher. If all of the methanol is burned as fuel, the number is higher.

Burning all or most of the methanol for fuel is a likely scenario clearly expressed in NWIW's investment overview for potential investors in the project in 2018 and 2019 NWIW spent five years attempting to mislead the public and regulators about the purpose and impact of this project. Only when a potential investor leaked NWIW's real plans, did we learn that the company fully intended to promote methanol as a fuel.

Unbelievably, despite having told this story to potential investors and NWIW still denies it's fuel burning plants. The company even denies these plans despite having announced a partnership with a company that develops methanol burning ships. NWIW asked us to believe the following, it will build the world's largest methanol refinery, promote the use of methanol for fuel to investors, partner with a company that makes methanol burning ships, use these ships at the NWIW refinery, and never see any of the methanol from the NWIW refinery used for fuel. This is absurd on its face.

Ecology should not reward this ham-handed duplicity with a permit. Northwest Innovation Works invites Washington to knowingly and significantly increased greenhouse gas emissions based on the assumption that others will do the same. Yet Washington has stated its intention to work towards reducing emissions and meeting a goal of limiting warming to two degrees Celsius or less.

>> Daniel, I'm going to have to ask you to provide the rest of your comments in writing. You've reached your two minutes mark.

Earth Ministry

I'm Frank Turner from Olympia. I'm speaking as a member of earth ministry and I'm asking you to deny the shoreline permit for the methanol plant because of climate change considerations. I recognize that the plant means tax revenue and jobs for Kalama but we're ruining our whole planet. We have to take care of it. We have inherited this planet from our ancestors. We're borrowing it from our descendants. What kind of planet will we leave them with?

My objections to the proposed methanol plant go way beyond the risk to the shoreline of the Columbia. The plant will use natural gas from hydraulically fractured wells. These leak methane into the atmosphere. They will continue to leak methane after they are abandoned. These leaks will be our responsibility for centuries. Capping these abandoned wells will not prevent methane from moving through the fractured rocks to other uncapped wells or to groundwater. Why should we do anything to support fracking?

At the other end of this complicated industrial process with the products is producing, plastics. We're just becoming aware of just how big a problem this is. Tons of discarded plastic will be our responsibility too. Like the Governor, I cannot in good conscience support a project that will cause so much ecological damage. Our neighbors in Kalama will benefit equally if the land can be used for more eco-friendly projects such as a solar panel manufacturer. Let's move on to something else. Please use your influence to stop this project for us. Thank you.

Harriet Cooke

My name is Harriet Cook. I'm a retired physician with two children and my first grandchild on the way. That prospect terrifies me in this time of environmental degradation and advancing climate crisis. I live in Oregon, but climate change has erased the borders of our jurisdictions. What happens in Kalama affects Oregon, California, and the world.

Washington must hold the line and reject Northwest Innovation Works' proposal to build and operate the proposed refinery. We've heard testimony about the misleading claims and accounting of the projects upstream and downstream and climate pollution. I've heard that olefin plastics are essential for the products we deem necessary for a lower-carbon way of life.

We can find alternatives and build safe markets. This will be less likely if we maintain this toxic status quo. Just because there's a market for something, doesn't mean we should continue to support that market. From narcotics to fossil fuels, it's time to change our market. We need our engineers and construction industry to develop renewable energy projects and biodegradable products that do not contribute to life threatening pollution from methane and carbon to plastics and toxic chemicals.

We need cradle to grave responsibility in our industries. Have you seen the documentary Who Killed the Electric Vehicle? The issues with alternatives are political. It's our job to say no, we cannot keep building fossil fuel infrastructure and address the catastrophic climate change.

The recent overwhelming fires and hazardous air we all suffered should remind us how immediate our problem is, for the community of Kalama for our children and grandchildren and for our climate and forests and oceans and famine, we need to change how we do things. We need ecology to do its part and keep Washington on track to meet its climate goals. May you have the courage to stop this dangerous project.

Emily Chang

Hi, my name is Emily Chen. I live in Olympia. I'm a mother of two adult children and was a new immigrant 13 years ago. I worked for a popular school district and was a [inaudible] faculty of CWU biology department teaching environmental study in high school running STAR program. I am very concerned about our environment as well as our economy following real science respecting government regulations, community empowerment, setting high standards, leading by example and doing our part.

I support this project in two aspect. First, USA has the highest proficiency in technology and high standard regulation in maintaining housing environment. Instead of letting other countries pollute the global environment, we should act to solve the global pollution problem by lowering global greenhouse gas emissions. This project is exactly to do that.

Secondly, looking around our economic surroundings, especially under the impact of COVID. We need a company like this to support our local economy. Instead of passively rejecting all development, we need a plan to wisely use our natural resources for the benefit of our common good. I believe this project will just do that for our community.

I'm in support of the Kalama project. I appreciate the review done by the Department of Ecology. I believe right now, it's time for us to act and support the department to permit this project to proceed. Thank you.

Heidi Cody

My name is Heidi Cody and I live in Vancouver. I'm here tonight because I'm concerned about the state of the planet we're leaving for future generations. I have an eight-year-old daughter. I've been mulling about the value of fear recently, specifically fear as it relates to acting to protect our climate and environment. I was told once not to talk about how short of timeline we actually have 10 to 12 years to get to a carbon neutral economy because it would scare the officials I was talking to.

Better to talk about a goal of 2030 maybe 2050, a more comfortable doable guideline. Here's what I'm afraid of, what if 10 years is actually optimistic to transition to carbon neutral economy. The five days we just spent locked up indoors from forest fires smoke make it obvious we need to act now. We have to stop opting into huge fossil fuel based projects. Instead, we need to opt out of them.

We need to act decisively to protect our future while we still can. We are at risk of burning up. This fracked gas to methanol factory is an opportunity to opt out the colossal amount of toxic GHG emissions from this Kalama plant could cause irreparable harm to our environment. Methanol is notoriously leaky from extraction to transport to delivery and refining. It is 84 times more potent than carbon dioxide. All of this environmental damage, all of this risk, so China can make more plastic or is this so China can burn the methanol?

Northwest innovation works is talked out of both sides of its mouth about this plant's true purpose. There is no reason to trust Northwestern Innovation Works. Here in the Cascadia subduction zone. we are overdue for a huge earthquake. We might not be able to recover from a large-scale accident. I call him the department of ecology to reject this methanol refinery. Thank you.

Holly Masri

My name is Holly Masri and my family has just moved to the Kalama area. I'm hoping to have grandchildren here. I want this place to stay beautiful, to stay healthy and safe. I was absolutely horrified when I heard about this methanol and refinery project. The EIS shows that the project would be a disaster of epic proportions, not just for us in Kalama, but for the Pacific Northwest and the world.

The mega corporations behind this and the people they've hired to sell it to us keep saying that this project is actually good for us. Good for the climate. They're lying through their teeth. The figures show that no matter how you look at it, this project would be one of the worst polluters in the state and that's at best. By the time you add in all the factors, the facility could produce as much as 9.4 million metric tons of carbon pollution per year.

The project's backers say that this project is safe, but projects like this always have spills, leaks, and explosion. There will be toxic waste to quietly dispose of, and then we'll find out where they hit it decades later. They say that it won't cost us a thing, but already they're exploiting every tax loophole there is and arranging for the public to pay for most of what they want to do.

I call an ecology to reject this misbegotten nightmare of a project. We are already in deadly danger. All of us are already feeling the effects of all the previous fossil fuel projects, which were supposed to bring good jobs and money to our communities, which were supposed to be safe. I'm reminded of the story about the camel that asks to put its nose inside the tent but if you let them nose in, the whole camel is sure to follow. This is not a friendly camel, no matter how big his smile and not friendly not safe. Thank you.

Elizabeth Sataico

My name is Elizabeth Sataico. I'm a full blooded [inaudible] married to a [inaudible] Robert Sataico and I oppose the methanol plant going up down South. That is South of me. Tacoma refused this methanol plant a few years ago, unanimously. We stood against it and we stand with our partners down South to oppose the methanol plant to go up.

They're trying wherever they can to get a methanol plant in the state of Washington. I refuse to give up and I'm going to continue making my stand opposing the methanol plant. Please, please stand with me and oppose the methanol plant going up in the state of Washington. We are too beautiful of a state. We have too many resources that can be ruined by this. I would like to thank the board for me, trying for the third time to have my say. Thank you. Good night.

Jane Smiley

In honor of Ruth Bader Ginsburg, I thought I should get off my bottom and get involved. Now I would like to offer a quote of Carl Sagan. Anything you're interested in or want to do, is not going to happen if you cannot breathe the air or drink the water. I don't think there's anything more that needs to be said. Reject this proposal. Thank you.

Marian Fish

this is Maryann Fish. I would like for my husband Rick Rappaport, to be able to follow me.

>> [inaudible]>> I'm a retired chiropractic physician residing in Portland, and I am 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 I've loved being on the shorelines of our great waters while camping, rafting, kayaking, hiking, and cycling. There was 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.

The Shoreline Management Act states, 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 the use of Washington 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 set forth in its website that Washington is a national leader in cutting greenhouse gas emissions to prevent climate change. Ecology stands proud to protect, preserve and enhance Washington's environment for current and future generations.

Again, words matter. 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 than 14,600 days of this project's length that applicant's insists will be high demand for its product. By the way, they're making fuel like they told our investors are plastics. They lied to you.

>> Maryann, your two minutes are up, it's okay to pass the call onto Rick, but we need to keep everything into two minutes, and additional comments can be submitted in writing.

Rick Rappaport

Thank you. I want to touch on two topics that are constant refrain from our proponents, One, we need jobs. It's good for our family, it's good for our economy, good for our spiritual health. The underlying implication, environmental that's the do-gooders are taking food from our babies. I reject those testimony implications here that there are opposing sides. One's right, one's wrong.

We have a common interest in human survival and sustainable livelihoods. An unattributable quote. If God had intended some people to fight just for the environment and others fight just for the economy 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. We all work, we all need a livelihood, we all need a livable planet. We don't address both. We starve together while we're waiting to fry together.

Two, most of the proponents have latched on to the Nick's charts and explanations showing just how much better this is going to be than using coal. It's a hard argument to counter. They're right.

The project would have lower emissions, but comparing two huge greenhouse gas emitting projects to each other, can't be a way to evaluate it unless you have 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 China will never ever build another coal fire plant producing methanol if this one is built.

Testimony of unemployed trade union workers, tears in everyone's hearts. Stories of climate catastrophe, tears at everyone's hearts. 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. Yours is more limited.

Your job is to protect the environment for future generations as stated in your mission statement. Viewing this project is a standalone one and not making these assumptions, the project surely fails by the millions of tons of greenhouse gases it will emit.

Janelle Rich

Good evening, my name is Janelle Rich. I am a resident of Centralia, Washington. I'm asking the Department of Ecology to reject this project and permit. While we are trying to move beyond coal, natural gas is not our next sustainable answer. We are in a climate crisis, we need to employ practices that are on our path to better energy sources, not a band aid source.

Fracking required for natural gas refineries is not our safest or cleanest answer to address climate crisis. Methane escapes the atmosphere during the fracking process at underestimated levels, it is a powerful greenhouse gas. There are albeit rare chances that fracking can contaminate our waters. There's also no debate that the fracking process causes earthquakes through the disposal of wastewater back into the grounds.

We don't need to be involved in shipping our natural gases to China while our local environment suffers. That's creating the circle of the same damage and not breaking the cycle. Natural gas refineries are not an unmitigated evil however, it is not our best option to seriously address the climate crisis. We need to invest in renewable energy sources and within that there are the jobs that the opposing side claims they need so badly. Thank you for your time.

Janet Kirkland

My name is Janet Kirkland and I'm a proud Oregonian, parent, psychologist, and concerned citizen. I've come tonight to speak for those who can't speak for themselves, the children of tomorrow, the orcas, the salmon, and the earth that we've been gifted to steward. For their sake as well as our own I urge you to reject the proposed Kalama fracked gas to methanol refinery project.

This project will be a huge carbon polluter, emitting an estimated 4.6 million tons of climate pollution or more every year for 40 years. It would be one of the top polluters in Washington. It disregards Washington's climate related statutes and goals. The oil change international think tank says more natural gas is a climate disaster. There is no room for new fossil fuel development in the Paris Accord carbon budget.

Renewable Energy is the way of the future. By rejecting the Kalama methanol refinery project, we will be making the ethical choice that best serves future generations. They deserve a planet that is livable with clean air, clean water and a healthy ecosystem. I thank the Washington Department of Ecology for the opportunity to testify and for their stated mission to protect, preserve and enhance the environment for current and future generations. I urge you to reject the project permit and fulfill your stated mission. Thank you.

Jasmine Zimmer-Stucky

Thank you Department of Ecology for allowing me to testify today. My name is Jasmine Zimmer Stucky. I want to thank the outstanding residents of Kalama and the people across the Pacific Northwest who are shining a light to expose the dangers of Northwest innovation works fracked gas to methanol refinery, and illuminating a healthy safe future for our river, our salmon, our air, our towns and our next generation.

First, I want to say that this project is one in a long string of dirty fossil fuel projects that have threatened the Columbia River. Tonight I hear the same people tuning in to repeat the company line that this project achieves the liminal goal of burning an obscene amount of fossil fuels will also miraculously combating climate change.

They said it about the Millennium coal project, they said it about the [inaudible]>> oil terminal project, and now we hear it again today. It wasn't true then and it isn't true today. Despite Northwest Innovation Works its own claims to investors and supporters. Methanol is not liquid sunshine. It's fracked gas transported by pipeline refined into methanol and shipped to China and used for whatever the industry deems most profitable at the moment.

The only way we are guaranteed to reduce climate emissions is to use our resources wisely and judiciously not allow the construction of new fossil fuel projects that will operate for 40 years or more in our region. Northwest Innovation Works, just like every other fossil fuel company that has targeted the Columbia River in the past decade is selling Kalama a bill of goods and Ecology's supplemental EIS plays right into their hands.

Your study relies on speculative mitigation and an unenforceable market analysis to paper over the impacts of this dirty climate-wrecking proposal. The only way to mitigate this disaster and keep Washington on track to meet its climate goals is to say no to Northwest Innovation Works and protects the Columbia River. Thank you.

Columbia River Keeper

My name's Kate Murphy, and I'm an organizer with Columbia Riverkeeper. This analysis spends far too much ink attempting to paper over the pollution impacts by speculating on even worse pollution ideas, such as making methanol from coal and then giving Northwest Innovation Works credit for being better than the worst, without any consideration of more sustainable, healthier alternatives.

The analysis assumes a business as usual approach, barreling headlong into climate disaster when we need bold action to address the climate crisis by rejecting this potential polluter in Kalama. Let's be clear, neither this project nor making methanol from coal are consistent with a low carbon future. Not only can we do better than this, we must do better.

The SCIS is no place for fantasies, and we will not accept magical thinking as a justification for locking us into decades of harmful fossil fuels when better alternatives are already available. There is no evidence that coal-fired methanol producers would shut down in the midst of an increased demand for their product.

What we do have evidence of is that this refinery would be a massive polluter, would require the majority of the gas supply for the Pacific Northwest region and puts our communities and our environment at risk for the profits of international corporate interests.

We have a better vision than this. If building this disastrous project is the best you can imagine for our future for our shared ecology, if you cannot envision the innovation, the drive the dedication to something better, if people in your position are not forward-thinking enough, bold enough, brave enough to move toward a better vision for what we are all capable of, then you will be failing your mission.

May I remind you Ecology is Washington's Environmental Protection Agency. Your mission is to protect, preserve, and enhance Washington's land, air, and water for current and future generations. We are counting on you to do the right thing. Join us in envisioning a healthier, cleaner future. This starts with denying the world's largest fracked gas to methanol refinery from being built and Kalama Washington. Thank you for your time.

Kevin Lux

Hello, my name is Kevin Lux. I'm a resident of Vancouver, Washington and a proud electrician working very hard every day in a long view for a brighter future for all of us. As a 34-year-old, I am very concerned for the lack of scientific literacy at hand in our country. We've seen how this plays out among those who think that COVID is a hoax or that vaccines cause autism.

This kind of thinking comes with what psychologists label as groupthink and confirmation bias. These people mean well, and they believe they understand things but without doing the hard work of real study. Being faced with real science doesn't faze them. If anything, they grow deeper in their beliefs. They stick around with only the people who think like them. They cling to things that they already agree with.

They don't exercise skepticism or healthy doubt. This is scary. To quote the great Neil deGrasse Tyson, "The good thing about sciences that is true whether you believe it." I'm not an expert in the science of emissions, not on the macro level or the micro level and I ask each person listening now, are you an expert in this field? Are you at the level of those working for all of us at the Department of Ecology? Here's some real talk.

The expert scientists in the field-specific to this project have analyzed the data not feelings, and their science is clear. Mother Earth needs this project for her health, for our health. If this permit is rejected, on what evidence-based grounds would that be? Rejection of the permit could only be in rejection of the work of the Department of Ecology because of these experts, and the work that they have done in science, I will follow this data and support this project 100%. Thank you.

Marianna Grossman

Thank you for having this hearing. My name is Mariana Grossman. I live in Portland, Oregon. I oppose this plant and agree with the concerns others have expressed about the climate and pollution costs of this refinery. I'm also troubled by the unnecessary conflict between good-paying jobs and human environmental health and well-being.

One example of a community that shifted from fossil fuels to locally produced bio and renewable energy is [inaudible] in northeastern Austria. They had lost their jobs and were very fossil fuel dependent and because they decided to invest in bio and renewable energy, they now have high-quality jobs and clean energy production, a technology research center.

They even had to build a hotel to support visitors coming to study their transformation, and 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 jobs by investing in all of our futures and rejecting a fossil fuel disaster. Thank you.

Mara Bridges

Hi, my name is Mara bridges. I have lived in [inaudible] County all my life. I am a sophomore at Kelso High School. In my spare time, I'm usually fishing, hunting, hiking, or working outside. When I graduate, I plan on working for IBW as an electrician. I have been supporting this project for a while now. I think it's awesome that we have a project like this one that helps address our climate issues while creating opportunities in career pathways for young people in my community.

I have been listening to people on this call that are saying that this is a choice between jobs and the environment, but I do not believe that's the case. I think we need to encourage projects like this that are working so hard to protect our environment and keep us safe. To not build this facility, would only make our climate worse. Thank you, and have a great rest of your evening.

Meccah Boynton-Brown

My name is Mecca. I have very big concerns about the impacts and health consequences on the people in Landon Kalama, the surrounding cities and counties, the States, our waterways, and the air where the proposed methanol refinery and any future dirty energy corporations. It's not a secret that the 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.

Over 10 years ago, my husband was on the Deepwater horizon oil rig when it exploded in 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. BP, Transocean and Halliburton were responsible for their gross negligence and willful misconduct. They continue to profit in the billions despite their record for irresponsibility.

Almost two years ago, my parents lost their home and every treasured possession in the paradise California fires due to the admitted negligence of PG&E. How many are now relocated, homeless and facing health issues? PG&E filed for voluntary bankruptcy protection and 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 it will not make the people in the land whole again. This too was preventable. For years, I've sat on legal hearings, government meetings, and going to Washington DC to watch my husband testify to the Senate about the problems with 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'm concerned for the large-scale incidents of human miscalculations that permanently scar our lungs and our landscape.

>> Mecca, we'll need you to provide the rest of your comments in writing

Isaac Kastama

Hi, my name is Isaac. I'm a resident of West Seattle. Toward the end, it's hard to find an argument that has not already been made, but I would offer that the assumptions that were applied to this facility in the report are nothing to take lightly. Ecology evaluated a wide range of leakage rates using figures as high as the 3% as cited by the David Suzuki Foundation.

The department disregarded the state's facility plan to use methanol solely for materials and evaluated the use of methanol as fuel. The results of this stress test of the carbon reduction bonafides the facility are actually quite stunning. Every scenario of the clamor facility results in lower emissions than other production pathways and a net benefit in terms of global greenhouse gases.

None of these findings consider the increasing use of biofuels, RNG and sequestration technologies. They are likely to become viable over the lifetime of this project. Displacement theory as applied in this report is entirely appropriate, it is a frequently utilized and broadly accepted means of assessing climate impacts in everything from land use of biofuels, low carbon fuel standards.

Bottom line, this project has passed the climate

test and should be approved. Our impact at global climate change and its influence on forest fires, is not about what we do within our borders. Much like Washington has led with disruptive innovation in software, aerospace, and airports. It's through exporting our goods and intellectual property we create impact. We have a unique opportunity to produce the least carbon-intensive methanol in the world, a major disruption to the global materials market. Let's seize it. Please approve this permit.

Mirabi Peart

Hello, my name is Mirabi Piet. I live in Portland, 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 can create jobs and careers within sustainable industries.

Without Kalama case in this SSEIS, is a straw man 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. It's an outright nonsensical evasion of the climate crisis at hand. It is a blatant greenwashing by the Chinese Government Corporation Northwest Innovation Works. Insisting that 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 change and pollution and use more frack gas and all Washington's gas-fired power plants combined. Any mitigation for environmental impacts and emissions would at best be a tiny band-aid on a gaping wound.

Economic impacts for the next 40 years stated in this study failed to attempt to look at economic impacts of climate change and climate disasters over the coming decades. Please, 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. Thank you.

Nichole Snyder

I'm the mother of a toddler and a Washington State resident. I reject this proposed methanol factory. It will create more greenhouse gas emissions, not lower them. It will have adverse health effects on the local community, and it will have adverse health effects on a global scale by helping boost the already disastrous climate crisis. It is a facility for short term profits with long term consequences.

There will be accidents, if not at the plants, then on the pipelines or on the ships moving the product. Corporations would rather pay fines than create safe and responsible practices to protect people and the environment. We need to be listening to our youth and reject this facility that will contribute and a huge increase in global emissions. Can you look into your children's eyes and tell them that you did everything you could to ensure that they have a healthy future? Thank you.

Olga Levaniouk

My name is Olga Luvanyoc. I live in Seattle and have lived here for 20 years now. I'm calling on the Department of Ecology to reject the methanol refinery. I think that to go forward with this project now at the moment we're in, is very short term thinking. I suspect that it will not make sense even economically never mind environmentally in the long run. I see the logic of the replacement theory, and I think it would have made sense 40 years ago, but not now, not any longer.

When I left the Soviet Union several years ago, I was hoping that should I ever have children, they would have a safer future in this country- than in my native land. Now, my son is a teenager and I see the future of all the kids of his generation being destroyed by the climate disaster we are already living through. They need less pollution, not more. The kids know it, they know who is doing it and where it is happening. This state and this region is facing a moment of truth. What kind of region will it be?

Will we be amongst the innovators, places that search for ways to mitigate the effect of climate disaster and leave without, destroying the ecosystem we depend on? Or will we continue to embrace fossil fuels, until the fossil economy collapses and we go down with it. I don't think you'll will get to a livable future by saying, let us pollute because if we don't someone else will and they might pollute even more. This is not an environmental win, this reasoning is a way to keep polluting forever, because there will always be someone else doing it.

We do not know what China will do. We do not know how much plastic will be produced. Let us focus on what can be done here. I don't think it will serve Washington well to be known as the region of hypocrisy. Whereas the Governor campaigns on climate, even those department of ecology, approves a new massive source of greenhouse emissions. Above all, it will not serve as well to feed the pollution equivalent to more than a million cars per year into the air. This project will not be for the benefit of the people of the State and the people everywhere.

>> Thank you Olga, If you have any additional comments, we'll ask you to submit those in writing to us and I'll go over that information at the end of the hearing.

Patricia Kullberg

Thank you for this opportunity to testify in opposition to the proposed methanol refinery. My name is Patricia Kohlberg. I am a retired physician and public health official and a lifelong resident of the Pacific Northwest. I recently spent a week confined to my home in Portland, because the smoke-filled air outside was too hazardous to breathe. Climate change is upon us now, for this reason, I find the draft SSEIS 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. The analysis makes a number of unsupportable claims, including highly speculative assumptions about market trends. Worse, it forecloses on the very opportunities we have to save our way of life in the Pacific Northwest. First to assume that at most 40% of the methanol will be marketed as fuel is a fantasy. Northwest Innovation Works will market their methanol in whatever way they can to turn a profit, even if that means 100% of their product is used as fuel.

To assume that the market for methanol will continue to grow unabated assumes that we will never have another pandemic. That there will be global economic stability and that the regulatory environment or remain unchanged. Current reality suggests that none of these are likely scenarios. Third and most egregious of all is the total lack of consideration for true alternatives to the climate destroying fossil fuels. Coal-based production of plastics in China should not be our benchmark. Anything better than coal is not the policy that will spare the planet. Thank you.

Rachael Hogan

Hello, hi, my name's Rachel Hogan. Thank you for taking our feedback and comments here. I really sympathize with Emeka and I would like to thank her for the testimony telling us about her husband working on Deep Horizon and family in paradise fire. Until you've actually experienced your own self, not just on TV, but actually experienced, not being able to drink water that's in front of you. Not being able to bathe, not being able to eat a fish that comes out of a river.

Until you've actually had that happen in your experience, not just on a fishing trip somewhere else in another state, but where you live. You don't really know what it is you're talking about, in a real sense, it's an idea. I just want to mention that as far as we're talking about making what is the word? Mitigation. for climate impacts and other things and promises about zero emissions on the shorelines and all this stuff. As just people who know how to be around a river at all. By the way, the Kalama River and Columbia River are so gorgeous.

You know that you don't even pee 200 feet from a river, things go into the river, it's the way that things work. Any industry on the edge of the river is going to end up in the river. That's just natural. Not everybody understands how water works, but that's reasoning, that's rational. The Exxon Valdez when I was witness to the effects of that, and when I was there for what was called cleanup. Their cleanup didn't really exist the way the TV showed it. There were a lot of workers paid to stand around. I didn't even get to what I was saying. Anyway, thank you for your time and deny this project.

Robert Erwin

Hi, my name is Robert Irwin and I work in Cowlitz County. My wife and I are raising our four-month-old son, and I'm a lifelong resident of the Pacific Northwest. I'm an electrical apprentice and union member with IBEW Local, 48 but today I speak only as a citizen and father. I'm concerned with the cherry-picked sources provided in the SSEIS. They consistently cite state funded Chinese universities for data that purports to show significant greenhouse gas emission reduction in this project.

Considering the significant amount of international money pumped into this project, it is prudent I think for the department of ecology to request an independent environmental review, perhaps by Washington State University. The greenhouse gas mitigation proposed also has no teeth contractually. The people and governments of the city of Kalama and Cowlitz County won't be able to hold this company to their bad faith promises when the time comes to offset the significant greenhouse gas emissions.

That doesn't even cover the fact that the so-called zero liquid discharge technology touted in this report hasn't been proven. The standards required of our greatest river, the Columbia River also deserve a significant review. It doesn't guarantee zero wastewater discharge into the Columbia River in spite of its name.

The study doesn't address the pending mandate by the Chinese government to require fuel for cars and trucks to contain 15% methanol. It overlooks this while making optimistic predictions of other Chinese actions in the future. That deserves further scrutiny for the sake of my son and millions of other children. I think it's prudent to find this report irresponsible, and we need to reconsider the haphazard assessments for our future. Thank you.

Sarah Anderson

Hi, thank you. Hi, my name is Sarah. I am a proud Oregonian, a mother to a young son, and a wife of a member of Operating Engineers, Local 701. I fully support the Kalama project, because it will bring apprenticeship opportunities and family-wage jobs to our region. I appreciate the opportunities that a union job has provided for our family and this project will provide those same benefits to hundreds of workers and their families. I want the best for my son, and my family, and that is why the department should approve this project. Thank you.

Scott Anderson

Hello, my name is Scott Anderson. I'm a proud union member of Operating Engineers, Local 701 and I think this project should be approved. This project provides the best technology and cleanest way to produce the products that we all use every day. We would be hypocrites to complain about environmental impact of this project, and then buy products like these computers, these phones- that we are using for this meeting.

While demanding that by these products being produced overseas without safety standards, union labor and environmental regulations. We need these products and this project offers a clean, safe, pro-worker way to create local jobs. I live in a small town and I have been affected directly by these fires. The people on here have been saying that these fires are due to global warming, but our community has chased looters in people starting fires for political reasons.

I've seen this small town come from a booming logging community, to a community that has to travel to big cities for work. I agree that we need to make sure that this project is regulated and safe. I also agree that there's jobs helping support families, and without jobs climate will also be affected like my small town. Thank you.

Cowlitz Wahkiakum Central Labor Council

Thank you. I appreciate your time, and the department of ecology's work on this SSEIS. My name is Tara McElligott, and I'm a 32 year member of Cowlitz County. I'm also the president of the Cowlitz-Wahkiakum Central Labor Council and rank and file member of the International Political Worker's Union. I have a unique perspective for the fact that I am a chemical worker. I do work in a climate chemical facility, which is actually just a couple doors down from the proposed methanol plant.

For right now, I'm going to be speaking on behalf of the Cowlitz-Wahkiakum Central Labor Council, and on a resolution that we passed for this project. The Cowlitz-Wahkiakum Central Labor Council understands there's a significant value in growing local opportunities for careers that are capable of supporting a family for both the members represented by affiliated building trades unions and the community as a whole. The loss of industrial and manufacturing businesses along with substantial decreases in pulp and paper industry has left Cowlitz County and the surrounding areas with lack of living wage jobs.

Those losses and decreases have resulted in considerable reduction in the available tax revenue required to support schools, parks, law enforcement and other essential services. Basically, what I'm saying is we were in supportive of this project, this not only directly affects us as chemical workers, but also my entire family. My family are all Building Trades, IBEW members, and my current partner is starting the apprenticeship with IBEW. We want this work, we want these jobs. Thank you for taking your time for this hearing, thank you.

Tom Luce

My name is Tom Lewis. I'm a lifelong Washingtonian. What I've learned throughout these hearings, is that everyone is in agreement on one thing, the status quo today isn't working when it comes to confronting climate change. If we don't do things differently than we are doing today, the results will be catastrophic. As a father of three daughters, one of which will speak immediately after my time comments, this is an issue that matters to me on a personal level. It's why I support several environmental nonprofit organizations.

As anyone who spends time on these issues knows, the air we breathe doesn't begin or end at Washington State borders. We witnessed evidence of that in the last few days with this terrible smoky air. It's a lesson on why we have to look at the net effect of projects on our global environment, especially when it comes to carbon. Which is what project opponents argued when they went to court to get the analysis, we are now commenting upon.

I heard a few people reference the Paris Climate Accords earlier in this hearing. As anyone who reads that report knows, one of its biggest specific priorities is reducing our reliance on Chinese coal production. The analysis we consider today literally shows us a path to doing exactly that. Unfortunately, during the four years, this project has been delayed. China has continued to permit and construct even more coal-based facilities as several surveys have shown.

That's more evidence that we have to do something differently to make things better. To those who support delayed in opposing this project further, please know your actions however well-intended, are adding over 6 million metric tons of GHGs into our atmosphere every year. If you believe in making decisions based on science over politics and if you believe we have a responsibility to make the world better, including Washington State, then you should support this project.

Emma Luce

Hello. My name is Emma Lewis and I live in Kitsap County, I just turned 12. I attend sixth grade at my local middle school and I dance in my free time. I am concerned about what my world will look like 10, 20, 30 years in the future, especially if we don't follow the science. I'm only 12, but I've learned tonight that everyone has an opinion.

What I hope for my future is that people are willing to adjust their opinions and beliefs when confronted with three independent reports, all of which are based in real science and all of which say building this project will reduce global greenhouse gases. I am in full support of the Kalama project and think the department should give this project permission to continue. Thank you to the department of ecology for putting the data and the science first and many thanks for your time.

Wesley Allen

Thanks so much for bringing us together and listening to our comments tonight. My name is Wesley and though I don't live in Kalama, I live on the Kalama [inaudible]. Our communities depends so much on this river as does our planet. I ask that ecology will reject the methanol refinery shorelines permit for the Kalama methanol refinery [inaudible]. To evaluate the true whole impact of this destruction.

[inaudible] Alternative to greenhouse gas emission, pollute the air and create earthquake hazards in our community. It would also renege on Washington 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 a sustainable future? Stating that methanol is better than coal orients us to pass inadequacies, but it 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 will come from methanol refinery. Rather than end up NWITW's silly displacement argument. Washington must keep its promise to be a leader in keeping global warming under two degrees [inaudible] further entrench ourselves in fossil fuels. Please reject this project, please reject the shorelines permit. Thank you

William Glover

>> Hello, my name is Mark Keeley. I'm speaking for my father William Glover, he's 94, and I'll start right now.

>> Thank you.

>> NWIW says, if they get the shoreline permit, 60% will be used for plastics and 40% will be used as fuel. When this all started, we were assured that it would all be used as olefins for plastics. As if the earth needs more plastics floating around and its waters or burned and mucking up the air that we breathe. It's written on the wall that the methanol will be used only as fuel, the song and dance NWIW has given us isn't worth the value they've portrayed. It will only be used as fuel.

This is NWIW's way of avoiding EFSEC oversight. If the shorelines permit gets approved, the foot gets in the door and we get screwed. Let's not forget NWIW's recently amended the dock use agreement with a port Kalama stating that NWIW promises methanol would not ever be used fuel. They flip-flop like a dying salmon, reject this petrochemical disaster. Thank you

Mandy Lill

My name is Mandy Lille and I am a proud resident of Kalama, who lives just a mile away from the proposed site and I support the methanol facility 100%. Some of the reasons I support this project is, I will list now, jobs. 1,000 construction jobs to local workers, and 200 permanent family-wage jobs provides a huge boost to our community. There is a zero liquid discharge in our river that Northwest Innovation Works has committed to. There are local partnerships that they have committed to, such as their partnership with the Lower Columbia College, who will create a program that will train 40 local people to work at this facility.

It also provides something we need, methanol is in so many things we use every day. It was used to make your carpet, you're siding, your flooring, furniture, pet products, the containers your makeup comes in. Your computers and cell phones that you're all using right now to hear this hearing, your kayaks, reusable water bottles, clothing. What about the paddles that may save your life someday at the hospital? If I listed everything, my information here would be endless. Then there's taxes, this plant will bring a huge boost to our area. If this was already built, our new schools they're building right now would be paid for with no new taxing on the residents.

It brings much provided funding to our fire department. People keep asking why we can't do some other green project for environments such as wind energy. Wind energy is a great idea, and I've continued to embrace that but remember those blades take methanol to build. Not to mention they have a lifespan of 20 years, but some are replaced just after 10 years due to wanting larger and stronger designs, and they're filling up our landfills at an unprecedented rate. Methanol is simply supply and demand, so please, let's build this project and thank you.

Michael Yadrick

My name is Michael Yadrick. I live in Tacoma, Washington where a proposal to build the world's largest methanol plant died in 2016, so I urge you to reject this petrochemical proposal for Kalama. I'd like to believe the Department of Ecology's job is to protect us and the environment. Despite the fact we do not actually have a constitutional right in our state to clean and healthy air, land, and waters.

The company's proposals to build more gas and methanol facilities at the Port of Kalama and also in Oregon remain alive. Despite in May 2019, Governor Inslee announced, "I cannot in good conscience support continued construction of a liquefied natural gas plant into Tacoma or a methanol production facility in Kalama." After, he signed a bill to ban hydraulic fracking for oil and natural gas within Washington State. There is no way to make fracking safe for oil and natural gases source.

While climate-changing methane leaks through pipe and compressor infrastructure that crisscrosses our region. We should not be the end of the pipe for petrochemical infrastructure. We should not accept becoming the next sacrificed zone so we can ship fuel to China. So they can make more plastics that end up back here in the Northwest via ship or bioaccumulated in salmon that bring it back to the Columbia River. perhaps for us to ingest.

Plastic pollution equates to waste colonialism. One of the greatest environmental justice issues of our time on top of the climate chaos this gas factory helps create. I reject this proposal on behalf of people who cannot be here, I encourage you to do so as well on behalf of future generations. Thank you.

Sierra Club

Hi, my name is Seth and I'm an organizer with the [inaudible]. I was born in 1991, which is the year after the Second World climate conference at the UN calling for a global treaty. I've lived through year after year of inaction. At first we thought we could prevent climate change if we just change course. Now, we can't even say that we can stop climate change. We need to change course within 10 years to avoid completely wiping out our species.

I'm going to be turning 30 next year, and I've lived through 30 years of government inaction, selling out my future. I see my younger peers in Generation Z, facing this realization so much younger than I had to. I want to acknowledge that climate trauma is real. That it's hard for us to tell you over and over again that we just want to be able to live. It's painful to grow up where we know where the status quo is getting us and we see politicians bought by corporations continue to protect it.

The economic analysis assumes the inactions from other countries and then uses that to rationalize in more fossil fuels. No one is buying this argument. Don't base your decision on the assumption that other countries won't regulate their fossil fuels, it's really unfair. We need to trust each other, and we need to act. End climate action stalemate by acting first and deny this project.

Bob Kaminski

Hi, my name is Bob Kaminski, I live in Seattle, I work as a mechanic. I read through the environmental impact statement. I think it's just based on this false assumption that the Chinese Government or whoever runs the facilities in China is going to either not build additional production facilities or shut down existing production facilities that are currently coal fired if this project were built. I think that this is a total false assumption. I've never, ever seen any oil, or petrochemical or chemical production facility be shut down thanks for something like this ever.

Even on the opening of a newer facility elsewhere. If anything, they just keep it running so as to pump more our more and more raw materials. I think that's all totally false information and it's not really scientific. It's just a bluff in my opinion. I think it has no place actually in a scientific hypothesis of any of this other project, because like I said, it's not scientific, it's just political. Please I ask you to deny the project. We can focus on putting up new plants for our workers in industries that don't destroy our environment, and also don't put workers at risk of major explosions and industrial accidents. Thank you.

Phil Brooke

My name is Phil Brook. I'm a small business owner and one of the founders of the Lewis County Water Alliance. I appreciate the opportunity tonight to comment in opposition to the proposed refinery. Northwest Innovation Works has spent literally millions of dollars on a sophisticated greenwashing effort. Promising things like zero liquid discharge when upwards of 90% of the absolutely massive amounts of water were already going to be burned into our air as toxic steam or such things as ultra low emissions. Referring to an unskilled technology when project owners could sell up to 100% of their frack gas exports for transportation fuel in China.

Please take this greenwashing with a grain of salt. Realize it was crafted with a single goal of easing your consciousness just enough into believing there may be some benefit to handing over control of our water safety and our environment. To someone who has never built or operated anything much less the largest frack gas refinery in North America. The proposed refinery should rise or fall on its actual merits, rather than how many millions of dollars are spent to disguise it as either environmentally friendly or conceal its risks. Thank you very much.

Therese Livella

Hi, thank you for taking my comment. I live Montesano, Washington. I have listened to and made comments regarding Northwest Innovation Works for six years. It is very hard to find and make a point that has not already been made and I know that you have heard them all. What I would like to leave you with is this, much can happen in 40 years the lifespan of this project. When I was born, most cars ran on regular lead gasoline. When I was born, we had a rotary telephone.

In my 20's I swore I would never have a cell phone, why would I ever need one of those? I learned about the Oklahoma City bombing from a guy who was surfing the internet. That was how I learned what the internet even was. No one knows what the next 40 years will hold. I think it is quite reasonable to say that our plastic pollution will not decrease if we do not start making decisions to make it so. Claiming that greenhouse gas emissions will improve with a fracked gas to methanol plant just does not even make sense, and belittles the trauma that so many of us feel for the destruction of our planet.

In response to those who lament the loss of logging and paper mills in the area. The reason for that is very simple, you cut them all down. Humans have done a terrible job managing our natural resources in the name of jobs, profit and power, it is time to do better. We can make products out of other more sustainable resources.

Until we put a stop to the construction of new fossil fuel projects, we will never open the door for new and innovative technology. I encourage you to deny this project because it has nothing but bad news for our neighborhood. Those of us that live in the area have invested more than this \$2 billion facility, we combined are a greater force. I would encourage you to stand up and help us protect our investment. Thank you.

Barbara Hill

I'm trying to pull up, my comms having a little bit of technical difficulty. Waited till the last because I feel everyone else has been so articulate, and so wonderful, and informative in sharing their opinions. I just wanted to contribute and support all those who are in opposition to this project. I'm in Seattle, but I've also lived in Northern California for quite a while. All the fires that have been happening it's very concerning to me, it's very distressing, but I'll go on with my comment here.

I've listened to hours of testimony and appeal. I've heard proponents of the project attempt to blame, put guilt, insincerity and hypocrisy and ignorance upon the opponents of the project. For causing not just future, but past years, pollution from China's much dirtier coal factories. Let me ask this, have the coal factories in China signed agreements that they will close when they receive Kalama's methanol? Were these agreements attached in order to support the science behind the charts and the SSEIS? What about the pollution and dangers of tanker accidents? What about the many miles of pipeline bringing in dangerous fracked gas?

Which company is going to build it one with no past violations or accidents, does one even exist? People of Kalama and its environs and the indigenous people whose land and lives this will most affect are the ones we should listen to and stand behind. Speculative and doubtful global benefit should not be upon the backs of the local community, entire Pacific Northwest. The imminent and potential long-lasting dangers are not worth the economic benefits to the community in Washington. The truth is that the vast economic benefit will be to the foreign developer. Thank you very much.

Gary Wallace

Thank you. I'm reviewing the Department of Ecology has taken over this project on the second SEIS and [inaudible] specifically the upstream, life cycle climate emissions of the project. So far, I have seen all kinds of statistics on the tracking, the transmitting, the transportation through pipeline, whatever methodology. I've also seen fuel consumption comparatives and speculation made by NWIW. I have to point out, NWIW has zero experience doing anything, specifically zero experience in fossil fuels. This is an experimental zero liquid discharge methodology that has never been tried at this scale. They're bringing people from outside of the area for jobs that really matter. The construction of it, we're going to be the tinkers that put together that work from China, because that's where they're bringing people from. Back in Louisiana, they have experience building these things.

To get back to my point, multiple studies have been done on this fuel. It's only 40% of the product, as the total project is predicted to have 60% plastics. I've heard everybody say we all use plastic, and we do, but what type of plastics is this plant going to contribute to? Has there ever been a study-- I couldn't find anything stated in any study pertaining to this proposal. Has there been a study that brings into effect the disintegration process of plastic no matter what kind it is? How is that affecting what's in our food chain? It's poison. If you can't--

>> Gary, we're going to have to ask you to summarize your comments and provide the rest of them in writing. You've gone over the two minutes

Gary Wallace

Thank you. I'm going to make a comment. I'm a former [inaudible] and I have somewhat of a different viewpoint on wildfires and forest management and climate change. Climate change doesn't mean that just the forest was mismanaged. It means the wind didn't come that was supposed to. Climate change doesn't mean the whole thing stops and we all have to get 100% [inaudible] ourselves. It just means we heat our chemical soup that we live in, the multiple compounds that we've survived by. We just heat that up and add more pollution called greenhouse gases because it's a generalization term. No matter what, it happens if I don't believe, but that soup we live in is going to a catalytic conversion by adding more heat, by burning more fuel, create fossil high potential exacerbating the future climate changes.

Climate change doesn't mean that we have to all be [inaudible] before we all accept it. Climate change, it moves the weather around. We don't have range of forests, so the legislature doesn't have the backbone it takes to pass the funding that otherwise would mitigate potentially some of the impacts of massive forest fires. We got to look at the big picture, connect all the dots. It isn't just this project. However, this project-

>> All right, Gary, you explained ahead and got it to the two minutes. We ask that you provide your additional comments in writing, and I'll go over that at the end of the hearing.

Let's Build This

Director Watson,

The Dept. of Ecology's draft report on NWIW's proposed methanol facility in Kalama answers all of 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.

With this project, we can create jobs in America, where we pay real family-wage salaries and benefits and build things to extremely high and exacting environmental and safety standards by the most skilled workforce in the world.

There's never been a greater need in my lifetime for jobs, especially in rural areas like Cowlitz County, where the economic impact of this project would also provide \$30-40 million in tax revenue to local and state governments.

Finally, the science definitively shows that this project benefits the global environment. And the comprehensive mitigation plan ensures NWIW will do the right thing on a statewide basis, making Washington a leader in how to build a sustainable economy.

I urge you to move quickly to finalize this report and approve the permits needed for construction.
Sincerely,

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Cynthia Svensson

Dear Champions of Washington Ecology,

I just discovered another important GHG source while researching a question someone posed on Facebook. It seems Japan has experienced, and is now concerned about, methanol tanker explosions. That's a lot of methanol and there will be a lot of tankers. How many GHGs will be released by a mishap? Thank you both for working diligently on vetting this methanol plant permit. Really, the Earth as we know it is at stake.

<https://www.spglobal.com/platts/en/market-insights/latest-news/petrochemicals/061419-japans-mgc-weighs-options-for-methanol-cargoes-after-blast-on-kokuka-courageous-tanker-sources>

Thank you,

Cynthia Svensson

MS Chemical Oceanography, U. of W.

Kalama resident

Diane Dick

Re: Comments on Draft Second Supplemental Environmental Impact Statement for

Kalama Methanol Refinery and Export Terminal

Dear Director Watson:

Greenhouse gas emissions are not fully accounted for in the draft second supplemental environmental impact statement (SSEIS) and the data contains errors and omissions. Please consider my comments below in revising the final EIS.

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.

1. Include GHG emissions from construction and operation of Kalama Lateral Gas Pipeline.

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.

2. Upstream emission estimates are based on speculative, incorrect information and omissions.

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.

I will emphasize this point by quoting the late William Brake, a retired chemical engineer and registered professional engineer with a 35-year career in the natural gas business.

“The Chapter 4 Air Quality and GHG discuss at length the reasons why GHG emissions are not included for the natural gas transmission of the feedstock to the Kalama Methanol Refinery. The reasons and thought processes are flawed and the flow of natural gas either from the north or from the south requires compression to move the gas along the pipeline. The incremental 320,000 MCFD natural gas required for this facility is a significant amount of gas on the entire transmission system and it requires horsepower to move the gas and incremental horsepower is emissions and GHG. It appears this subject is too challenging to admit that there is significant GHG related to Natural Gas Transmission and is avoided by “Wordsmithing” the revised Chapter 4. This is unacceptable.

http://kalamamfgfacilitysepa.com/wp-content/uploads/2016/09/FEIS-4-0-Air-Quality_GHG.pdf
The No Action Alternate is recommended for this project.” William Brake, Formal comment #18 on FEIS, 2016 October 19

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.

3. The 786,117 MT CO₂e estimate of in state emissions is misleading and without validity.

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 onsite 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 CO₂e 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 than 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.

4. Can even 1 million metric tons of CO₂e be verifiably mitigated?

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.

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.

5. 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.

6. 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
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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. Current policy dictates 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 NO_x 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.

7. What is a reasonable answer to the 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.

8. 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 is 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 for pursuing environmental truth and providing decision makers with the best most credible information we can obtain in these trying times. The health of Washingtonians and a high-quality environment that sustains us depend on your efforts.

Diane L. Dick

13 Saint Helens Lane

Longview, WA 98632

Lee McKiernan

My name is Lee McKiernan. I've lived in Kelso, Washington in [inaudible] for 45 years. This is a beautiful county with lots of rivers and lakes and into quality of the Kalama River should really be highly considered, also, the susceptibility to slides. Because like in Texas, there was a pipeline explosion that evacuated 17 miles under the WAC 222-16-050-(1)(d) Class IV-Special.

It's illegal to move dirt around or log in landslide areas. I'm sure you'll find slides every year in this area. It's a great risk to this area, both ecologically and to human lives. The positions of Washington also said it was dangerous to our health. The electricity which would take the electricity of 100,000 homes will all put us in dire financial straits by raising our electric bills.

You should talk to the geologists at University of Washington and Dave Montgomery and Portland State Scott Burns. You should also talk to the people that were in the fish hatchery that got wiped out of upper Kalama River and they can inform you of all the fabulous ecology watching the salmon go by in the clear River.

I've walked along the port of Kalama and on the Columbia and seen all the fishermen catch five salmon in a row. It would be a shame to waste all this for a plastic factory. It would be a disgrace for Ecology to permit it. I believe my minutes are up.

Theresa Hardy

I'll provide comment. My name is Teresa Hardy. I'm a resident of Vancouver, Washington. I want to urge to do the right thing by rejecting the Shoreline permit and the facility clean your matters. I've been a member of the Sierra Club for many years, working on water quality and air quality, and we need to reject this. Thank you.

Noelle Allen

This is Noelle Allen. I'm a resident of Seattle, Washington. I just believe that Washington State should be honoring the spirit of the Paris Protocol even though our country is not. We do not need to allow a facility that creates plastic and increases our greenhouse gas in this state. 1% is drastic. We need to be cutting our greenhouse gas emissions and not increasing them. That's all I'd like to say. Thank you very much.

Janth Hedgpath

I will provide comment. Good evening. My name is Janet Hedgepath. I live in Vancouver, Washington. The past weeks surrounded by smoke is an undeniable evidence of the effects of our carbon-based economy. If we had any shred of hope of preserving our precious Northwest environment, we need to act now to move to a low carbon future.

By the Department of Ecology's own analysis, you found that unequivocally and under every set of assumptions, the Kalama Refinery would be one of the top polluters in Washington.

It will boost climate emissions both upstream and downstream, and it would prompt new fracked gas pipeline expansion throughout the region, creating more risk of spills and explosions.

The promoters of this project contend that will replace worst polluters, thus bringing overall world emissions down. This speculation is based on the assumption that we will continue to do business as usual without regard to climate change. Scientists tell us we have 10 years to dramatically reduce carbon emissions.

The Kalama Refinery would produce 4.6 million tons of greenhouse gas pollution each year for 40 years. We do not have 40 years. Now is the time to pursue a low carbon future. Now is the time to intensify our efforts to comply with the state statutes regarding carbon reduction. Now is the time for the Department of Ecology to safeguard our climate, our health, and our safety. Now is the time to reject the Kalama Methanol refinery project. Thank you very much for your tome.

Mark Keely

My name is Mark Keeley. I urge you tonight the shorelines permit for NWIW. NWIW is a shell company. They don't even have an act of Washington business license number. This has gone on for too long. Port of Colombia can get a multiple amount of sustainable businesses on the same footprint of property right now. Thank you.

Adam Davidson

My name is Adam Davidson. I'd like to know what on earth would make any American believe anything that Northwest Innovation Works says. This company was founded in 2011 by the Pan Pacific Energy Corp which is owned by Shanghai Bi Ke Clean Energy Technology Company, the private equity arm of the government own Chinese Academy of Sciences.

Is it because of their current treatment of Hong Kong? Is it the current treatment of what they're doing in Taiwan with 40 warplanes flying overhead? I just don't understand why we would do business with a terrible communist regime such as China at all. I don't understand it one bit, not to mention the horrible environmental impacts down the road.

Why don't we address our insane overuse of disposable plastic, single-use plastics. I wish people would please use your brains for more than profit-seeking and return to some level of sanity. We cannot allow ourselves to continue to do business with an evil communist regime led by Zhi Jing Ping. This is outstandingly insane. Thank you. That's all I have.

Pat Freiberg

My name is Pat Freiburg. I'm from Ridgefield, Washington. I'm a longtime Washington resident. I'm asking if you all remember when Origin had a 500-foot cooling tower across the river in Rainier. The Trojan Nuclear Power Plant was shut down in 1992 but for the next 14 years drivers going north and south on [inaudible] looked at the remnants of PGE's financial disaster. To build and demolish that plant cost 2.4 billion in today's dollars and at every level, it was a debacle.

Today, a Chinese entity wants to buy Canada's [inaudible] and ship it by pipeline to Kalama, convert it to methanol, and then send it to China to be burnt as fuel or made into plastics. I smell another debacle. Building this plant will [inaudible] into methane use for another 40 years.

There's been talk of greenhouse gas mitigation but tell me, what just cutting back coal emissions while creating methane submission, how does that actually save us from the climate emergency that we are currently experiencing? We are already overcome by ferocious wildfires, polar ice caps are disappearing, and Greenland is turning green. We have more frequent and devastating tornadoes and hurricanes every year.

The oceans have warmed with carbon which converts to carbonic acid and is killing coral reefs and impeding the shell production for crabs, lobsters, clams, and oysters. Climate scientists predicted these events 32 years ago and now they are here. Ecology should deny this permit. We have enough debacle to contend with right now and there's way too much at stake. Thank you.

Monica Laguerta

Hi, my name is Monica Laguerta. I'm from Vancouver, Washington. I also have on the phone with me my son Eric Paver. He's six years old. I am calling in tonight to oppose this. I don't even know I am speaking to my [inaudible]. I am shaking right now to just even think of why people think it's okay.

If you use fossil fuels like I know there's a better tomorrow. I noticed a greener tomorrow. I know we don't need this. I know my son doesn't need this. I know that [inaudible] tell you all. I hope you all listen and I really do thank you for that. Thank you so much and I hope you all take care. Peace, love, and unity.

Thomas Gordon

Hi, this is Thomas Gordon. My wife, Diana will follow.

The SSEIS gives 40% for the amount of exported methanol to be used as fuel. However, on page 16, in Section 1.1, Introduction, the SSEIS states, "It is possible, however, that the methanol could be used as a fuel, once it is acquired by importers in Asia and elsewhere." Even in pitches to potential investors, NWIW, owned by the Chinese Academy of Sciences, which is part of the Chinese communist government, stole the market for fuel for the methanol.

The methanol could be used to fuel both civilian and military sectors in China. On September 19th, "American Undersecretary of State, Keith Krach, who handles the Economic Growth, Energy, and Environment portfolio held talks with Taiwan's minister at Economic Affairs and Vice Premier. He also met with business leaders over lunch and, obviously, dined with President Tsai Ing-wen later Friday."

The Chinese flew 18 warplanes, including fighter jets, over the strait between China and Taiwan, and are also conducting war games to show their displeasure with America over our friendship with Taiwan, who they regard as a renegade province. NWIW's methanol would probably go to China can easily be used as a fuel by its military. Why should Kalama refine methane into methanol fuel for China's war machine?

If a confrontation between the United States of America and China over [inaudible] occurred, we would have to protect Taiwan from Chinese aggression, as outlined in our treaty with Taiwan. Kalama Methanol Refinery should not be built. Deny the shoreline permit and deny the use of methanol made in America. It could be used against us and our ally, Taiwan. Thank you.

Diana Gorgon

Hi, this is Diana Gordon, and I'm against building this refinery for many reasons. Just last week, I thought we were in the midst of a climate crisis. The East Coast was dealing with early and damaging hurricanes and flooding, and the West Coast was coping with historic drought fueling climate wildfires. Here in my neighborhood, we were surrounded by fires and smoke. The air was not fit to breathe. Exercise and working in the garden was not a good idea. Even walking the dog just a few minutes necessitated wearing a face mask.

The second SSEIS for the refinery estimates that at least 4.6 million tons of greenhouse gas would be released every year. That seems like a huge amount to me. We know that greenhouse gases worsen climate change. Here in the West, climate change has created hot and dry conditions, making our forests sitting ducks for wildfires. In addition, greenhouse gases make our oceans more acidic and warm our rivers, impacting our seafood producers and tourism, both important sources of jobs and income.

Climate change also affects our health and quality of life. This refinery has too many problems and too few benefits. A few people may get good permanent jobs, but most of the profits will be scooped up by the Canadians and the Chinese. We are left with a large explosive refinery in the midst of potential wildfire hazards and huge increases in climate-altering greenhouse gas emissions.

This would be a good time to say no to this project and encourage the port and the county to seek new businesses to move into the area. A diversity of businesses will help guard against economic downturns, employ more people per acre, and we hope, be more climate-friendly. Please deny the shoreline permit and stop this untenable project. Thanks.

Jennifer Vennard

Hello. Hi, there. My name is Jennifer Venard and I live in Kalama with my family. We live just a few miles from the proposed site, and we adamantly oppose it. We moved to Kalama because we love to hunt and fish, and this is the only place that we wanted to live. From the moment that we found out about this refinery, we stopped unpacking. We didn't want to move here to have millions of tons of pollution fill our air and our lungs and promote who knows how many health problems.

The EIS, yes, it talks about mitigation, but they don't explain how they're going to mitigate it exactly. Planting trees, what do they intend to do? What happens if 100% of the fuel is used or methanol is used for fuel? The EIS doesn't produce that, it's only a portion. The supporters of this project, most of them don't live here. We're doing everything that we can to protect this beautiful country that we love so much, and to have China reap the rewards and Kalama, Cowlitz, Washington and our planet pay the price and live with the consequences, it just isn't worth it. We just really hope that ecology protects us and denies this permit. There's other jobs that we can get in here. We do need jobs but not like this. Thank you.

Cathy Sampson-Kruse

My name is Cathy Sampson-Kruse. My Waluulapum name is Wey-ow'sux. I'm a tribally enrolled member of the Confederated Tribes of the Umatilla Indian Reservation, 200 miles east of the proposed Kalama facility. I speak only for myself and for my children and grandchildren. We need to remember whose land this is. This is the Chinook, the Clatsop, the Willapa, the Kathlamet, the Grand Ronde, the Siletz, the Quileute Indian nations. We're all rooted in this land. We know the struggle way because we are here [inaudible] Chinook, because of those elders who stood up before us.

I'm here to witness and listen to these testimonies, but I want my voice heard. In 40 years, I'll be a 106 years old. My youngest grandchild who's only five, I pray that she will not see the outcomes that may prevail if this were approved. The second SSEIS is flawed. I'm a board member of the Columbia Riverkeeper and I have colleagues at the Sightline Institute. I hope that you take both of them seriously into account in their testimony. We need to deny the shorelines permit.

The Northwest Innovation Works has lied. We have to understand that the mitigation plan is for Washington, it does not include Oregon, but there is really no wall here between us. There's just a beautiful big river. We know what happened to those mitigation plans when we sacrificed [inaudible] dams and the rest of them that are there. You have a moral--

Bonnie McKinley

My name is Bonnie McKinley. I call on the Washington State Department of Ecology to reject Northwest Innovation Works' misguided plans and deny the shorelines permit. I live across the Big River in Portland. I live close enough to Kalama to have been present for almost five years of public hearings and gatherings there. I have listened to local voices plead to their governing agencies and elected officials, "Protect our town, protect our riverbanks, protect our hillside community." That is your calling. That was your promise.

I live just 40 miles from the proposed methanol refinery, but my own proximity to it isn't my concern. What matters is that I live on Earth, a climate-destroyed planet, where physical and natural realities are emerging with force. We see it, we know it, we hear it bellowing from forests to coastlines, from diminishing glaciers to wind-ravaged and flooding communities. Washington State should not be scooped up in a whacked plan leading them away from science. Washington State, aware of the social and economic benefits of a healthy natural system, must not embrace this climate folly, this Kalama methanol refinery.

What if Northwest Innovation Works succeeds in securing permission? What lies ahead? We know. When increasing deluge and drought finally convince humans to put away their fossil fuel schemes, what will Kalama [inaudible] on this riverbank? At best, an empty, mega facility and a crushed community. It can be so different. We have the direction to clean renewable energy and employment opportunities far better than the crooked, hazardous tasks Northwest Innovation Works pays for us.

I call on the Washington State Department of Ecology to reject Northwest Innovation Works misguided plans and deny the shoreline's permit. Protect Kalama, protect its people, protect our special planet. Thank you.

Catherine Chudy

My name is Catherine [inaudible]. I listened carefully to all who spoke during three hearings. I was dismayed to be told that in opposing this proposed facility, I'm putting feelings over fact and ignoring science, that I rely on plastics, and I'm a hypocrite for asking our Department 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, intentionally misleading and misrepresenting 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.

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 several generations.

As for maintaining the status quo, the Kalama proposal actually represents continuing a classic 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. Say no to profits in light of doing no harm. 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's 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. As 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." Thank you.

Neal Anderson

Yes. In the presentation he gave at the beginning of the hearing, he described how this plant would affect emissions given the expected global market from ethanol, but you seem to have only considered one possible future, and it's a very pessimistic one at that. Given that the IPCC has said that the only pathways that allow us to stay below two degrees are those that have us fully decarbonizing by 2050. The fact that you would consider a new fossil fuel project projected to last beyond that, means that you're expecting the world to fail in this effort.

The Washington State is still committed to the goals of the Paris Agreement, as is virtually every country in the world. How can we assess a project against a future where we don't meet these targets and not even consider the option that we will? When the IPCC models possible climate futures, they don't just consider one alternative, they model four scenarios. From optimistic, where we start drastically cutting our emissions right now, to pessimistic, where we continue on with business as usual.

The SSCIS seems to be based on the pessimistic view. The demand for fossil fuel based methanol will keep increasing over the next few decades. In the language of the IPCC, this would correspond roughly to the RCP 8.5 scenario, which would be a disastrous outcome where hundreds of millions would be displaced as climate change renders large parts of the world uninhabitable. This can't be the only future we consider and it can't be the one we use when we're deciding whether we should build this plant and add to the problem.

Not only is there a good chance that the increase in weather related disasters will cause people to start acting more quickly to curb admissions, but any number of technology innovations could cause renewable adoption to accelerate much faster than the scenario predicts. I request that you update the SSCIS to compare other possible scenarios, to be more in line with the IPCC pathways, which lead to outcomes that are within the Paris Agreement's goals of keeping warming to less than two degrees, and that are in line with a livable future for the next generation. Thank you.

Brian Bonlender

Hi. Anna just stepped out, but she's going to come back before I finish making comments. My name is Brian Bonlender. I just want to say that this is an opportunity for us to put in place a facility that will allow us to buy less carbon intensive materials. Things that we use every day like toothbrushes, the kayaks that we float in, the life preservers that we put on, the jackets, the airplanes that we fly in, right now are increasingly made out of coal. Incredibly carbon intensive. China is escalating the size of that industry every day with these massive facilities. This is an opportunity to short circuit that, and also to eventually start producing renewable materials to make those things a place of sequestering. Here's Anna.

Anna Bonlender

Hi, sorry, I stepped away for a sec right when you called my number. I heard what Brian said mostly, and I strongly agree that I'd like this project to go forward. I would like less dependence on carbon. I know eventually we will move even past this, but for right now, this is a great option. I think it should move forward. Thank you.

Gretchen Armstrong

This is Gretchen Armstrong and I have lived in Kalama for 28 years. I am so against this proposed gas to methanol refinery. Washington State should be pursuing industries with low greenhouse gas to gas pollution, and this is not one of them. China's possible use of methanol for fuel, as well as for plastic should give it all pause for the sake of-- Well, anyway, because of the climate and for climate itself, stop this all ill-advised project. Thank you.

Dan Mark

Yes, my name is Dan Mark [inaudible]. When the fossil fuel industry proposes new projects, they are always presented as if all positive with no negatives, which is impossible, so I have learned to distrust that industry and so should you. When counties and ports welcome new fossil fuel projects, it's with no regard for anyone outside their jurisdictions, so I've learned to distrust such jurisdictions, and so should you.

The current methanol proposal is too big, too costly, too destructive. Upstream gas fracking destroys water supply, destroys water table, destroys subsurface geology. Piping the gas leaks all along the route. Processing frack gases abuses water supplies and leaks more gas, transferring methanol leaks more, shipping the methanol leaks more, transferring at destination leaks more, and of course, burning methanol for 40 or more years in China adds gigantic amounts of greenhouse gas to an already overburdened atmosphere.

Have we learned nothing from what climate change has brought us in the form of extreme weather? Did our recent West Coast unbreathable air teaches nothing? This project is dangerous, it is also unnecessary, shut it down. We must get off coal, we must get off oil, we must get off meth. There is alternative to our chemical dependency, and it's green. Thank you.

Joan Meyerhoff

My name is Joan Meyerhoff, and I live in Portland, Oregon. I'm testifying this evening because I [inaudible] and the people who live on it. I am motivated by my concern for future generations and by my commitment to the common good. Anyone who's brave enough to educate themselves about global warming knows that we're on a catastrophic path. Recent scientific analysis states we're behind schedule to curb carbon pollution, and our window to effect change that will mitigate the most severe consequences is narrowing.

The argument that Northwest Innovation Works methanol factory proposal for Kalama could cause less carbon pollution than other possible high-carbon futures, is in my mind, weak, based on speculation. By contrast, I present two realities. If we're not successful in curbing global warming, it will result in immeasurable suffering for all life on earth. The second is that there is an enormous surge in the number of people who describe climate change as their number one concern and they are demanding policy change. In this, there is surely hope.

We are engaged in a battle for the viability of life on earth. The course of the battle and the outcome are both unknown, but just like other high-stakes battles, like a nation fighting for freedom from an oppressor, or a person faced with a life-threatening illness fighting for their life, we need generals, we need doctors, we need leaders who are fully committed to winning. Washington Department of Ecology, we need you to fight with us for the environment. Do not support the methanol refinery, which will contribute to global warming. Deny the shoreline permit for the project. Thank you.

Columbia Riverkeeper

My name is Kate Murphy and I'm a community organizer with Columbia Riverkeeper. Thank you to the Department of Ecology for your efforts in organizing these hearings. Over the course of these public hearings, we have heard overwhelming opposition to this project from community members and people from all walks of life who care about protecting the future of this region. We have heard diverse testimony from folks urging you to focus on the fact that we can reasonably and accurately predict, rather than basing this critical decision on speculative hypothetical scenarios.

You have heard from many people about the massive amount of greenhouse gas emissions that would come from this refinery, the lack of any tangible plan for mitigation, the high level of uncertainty about the speculative displacement theory, the concerns about staggering gas, electricity, and water use, the plastic already choking our oceans. You have heard many other concerns about this project, each one of which should compel you to deny the world's largest fracked gas to methanol refinery.

Now, on our last opportunity to give oral comments on this potential disaster of a plan, I feel at a bit of a loss. At a time when we need bold leadership to lessen the impending crisis, I fail to understand why the Washington Department of Ecology is even entertaining such vague and speculative scenarios. The main justification for even considering this project is based on the assumption of a catastrophic climate failure. It assumes a failure of human will and determination on a global scale.

This is a false dichotomy. Morally equivalent to offering someone a different brand of poison. There is no scenario in which approving this project actually makes sense if our shared goal is to protect the health and safety of our communities and our environment. You have all the information you need to fulfill your mission and stop this refinery from being built. If we have any hope at all, we must speculate about the good we are capable of accomplishing together when we value health, safety, in a livable future over short-term profits and empty promises. We're counting on you to do the right thing. Thank you.

Columbia Riverkeeper

Hi, my name is Dan Serres. I'm the conservation director for Columbia Riverkeeper. I want to thank the Department of Ecology for the effort it has put in to holding these hearings and soliciting public comments. I also want to say that I'll be counting on you to protect Washington and to implement a vision for the future that involves less climate-changing pollution, less plastic pollution, and a healthy river. Ecology, the EIS correctly identifies NWIW's proposed refinery would be a massive polluter, capable of producing 4.6 million tons of greenhouse gas pollution each year or more.

Roughly one million tons of this pollution would occur in Washington State each year alone. The refinery will be one of Washington's top polluters. NWIW had suggested that it can mitigate all of its in-state pollution. We doubt this claim and we urge Ecology to find the mitigation plan incomplete and inadequate on several grounds. The plan lacks specifics. NWIW has put forward a voluntary framework, a plan for a plan that gives little substance for the public to comment on at this time. Although, we will attempt to offer more detailed comments in writing as best we can.

NWIW has not identified any mitigation projects in Washington thus far, and according to the plan, projects wouldn't be identified until far too late in the game to know if they are likely to succeed. The governance structure of the mitigation framework is suspect. NWIW states that it will set up a board of its own choosing. This is inadequate. Ecology is responsible for identifying the impacts of the project and how they will be mitigated. Ecology should protect Washington by denying this project altogether. Thank you for your time.

Edith Gillis

I am Edith Gillis living in Portland and Seattle with family in both cities. I oppose the world's largest fracked methane gas and methanol refinery anywhere, but especially in Kalama, because it would devastate the local economies, ecosystem, communities, industries, cultures, and government, and the global climate economy and democracy. The fracking trains, trucks, refining processes ships, loading, unloading, and then the burning of it in Asia, and the resulting plastic effect, where air pollution would each additional air pollution and additional risk to increase fires, explosions along the route.

The climate warming also weakens plants, evaporates somebody's water, increases vulnerability and vulnerability to fire explosiveness, and heating faster spreads fire and explosions. Thus lessening snow-packed rain and water flow and increasing flow from the water clogging pumps, and wells, and water hoses means it will be harder to extinguish fires and care for the wounded and ill.

Before and after the fires at Kalama, the increase in the fire danger and worsening in fires would put at risk the nearby Trojan Nuclear Plant radioactive waste. It's getting too hot downstream ready to explode, which in turn, would also affect the radiation poisoning being released continually every day and worsening at Hanford Nuclear Reservation.

The radiation poisoning and increased fires with hazardous air and poison will kill people along the Columbia River, and eventually also around the world as radioactive poisoning air circulates the planet. This attack on the environment means attacks on workers' jobs, public health and safety, and our ability to solve problems again [inaudible]. The longer we're exposed to air pollution, the more damage to our brains and ability to problem-solve and handle stress. This poison disables and kills more Washingtonians and Arizonians. The survivors will be too overwhelmed with grief, fear, and caring for the sick and working longer hours or cloaking with poverty.

Our communities would have fewer volunteers and ability to solve the serious problems we need to have. This is making our [inaudible] go extinct to increase the fires and worsen the cooling. We need to stop it now and we need to increase our ability to handle better regenerative cultures instead.

Judith Bartholomew

Thank you for the opportunity to testify today. My name is Judith Bartholomew. There was a time when Cowlitz County was a thriving and vital area with low unemployment and good health ratings, but in the recent past, those once low unemployment levels have continued to rise. Poverty is highly correlated with a community's physical and spiritual health. In my over 30 years working in the mental health field, I have seen how our high levels of unemployment have contributed to increasing levels of stress, depression, and substance abuse.

The NWIW methanol facility in Kalama will create 1,000 construction jobs, 200 permanent high-wage jobs, and over 500 indirect jobs. It will have a significant positive impact, not only for those who get these jobs but on the entire community. Thank you.

Ted Gleichman

This is Ted Gleichman. I live in Portland, the stolen lands of the Chinook and other peoples as the Umatilla elder spoke to earlier, but I am a recent immigrant to the Pacific Northwest, this beautiful territory from the stolen lands in Colorado, where we know well the damages to air, land, and water from renegade runaway fracking. It is imperative that the Department of Ecology, and thank you for all of your work in putting this together, fully understand that methanol is a poison.

In June, six months into the pandemic, and then on July 2nd, the FDA published dozens of names of companies providing methanol as a hand sanitizer, a deadly poison, which causes permanent blindness and death. The climate crisis is another form of poison. It is in process now in ways that are all too obvious, damaging and killing people all around the world. It is imperative that when you hear the word methanol, you think poison. When you hear about climate, you think about the crisis of death that we are living with now.

The Department of Ecology has set a standard in the past and must live up to that standard now in denying this project. I will supplement my comments in writing. Thank you again for your work.

David Goldberg

Yes, this is David Goldberg of Vancouver, Washington. The SEIS says it is not possible to predict the advent of newer cleaner sources of energy to replace methanol and other fossil fuels, or to speculate on whether the building of this refinery will hinder the switch to these alternatives, but the SEIS is not averse to speculation in other places. For instance, the SEIS claims that 40% of methanol produced will be burned as fuel. Where did Ecology get this number? It is not a firm number supplied by NWIW, but a pure speculation on Ecology's part, and since burning methanol is more greenhouse gas-intensive than making plastics out of it, that throws off the whole analysis.

Northwest Innovation Works told regulators that the methanol produce would be used for plastics while telling investors it'll be used as fuel. This [inaudible] me to conclude that 100% of methanol will be burned as fuel. The SEIS states that the state emissions will be mitigated without backing it up with any details on how this mitigation will be achieved. The SEIS also relies on lower emission rates of British Columbia instead of the more accurate top-down recordings of sensors on airplanes. The SEIS treats methanol like a bridge fuel, it will replace dirtier forms of fuel until we find an overarching solution to global warming.

Fracked oil was supposed to be a bridge fuel, but as a result of this new American source of energy, oil supply surged, bringing the price of gas down. As a result, Americans bought more pickups and SUV instead of cars. They also drove more miles. Frack--

Gordon Hinkle

Thank you very much. Hi, my name is Gordon Hinkle and I grew up in nearby Camas, Washington. I wanted to say thank you to the Department of Ecology and ask them to please finish this important work. Please issue the permit for this project to proceed. I'm absolutely amazed by the opposition and the hypocrisy. Everything we use in modern day uses technology, computers, phones, tablets. If they are all so against the production of plastic, I'm asking them now, please do not ever use plastic again. We all know that's unrealistic and that we are looking to implement it in a safe way in the state of Washington. Why would we empower foreign governments to try to produce something using unclean technologies, when we have the best, the very best in the world right here in the United States?

The independent Department of Ecology report has already confirmed that the project will result in massive, significant, huge global benefits, millions of tons of greenhouse gas reductions every year over what would happen without this project. Why in the world are we giving this not in my backyard mentality by so many in the opposition? I say, create the job, do it better here in the US than this production would be anywhere else, and we will meet the standards and have better mitigation than any other place in the world. Please approve this project. Thank you.

Mike Bridges

My name is Mike Bridges and I'm a lifelong resident of Cowlitz County. I will keep my comments brief and try not to repeat myself since I have previously gave testimony for the record and I want to be respectful of this process. No matter how you look at the SEIS and its various range of data variables, even looking at the worst case scenarios for pipeline liquids, the project proves to create a significant reduction in GHGs. GHGs are a global issue that has no boundaries. To not move forward with this project guarantees the status quo and further acceleration of the effects of climate change.

I know during these hearings we have heard from project opponents, but as someone that is involved in my community, I have the privilege of working with business, labor, elected leaders, and many nonprofit organizations throughout the community. I can assure you that we have very strong majority support for this project in Cowlitz County, because it's a win for the environment, it's a win for the local economy while setting a high environmental standard and example for the rest of the US and the world.

I'd like to thank the Department of Ecology and all who participated in this process, including Northwest Innovations for this project and for us locally while helping to reduce global GHGs. Thank you

Isaac Kastama

Thank you. I believe it's important that we apply rigorous climate test on new projects under consideration state. Ultimately, it's important that if that test shows that it's a good project, that it produces a net benefit would be intellectually consistent and approve it. In this case, the college's analysis is unequivocal. Every way it looked at it, the climate facility results in a global greenhouse gas net benefit and a substantial one.

This facility will produce the cleanest methanol in the world. As we've seen from global analysis that have looked at the challenges of achieving deep decarbonization, this is a stubborn sector to achieve emission reductions. What we have before us is a solution. It's a solution that does put us on a path to deep decarbonization to Paris Accord targets, recognizing that this is a sector that over time is very hard to reduce emissions, but this is the best improvement that we have. It can become cleaner with sequestration and biofuels. That's an opportunity for Washington to continue to lead.

The results of this EIS can actually improve over time, and that is something that needs to be recognized. I hope that Ecology follows through and proves this permit. Let's get this built. Thank you.

Marren Jenkins

Hello. I'm Marin Jenkins. I live here in Kalama. I am so thankful that we have Department of Ecology to monitor every industry that wants to work in our communities and our states because I remember the days when industry for jobs could pollute the air that we breathe daily, daily, daily, the poisons, the poisons. It was the people who are opposed to this methanol refinery that existed to make it possible to have Departments of Ecology.

They saw the pollution and they said they have solutions. They are the people that said, "Cars don't have to be polluting so much," and catalytic converters were found. What I want to say is where is the point of origin of this proposed plant? It's the oil fields of Canada, who sold their product to the Chinese. The Chinese buy for whatever purposes as an investment.

If the Chinese made it as an investment, then their investment can be used and built here in the US or Canada with where we have more stringent air quality restrictions because we have Departments of Ecology. They don't have them in those foreign countries. I'm really counting the Departments of Ecology throughout the US to rein those in. If the Chinese need to do something with their investment, how about returning their investment to pay off the cost of the degradation from the COVID or the Chinese flu, whichever way you want to put it.

The Chinese do not have to be build out by the Department of Ecology, or America, or American life. This manufacturing that they want to put on is in the most dense parts up and down the Columbia River. This is where the population is. This isn't in my backyard, this is in my front yard, and I know-

Julia Mottet

Hi. My name is Julia Motet. I live in Longview, Washington. The proponents of the methanol refinery would have you believe that the refinery would decrease the amount of methanol derived from coal-based methods, thus creating a net reduction of greenhouse gases being produced. However, the Chinese have made no written promises to decrease their coal-based activities if the Kalama methanol refinery were to be built. Even if they did make a written promise, it would be absolutely impossible for us to enforce.

Most certainly, they would simply add the methanol to all their other fuel stocks and coal would continue to be burned at the same rate in China. Displacement is wishful thinking at best and false logic and deceptive propaganda at worst. When you consider all upstream emissions of this fracked gas project is every bit as bad as coal, the very source that NWIW claims to be replacing, this refinery would be a very significant contributor to greenhouse gas emissions. We cannot mitigate our way out of the damage it would do to our planet. The damage would be immediate and ongoing.

Any so-called mitigation such as planting trees that take decades to grow would be too little too late. Only after updating the FEIF to take into account all upstream emissions can the Department of Ecology make an informed decision. No decrease in China's use of coal-derived methanol should be assumed in the final FEIF due to the aforementioned reasons of no promise and no enforcement. Methanol is a commodity and once it is manufactured and sold, the seller has no control over how or what is its use. I'm also very concerned about additional tanker traffic on the Columbia River and what it would do to our salmon and other native fish.

Finally, I think this refinery is an explosion hazard and too near families with children. All we need is a good earthquake and any safeguards put in place to prevent the methanol from coming in contact with oxygen will be breached.

Kimberly Parks

Hi, my name's Kimberly Parks. I've been a resident of both Oregon and Washington and considered both states to my home. I want to thank Ecology for their due diligence in vetting this project and taking the time to hear from the people in Cowlitz County and the surrounding areas. I consider myself to be a progressive, an environmentalist, a realist, and a person who values facts. I lived and worked in China and have seen the coal mines, the factories, and have breathed that air, so I know what's at stake. There is no global window to roll up that will protect us from Chinese and China manufacturing, which is thriving because of our demands as consumers.

This isn't about single-use plastics like water bottles, this is about items we use every day like the devices we are using on this call and the PPE our medical people are using to save lives and battle COVID. Items that are essential, so where is the balance? Where is the science? The science is right in front of us. The data that Ecology is providing us. I support this project because it's going to take many different angles and solutions to get us to net-zero GHG by 2030. If this project by end of it NWIW is going to help get us there, I'm for it. It's going to bring an alternative to coal, I'm for it. It's going to bring local jobs to Kalama, I'm for it.

If this cleaner way forward will help produce greener materials for us that we demand like wind turbines and other important equipment that American benefits from, I'm for it. All industries are going to have to do their part in being part of the solution. I like for all of us to see the science for the positive and work together to keep this project green, clean, and setting standards with the world to see it as possible. United we stand, divided we fall. The world is counting on us to lead. Thank you.

Rachel Hogan

Hello, this is Rachel Hogan my phone. I am a resident in Washington State on the unseeded land of the Duwamish and Coast Salish people. Regarding Ecology's economic models, these assumptions about the future of fossil fuel use and global methanol markets like 2030 oil prices, et cetera, to justify such a project in our state, for those who use an economic lens anyway, let them use the full weight of what others have just touched upon and take into account these literally stranded assets. During these last six months when the price of oil collapsed, there were lines and lines of tankers sitting off the coast of California.

They were at \$250,000 a day stuck out there at sea trying to find a place to store it, they were the storage. If you haven't seen those images, check it out. Once quite recently, a barrel of oil in Canada fetched about the same price as a beer there. In some cases, they paid to have people just take the oil so they wouldn't have to shut off the wells.

During this pandemic, the same extractive industry CEOs received millions in massive coronavirus bailouts from the federal government, while our economic systems are in failure, while our families are struggling to meet our basic needs.

I reiterate the comment that in your draft EIS, methanol production and projection is based on static and not the dynamic analysis which is needed since not just our awareness is changing so quickly but the reality is. As a key element in your presentation, something like methanol market is increasing its capacity to meet the demand, that's a business argument, a seller's argument made by desperate entities. Surely not through a lens of ecology, the definition of which is the branch of biology that deals with the relations of organisms to one another, and to their physical surroundings.

When we talk about fish habitat, degradation of soil, earthquake risk, on and on, air, water, food sources, social justice, all these things like cancer and health, we're talking about ecology to Ecology. Thank you very much.

Linda Leonard

Hi, I'm Linda Leonard, I am Kirk Leonard's wife. We are residents of Kalama. I thank you for giving the public the opportunity to make comments. Industry is a major

contributor to climate change. The more fossil fuels are extracted and burned, 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 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 with Washington State by almost one million metric tons of carbon dioxide equivalent a year. Our climate future is at stake with 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, the 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 and thank you for your time.

Mark Ivan

My name is Mark Ivan and I live in near Kalama. Many of my neighbors are fishermen, 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 spent a good part of their life. Washington fisheries are not the only ones in decline. This year, salmon returns in Alaska were so poor that many Alaskan communities are claiming fishery economic disasters and requesting government assistance.

As of August 12th, all sockeye, chinook, pink chum, and chum salmon fisheries are below projections with some areas completely closed to commercial fishing. This could happen to us and probably will. I reviewed the 2019 and 2020 Washington Coho Forecast Summary published by the Department of Fish and Wildlife. The forecast and actual returns for hatchery and natural coho salmon went from a little over two million in 2019 to just under one million forecasted in 2020, less than half. Runs will likely be just about 50% of the 10-year average. Every production unit is forecasting significantly fewer natural fish.

Although this is a snapshot and only represents 1 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 shocked, what are we thinking? I hope you see the SCIS for what it is. It's a scheme that under reports GHGs, sells the local jobs now for a climate emergency in the future that cannot be avoided anyway. Therefore, it is unacceptable outcome.

If this plan is approved, the port decline will be there ring in the bull's nose waiting to be pulled a sign of discretion. Please deny the shoreline project.

Linda Horst

My name is Linda Horst at Newcastle. 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, and its reliance on speculative and unenforceable assumptions, this voluntary mitigation program 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 height net green project mantra. If this refinery is the environmental panacea in Northwest Clinton NWIW claims it to be, why is every Northwest environmental organization opposed to it?

As a 30-year area resident and lifetime 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, "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. Thank you very much for the time.

Audrey Not Provided

Hi, my name is Audrey and I'm a high school junior. I'm currently living in Kalama and I'm less than a mile away from their project site. I'm very concerned for our environment and I'm actively engaged in environmental awareness clubs and movements in my school and community. As a result, I'm in support of the Kalama project. I appreciate the review done by the Department of Ecology and believe that more than enough study has been done to support the incredible benefits of this project. This project has been under review for almost seven years now. This is the third time a government-led process has been undertaken.

In the meantime, while we continue to study this, climate change keeps happening and the science shows that every year we delay this project is another year we allow more carbon to be added to our planet. We must act now in order to address climate change. This project is an important step to doing that. Additionally, thank you to the Department of Ecology for the extremely thorough report. Climate change is real and change requires bold and meaningful action. Even this more conservative study sets a clear picture for the benefits for this project on both a statewide basis and globally.

Opponents of this project have slow progress and delay positive impacts by denying science. If Ecology's best estimate is to be believed, then the four-year delay caused by opponents of this project has the effect of adding a cumulative of a total of 24 million tons of GHGs into the atmosphere. I believe Washington state can and should set the highest standards and lead other states, our nation, and other nations. To the Department of Ecology, please approve this project as a great example to drive those high standards.

350PDX

Thank you to the Department of Ecology for holding these hearings. My name is Dineen O'Rourke and I'm the campaign manager for 350PDX, a grassroots organization working for climate justice in Portland, Oregon, and beyond. On behalf of over 8,000 supporters and volunteers in our organization, I'm calling on Ecology to reject this methanol refinery and deny the shorelines permit. The impact of building this project would extend far beyond Kalama, far beyond our community just 40 miles from Kalama, but throughout our entire region and our entire atmosphere.

The SCIS is full of flawed arguments, false choices, low-balled estimates of emissions, and industry talking points. It's disappointing. The core argument that methanol could displace dirtier energy presents a false choice among all bad options, and fails to consider whether cleaner energy technologies may dramatically displace the need to use methanol for transportation fuels. NWIW will also use up to 320 million cubic feet of gas per day, and it will drive additional fracking and methane leakage across the continent.

Given these uncertainties, Ecology should base its decision making on the assured dramatic pollution from fracking gas, producing and refining methanol, and burning or using methanol to make plastics. The rest is largely speculation. It is downright embarrassing that while this region is on fire, about thousands of people have entirely lost their homes and while millions of us breathed in the worst air quality in the world for over a week, Ecology is even considering these speculative claims to build new fossil fuel infrastructure. The climate crisis is here.

Building this refinery would be breaking Washington's own climate goals and moving us in the exact opposite direction. Ecology, do the right thing and deny the shorelines permit.

Not provided Not provided

Nick's emissions analysis shows that this is a good deal because the project emits fewer outrageous numbers of tons of greenhouse gas compared to even more outrageous coal sources, but to get there, we've got 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 assumptions are true, then this big idea that the plant will displace coal fails. You have to buy into applicants claim that, one, for the next 40 years, it will be endless growth in demand for fossil fuel-based plastics or methanol.

Two, in the next 40 years, we can, with certainty, predict Chinese manufacturing, trade, and environmental policy, tech development, and global commodity markets. Three, the next 40 years no coal-based competitors will produce methanol because they feel the Kalama plan and operation they'll fold their tents knowing methanol consumption will be a fixed amount. It is 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 into the global market will affect demand, will affect price, and will affect supply.

Actually, it's going to incentivize other methanol plant production. They won't at all displace coal, but instead will displace renewable energy sources, and you're low-balling 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. There's zero independent verification. We're talking 40 years of this production to distribution gas highway. Blowouts will occur. They're inevitable. Just one gas well in Belmont, Ohio in 2018 blew up and spewed more methane in the air in 20 days than Europe did in an entire year.

Bottom-up measuring completely depending on gas industry-- Thank you.

Teresa Purcell

My name is Teresa Purcell and I was born and raised in Cowlitz County, and moved away for 26 years, and moved back 13 years ago. I have been astounded at the despair of the county and the fact that we haven't been able to build anything in 30 years. I've also committed my life for the past 30 years to environmental protection. I've worked all over the country with environmental organizations and working very hard to protect our land, air, and water and address climate change. I am a big supporter of the Northwest Innovation Works project because, to me, it is part of the solution. One of the things, as I hear all of the folks who are against it, I don't actually hear any solutions.

I don't hear looking for investments in creating jobs while we're actually tackling the climate crisis. I don't hear excitement about the fact that this project has actually committed to zero liquid discharge and ultra-low emission technology, which sets a new industrial standard for Southwest Washington where we can become an innovation zone, where the things that we do here can become creating the products of the future that are created with clean energy.

The conversation about using and creating a market for renewable natural gas, which is something that we actually do want to see happen, and also looking at the fact that we're running out of time and saying no to things that actually make a meaningful difference is not a solution. Please, I ask you, and I thank the Department of Ecology for their thoughtful work, but I ask you to move forward with this project and support it. Thank you.

Not provided Not provided

Thank you. My friend Bill Brake worked in the petroleum and gas industries for about 35 years, used to testify as an expert witness, and he was aware of this facility which was under discussion before he died. One of the things that he pointed out is that the footprint that this is expected to be placed on is about 98 acres I believe, and he said for a project this big in, for instance, Texas, which knows something about gas and gas plants, even though this is a different design, the industry standard is at least 500 acres for something of this size.

This is an experimental design and it is hazardous in the extreme, and I do not believe people have been considering the added greenhouse dangers of accidents that could so easily happen with an untried facility. There is, I understand, a similar one in Australia, but this would be no. Anyway, I want to point out that as good as the promotion work sounds, methanol is a far more effective greenhouse gas, it's 86 times as bad as carbon dioxide in the short term, and, friends, all we have is the short term. As far as jobs, the industry does not have our best interests at heart. They're going to bring in people from Texas and Oklahoma. Thank you.

Thomas Not provided

My name is Thomas, I'm a lifelong Washingtonian. 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. This plant would reduce harmful greenhouse gas emissions globally at meaningful levels. For those who have asked questions throughout this process, those questions have now all been studied and answered.

I've heard several well-intentioned people during these hearings express their opinions, and it is clear that those opinions are deeply held, but even the strongest held opinion is no match for facts and science. Here's an example. I've heard some people expressing opinion that China's use of coal will unquestionably decline as a direct result of the country signing the Paris climate accords. While I do wish that would be the case, the fact is that China is expanding its coal plant capacity right now at the fastest rate since 2015.

According to survey data published this June by the Global Energy Monitor and the Center for Research on Energy and Clean Air, the only way to enact the goals established in the Paris climate accord is to look at facts like these, use rigorous and comprehensive scientific analysis like we find in the draft FSEIF, and when that science gives us an opportunity to reduce global GHGs by over six million metric tons annually, we have to say yes. To not do so is to do miserable harm to our planet, and that's not speculative or hypothetical even if it challenges somebody's strongly held belief. To be clear, the status quo isn't working. The only thing we can do is trust back to the science which the draft FSEIF accurately does.

Alicia Not provided

Yes. My name is Alicia and I'm a high school sophomore. I'm currently living in Kalama which is less than a mile away from the project site. I'm very concerned for environment and I'm actively engaged in environmental awareness clubs and movements in my school and community. As a result, I'm in support of the Kalama project. I appreciate the review done by the Department of Ecology and believe that more than enough study has been done to support the incredible benefits of this project. The site analysis opponents question has now been completed and Ecology's report makes it clear that the real impact of NWIW Kalama methanol is meaningful in the reduction in global greenhouse gases.

This is true under even the lowest ranks of [inaudible] presented in colleges. According to those reports best estimates, NWIW would produce a global net reduction in greenhouse gases of over six million metric tons per year, approximately twice the amount of greenhouse gases the entire city of Seattle produces annually.

Brian Not provided

My name is Brian and I have a couple of people here who want to say that we want to have access to clean materials. One, two. We want clean material. Those are my kids who are tired of their toys being made of coal from China and would like to have access to cleaner toys. Thank you.

Jim Johnson

My name is Jim Johnson, I've lived in Woodland area with my wife and raised our kids here. I've been here 54 years, time moves when you're having fun. That's where we are. I want to say that environment is important for us in our family. All our three kids and eight grandkids all live within Washington, except when they're going to college, and they also have the same concerns. I want to thank you for the opportunity this evening, and I want to thank you for the deliberations as to afforded us in looking at the project. I agree with you, the Department of Ecology, where you agree with Northwest Innovations in the EIS.

I want to say also that we have a number of people that we associate with in the local area, and we have a lot of favoritisms for the project and the opportunities that bring us, and I think it has assets that a lot of people want to pass by jobs, clean air in the future. I think that inaction on making this a goal is we got to get it and get it going soon. I thank you for your time. Goodbye.

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 Gussing 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 Gussing achieving zero GHG emissions.
<https://www.100-percent.org/gussing-austria/>

Here is more information about the technology and economic impact of their regional transformation.
https://ec.europa.eu/regional_policy/en/projects/austria/new-formula-for-renewables-revolutionises-gussing

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

Columbia Riverkeeper

Hello,

Please find attached our song about Kalama, which we would like to include as an official comment for the Kalama DSEIS.

You can also view it online

here: <https://www.facebook.com/ColumbiaRiverkeeper/videos/653532421966634/>

Thank you for working to protect our communities and our environment.

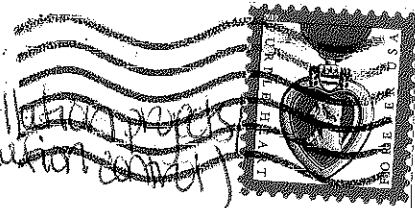
Sincerely,

Kate Murphy

* We protect what we love. ✓

PORTLAND OR 972

Dear Laura Watson / Ecology (anti-pollution projects)
24 AUG 2020 RM 2 (pollution control)



My name is Kimberly

Kramer and I live in
Kalama WA, the area that
would be impacted by
the Kalama Methanol refinery.

Laura Watson Director
Department Ecology
PO Box # 47600
Olympia WA 98504-
7600

Actually one of the most
beautiful spots by the
river here is where you'd built.
Please we need state climate, clean water, air.

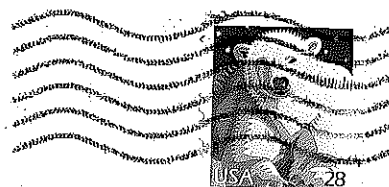
Photo Credit: Kate Murphy

Thank you for your time. Kalama Kim

We protect what we love.

PORTLAND OR 972

01 JUL 2020 PM 4 L



DEAR LAURA WATSON,

MY NAME IS CHRIS THOMAS, I LIVE NEAR LA CENTER AND
SUPPORT THE DECISION TO REQUIRE A NEW SEIS FOR THE
KALAMA REFINERY. WE SUPPORT YOUR DEPARTMENT'S ROLE IN
PROTECTING CLEAN AIR, WATER AND A STABLE CLIMATE OVERALL. THE
NWIW REFINERY THREATENS THESE ESSENTIAL RESOURCES
AND HAS ATTEMPTED TO MISLEAD THE COMMUNITY INTO
TRADING THEM AWAY FOR MINIMAL GAIN. I URGE YOU
TO DO A THOROUGH SEIS THAT WILL PROTECT THE
KALAMA REFINERY. THANK YOU - CHRIS THOMAS

LAURA WATSON, DIRECTOR
DOE
PO BOX 47600
OLYMPIA, WA 98504

Photo Credit: Cambria Keely

We protect what we love
PM



Dear Director Watson,
My name is Jody
Low and I want to
thank you for your
efforts to protect
our state's clean air
and water. I urge your
dept. to reject the
Kalama methanol refinery.
Thank you!

Laura Watson

Dept. of Ecology

P.O. Box 47600

Olympia, WA 98504-
7600

Photo Credit: Mark Hart

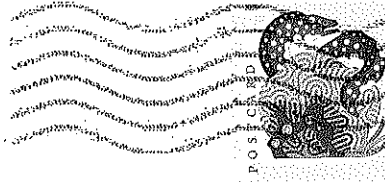
We protect what we love.

Dear Laura,

As one who has enjoyed
clean living in Kalama
for many years, I know
that we have a choice
between fracked gas
& clean technology. I
prefer clean air to
breath, clean water to
fish in & enjoy, clean
soil to grow food in.
Please oppose NWIW.

Thank you,

Alice Smyke



Laura Watson, Director

Dept. of Ecology

PO Box 47600

Olympia, WA

360-485-7600

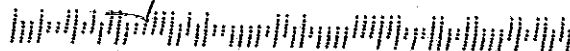


Photo Credit: Cambria Keely

PORTLAND OR 972
We protect what we love



Dear Laura Watson, Director
We have both a legal
and public obligation
to have a complete and
accurate assessment of
the environmental impacts
of NWI. The lively
hood and environment
of Kalama depend on
it and your help.

Thank you,

April O'Donoghue

Laura Watson, Director
Dept. of Ecology
PO Box 47600
Olympia, WA
98504-7600

Photo Credit: Cambria Keely

We protect what we love AND OR 972

Dear Laura Watson,

06 JUL 2020 PM 2 L

I am requesting that
Dept. of Ecology to step
up and protect Washington's
clean energy and climate
goals. NWIW has not been
honest about their
emissions and other
points. We want to be
able to enjoy a clean
environment. Our health
and the areas health
depend on it.

Sincerely,

James O'Donnell



Laura Watson, Director

Department of Ecology

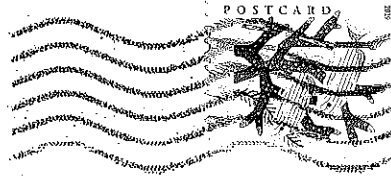
PO Box 47600

Olympia, WA

360-476-1600

Photo Credit: Cambria Keely

We protect what we love
PORTLAND OR 972



Dear Director Watson,

I support the
ecology dept's
decision to require
a new SEIS for
the Kalama
methanol refinery.

Thank you for
your efforts to stand
up for a fair process.

Director Laura Watson
Dept. of Ecology
P.O. Box 47600
Olympia, WA 98504-
7600

Photo Credit: Kate Murphy

Anonymous Anonymous

Dear Sir:

I am very much against building Northwest Innovation Work's Methanol Refinery in Kalama for several reasons.

Right now, it feels as though we are in the middle of a climate change crisis. The east coast is bracing for early and damaging hurricanes and the west is overwhelmed by wildfires. Here in my Portland neighborhood, I feel surrounded by a horror show of fires and smoke. The air is not fit to breathe, and exercise or even walking the dog more than a couple of minutes is not advisable.

The second Supplementary Environmental Impact Statement for the Kalama Refinery projects the release of a huge amount of greenhouse gases every year - about 4.6 million tons. We know that greenhouse gases exacerbate climate change. In addition to creating hot, dry conditions ripe for wildfires, GHG's acidify our oceans and warm our rivers thus having a considerable impact on tourism and the seafood industry, both important sources of jobs and income in the NW. Climate change also has a devastating effect on everyone's quality of life and health.

I cannot think that this venture has anything except problems to offer our region. A few people will land permanent jobs, but the profits will flow to Canada and China. We get the risk of a possibly explosive methanol refinery surrounded by potential wildfire hazards, and huge increases in climate altering GHG emissions.

We must work together to move our region away from fossil fuels and not build new facilities that will endure for over 30 years. I think the Department of Ecology should halt this dangerous enterprise now and deny its Shoreline Permit.

Each of these issues is extremely important for the health of our people and our planet!

Rayna Holtz
12509 SW Cove Rd.
Vashon, WA. 98070

RECEIVED

OCT 13 2020

WA State Department
of Ecology (SWRO)

Rich Doenges
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

October 9, 2020
RE: Kalama methanol plant

Dear Rich Doenges,

Thank you for this opportunity to give comments. After days of looking at the SSEIS for the proposed Northwest Innovation Works methanol plant at Kalama, and searching for additional research and information about relevant parts of the SSEIS, I have collected my responses and perspectives into the attached comment, and have additionally copied a model "Policy on Coastal Liquefied Natural Gas Facilities" written by Surfrider Foundation. It is one of the interesting related documents that surfaced as I was looking at background literature, and I think it has good science and sound reasoning behind it. Although it's not official Washington State law, it is consistent with the Shorelines Management Act intent, and I appreciate the way it gathers considerations and comes to conclusions.

Essentially, the importance of prioritizing the health of significant aquatic ecosystem sites outweighs all other considerations. No coastal site is good for a methanol plant, but the worst possible coastal site is at the inlet to one of the greatest river systems of the North American continent. Industries involved with handling toxic materials are too hazardous, and supply lines carrying toxic materials all the way across country, putting all the ecosystems and communities at risk as they pass through them, to deliver them to a highly sensitive site is foolish.

My personal background of volunteering as a beach naturalist on Vashon Island for over 15 years, learning about marine and shoreline ecosystems and teaching others during free public walks, has given me a front row seat to watch the effects of climate change on Salish Sea life. I have also volunteered for the University of Washington COASST program (Coastal Observation and Seabird Survey Team) for the past 13 years, and for the local Vashon Nature Center's Salmon Watch program. Reading related news stories on these subjects and observing what has been happening right here in front of me, I can tell you I feel great urgency about the need to sharply curtail all emissions of greenhouse gases, and there is nothing in NWIW's proposal that justifies adding a brand new source likely to operate for 40 years if their plans work out. We have seen warming spells that contributed to the vulnerability of local sea stars to a disease that they've successfully survived for years until recently. There have been a number of toxic plankton blooms that have caused the deaths of staggering numbers of marine mammals and birds in northern BC and Alaska especially. The earlier melting of snowpack and warming of salmon streams has literally killed fish that were swimming home to spawn, because the water was too warm to hold the oxygen they need to survive. Scientists say it will get worse before it gets better, no matter what we do. The time to act is now.

Sincerely,

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

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.

10/5/2020

TO RICH DOENGER:

I AM ADAMANTLY OPPOSED TO
THE METHANOL PLANT IN KALAMA.
THE SHORT AND LONG-TERM (100)
JOBS PROMISED DO NOT COMPENSATE
FOR THE POSSIBLE CONSEQUENCES
TO OUR AREA.

ASSURANCES OF SAFETY ARE
SELF-SERVING AND SUGAR-COATED.
OUR SAFETY, HEALTH, AND THE
ENVIRONMENT ARE MORE
IMPORTANT!

LET CHINA FIND SOMEWHERE
ELSE. WE'VE HAD ENOUGH
DISASTERS AND CATASTROPHES
LATELY!!

SINCERELY,

Carolyn D. Laudain
202 FOREST VIEW
WOODLAND, WA 98674
360. 225-7637

RECEIVED

OCT 15 2020

WA State Department
of Ecology (SWRO)



Carolyn Laudain
202 Forest View Rd.
Woodland, WA 98674

Thomas Gordon

NWIW plans to use part or all of the methanol it hopes to produce as fuel in China. However, most of China's power comes from coal-fired plants now.

As reported in Carbon Brief, March 24, 2020, China, with more than half of its coal -power firms losing money and with the usual plant running at less than 50% of capacity, why is the Kalama methanol refinery being planned?

"Looking at the energy situation shows the China's network operator, State Grid, and the industry body, the China Electricity Council, are pushing for hundreds of new coal-powered power plants to be built. "And a recent update to the "traffic light system" for new coal-power construction signaled further relaxation of permitting." Even now, China, the world's largest emitter, who overtook the EU in 2003 and the US in 2005, is putting out nearly a quarter of global green house emissions.

Also, China is pushing ahead on renewables. The result is over-capacity, built on purpose. China is working to keep its options as open as possible in the future.

China's "economic miracle" has seen the country become the world's second-largest economy and pulled nearly a billion people out of poverty. But this progress has been built on a boom in energy from coal, meaning China has also become the world's largest carbon polluter by far.

China's CO2 emissions increased again by around 2% in 2019, based on recently released official economic data, and 65% of the annual growth in energy consumption came from fossil fuels.

Coal is the most carbon-intensive fossil fuel and still accounted for 57.7% of China's energy use in 2019, the data shows. Coal plants, which burn approximately 54% of all coal used in the country, provide 52% of generating capacity and 66% of electricity output - down from a peak of 81% in 2007.

Coal-fired power capacity grew by around 40 gigawatts (GW) in 2019, a 4% increase, and a pick-up from the past two years. As a result, the coal fleet's average utilization rate fell further, to below 50% on average.

Against this backdrop, there is already heated debate - as outlined below - over China's 14th FYP, (five year plan), which will set national targets and priorities for the next five years. The energy targets that will be set by the plan mean it will be a crucial document for global efforts to tackle climate change.

Under the existing 13th FYP, coal power capacity is capped at 1,100GW. Separate targets aim to raise the share of China's energy mix that comes from non-fossil sources to 15% by 2020. More detailed development plans set out indicative targets for sectors such as renewable energy. (Solar has significantly exceeded the relatively low indicative target that was set five years ago.)

Targets of a similar nature are likely to be set as part of the overarching 14th FYP, due to be agreed on early next year. Further details will then be set out in sectoral plans over the following year.

The power- sector plan, which could include targets for the growth of most generation options - but particularly renewables - might be expected during winter 2021 -22, based on previous cycles.

The stakeholder consultancy, scoping and drafting for the power-sector plan has already been started within the government system, with different academic organizations and think tanks tasked with producing research to support the process.

China's coal-power overcapacity dates back to the 12th FYP. This was formulated in the early 2010s as part of the largest economic stimulus programme in history, launched in response to the global financial crisis. It targeted a huge expansion in coal mining and coal-fired power generation.

Then, from 2014, the authority to approve new coal- fired power plants was transferred from the central government to the provincial level, in a drive to cut red tape.

Many local governments jumped at the opportunity to prop up GDP and create demand for locally mined coal with new power projects, leading to around 210 projects with a total capacity of 169GW being rubber-stamped in less than a year.

This surge of new projects came as demand for coal- fired electricity declined from 2013-2015, apparently catching the central government by surprise. It then moved to curtail approvals and suspend already permitted projects.

China's economic system is based on abundant and cheap capital being made available to the state-owned sector with little concern for economic viability, as long as the investments made are broadly aligned with the five-year plans.

This system can mobilize vast amounts of resources, but is prone to over-investment, as companies and local governments use capacity expansion to boost GDP and gain market share. The planning machinery limits overcapacity with control policies - with varying levels of success.

Many experts and industry bodies argue for a move away from top-down targets and controls, to investment driven by market forces. However, the spending needed to fuel a new stimulus program can only be mobilized if investment is directed at the behest of the state, rather than the market - as a rule, China does not fund stimulus with on-budget spending, but by directing state-owned enterprises and commercial banks to spend more. In these circumstances, lack of controls on capacity additions runs a high risk of over-investment .

For example, efforts to control overcapacity might be vulnerable to the political priority of boosting investment spending to reach economic targets. An indication of this was the loosening of "traffic lights" for new coal-plant approvals, published by the National Energy Administration in February.

The traffic light policy was first introduced in January 2017 to prevent provinces with overcapacity from permitting new projects. A year ago, however, 21 of China's 31 provincial grids included in the policy were given a "green light". Last month this increased to 25."

Thus, there is no pressing incentive to build methanol-burning plants. However, one incentive is to use resources outside China in order to save internal resources.

There is no reason for us to build this plant just as a hedge against the future for China. The result for us is destroyed land and forests to get at the gas by fracking in Canada and the US. Leakage of methane will increase as more methane is pushed to Kalama through aging gas lines, some 50 to 60 years old, the projected life times of some of these lines.

Plus, our electricity will be used to refine the methane into methanol through electric lines that created pollution in their manufacture and placement. The refining of methanol itself creates millions of tons of pollution. Lastly, transporting the methanol down the Columbia River and across the Pacific to China will create more pollution.

If this refinery is not built, all these green house gases won't be created either.

Please do not issue the permits for this refinery.

Thomas Gordon
642 I Street
Washougal, WA 98671

RECEIVED

OCT 13 2020

WA State Department
of Ecology (SWRO)

Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-76

I submitted a long comment that started with "NWIW plans to use part or all..." on October 8, 2020, at around 11pm and something happened in transmission. There are a bunch of question marks with strange borders in the text. I'm not sure what happened, but I have special computer skills as you can see. Enclosed is a regular text of my comment so you can see what I meant to send.

Would you please get rid of the question marks or delete the comment and put in the enclosed desired comment, please?

Thank you for your time and effort. At least, you will have a story for the rest of your office.



Sincerely, Thomas Gordon

NWIIW plans to use part or all of the methanol it hopes to produce as fuel in China. However, most of China's power comes from coal-fired plants now. As reported in Carbon Brief, March 24, 2020, China, with more than half of its coal-power firms losing money and with the usual plant running at less than 50% of capacity, why is the Kalama methanol refinery being planned?

“Looking at the energy situation shows the China's network operator, State Grid, and the industry body, the China Electricity Council, are pushing for hundreds of new coal-powered power plants to be built. “And a recent update to the “traffic light system” for new coal-power construction signaled further relaxation of permitting.” Even now, China, the world's largest emitter, who over took the EU in 2003 and the US in 2005, is putting out nearly a quarter of global green house emissions.

Also, China is pushing ahead on renewables. The result is over-capacity, built on purpose. China is working to keep its options as open as possible in the future.

China's "economic miracle" has seen the country become the world's second-largest economy and pulled nearly a billion people out of poverty. But this progress has been built on a boom in energy from coal, meaning China has also become the world's largest carbon polluter by far.

China's CO₂ emissions increased again by around 2% in 2019, based on recently released official economic data, and 65% of the annual growth in energy consumption came from fossil fuels.

Coal is the most carbon-intensive fossil fuel and still accounted for 57.7% of China's energy use in 2019, the data shows. Coal plants, which burn approximately 54% of all coal used in the country, provide 52% of generating capacity and 66% of electricity output – down from a peak of 81% in 2007.

Coal-fired power capacity grew by around 40 gigawatts (GW) in 2019, a 4% increase, and a pick-up from the past two years. As a result, the coal fleet's average utilization rate fell further, to below 50% on average.

Against this backdrop, there is already heated debate – as outlined below – over China's 14th FYP, (five year plan), which will set national targets and priorities for the next five years. The energy targets that will be set by the plan mean it will be a crucial document for global efforts to tackle climate change.

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OCT. 8, 2020
KALAMA, WA.

NW1W SSE15
WA. dept. of ECO.
P.O. Box 47600
OLYMPIA, WA. 98504-7600

RECEIVED

OCT 13 2020

WA State Department
of Ecology (SWRO)

ATTN: Rich DOENGES

SIR,

I AM A CONCERNED CITIZEN OF
KALAMA, WA. AND HAVE BEEN FOR 20YRS.
I'M NOT A SCIENTIST OR CHEMICAL
ENGINEER BUT VERY MUCH CONCERNED OF
THE PROPOSED PROJECT. ① DEPLETING OUR
NATURAL RESOURCES, ② GENERATING A PRODUCT
THAT WILL NOT BIO-DEGRADE WHEN PUT
INTO A FINISHED PRODUCT. PLASTIC.

OUR RIVERS AND OCEANS ARE FILLING
WITH THESE CONTAMINANTS.

I'M BEGINNING TO THINK IT'S ALL ABOUT
JOBS & MONEY NOT THE HERE AFTER.

ONCE THIS PRODUCT LEAVES OUR SHORES
WE'LL HAVE NO SAY.

THANK YOU
ROGER BRINDLE

The Field



Haitian Bleu™ Coffee Art expresses the essence of a special group of native coffee farmers who live in Haiti. Although they live in the poorest country in the Western Hemisphere, they now produce the finest tasting coffee anywhere in the world. Capturing authentic Haitian color and style, artist Vincent Gary depicts a man and woman working together in a coffee field, carefully tending their coffee plants to produce unique Haitian Bleu™ coffee.

This card is part of an original and exclusive collection commissioned by the Coffee Revitalization Project, a large-scale endeavor by a new democratic farmers' organization named Cafetières Natives, to improve coffee farming and processing methods in Haiti. Now for the first time in history, Haitian Bleu™ quality coffee is available to the U.S. market. For your enjoyment, these dedicated farmers have recreated the legend of the famous bleu bean of Haiti. Savor the exotic coffee experience once reserved for European Kings: Haitian Bleu™.

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OCT 13 2020

WA State Department
of Ecology (SWRO)



Some of this talk of
life along the Columbia
-The big tsunami from the big
quake Dec in 1904 50 yrs
p 43-44 etc

PS - the natural beauty of the
Kalama River has value. with its ecology at stake.



Leigh McKeimman
146 S. Vista Way
Kelso, WA 98626

Our aluvial valley has slides
every year and you are adding methane ???

It will destroy recreation
money on the river, the
fishing (what is one cure
about the salmon conference -
1 gallon spilled kills
144,000 gallons of marine
life) and it will clog
the river with trans oil
tankers mangroving other
industry. Also a methanol
explosion 1 1/2 yrs ago
evacuated 17 miles. What
about the nuclear rods !!!



When you are finished
I can remember when we were
in the slide areas in 1980.
ecology seemed like the only
dept we could trust that
wasn't bought off.

This book is to remind you
why we don't want methanol
which is owned by a foreign
bank, will put 2/3 of the
world's methane in the hands
of the Chinese (Powers ships
at war) They are currently
working us off in the south
China seas. It only guarantees
SD international jobs ~~the~~ the local jobs we
instead of 750-1000 clean local jobs we
could have



The Tidewater Reach

Field Guide
to the
Lower Columbia River
in
Poems and Pictures

ROBERT MICHAEL PYLE
JUDY VANDERMATEN

Larry Tyrrell
7234 SE 17th
Portland, OR 97202

Mr. Rich Doenges
Dept of Ecology
PO Box 47775
Olympia, WA 98504-4777



USA / FOREVER

OCT 15 2020

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WA State Department
of Ecology (SWRO)

STATION

22 SEP 2020 PM 6 L

Shunk & Bunnys

PORTLAND OR 972



Recycling

Keep it simple

9-8-2020
With reference to The second greenhouse
gas analysis for so-named Kalamia Manufacturing
& Marine Export Facility three points came to
mind:

1. The environmental impact is too high.
2. The subterfuge of renaming the proposed
site as if it would be a major job
producer and world class port is
both misleading and false
3. We cannot continue to lie to ourselves
about climate change and approve this
high impact project.
The ball stops here. J. Oyrull

Mia Iriye

Dear Ms.Bommarito,

My name is Mia Iriye. I am 11 years old and attend Annie Wright Schools, and have been a Girl Scout since the first grade. My mom told me about the idea of the Kalama Refinery that would bring the methane from fracking to Washington state. I think this would be a bad idea. First of all, fracking destroys the land and our environment. Also, the processing of methane would also add carbon dioxide into the atmosphere, which means more global warming.

I feel that this idea will impact our climate in a negative way. Methane creates a blanket of gas that lets sunlight and heat in, but not out which keeps the sun rays bouncing around the atmosphere causing global warming. The refinery would produce over 100 million tons of Co2 every year and would become one of the largest polluters in the state. When we ship the methane to China, the ships will create pollution in the ocean AND when they burn the methane in China, that will produce even more pollution!

We recycle and compost at our house to help keep the environment clean. My Girl Scout troop tries to find ways to use less plastic because it pollutes and never goes away. Additionally, the 3rd grade at my school goes to Tacoma's compost facility to learn about food waste. Methane is the worst gas that adds to global climate change. Adding a new source of that much pollution would make it even harder to erase the negative human impact on the Earth.

I have visited the Columbia river with my family and seen the shipping, fishing and other people who use the river to live and make money. The river is also habitat to salmon and other species who can not live anywhere else. It is part of what makes Washington beautiful and a great outdoor place to visit. This hearing is to measure the impact on the environment and I am convinced that there are too many negative impacts that would change the river and the Earth forever. Please vote to protect the Earth.

Sincerely,

Mia Iriye

Sharon Victor

September 23, 2020

Washington State Department of Ecology, PO Box 47600

Olympia, WA 98504-7600

Dear Director Watson and Department of Ecology,

As Washington resident and human being, I believe I am called to care for both the well-being of communities and the earth as a whole. We must invest in a livable future that is safe for all to thrive.

Building the world 's largest tracked gas-to-methanol plant in Washington does not support our state's commitment to reducing climate pollution, nor does it align with my personal values of stewardship and justice.

The second Supplemental Environmental Impact Statement for the Kalama methanol refinery clearly shows that this project is dirty, dangerous, and unwise.

Please reject the Northwest Innovation Work's proposed methanol refinery in Kalama and deny its Shorelines Permit. Thank you.

Sincerely,
SS Victor

Please don't let this facility be built. Our historic wildfires are a result of climate change and this refinery will emit enormous amounts of pollution that will add to climate change.

And, what if it caught
fire?
PLEASE
Don't let it happen.



Dept. of Ecology
State of Washington
SW Office

300 Desmond Dr. SE

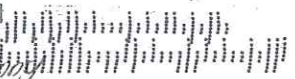
Lacey, WA

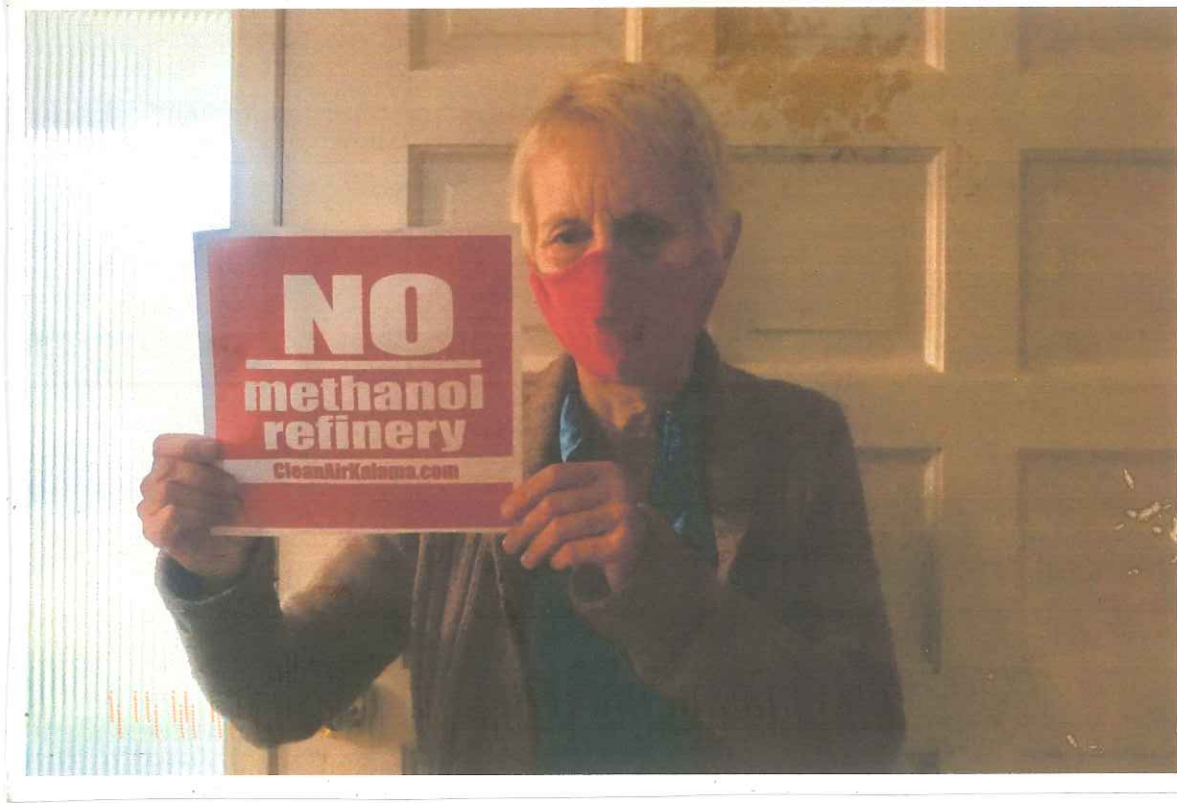
98504-7775

STATION

14 SEP 2010 PM 5:01

PORTLAND OR 972





Carolyn Treadway

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

Shannon Markley

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

Kathryn Robinson

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

Kristin Felix

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Adam Levine

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Gayle Janzen

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Evelyn Pietrowski-Ciullo

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Sonja Aikens

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Joanne Mayhew

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Anita Bryant

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Cornelia Shearer

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Priscilla Martinez

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Virgene Link-New

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Tatiana Zolotareva

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Stephanie Trasoff

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Joan Bowers

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Fred Greef

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Fay Payton

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stephen curry

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Linda Carroll

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Theodora Tsongas

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Derya Ruggles

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Wendy McGowan

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Sharon Anderson

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Noemie Vassilakis

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RJ Bordelon

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Molly Gibbs

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Esther Friedman

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Heidi Welte

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jan gordon

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Nancy White

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Clayton Jones

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Dave Shelman

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Travis Miller

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Rick Ray

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Laura Huddleston

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Mary Solum

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dana Bleckinger

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Joseph Poirier

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Isaac Ehrlich

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Nora Polk

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Art Bogie

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Danielle Rowland

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John S

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Andrea Gruszecki

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Thomas Cox

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Mauria McClay

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Paul Brown

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Rusty West

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Pauline Igoe

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lori Erbs

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debbi pratt

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C. Huff

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Polly Taylor

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Kenneth Zirinsky

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Sammy Low

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Jen Stone

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Jeffrey Watson

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Marilee Dea

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Anne Roda

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Cindi Lund

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Cheri Carlson

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Elizabeth Johnson

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NANCY GROUT

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Wanda Graff

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Mark Canright

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Ruchi Stair

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Hal Glidden

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Mary Jokela

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Timothy McGuire

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Philip Ratcliff

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Jeannie Park

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Steve Uyenishi

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Brian Huseby

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diane marks

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Rebecca Campbell

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Marguerite Thayer

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Lorraine Johnson

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joshua berger

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Elizabeth Rosenthal

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Robert Dash

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Steve Ditore

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Michelle Keating

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Donna Kinney-Dobbins

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Betty Morgan

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Emily Willoughby

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Joe Wiederhold

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William Packard

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Dennis Bahr

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Rosemary Siipola

NWIW comments

Evelyn Sizer

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Dr. Marre

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Scott T.

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Zenk, Jeff

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Charlotte Feck

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James Little

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Lana Lasley

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Beth Mauch

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David Done

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Sally Sheck

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Judy Cash

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Earlene Carter

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Jenney Pauer

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Vivian Decker

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Jan Solomon

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Vincent Vandenbosch

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Marcy Stafford

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Will Silva

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Connie Bahner

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Ann Brooking

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Blaine Ackley

Oppose Methanol plant in Kalama

Olga Levaniouk

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Christine Stansbery

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Anne Drury

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Larry Lambeth

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Shea Scribner

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Greg Carroll

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Marianne Tompkins

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Sheryl Feldman

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Rachel Cowen

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Kelly Spain

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William Rappaport

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Elizabeth Terry

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Pete Borchert

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Rachel Cochran

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Cigdem Capan

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Mason Smith

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Tim Oswald

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Chris Tauson

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Judy Lasko

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Gregory P

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Judith King

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Sue Rooney

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Haillee Donaby

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Amy Compestine

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Grace Brennan

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Jenny Elliott

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Mike Alexander

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Lucas Ritting

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Kirsten Taylor

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Katherine Larrabee

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Belinda Colley

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Kathryn Bromley

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Carol Rees

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Thomas Artle

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Candice Kalb

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Anne Fisher

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Denise Motta

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Joel Carlson

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Kelly Daulton

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Marlene Meyer

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Dennis Tapley

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Peggy Brown

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Alex Macdonald

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Becky Stanley

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Aleta Springer

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Lauren Lichtman

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Debra Kern

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Lois Carpenter

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Gloria McClintock

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Gunda Vesque

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Danielle M

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Carol Olivier

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Richard Einig

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Kimberly Chenault

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Katrina Lerchen

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C.D. McDougall

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Amy Walter

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Lindsey Goodson

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Austin Zimmerman

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Julia Brasch

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Lori McKole

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Dorian McGlannan

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Karli McIntyre

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Ellen Scherer

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Stephanie Bell

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Mary Ellen

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Michelle Asker

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Karuna Berryman

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Shel Neu

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Brian Simpson

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Stefan Lewis

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Monika Baumgart

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Art Maki

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Jessica Willis

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Emily Moon

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Mariya Starichenok

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Aldora Perez

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Melissa Stalp

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Coleen Anderson

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Grant and

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Amy Henson

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Bradley Barton

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Lee Chebert

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julie reed

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Yonit Yogev

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Karen Holderman

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Matt O'LAUGHLIN

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John B

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Judy Fitzpatrick

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Claire Aiello

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Maureen Brul?

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Tanya Lasuk

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VelindaDawn Ohrt

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James Mulcare

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Tracy Wang

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Janet Riordan

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Vere Guthrie

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Susan Morse

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SHERRY GLASS

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Michele Francesconi

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Laurie Armstrong

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Cynthia Jones

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Coco Lopez

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Heidi Waltner

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Brittany Ellison

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Robert Davis

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Michael Bodtke

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Tim Hatch

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Lorraine Freeman

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Robert Curry

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Ashley Howisey

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Tessa Raebeck

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Jen Ruiz

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Henry Bader

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Dr. Soman-Faulkner

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Christi Wheelock

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Tamara Howell

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Lori Templeton

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Beth Gurney

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Monika Eckhart

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Jeffery Lyles

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Zenk, Jeff

FW: Kalama Methanol D2SEIS Hearing Comments

Shannon Milhaupt

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Ladislao Quintanilla

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A.L. Steiner

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marjorie fields

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Dawn Johnson-Deal

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Robin Everett

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Alan Kaptanoglu

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Susan Burnett

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FW: Kalama methanol plant

Nicholas Heyer

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Basey Klopp

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Harriet Cooke

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Roger Martin

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Rejean Idzerda

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Laura Dicus

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Tarun Bishop

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Patti King

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Charles Raymond

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Evelyn kochanowski

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Troy Dillard

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Zenk, Jeff

FW: Kalama Manufacturing and Marine Export Facility Public Hearing

Ann Skinner

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

john neighbor

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Zenk, Jeff

FW: I thought this was supposed to be audio and video.

jody bleyle

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

April Matzenbacher

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

Zenk, Jeff

FW: Kalama Manufacturing and Marine Export Facility

Fiona McLary

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April Matzenbacher

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Kristen Sartor

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Rachel Quesenberry

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Victoria Clark

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Aaron Quitta

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Dylan Wilson

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Caterina Jardini

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Joan Roberts

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Zenk, Jeff

FW: Kalama Manufacturing and Marine Export Facility

Mikhaila Bishop

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Alicia Liang

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Jacob Carlson

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Isabel Homsí

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Jonah Lee

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Zenk, Jeff

FW: Methanol Plant Permitting

Cheryl Erb

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Kimber Anderson

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Jessica Norberg

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Joshua Spector

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Elizabeth Perkins

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Mr. Pepper

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William Adriance

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Sam Richins

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Allison Brinkhorst

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Hannah Phillips

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Ben Stevenson

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Will Golding

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Lou Orr

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Skyler Mcvaugh

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Robert Lapsley

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Kent Gale

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Randall Strutz

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Jan Hughes

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Aslaug Haraldsdottir

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Pete Paget

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Kim Rice

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Noreen Fujitasacco

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Casey Defoer

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Lynda Cunningh

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Elizabeth Fleming

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James Bracher

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Wendy Bowman

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Leonard Elliott

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Doris Acosta

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Janet Waite

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Frank Kroger

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Stephen Zettel

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Patricia Perron

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John Edison

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Andreas Enderlein

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Wally Bubelis

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Chris Smith

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Steven Biggio

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Justas Vilgalys

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Joachim Veith

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Marta Benson

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Randy Widen

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Asphodel Denning

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Johan Luchsinger

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W Koopman

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Jim Leuba

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Abby Wagman

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Kergan Street

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Rocky Votolato

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Kate McWiggins

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Michaela Wehner

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Deborah Gandolfo

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April Matzenbacher

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Zenk, Jeff

FW: Kalama Manufacturing & Marine Export Facility comment - Marlene Meyer

Tara Ohta

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

Zenk, Jeff

FW: Comments for today's Public Hearing: Kalama Mfg. and Marine Export Facility

Kathryn Barlow

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

Teresa Oh

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

Eileen Perfremment

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

Julie O'Donald

To whom it may concern,

Let Asia make its own methanol, say no to worldwide expansion of plastic production. We don't want this in Washington. Take care of the world environment, take care of Washington. Please say no to the Kalama project.

Sincerely,
Julie O'Donald
3404 Russet Rd
Brier, WA 98036

mikhaila gonzales

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

Denis Harney

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

Laurie King

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zoey lahey

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Cyndy Adams

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gina hicks

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Hope Harris

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Mary Paynter

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Sandy Polishuk

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Betsey Thoennes

NO Methanol Refinery in Kalama

Jason Thoennes

NO Methanol Refinery in Kalama

John Keefe

FW: Opposition to Kalama Methanol Plant

Ashley Bonnell

FW: NO Methanol Refinery in Kalama

Marylin Miller

FW: NO Methanol Refinery in Kalama

Kaitlyn Welzen

FW: NO Methanol Refinery in Kalama

William Johnsen

FW: NO Methanol Refinery in Kalama

Martha Taylor

FW: NO Methanol Refinery in Kalama

Natalie LaBerge

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Patricia Carroll

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Ric Chapin

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Gene Ulmer

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Sue Burrus

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James Frost

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Joan Davis

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Mary Lee

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Andre Fortin

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Lynn Fitz-Hugh

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Ute Saito

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Sara Simon-Behrnes

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Jen Forti

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Liliana Burchard

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David Snyder

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Ben Rall

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Terry Friedman

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Gret Rowe

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Margaret Graham

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Brian Dalton

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Sharon Anderson

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Susan Haywood

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Jennifer Valentine

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Betsy Kirby

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Suzy Titcomb

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Mark Griffin

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ANNE DOR

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Mark Hulett

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Sally Stevens

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David Edwards

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Tom Harris

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Bruce Cratty

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Thomas Brown

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Rachael Pappano

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Thomas Hernandez

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Katherine Fredricks

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Nancy Quackenbush

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Raymond Gibson

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francis mastri

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Elizabeth Kepl

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Elaine Fischer

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Chuck Graver

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Hoa P

FW: NO Methanol Refinery in Kalama

Jacqueline Jeffers

FW: NO Methanol Refinery in Kalama

Sue Thompson

FW: NO Methanol Refinery in Kalama

Shelly Ackerman

FW: NO WAY to Methanol Refinery in Kalama

Cathleen Burns

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

Ann Wasgatt

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Janet Marx

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Shirlee Tan

Please: Let's not have a methanol refinery in Kalama

Carla Moschetti

FW: NO Methanol Refinery in Kalama

Brian Snouffer

FW: NO Methanol Refinery in Kalama

Cheryl Wheeler

FW: NO Methanol Refinery in Kalama

Julia Masura

FW: NO Methanol Refinery in Kalama

Betti Johnson

FW: Please: Let's not have a methanol refinery in Kalama

Marie Long

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Ruth Kram

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Dell Goldsmith

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Jim Brunton

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Kimberly Seater

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Mark Sentesy

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John Keiser

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Talmon Glidden

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Lisa Scharin

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Miranda Schmitz

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Allison Fradkin

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Teresa McFarland

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lorraine foster

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Grant Fujii

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Lisa Caine

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Candace Volz

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James Freeman

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Catherine Martinez

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Jean Wyman

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Nora Polk

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Rita Heinz

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Mary Mann

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Lee chapman

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William Biederman

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John Barger

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Karen Alexander-Brown

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Lucy Kennedy-Wong

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Roxanne Nakamura

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Norman Dick

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Dean Webb

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David Bremenstuh

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William Daniell

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Stephanie Trasoff

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jon iverson

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Noreen Fujita-Sacco

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Peggy Printz

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Amanda Yampolsky

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JAMIE DONALDSON

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Sandra Couch

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Barbara Sullivan

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Dianne Ensign

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Steven Christian

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Bob Kutter

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Matthew Anderson

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June Elliott-Cattell

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George Bedirian

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Elaine Lavezzi

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Gregory Gregg

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Beverly Sharp

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Selina Sweet

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Dena Turner

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Kristin Noreen

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Michele Francesconi

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Rochelle Nedeau

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Linda Wasserman

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Marta Guttenberg

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Caroline Sévilla

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Lynne Treat

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Dana Weintraub

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Michelle Yenderrozos

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Jules Moritz

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Beth Ruehl

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Jeff Fernandes

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Margo Margolis

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Russel West

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Pamelia Maxwell

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Sonia Zwilling

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Leon Robert

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jody wright-tenenberg

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deni leonard

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Dr. Henrich

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

Marianna Grossman

FW: Kalama Manufacturing and Marine Export Facility Public Hearing testimony

James Mulcare

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

James DeCorsey

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Greg Thiessen

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Marg Cemulini

FW: No methanol plant in Kalama for China

Robert Glover

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Sharon Sneddon

FW: Kalama methanol plant

Anand Parikh

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

Joseph Yencich

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Janna Wachter

FW: Methanol refinery-NO

Matthew Benedict

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

Renato Cemulini

FW: proposed Kalama methanol plant

Kate Murphy

Comment on Kalama Methanol DSEIS

Mark Wells

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

Denise Banker

Talking points for the 10 AM Tuesday Ecology Testimony:

Before I begin, I want to thank you ahead of time for doing the right thing for the people and the planet in voting to reject Northwest Innovations Works proposal to build in Washington State the largest fracked-gas to methanol plant in the world.

My name is Denise Banker and I live in Port Townsend, Washington.

Why is this specific issue important to me: Overall this spherical planet, we all breathe the same air. We all depend on the earth's stability in its ability to support human life. I'm particularly tired of witnessing billion-dollar companies obfuscate data, use future speculation and mitigation schemes to hoodwink busy and underpaid government regulators. It's unfortunate that Ecology's current study relies on speculative mitigation and an unenforceable market analysis to paper over the impacts of this dirty, climate-wrecking proposal.

Here's why Ecology needs to reject Northwest Innovations Works dubious proposal.

- 1.) The people don't want the proposal approved.
- 2.) We know the hazards associated with fracking gas.
- 3.) We know the disruptions underground caused by fracking gas
- 4.) We know carbon emissions drive global climate change
- 5.) We know pipelines leak
- 6.) We know methane leaks are underestimated in this proposal
- 7.) We know the cost benefit analyses do not take into consideration all the healthcare, loss of livelihood, infrastructure, and insurance costs associated with noxious air, rising sea levels, intensified storms, and fire seasons.
- 8.) We know that it's hypocritical to say out of one side of your mouth "we can't base our decisions on speculations regarding what climate science tells us the future holds if we keep burning fossil fuels, or on future clean energy development..." while, at the same time, saying out of the other side of your mouth "we can base our decision on these data models that project into the future to base our decisions..." Talking out of both sides of your mouth is unethical.
- 9.) This project is not in keeping with the WA State clean air Goals.
- 10.) Fossil fuel energy production is a thing of the past.

11.)This company has consistently made false, misleading, and dubious claims.

To quote Governor Inslee's May, 2019 words: "I cannot in good conscience support this refinery."
End quote. Now is the time to invest and approve renewable, sustainable, clean energy development.

I call on Ecology to reject Northwest Innovations Works proposal to build the largest fracked-gas to methanol refinery in the world. We don't need any more greenhouse gas producing energy systems, we don't need expansion of fossil fuel development and production. We need to focus solely on expansion of sustainable, renewable, clean energy systems that don't use fossil fuels. We definitely don't need any more plastic that's created using last century's methods. Thank you for your time.

Grays Harbor Audubon Society

Attached please find our comments.



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

Centralia Chehalis Chamber of Commerce

When you look at the lowest range of Ecology's report, using the most conservative assumptions, methanol from Kalama will still drive meaningful net reductions in global GHGs. And according to Ecology's best estimate, this project will displace approximately two times the amount of GHGs the entire city of Seattle emits annually.

If we are to confront climate change, we must invest in new, clean ways to manufacture the things we use every day. We can't solve climate change through inaction. We must be led by science, not personal beliefs. The SSEIS from Ecology has answered the questions it was asked.

Prescott City Council

The Prescott, Oregon City Council does not support sacrificing the health, livability, and economic future of our community to a dangerous fossil fuel export project backed by the Chinese Government. Our homes are some of the closest to the proposed methanol refinery less than a mile away. Prescott is home to children and elderly residents, the most vulnerable to health risks from air pollution. The proposed facility would emit more than a million tons per year of climate pollution as part of the manufacturing process alone. The emissions for diesel particulate air pollution would exceed the state's acceptable levels by 5 times. Shipping the methanol to Asia would generate hundreds of thousands of additional tons per year of climate pollution. The refinery would degrade the quality of Prescott Beach and potentially deter new visitors. Despite our proximity, Prescott residents have never properly received notices informing us of the project, denying opportunities to engage in earlier hearings and comment periods. Please protect Prescott from the world's largest methanol refinery.

VANCOUVER AUDUBON SOCIETY

P.O. Box 1966 Vancouver, WA 98668-1966
www.vancouveraudubon.org



September 22, 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:

Vancouver Audubon Society, a chapter of the National Audubon Society, believes in the wisdom of nature's design and promotes this through education, involvement, stewardship, enjoyment and advocacy.

We thank you for the opportunity to comment on the draft Second Supplemental Environmental Impact Statement (SEIS) that seeks to correct previous environmental analyses of the proposed Northwest Innovation Works (NWIW) project that have been inaccurate and inadequate.

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, despite deliberate efforts by NWIW to mislead the Department of Ecology (DOE) and the public otherwise.

The SEIS has made some necessary adjustments in the methane leakage rates, but the rates still are low estimates 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. DOE concluded the methanol refinery would emit 4.6 million tons of greenhouse gasses every year for 40 years. It would become Washington's largest source of climate pollution at the same time we are trying to reduce emissions statewide.

The evaluation of potential mitigation and displacement contained in this SEIS, however, is misleading in its reliance on speculative, unproven and unenforceable assumptions. 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. For

example, 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.

A news report on September 18, 2020, announced a new type of plastic that's being rolled out in the United Kingdom. Xampla says it is the first company in the world to engineer plant protein into a material that acts like single-use plastic. "Single-use plastics and microplastics don't need to be made from fossil fuels, there's something very wrong about making materials from oil that lasts just for a minute or two," says Simon Hombersley, Xampla CEO.

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 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. The SEIS also fails to consider the impacts of the proposed new lateral pipeline to the Port of Kalama.

The "downstream" impacts not considered in the SEIS include tanker emissions and the emissions from other ships allowed to dock at the proposed new marine dock. Another "downstream" impact would be to air quality over federal lands. One of the most basic forms of air pollution - haze - degrades visibility over our public lands. 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. 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.

Outside of the visual consequences from polluted air, human health consequences include flare-ups of asthma and chronic obstructive pulmonary disease. 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, according to Clark County Public Health Officer Alan Melnick. 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.

In addition to human health impacts, air pollution also affects birds. “We do know that exposure to particulate matter, which of course is of great concern for human health, can affect birds as well,” says Olivia Sanderfoot, a National Science Foundation Graduate Research Fellow at the University of Washington Seattle who studies how air pollution affects birds. For example, veterinarians and poultry scientists who study captive birds have found that smoke can damage lung tissue and leave the animals susceptible to potentially lethal respiratory infections. How that plays out in the wild is largely unknown, Sanderfoot says. Her current research aims to track changes in bird populations and diversity after exposure to smoke from large wildfires.

While wildfires are a part of natural cycles in the western United States, climate change makes every wildfire that sparks more likely to rapidly grow and spread. Like melting glaciers and rising seas, larger fires and longer fire seasons are among the predicted effects of climate change that are now coming to pass. 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 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.

We find it simply unacceptable for Washington state to permit an unequivocally and enormously polluting methanol manufacturing facility based on speculative analysis and a faint hope of theoretical emission reductions.

DOE should dismiss the speculative basis that this proposed project could displace even more polluting facilities and, 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 Washington’s climate goals.

We urge DOE to deny permits for NWIW's proposal. We cannot allow new fossil fuel export infrastructure to be built at the same time we are trying to build a clean energy future for Washington and reduce emissions that contribute to climate change.

Please keep our communities safe and keep Washington on track to meet our goals for reducing climate pollution.

Sincerely,

Sam Neuffer
President

24 September 2020

TO: Washington State Department of Ecology

FROM: Tracy Farwell, Better Energy LLC
PO Box 86449
Portland OR 97286

SUBJECT: Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

My career started in Washington, Seattle in particular and I spent most of my adult life enjoying a beautiful natural setting, robust weather, no income tax, fresh air and water galore, but most significantly a thriving Seattle life among fellow workers, neighbors and friends who were not gaining wealth from destroying the place. Except for my neighbor Larry who was CEO of a Bellevue plastics outfit. There's always somebody.

But that was long ago. Now it's foreign investors who imagine without justification we can be induced to destroy our own natural heritage. True, it was not ours to begin with, but by now we know why the First People loved living here. The science of Methanol is not the only science, and we know what they need the Columbia River for, and the new gas pipelines for, and the Port for: products that unquestionably create more carbon pollution to make wildfires, storms, floods and droughts more intense and frequent, and not just on our West Coast. Yes, we know the dire consequences. Namely from 4.6 million tons of greenhouse gas pollution each year for the next 40 years from this Kalama point source.

Yes, they are called Climate Fires, and we can draw a straight line between them and carbon fuel refineries like the Northwest Innovation Works, LLC proposal and markets like Asia among others. You should know by now that refineries depend on metallurgy that is not entirely immune to the chemical brews it tries to contain and control. No one in the refinery front office or anywhere else is tracking the subtle corrosion that builds up randomly over time – all over the site.

No doubt you are aware it's common practice, reputed from BP (Deepwater Horizon) that is now exiting this business, to "run it until it breaks?" You already know the Tesoro history in Anacortes. They are not the only ones, and methanol mavens cannot rewrite the sad history of their predecessors. Would you have staff in your Ecology Offices saying,

"Oh, I just can't wait to see more death and destruction foisted by foreign interests who argued us into submission without a fight, by mere brow-beating and typical marketing department hokum"?

I think not.

Best practice in meeting Washington's climate goals and ensuring a safe and healthy future for generations to come is for you, the singular guardian of land, air and water, to deny the Shorelines Permit for the Kalama Northwest Innovation Works, LLC. methanol project and unambiguously issue the rejection the proposed refinery deserves.

Portland Raging Grannies

Testimony from the Raging Grannies and supporters.





No Fracking
No Kalamity









Portland Raging Grannies

Testimony from the Raging Grannies and supporters. Just one evening's fotos.







A woman with short grey hair, wearing a red hat decorated with yellow and orange flowers, red-rimmed glasses, and a red and white floral vest over a pink and white checkered shirt, stands in front of a tall green hedge. She is holding a large white sign with black and red text. The background shows trees and foliage.

**L.N.G. PIPELINE
THRU CLIMATE-
DAMAGED FOREST?
R.U. GUYS CRAZY?**





Seotember 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 Intelligence 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



Seattle Aquarium

Please see attached comments from the Seattle Aquarium on the Second Supplemental EIS (SEIS) for the Kalama Manufacturing and Marine Export Facility. We have several concerns about the analysis, and we urge Ecology to deny NWIW's proposal to build and operate the methanol refinery in Kalama by rejecting the Shoreline Conditional Use Permit.



1483 Alaskan Way, Pier 59
Seattle, Washington 98101-2015

(206) 386-4300
SeattleAquarium.org

Rich Doenges
Department of Ecology
Kalama SSEIS
PO Box 47775, Olympia, WA 98504-7775
Submitted via online comment form

September 29, 2020

RE: Kalama Manufacturing and Marine Export Facility Second Supplemental EIS

Dear Department of Ecology,

Thank you for the opportunity to comment on the Second Supplemental EIS (SEIS) for the Kalama Manufacturing and Marine Export Facility.

This new analysis confirms that Northwest Innovation Works' (NWIW) proposed facility would become one of the largest sources of climate pollution in Washington. The refinery would produce at least 4.6 million tons of greenhouse gas pollution each year for 40 years. The project would result in new greenhouse gas emissions at all points in the process—from fracking and piping the gas, to its conversion to liquid methanol, to its downstream conversion to plastics or fuel, and then the burning of that fuel. Building out new fossil fuel export infrastructure in this manner is at odds with Washington's climate change mitigation goals and the severity of the global climate crisis.

The SEIS's conclusion that this methanol could displace future dirtier energy in other countries is speculative and flawed. Ecology should base its permitting decision on what is reasonably foreseeable about this project: the assured, significant pollution from fracking gas, producing and refining methanol, and burning or using methanol. Energy technologies are likely to change significantly in the next 40 years; Ecology speculates about the future of Chinese energy and methanol consumption but does not similarly estimate future clean energy potential. The analysis should consider whether cleaner energy technologies may dramatically displace the need to use methanol for transportation fuels. Ecology should also consider whether dumping methanol into the market could impede a transition to cleaner transportation alternatives and vehicle electrification.

We are also concerned that some portion of the methanol is likely to be used to make virgin plastics,¹ and the analysis does not adequately account for the long-term impacts of those plastics—whether it fills up landfills, ends up as ocean pollution, or becomes a fuel in China via waste-to-energy

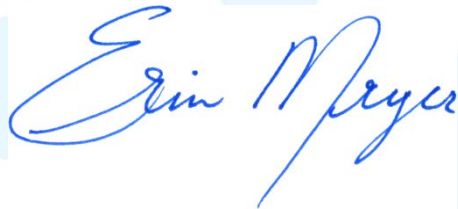
¹ One of the products that NWIW specifically mentions could be made with its methanol is polar fleece (SEIS Appendix D). The Seattle Aquarium has eliminated polar fleece uniforms because the microfibers are commonly found in ocean samples.

incineration, which has enormous carbon pollution and public health consequences. Ecology is currently taking meaningful steps to address plastic waste and pollution in Washington. Supporting a project that will directly support increased production of virgin plastics—rather than reuse, post-consumer recycled content, and a circular economy—is inconsistent with the agency’s own efforts and the urgency of the plastic pollution crisis.

Mitigation projects are also not a justification for continuing to build out the fossil fuel industry. The urgency of climate change demands that mitigation should be the *last* option (after all other possible steps are taken). First and foremost, we should not construct new fossil fuel infrastructure in our state.

We urge Ecology to deny NWIW’s proposal to build and operate the methanol refinery in Kalama by rejecting the Shoreline Conditional Use Permit. In doing so, you will get Washington on track to meet its climate mitigation goals, and not assume that future energy needs must be met by fossil fuels. You will help keep our air and our water clean and show that Washington is walking the talk as a true leader in climate action.

Sincerely,

A handwritten signature in blue ink that reads "Erin Meyer". The signature is fluid and cursive, with the first name "Erin" and last name "Meyer" clearly distinguishable.

Dr. Erin Meyer
Director of Conservation Programs and Partnerships
Seattle Aquarium

UA Local 669 Fire Sprinkler Fitters

I fully support this project. I Represent 550 fire sprinkler fitters who's work in Washington & Oregon saves property and lives. This project will be built by world class professional contractors and trades men & women. A huge benefit Socially and economically to the Southwest Washington regional area. Thanks for your time and consideration.

New Progressive Alliance

The New Progressive Alliance at <http://newprogs.org/> urges you to oppose the proposed methanol refinery in Kalama, Washington. NWIW openly and demonstrably lied. Other reasons are increased pollution, increased utility costs for both electricity and natural gas, and because it is a bad business plan.

1. Northwest Innovation Works (NWIW) openly and demonstrably lied.

- NWIW misled your agency and the public about the purpose and impacts of the refinery as well as the project's upstream and downstream climate pollution.
- There is no evidence that the Kalama will displace Chinese coal. There is neither evidence nor an agreement nor even a Chinese statement indicating that this is true.
- NWIW ignores both the amount and potency of methane and fracking pollution.
- NWIW ignores credible scientific studies and instead uses imaginative discredited methods.
- NWIW ignores a whole range of information on fracking to rely on a single fracking area in British Columbia.
- NWIW (repeatedly) that the methanol would be burned in vehicles while all the time telling regulators and the public (repeatedly) that it was instead all for plastics. The difference is millions of tons of carbon pollution.
- The whole NWIW argument rests on the notion that Kalama methanol would "displace" dirtier forms of energy in Chinese and global markets. The displacement argument is based on the false belief that economic modeling can accurately predict global fuel markets, technology developments, Chinese consumer behavior, and regulations for the next 40 years. It should be especially clear in a turbulent year like this one that our models often cannot accurately forecast most of these things even for a single year. Further China is increasingly investing in renewable energy making the predictions even more questionable.
- NWIW 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).

2. Increased Pollution

- This would be the largest methanol refinery in the world.
- Methanol is flammable in liquid and gas states, and it is considered highly toxic to humans and animals. Just one gallon of spilled methanol depletes the oxygen from 198,000 gallons in the Columbia River.
- A Methanol Plant also produces waste that includes heavy metals, volatile organic compounds, various air pollutants, nickel, copper, and zinc oxide from the catalysts used in the refining process.
- Air pollution that includes carbon dioxide, carbon monoxide, nitrogen oxide, sulfur dioxide, volatile organic compounds, and fine particulate matter.
- They will burn 30 percent of the huge amount of natural gas used, adding to local pollution.
- The best-guess analysis shows that pollution caused by the facility would be equivalent to 4.6 million tons of carbon dioxide pollution each year. That means that this one project would be equal to around 5 percent of the state's total climate emissions from all other activities combined. Even worse various rates for gas transportation leakage rates, end-use for the methanol, time-frame for evaluation climate potency, and other factors show that it is possible the facility's all-in carbon

pollution could be as much as 9.4 million metric tons per year.

- Kalama methanol refinery's air pollution risk is massive. They propose to emit up to 53 tons (106,000 pounds) of toxic and hazardous pollutants into the air annually. By comparison, Emerald Kalama Chemical released six tons of toxic and hazardous pollution in 2015, according to the EPA.
- The plant also could emit up to 62 tons (104,000 pounds) of very fine particulate matter — dust and soot particles — annually. Fine particulate matter can enter into the respiratory system and cause long term health impacts.
- The plant would buy gas extracted by fracking. Specifically this plant would use at least 300,000 dekatherms of fracked gas per day (270,000 as raw material plus at least 30,000 for power generation) — one third as much gas as the entire state of Washington. Fracking, a dangerous technique for getting natural gas out of shale, has been linked to serious health risks, groundwater contamination, and other environmental impacts. Fracking companies refuse to even reveal the chemicals they are "fracking" with, nobody is monitoring the pollution to water and our aquifers, and nobody is factoring the release of methane as a GHG. Of the 750 chemicals that can be used in the fracking process, more than 650 of them are toxic or carcinogens, according to a report filed with the U.S. House of Representatives in April 2011. For more documentation on Fracking see "The Environment," #6, at

http://www.newprogs.org/the_environment_under_the_democratic_republican_uniparty

- The Kalama Refinery would be fed by a new 3.1-mile, 24-inch diameter natural gas pipeline that will divert natural gas from the existing Northwest Pipeline. The New Progressive Alliance in the below documentation shows the danger of transporting fossil fuel, especially by pipes. For documentation on transporting fossil fuels by pipes and other means see "The Environment," #14, at http://www.newprogs.org/the_environment_under_the_democratic_republican_uniparty
- For pollution the Methanol Refinery discharges 200 gallons of wastewater per minute. The Methanol Refinery would also make a huge demand on water resources, using more than 2,500 gallons of water per minute or about 4 to 5 million gallons a day for cooling and gas forming, 90 percent of which is consumed during the process or lost as vapor to the atmosphere. It makes no sense that Kalama sell off millions of gallons of its fresh water every day when farmers and fishermen have operated under emergency drought restrictions. For more documentation on the dangers to fresh water see "The Environment," #16, at http://www.newprogs.org/the_environment_under_the_democratic_republican_uniparty

3. Higher Utility Costs for Electricity and Natural Gas

The Kalama Natural Gas to Methanol Refinery would use a lot of power which would be reflected in higher electricity and natural gas rates.

Methanol refining requires a lot of electricity. The plant would use 200 megawatts of electricity daily - equal to the amount of electricity used by ALL Cowlitz County residents. The plant would also use 1/3 as much gas as the entire state of Washington. These demands would increase gas and power costs for Washington residents and businesses.

4. Huge Taxpayer Costs

- The company is asking U.S. taxpayers to own the financial risk—up to \$2.1 billion—if the proposed methanol refinery fails.
- The Port recently applied for a \$11.5 million dollar federal BUILD grant to construct a massive dock in the Columbia River for NWIW's methanol ships, while the private company is pitching the US Department of Energy on a \$2 billion loan guarantee. See BUILD Grant Supporting Documents: 2018.6.26 Letter of support for Port of Kalama BUILD app 2018.4.27 Federal BUILD

Grant Announcement

- To feed the methanol refinery's massive water demand, the Port of Kalama asked the U.S. Department of Agriculture for a \$15 million low-interest loan to fund construction of an industrial well on the shores of the Columbia River. See USDA Loan for Well Supporting Documents: 2014.6.26 Port of Kalama Special Meeting Minutes 2014.8.27 Port of Kalama Meeting Minutes
 - According to a fiscal analysis prepared for the Washington legislature, existing tax loopholes will allow NWIW to avoid paying \$143 million in state and local sales taxes. NWIW successfully lobbied against legislation designed to close those loopholes. See Sales Tax Loopholes Supporting Document: 2016.2.24 Methanol plants could qualify for hundreds of millions in tax breaks, Tacoma News Tribune
 - NWIW is asking the U.S. Department of Energy for a loan guarantee. If NWIW goes bankrupt, the federal government could be responsible for paying some or all of the \$2.1 billion cost of building the methanol refinery. See DOE Loan Guarantee Documents: Credit Paper on NWIW Request for Loan Guarantee NWIW Presentation Reissue
- 6.
- NWIW gave the private investment firm Stonepeak the exclusive option to fund construction of the methanol refinery in exchange for part ownership. Much of the money Stonepeak would use to build NWIW's methanol refinery comes from Washington public employees' retirement investments. See WA Retirement Funds Document: 2016.12.14 Washington State Bets Retirement Funds on Fracked Gas, Sightline
 - The corporate owner of the project, Pan Pacific Energy, has already received between \$150,000 and \$350,000 in CARES Act loans. According to Propublica, the loan was to maintain 8 jobs, and it can be forgiven entirely under certain circumstances.

5. The Kalama Natural Gas to Methanol Refinery is a bad business plan.

Northwest Innovation Works, owned by the Chinese Government and British Petroleum, wants to build this Methanol Refinery even though it has never built or run a methanol refinery. Indeed, the proposed technology has never been used to make methanol commercially.

The plan uses America for cheap energy and to dump pollutants, ships methanol for thousands of miles overseas to China, and then China uses it to make plastics which are then shipped back across the ocean to the United States. Further China could also use methanol as a fuel source which would worsen climate impacts. The world methanol market has been oversupplied as recently as 2008 when many plants were just starting up. As China's economy cools, it remains obvious that profits are not sustainable.

Conclusion:

Consider the record of dishonesty by Northwest Innovation Works, total pollution, the higher utility rates, huge taxpayer costs, and the overwhelming evidence this is bad business plan. Then please oppose the proposed methanol refinery in Kalama, Washington.



WASHINGTON BUILDING TRADES

MARK RIKER
EXECUTIVE SECRETARY

TODD MITCHELL
PRESIDENT

Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47600
Olympia, WA 98504-7600

I am writing in support of granting the permit for Northwest Innovation Works for the Kalama Methanol Manufacturing Plant, on behalf of the approximately 80,000 members of the Washington State Building and Construction Trades Council and their families.

It will come as no surprise that we in the Building Trades support the project on the basis of the careers, and jobs benefits that the plant will bring to the region.

But equally as important, we are also supportive on the basis of the environmental benefits that the project brings to the world.

While the exact outcome remains specifically unknown, the most likely scenario is that there will be a net reduction of 6 million metric tons per year of global greenhouse gases by building the plant than if the plant were not built.

However, that is only the most likely scenario; there are possible scenarios that exhibit a range of outcomes that vary from even more realized reductions to barely any reduction, yet reductions nonetheless.

And those scenarios do not even take into account the result of the mitigation factors that Ecology will advise on and have oversight of.

While the process has been frustrating for both advocates and opponents of the project, there is no one who can legitimately claim that it has not been a thorough process. The Department of Ecology has performed their statutory duties in vetting the proposal. The proposers have responded to each challenge presented by improving the proposal, thereby realizing a proposal that will be the most innovative, environmentally responsible methanol manufacturing plant on the planet. To us, that is a successful outcome of a difficult process, and should be rewarded by being granted the permit.

The environmental challenges that we all face are derivative of the real problem; demand. And we will not be demanding less products manufactured from plastics, we will actually be demanding more.

As I have stated before, the costs of delaying projects like this further are not hypothetical, we do not have to guess. We see them all over the globe, but specifically and famously, we see them very clearly in the Atlantic Ocean, the Gulf of Mexico, and for those of us in Washington, we see them each wildfire season in the flames, smoke, and burned out landscape, homes, and towns like

Bridgeport where I personally have property and have spent time protecting against the devastation.

The long-term consequences of inaction due to argumentative stagnation are increasingly negative on our environment. We should not let the perfect be the enemy of the good, and delay progress on the issue of advancement of environmental improvements.

Please grant the permit and let's build progress.

Thank You,

A handwritten signature in black ink, appearing to read 'M. L. Riker', with a long horizontal flourish extending to the right.

Mark L. Riker, Executive Secretary
Washington State Building &
Construction Trades Council, AFL-CIO

Columbia Riverkeeper

Please see attached comment letter from Columbia Riverkeeper and 31 other regional and national environmental, climate, and faith organizations. Word version attached for ease of use and because the links are live in that format. Exhibits to follow.



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 CO₂ 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

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

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

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 SEPA²⁵ 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

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”

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 current³⁵ projections throughout the next 40 years³⁶ 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

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 policies⁴⁴ 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 policy⁴⁶ 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 choices⁴⁸ 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.

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 power⁵⁸—will become available in the Chinese market during the lifetime of

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:

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.

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

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 Works*, 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

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

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 pollution 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

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 organizations⁹⁴ 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

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 Works* (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



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 CO₂ 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

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

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

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 SEPA²⁵ 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

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”

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 current³⁵ projections throughout the next 40 years³⁶ 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

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 policies⁴⁴ 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 policy⁴⁶ 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 KMMF.”); *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 choices⁴⁸ 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.

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 power⁵⁸—will become available in the Chinese market during the lifetime of

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:

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.

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

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 Works*, 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

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

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 pollution 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

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 organizations⁹⁴ 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

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 Works* (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

Columbia Riverkeeper

Attached please find 5 exhibits to the comments of Columbia Riverkeeper et al.

A photograph showing an oil pumpjack in the foreground on the left, and a series of wind turbines in the background on the right, all silhouetted against a bright orange and yellow sunset sky.

Untested Assumptions and Unanswered Questions in the Plastics Boom

- The infrastructure to produce new plastics is growing rapidly. Massive investments in new plastics infrastructure rest on two critical but as yet unquestioned assumptions: (1) that demand will increase continuously and (2) that supplies of cheap feedstocks will remain available for decades.
- Demand growth is specifically projected among two segments of the population: millennials and consumers in the Global South.
- Evidence of shifting consumer attitudes against single-use, disposable plastic casts doubt on industry assumptions of indefinite demand growth.
- Because plastic production depends heavily on cheap fossil fuel feedstocks and energy, the coming phase-out of fossil fuels will force plastic producers to bear more of their upstream costs, dramatically altering the investment risk facing their production facilities.
- Alternative plastics, such as bio-based and electricity-based plastics, entail their own economic and environmental challenges, and require distinct production processes not found in investments currently being planned.
- To date, industry assumptions have received little critical attention despite their central importance to the long-term prospects for these investments and for the plastics industry as a whole.
- Investors and analysts should ask whether the current plastics boom poses the same risks to assets that it poses to communities, ecosystems, and the planet.

To address the urgent threat of climate change, the global community must rapidly reduce its use of fossil fuels as a source of energy. Almost all plastics are made from fossil fuels, and the two product chains are intimately linked. Even small changes in the price of oil or gas can have significant consequences for the plastics industry. It should be expected, therefore, that a major shift in fossil fuel markets, and an eventual phase-out of fossil fuels as an energy source, will fundamentally affect the long-term economic prospects of the plastics industry. Moreover, plastic production is itself a carbon-intensive process and is likely to be impacted by regulation that applies a cost to carbon.

Despite these factors, plastics manufacturers are accelerating their investments in new production facilities under the assumption that supplies of their feedstocks and de-

mand for their products will both increase for decades. Recent social, political, and economic changes call these assumptions into question, and the rationale underlying these investments is not being adequately vetted or tested. Stakeholders, including investors in these projects and members of the communities where they are being built, should demand answers to the many questions raised around the viability of these new projects.

Industry Expectations

The plastics industry expects continual, unfettered growth in plastic production and consumption over the next several decades. Saudi Aramco is investing heavily in petrochemicals;¹ ExxonMobil projects that naphtha and natural gas liquids will be used primarily as feedstocks

through 2040.² The International Energy Agency's New Policies Scenario — which predicts significant increases in greenhouse gas emissions from oil use for transportation — forecasts that 44% of the increase in crude oil consumption through 2040 will be for petrochemical production.³

Put simply: the natural gas boom in the US has made plastic feedstocks really, really cheap.

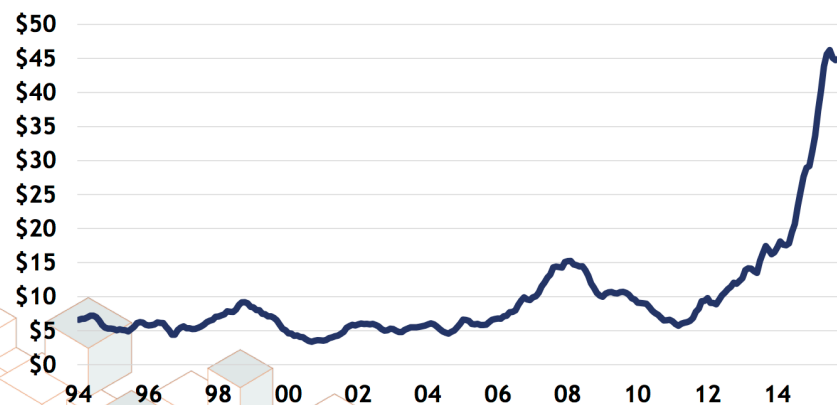
The plastics and fossil fuel industries are investing heavily in new capacity to increase ethylene and propylene production over the next several decades. As of December 2017, the chemical industry has already announced over \$185 billion of new investments in the United States alone, mostly in “chemistry and plastics products.”⁴ Other observers “expect China to invest more than \$100 billion in coal-to-chemicals technology in the next five years.”⁵ These investments, as well as those in other parts of the world, lead analysts to expect production capacity for both ethylene and propylene to increase by one-third between 2016 and 2025.⁶ In the United States, producers of polyethylene are expecting to increase production capacity by as much as 75% by 2022.⁷

The petrochemical industry expects two large groups of consumers to create the demand for increasing supplies of single-use, disposable plastics: millennials in the United States and European Union⁸ and consumers in the Global South whose incomes are rising.⁹ These assumptions, however, ignore the proliferation of social and political changes that call into question

Trends in Chemical Industry Growth

The Build-Out is Underway (Chemical Industry Construction Spending)

\$ Billions, SAAR, 3MMA



Note: Data are presented as a 3 month moving average to smooth month-to-month variations.

Source: Census Bureau

American Chemistry Council, Shale Gas and New U.S. Chemical Industry Investment: \$164 Billion and Counting, slide 9 (Apr. 2016), available at <https://www.slideshare.net/MarcellusDN/acc-shale-gas-and-new-us-chemical-industry-investment-164-billion-and-counting>.

industry assumptions of unfettered growth in plastic demand and consumption.

In North America and Europe, action is being taken at the local, national, and supranational level to reduce plastic consumption and waste. Over the past several years, bans on plastic bags,¹⁰ plastic microbeads,¹¹ and plastic buds (the stems of cotton swabs)¹² have multiplied. Moreover, in January 2018, the European Commission announced a Europe-wide strategy to reduce plastic pollution and ensure that all plastic in Europe is recyclable by 2030,¹³ and the United Kingdom pledged to eliminate all avoidable plastic waste by 2042.¹⁴

Importantly, these efforts are not solely being pursued in the United States and Europe, but are also taking place in the very markets the industry hopes to exploit. So far, a dozen African countries have banned, partially banned, or taxed disposable or single-use plastic bags.¹⁵ Taiwan has announced a ban on microbeads beginning in mid-2018,¹⁶ a ban on plastic straws in 2019,¹⁷ and the intent to ban all single-use plastic by 2030.¹⁸ China has banned imports of several kinds of plastic waste.¹⁹

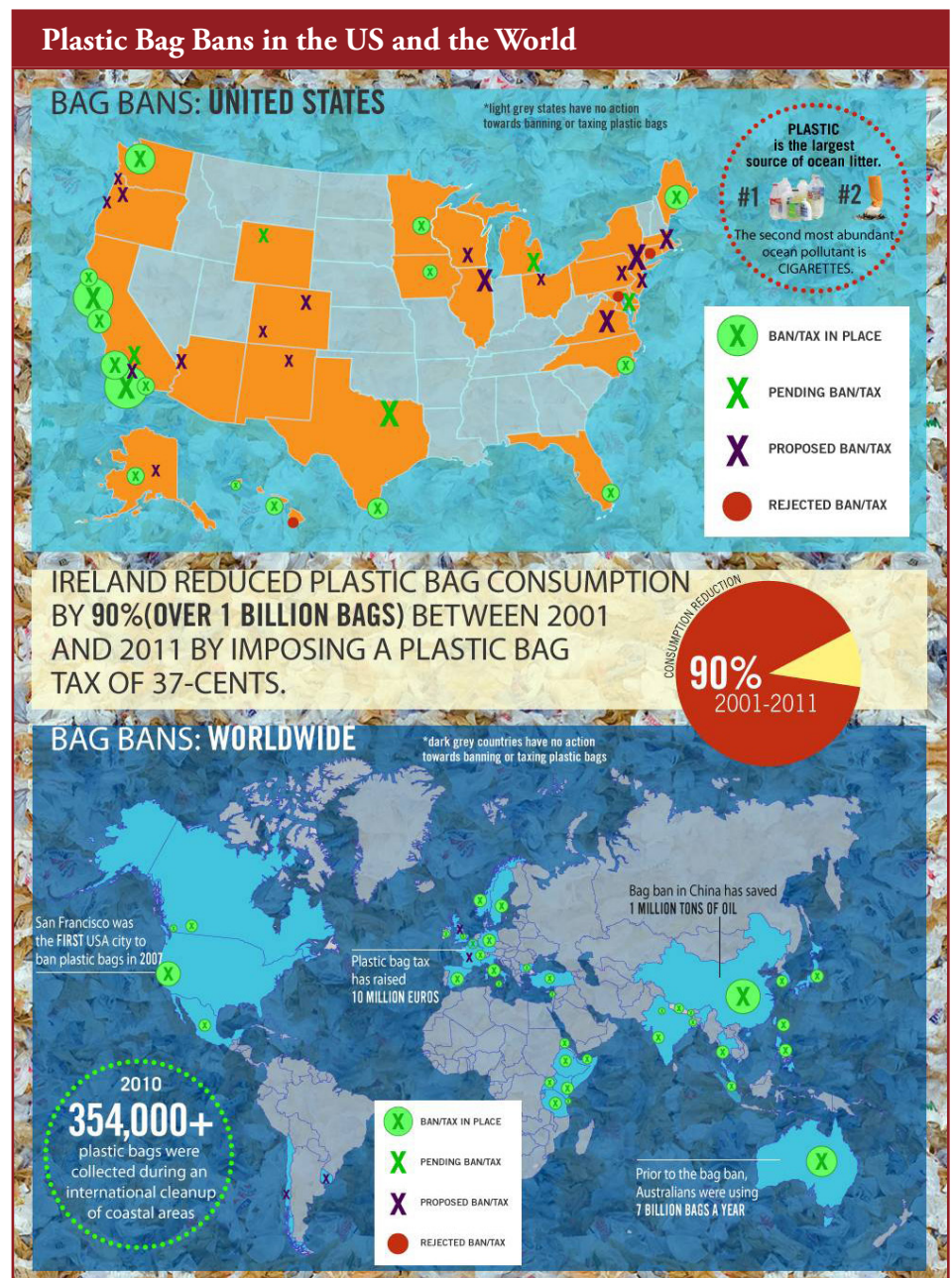
Finally, on the international stage, the plastics crisis is attracting attention and concern.²⁰ As evidence of the pervasiveness and severity of plastics pollution becomes inescapable, nations of the world are demanding — and now actively pursuing — a global response.

From December 4 to 6, 2017, the United Nations Environmental Assembly (UNEA) met in Nairobi, Kenya.²¹ At this meeting, UNEA decided to create an expert group

to look at options to address marine litter and microplastic, including the possibility of a new legally binding agreement.²² Significantly, governments specifically acknowledged “the challenges of addressing marine plastic pollution in the face of increasing production and consumption of plastic in products and packaging.”²³ Accordingly, UNEA urged that all countries and stakeholders

“endeavo[r] to reduce unnecessary plastic use.”²⁴

None of these developments by themselves signal an immediate end to the plastics economy — particularly given the limited control people have over packaging choices in much of the world. Viewed together, however, they demonstrate a growing resistance in many parts of the



Plastic Bag Bans in the World, REUSETHISBAG.COM, <https://www.reusethisbag.com/reusable-bag-infographics/plastic-bag-bans-world.php> (last visited Mar. 14, 2018).



Thomas Hawk/Flickr

world, and among the international community, to the continued expansion of plastics use at the scale envisioned and demanded by the current wave of plastic infrastructure investments.

In addition to anticipated increases in demand, the plastics industry expects that plastic feedstocks will remain cheap and abundant for the next several decades. As will be discussed below, however, global efforts to reduce fossil fuel consumption threaten these assumptions and are likely to raise the cost of plastic production significantly. Together, these converging forces raise fundamental questions about the long-term profitability (and viability) of these multi-billion dollar investments.

Relationship between Fossil Fuels and Plastic Production

Fossil fuels (oil, gas, and coal) comprise the primary feedstocks for plastics, with nearly all plastic derived from fossil sources. Typically,

the bulk of the fossil material is processed to become fuel for combustion, and another part is sent for use in chemical production, especially the production of plastics. The production processes of plastics and fossil fuels are therefore closely linked, both in the product chains and in physical location.

Originally, petrochemicals (plastics) were a way for fossil fuel companies to make money from their waste streams. However, when fossil fuel production materials will no longer be used for energy in the not-too-distant future, plastics producers will need to adapt their supply chains and industry economics to be fundamentally different.

Natural Gas is the primary source of chemicals for plastic production in North America and the Middle East.²⁵ Natural gas is composed of mostly methane, as well as ethane, propane, butane, and other chemicals. Typically, the methane is used as fuel, while the remaining chemicals (“natural gas liquids” or NGLs) are separated out. Some of the NGLs

are used for fuel as well, while the ethane and some propane are used to make petrochemicals. Natural gas is typically 90-95% methane, although it can have a greater share of NGLs.²⁶

These materials — natural gas liquids from gas development and naphtha from oil refining — exist in abundance because there is demand for the other components of the gas and oil.

All of the chemicals in NGLs can be combusted, like methane, so their floor price is determined by the relative amount of energy one can create by burning the heavier NGL molecules. Typically, petrochemical producers will buy these NGLs to make plastics and other products, raising the price above the floor value. However, there is so much available natural gas in the United States that some ethane is being sent into the fuel stream with methane (a process called “ethane rejection”) and is

currently trading at its floor heating value. Put simply: the natural gas boom in the US has made plastic feedstocks extremely cheap.²⁷

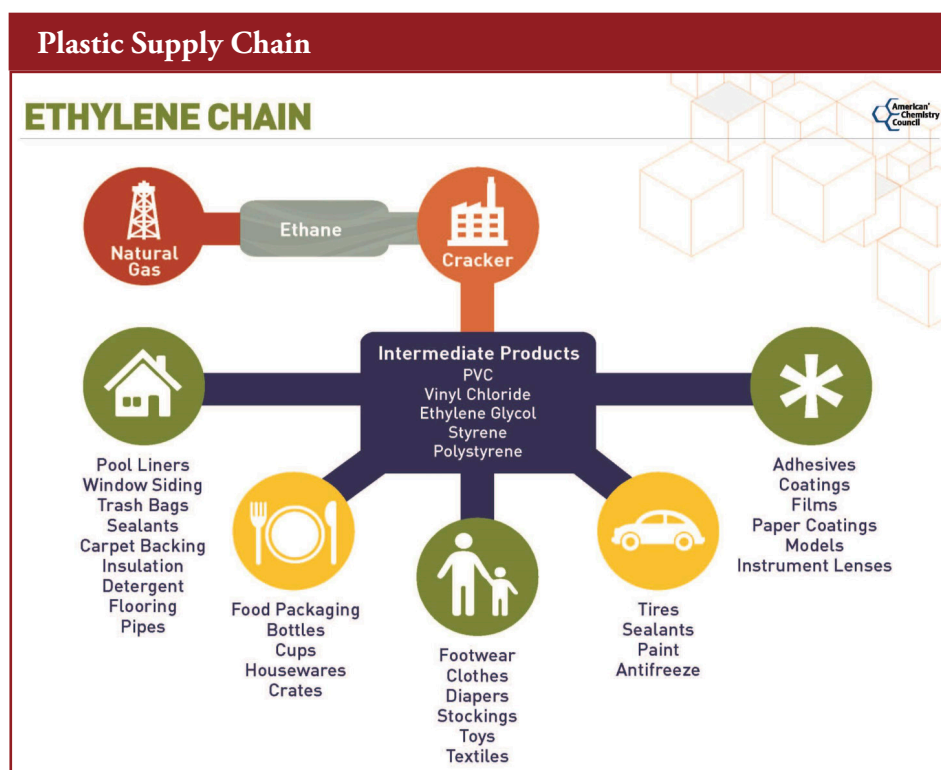
Oil is the primary source of chemical feedstocks for plastics in Europe and Asia,²⁸ although the importation and use of natural gas liquids is growing.²⁹

During the refining process, oil is heated to different temperatures and separated by boiling point. One of the products of this process is naphtha, which is used to make ethylene, propylene, and gasoline, as well as other petrochemicals.³⁰ Depending on the type of oil, naphtha can represent between one sixth and one third of the total production from a refinery.³¹

Because naphtha is a product of the oil refining process, its price is directly and powerfully linked to the price of oil.³² Currently between 4% and 8% of global oil production is used to make plastic. Business-as-usual projections reflect industry assumptions that, by 2050, plastic's share of global oil use will be around 20%.³³

Europe's reliance on oil as a plastic feedstock is an important reason the shale gas boom has given the US a massive competitive advantage in plastics production in recent years.

Coal can be turned into plastics, although the process is typically more expensive than processes that use naphtha or natural gas liquids. This point is emphasized by a Deutsche Bank report, which states, "China's coal-to-olefins and/or coal-to-urea do not make economic sense in a world awash in low-cost natural gas. Notwithstanding, China continues to grow its coal-to industries;



American Chemistry Council, Shale Gas and New U.S. Chemical Industry Investment: \$164 Billion and Counting, slide 5 (Apr. 2016), available at <https://www.slideshare.net/MarcellusDN/acc-shale-gas-and-new-us-chemical-industry-investment-164-billion-and-counting>.

maybe on the prospect that the world's growing supplies of cheap natural gas could be short-lived. ... The world does not use coal to produce industrial quantities of olefins ... only China uses its coal for these purposes."³⁴

The process of producing olefins (ethylene and propylene) from coal is also extremely carbon-intensive, even when compared to other olefin-producing processes.³⁵ Efforts to reduce, or add a cost to, emissions will make an already expensive process even more so.

The Phase-Out of Fossil Fuels

In December 2015, over 190 countries signed the Paris Agreement, determined to limit atmospheric warming to well below 2 degrees

Celsius and to strive to keep temperature increases to no more than 1.5 degrees.³⁶ This agreement signaled an understanding by the global community of the need to phase out fossil fuels as an energy source and their commitment to do so.

Despite this commitment, plastic producers and fossil fuel companies, which are often the same companies, are investing heavily in new production capacity, especially in the United States.³⁷ Recent developments, however, cast significant doubt on the assumptions underlying these investments.

To achieve the goals of the Paris Agreement, the transition away from fossil fuels must necessarily be rapid. A 2016 analysis from Oil Change International found that potential future emissions from currently operating oil and gas fields

THE LOFOTEN DECLARATION

Climate Leadership Requires a Managed Decline of Fossil Fuel Production

Read the Declaration

Sign the Declaration

and coal mines would bring atmospheric warming beyond 2 degrees; reserves of oil and gas alone would take us past 1.5.³⁸

The divergence between what is necessary to achieve the goals of the Paris Agreement and a business-as-usual scenario is stark. Fossil fuel company projections — even those that claim to account for aggressive climate action — predict growth in production and consumption for decades to come.³⁹ These projections, and the assumptions underlying them, are the bedrock upon which new investments in ethane crackers and other petrochemical production capacity are being built.

Public pressure to meet the Paris Agreement's goals from businesses, public officials, and civil society is growing. In August 2017, hundreds of civil society organizations signed the Lofoten Declaration, calling for a managed decline of fossil fuel production to avoid the worst impacts of climate change.⁴⁰ The United States Conference of Mayors released a statement supporting the Paris Agreement and “vow[ing] that the nation's mayors will continue their commitment to reduce greenhouse gas emissions.”⁴¹ Over

one hundred major companies have committed, through the RE100 initiative, to transition their operations to 100% renewable energy.⁴² Finally, investors, from individuals to large institutions with total assets of over \$6 trillion, have committed to divest their portfolios from fossil fuels.⁴³

This accelerating pressure does not exist in a vacuum. Recent announcements from governmental and industry actors indicate that the shift away from oil as a fuel for transportation may happen more rapidly than expected. In June 2017, India announced that it would ban the

sale of non-electric cars by 2030.⁴⁴ The following month, France announced that it would ban sales of gasoline- and diesel-powered cars by 2040,⁴⁵ and two weeks later, the United Kingdom announced it would do the same.⁴⁶ Then, in October, Paris, France, announced that it would ban fossil-powered cars ten years sooner, by 2030.⁴⁷ The same month, China announced that it was pursuing a similar ban.⁴⁸ Wang Chaunfu, Chairman of Chinese car manufacturer BYD, expects the electrification of all vehicles in the country to be complete by 2030.⁴⁹ Other countries, including Austria, Denmark, Ireland, Japan, the Netherlands, Portugal, Korea, and Spain, along with eight US states, have also declared goals for electric car sales.⁵⁰ In addition to their direct regulatory impacts, these national targets in major markets will create powerful incentives for automotive manufacturers to reduce their reliance on internal combustion engines.

Not surprisingly, therefore, 2017 also saw a wave of announcements from major car manufacturers about



Joe Brusky/Flickr

their plans to produce electric vehicles. General Motors revealed a plan to introduce 20 all-electric vehicles by 2023, stating that the company “believes in an all-electric future.”⁵¹ Volvo announced that by 2019 all of its new cars would contain an electric motor;⁵² Jaguar Land Rover would do the same by 2020.⁵³ The VW Group announced it would invest \$84 billion in batteries and electric cars;⁵⁴ Daimler will invest another \$10 billion.⁵⁵ Announcements from Ford,⁵⁶ Hyundai,⁵⁷ Renault, Nissan, and Mitsubishi,⁵⁸ as well as Toyota and Mazda,⁵⁹ similarly indicate plans to shift the focus to electric vehicles.

These and other changes are likely to reduce demand for oil below forecast levels in the coming decades. Similarly, changes in the market for natural gas suggest future demand may not simply continue to expand, as many expect.

Due to the shale gas boom in the United States, natural gas has increased in availability and come down in price. However, optimistic assumptions about the future of natural gas are being challenged by changes to energy economics, as well as an evolving understanding of natural gas’s true environmental cost.

A key claim for the necessity of natural gas is that it can be used in peak demand scenarios, responding to a rapid increase in the need for energy. The performance of quick-dispatch batteries serves to undermine expectations about the need for natural gas to serve this function. In December 2017, a major battery installation in South Australia managed to successfully dispatch power milliseconds after a coal plant



Jacek Sopotnicki/Shutterstock

outage, thus performing the exact “peaking” function for which gas plants are touted.⁶⁰ The neighboring state of Victoria is now planning to install a similar battery pack.⁶¹

These developments are not restricted to Australia. In the United States, for example, California has already deployed a massive battery pack,⁶² and a new report in Minnesota predicts that grid-scale storage will become cheaper than new natural gas plants beginning in 2019.⁶³

Subsequently, a ruling by the US Federal Energy Regulatory Commission noted that energy storage companies will be able to compete with traditional power plants by 2020.⁶⁴ As noted by business analytics firm IHS Markit: “The question is no longer if batteries will disrupt the power sector ... but rather how much and how fast.”⁶⁵

The significance of these economic changes bears repeating. One of the key arguments for the continued necessity — and success — of natural gas as an energy source is

the ability of “peaker” plants to respond to needs on the electric grids. The fact that batteries and grid-scale storage can serve that same function as cheaply or more cheaply than gas massively undercuts those optimistic projections.

These changes have not gone unnoticed. Continually increasing price competition from renewables has led to a dramatic and unexpected decline in the market for new gas turbines. General Electric, the largest gas turbine installer in the world, is expecting 2018 to be its worst year of turbine installations in 15 years.⁶⁶ Siemens, another major supplier of gas turbines, noted a 30% drop-off in orders in 2017 as well.⁶⁷

Forecasters in 2010 expected global sales of 300 large gas turbines per year.⁶⁸ In 2013, 212 were ordered, and in 2017, just 122.⁶⁹

Many proponents of natural gas also claim that it has a lower greenhouse gas emissions profile than coal and is therefore a climate-friendly fuel option. However, a recent NASA study

confirmed that, when methane leakage is properly accounted for, natural gas is no better — and perhaps much worse — than coal as far as the climate is concerned.⁷⁰ As such, continued and accelerating action to reduce greenhouse gas emissions and combat climate change could further impact the economic viability of natural gas as an energy source.

The foregoing social, political, and economic developments, taken together, undermine the rosy predictions of future fossil fuel use relied on, and promoted by, the fossil fuel and plastics industries.

Effects on the Plastic Supply Chain

As the global community phases out fossil fuels, markets for oil, gas, and coal — the feedstocks for plastics — will necessarily be affected. While it is difficult to predict exactly how this will happen, there are some predictable consequences of such a significant shift in the markets for fossil fuels.

In the short term, sociopolitical and economic changes that reduce demand for fossil fuels may help plastics manufacturers. Dow Chemical (now DowDuPont), an American company that uses natural gas to produce plastics, revealed as much in a statement to the United States Congress.⁷¹ In the statement, Dow made its interests clear: It wanted the price of natural gas as low as possible.⁷²

This potential price decrease only helps plastic manufacturers if the total amount of supplied fossil fuels can satisfy the demand for feedstocks. As stated before, only a fraction of oil and gas is efficient

for use in the production of plastics. These materials — natural gas liquids from gas development and naphtha from oil refining — exist in abundance *because* there is demand for the other components of the gas and oil.

To illustrate this point, it's instructive to compare the capital expenditure for ExxonMobil's upstream (the segment which explores for and drills for crude oil and gas) and chemical segments. In 2016, Exxon's upstream activities earned almost \$200 million in profits, compared to over \$4.6 billion for the chemical segment.⁷³ However, capital expenditures for ExxonMobil's upstream exploration and production amounted to over \$14.5 billion, whereas expenditures for the chemical segment were only \$2.2 billion.⁷⁴ While it is beyond the scope of this paper to attempt to apportion costs of upstream

If the market for burnable fossil fuels diminishes, plastics producers must either absorb all fossil fuel production and disposal costs or change their production processes to use the various components of fossil fuels.

activities to chemical production, the disparity in the scale of expenses for the different segments illustrates the degree to which upstream fossil fuel production subsidizes downstream chemical production.

This dynamic poses a fundamental challenge to plastics producers, as they need demand for fossil fuels to drive the large-scale production

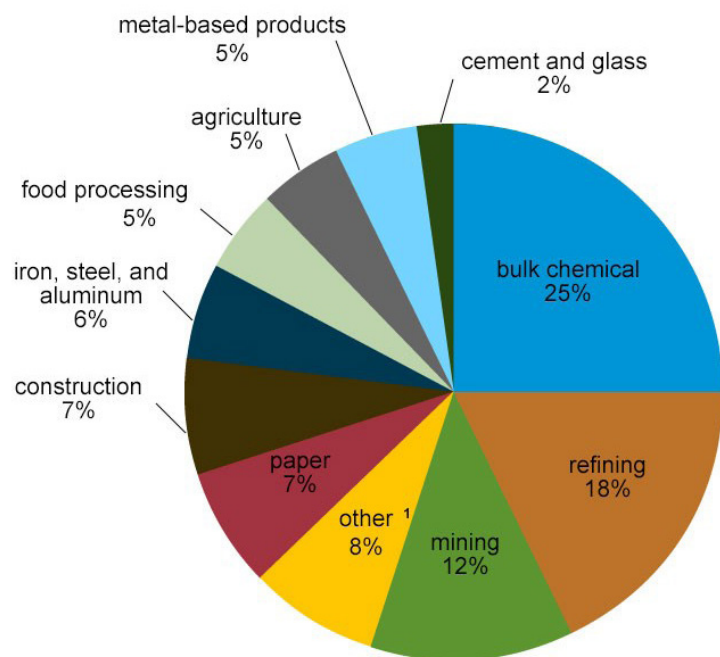
of their preferred feedstocks. As the market for burnable fossil fuels is dramatically reduced, plastics producers have three choices: They must absorb more of the cost of production of fossil fuels *and* the disposal cost of the majority of unused material, change their production processes to use different components of fossil fuels, or switch to alternative feedstocks.

If the source of feedstock is natural gas, it is possible to use the methane in natural gas to produce feedstock chemicals for plastics. Their method, called the Fischer-Tropsch process, is similar to the coal-to-olefins process used in China.⁷⁵ However, it is considerably more expensive than using ethane and other larger chemicals.⁷⁶

The non-naphtha components of oil can also be cracked and refined to make precursor chemicals for plastics.⁷⁷ However, as is the case with natural gas, the most efficient processes are the ones already in use, and if the industry is required to use other parts of the oil mix, it will make the process more expensive.

In addition to changes in production costs and processes, changes will also be necessary for plants and equipment. Many facilities that are now operational or are being planned perform specific functions and cannot easily be repurposed. The most extreme examples are the new ethane crackers in the United States, which are designed specifically to produce ethylene from ethane, a process that produces virtually no propylene.⁷⁸ If plastic producers are required to use new feedstocks and new production processes, their production facilities — which require massive investments of time

US Industrial Sector Energy Consumption by Type of Industry, 2016



Note: Together, bulk chemicals and refining account for 43% of US industrial sector energy consumption. Emissions from both sectors are relevant when considering the impacts of plastic production.

Use of Energy in the United States Explained: Energy Use in Industry, ENERGY INFORMATION ADMINISTRATION (last visited Mar. 19, 2018), https://www.eia.gov/energyexplained/index.cfm?page=us_energy_industry.

and capital — will have to change as well.

Because of this need, it is important to note both the enormous size of individual facilities and the risk inherent in their construction. A typical ethane cracker in the US Gulf Coast formerly cost between \$1.5 and \$2 billion to construct.⁷⁹ However, shortages of labor and materials are significantly driving up costs. In 2017, the total project cost of new ethane crackers rose 19% to \$2.5 billion, a nearly 40% increase over projections at the beginning of this wave of US petrochemical construction.⁸⁰

Other estimates place the cost even higher. According to the American Chemistry Council, “[a] new natural gas-based ethane cracker could have an annual capacity of 1.5 million metric tons or more, with a

price tag of well over \$4 billion.”⁸¹ At present, ExxonMobil and Saudi Arabia Basic Industries Corp. are partnering on a \$9.3 billion ethane cracker in Texas.⁸²

The wisdom of constructing new ethane plants in the United States is being questioned by some within the chemical industry itself, who are warning that a supply glut could depress ethylene prices.⁸³ Moreover, swings in oil and gas prices, key determinants of the relative competitiveness of individual crackers, have already caused delays and project cancellations, especially in the Northeastern United States.⁸⁴

Finally, before the industry sees fundamental changes to its supply chain, plastic production may be challenged in the short term as efforts to combat climate change apply a price to carbon. Two thirds

of the cost of plastic production is its energy input,⁸⁵ and the production process itself is enormously carbon-intensive. As noted in an American Chemistry Council report, “The business of chemistry is energy-intensive; in fact, it is the second largest user of energy (fuel and nonfuel) in manufacturing sectors (petroleum and coal products is the largest). Within the chemical industry, this is especially the case for basic chemicals,” including ethylene, propylene, and plastic resins.⁸⁶ Regulations that make greenhouse gas emissions more expensive will make plastic production more expensive as well.

A 2016 report from the Environmental Integrity Project underscores how emission-intensive these new petrochemical projects are.⁸⁷ In 2015 alone, the emissions from 44 planned or permitted petrochemical projects would amount to 19 coal-fired power plants.⁸⁸ The largest ethane cracker in St. James, Louisiana, has projected CO₂-equivalent emissions of more than 10 million tons per year.⁸⁹ By comparison, the average 500-megawatt coal-fired power plant emits 4.6 million tons of carbon dioxide per year when operated continuously.⁹⁰

Additional investigation and analysis are needed to project exactly how the production costs will change as the global community shifts away from fossil fuel combustion as a source of energy. It is well understood, however, that the chemical feedstocks for plastic production are abundant because of fossil fuel development and that the fundamentals of the industry will be radically changed when this is no longer the case. Plastic production will be more expensive as fossil fuels phase out.

Alternative Feedstocks are More Expensive

As the global community begins to phase out fossil fuels, some have suggested that plastics manufacturers switch to alternative, low-carbon methods of plastic production,⁹¹ including recycled plastics, bio-based plastics, and plastics formed from electricity. As a preliminary matter, it bears note that most of these alternative feedstocks require substantially different production processes and technologies than existing fossil-based plastics. Accordingly, these technologies would be unlikely to improve the economic prospects of existing or proposed petrochemical investments even if they were widely deployed. More fundamentally, these purported solutions present several of the same environmental problems as traditional plastics and cost more to produce.

Proponents of bio-based plastic suggest that, by using organic carbon instead of fossil carbon to produce plastics, the industry can wean itself of its dependence on fossil fuels.⁹² These plastics are considerably more expensive to produce, and many (because they are chemically identical to fossil-based plastics) still present the same challenges of waste disposal and plastic pollution.⁹³

Another alternative to fossil-based plastic is to use electricity to form the chemical feedstocks for plastics by pulling carbon dioxide out of the air.⁹⁴ This process requires enormous energy inputs, even when compared to traditional plastic production, which is itself energy-intensive. The plastics produced in this way would be considerably more expensive,

with production costs for ethylene and propylene doubling or tripling. As one observer noted, “Using electricity and carbon dioxide as the main feedstock for ethylene and propylene production will only make sense under a very strict climate policy where fossil feedstock is completely phased out.”⁹⁵

Finally, proponents of recycling — especially in Europe, where the EU has committed to circular economy principles — argue that the industry can increase the share of plastic that gets re-used to reduce its dependence on fossil fuels.⁹⁶ According to a report by GAIA and Zero Waste Europe, however, even the best available recycling technology, fully deployed, could only process a maximum of 53% of the current plastic mix.⁹⁷ (To date, only 9% of plastic has ever been recycled.)⁹⁸ Therefore, it is extremely unlikely that the recycling process could absorb the current plastic waste stream, much less planned increases in plastic production. Recycled plastics also present

other major challenges, such as recirculating various persistent organic pollutants that are banned under international law in the biosphere.⁹⁹ Nevertheless, setting aside concerns about the feasibility of creating a circular plastics economy while maintaining projected levels of output, recycled plastic requires different facilities to produce than virgin plastic,¹⁰⁰ raising further questions about the prudence of building new ethane crackers.

Switching to alternative feedstocks or recycled plastics, even if plausible in the short term, would not solve the industry’s problem of growing opposition to plastic pollution. Plastics made from alternative feedstocks (but with the same chemical properties) would pose many of the same long-term hazards and would likely be subject to the same social and political opposition as modern plastics.

Moreover, and as noted above, the technologies and processes required



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Karsten Wirth/Unsplash

for these alternative feedstocks differ substantially from the technologies used to produce virgin plastic resins from fossil fuels. Accordingly, increased adoption and use of alternative feedstocks would neither benefit nor justify the petrochemical-based plastics infrastructure that is the focus of current investment.

Conclusion

Plastics manufacturers and fossil fuel companies are currently investing hundreds of billions of dollars in new production facilities, with the heaviest investments focused in the Northeastern US and the US Gulf Coast. With plastics production capacity in the US already far exceeding domestic demand, and global capacity exceeding existing global plastics demand, these investments assume producers will reach new and steadily growing markets for their products, and that production processes will be subsidized for the

foreseeable future by steady demand for and supply of fossil fuel feedstocks.

To date, these assumptions have received little critical attention despite their central importance to the long-term prospects for these investments and for the plastics industry as a whole. The foregoing analysis suggests this is a significant oversight, which raises serious questions about whether project proponents and investors are adequately considering the risks of imminent and potentially significant changes in both the supply chains of their feedstocks and the demand for their products.

Plastics manufacturers assume demand for disposable plastics will continue to rise, despite evidence that global awareness of plastic pollution is growing and cultural attitudes are changing. Industry investments reflect a further underlying assumption that supplies of cheap hydrocarbons will remain the norm

for decades to come, even as the global community has begun to phase out the very fossil fuels upon which plastics producers depend. Proposed alternatives to virgin fossil-based plastics, in addition to facing their own economic and environmental challenges, will in no circumstances have positive economic impacts on the current wave of investments in petrochemical-based plastics infrastructure.

Plastics producers are depending on increasing demand and abundant feedstock supply to fuel their industry for the next several decades. These assumptions may be unfounded and unjustified.

There is compelling evidence that the rush to build new plastics infrastructure poses massive risks for communities, ecosystems, and the planet. Investors and analysts need to ask whether the plastics boom is putting assets at risk as well.

Endnotes

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The Long-Term Prospects for the Plastics Boom is the fourth in an ongoing series, *Fueling Plastics*, that examines the links between plastics and fossil fuels.

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INSIGHT: China ban on single use plastics threatens 4m tonnes/year of polymer demand

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2020/01/24

SINGAPORE: China's move to phase out single-use plastics has stirred concern among market players about the growth of plastics demand. The regulations might affect as much as 4m tonnes/year of polymer demand.

The new rules [prohibit](#) the production and use of disposable and non-biodegradable plastic finished products.

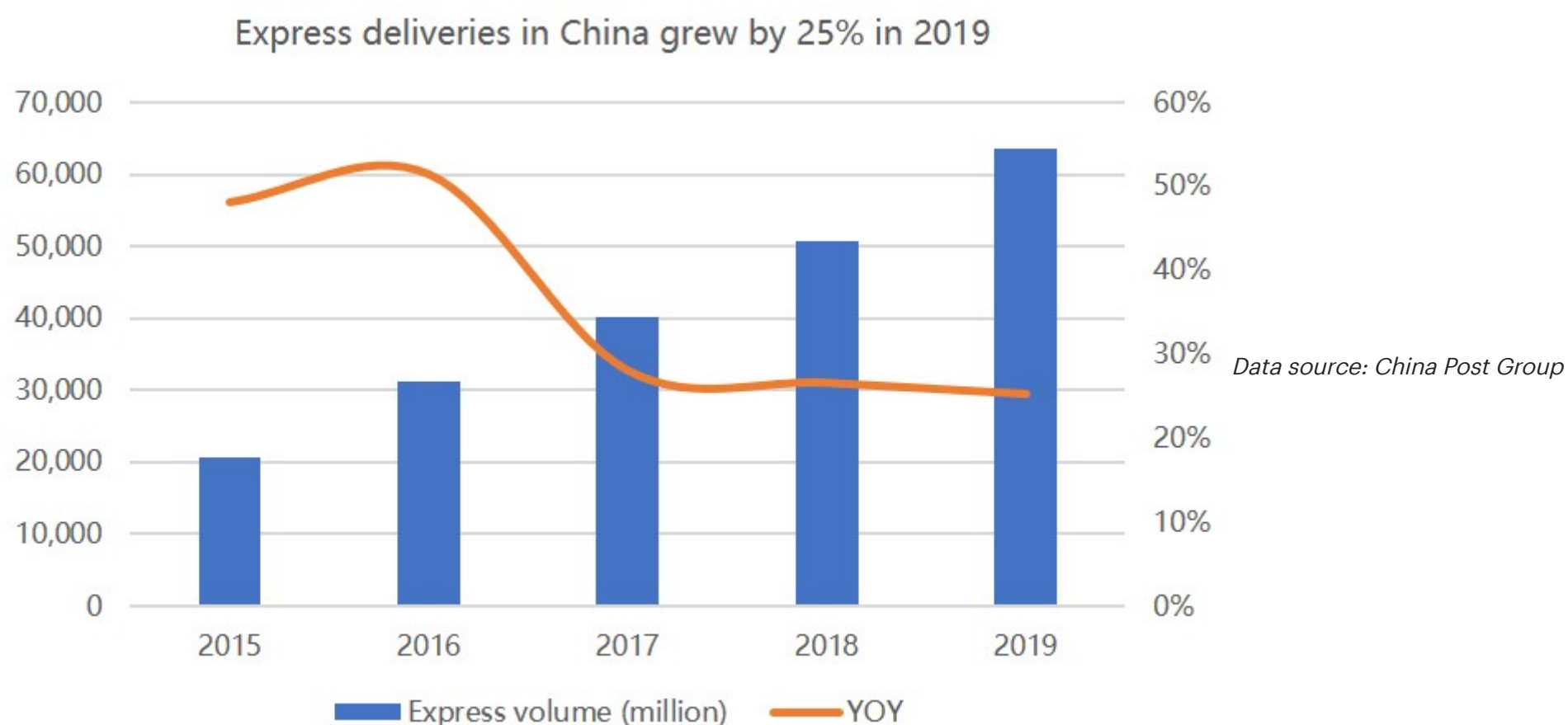
The impact on polyethylene (PE) demand is expected by ICIS to be more than 3m tonnes/year because of the widespread use of the polymer to make shopping bags, courier bags (bags that are sealed on one side), and agricultural film.

Currently, the costs of degradable plastics are much higher than for non-degradable, and there is insufficient degradable plastics capacity to meet demand.

ICIS believes that the ban of using non-degradable plastic bags in food delivery and express delivery packages will have a major impact on PE demand.

Packaging bags, widely used in emerging industries, such as e-commerce, express delivery and food delivery, underpinned by booming internet business, have become a major driving force for China's rising PE demand.

Data from China's National Bureau of Statistics (NBS) showed that the online sales of physical goods reached yuan (CNY) 8,523.95bn in 2019, up by 19.5% year on year. According to the China Post Group, the total number of express deliveries in China amounted to 63.5bn in 2019, up by 25.3% year on year.



We expect that the ban on using non-degradable plastic packaging bags in postal and express delivery services might have a considerable impact on PE demand.

Taking 2019 statistics as a reference, the missed demand would be around 880,000 tonnes of PE.

Polyethylene is a major feedstock for plastic packaging bags used in express delivery. But PE consumption in this application is hard to calculate as packaging bags are made in various sizes. Detailed rules for different provinces and cities are unknown as yet, which adds to the uncertainty about PE demand.

ICIS analysis assumptions are based on the total number of China's express deliveries in 2019 of more than 63.5bn.



Considering the plastic packaging bag with the most common specification of 40cm x 50cm for reference, the corresponding PE consumption in 2019 is estimated around 880,000 tonnes.

The number of express deliveries in six provinces and cities, including Beijing, Shanghai and Jiangsu reached 43.8bn in 2019, accounting for 69% of China’s total.

The new regulation would affect PE demand in these provinces by around 610,000 tonnes, or 1.7% of China’s total PE in 2019.

If the new regulation is implemented across China, around 880,000 tonnes of PE demand may be affected, corresponding to the 2.7% of the total PE demand in China in 2019.

Secondly, non-degradable shopping bags are prohibited from being used in take-away services, shopping malls, supermarkets and marketplaces and the regulation will be implemented in the near future.

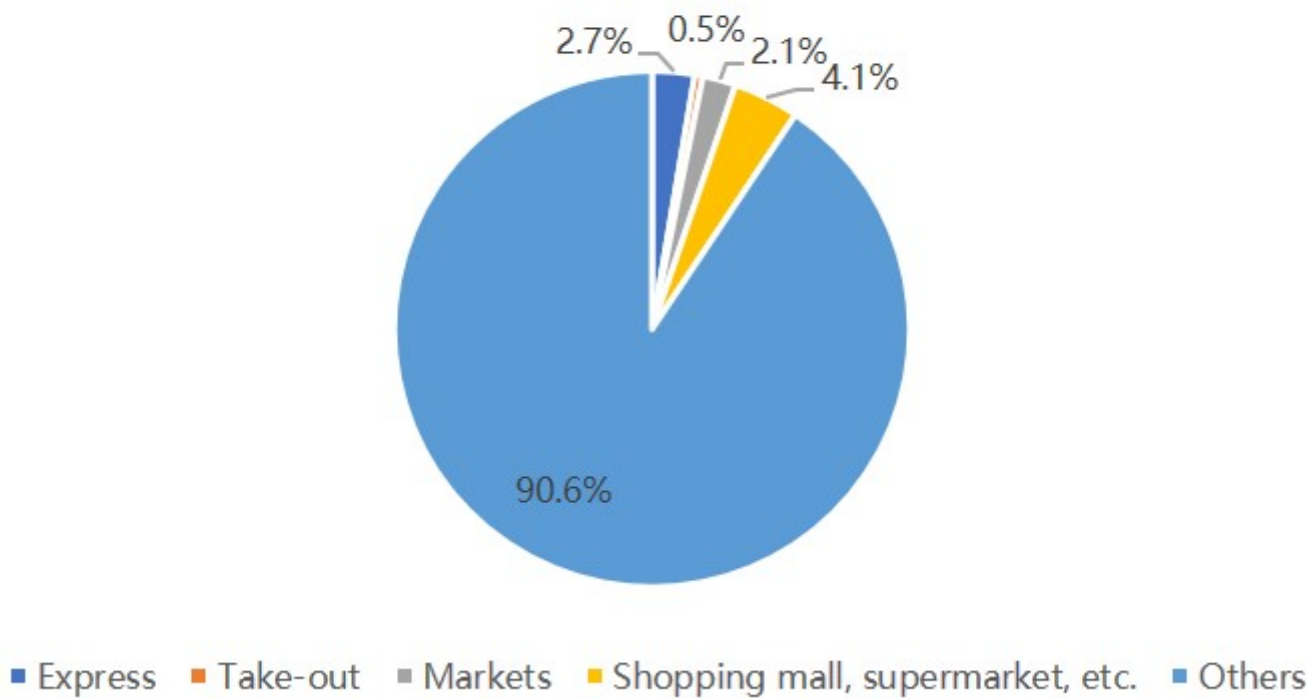
ICIS believes that this move might affect 2.2m tonnes of demand, equivalent to 6.7% of the China total in 2019.

According to media data, the annual take-away order volume of plastic bags in China is at least 20bn.

Assuming that a shopping bag weighs about 8.4 grams (g), PE demand from annual take-way orders is no less than 170,000 tonnes.

Around 1bn plastic bags are used in markets per day. And assuming that one plastic bag used in a market weighs 2g, the related PE consumption is expected to total 690,000 tonnes. Plastic bags are also used in shopping malls, supermarkets, pharmacies and elsewhere.

About 9.4% of total China PE demand will be impacted by the new regulation



The estimates suggest that once non-biodegradable plastic bags are banned in express delivery and takeaway, 3.11m tonnes of PE demand might be affected, which accounts for 9.4% of China's total PE demand in 2019.

In addition, by the end of 2020, China will ban the production and sale of single-use foam plastic tableware, which is made mainly expandable polystyrene (EPS).

The new regulation is estimated to reduce EPS demand by 0.5%. Rough estimates show that 30m foam lunch boxes are used in China every day. The production of 10,000 foam lunch boxes uses 12 kilograms (kg) of plastics, translates into 13,000-15,000 tonnes of EPS demand annually. According to ICIS data, China’s EPS consumption will reach at 3.11m tonnes in 2019.

Polypropylene (PP) packaging boxes have overtaken foam lunch boxes to become the mainstream packaging in catering, with the rapid development of take-away services. Therefore, the ban on non-degradable single-use plastic tableware in the new regulation will also weigh on PP demand.

Assuming that every take-away order uses three packing boxes on average, and that one packing box weighs around 20g, the plastic consumption in packing boxes in China totals around 1.2m tonnes.

At present, most packaging boxes are made of PP, and only some cold food boxes use polyethylene terephthalate (PET).

The ban creates great uncertainty because it is unlikely to be completely effective at once. The market is waiting for details on alternative materials and punishment proposals from each regional government.

China’s National Development and Reform Commission (NDRC) and Ministry of Ecology and Environment rolled out the new regulations to control plastic pollution on 19 January.

According to the regulations, the production, sale and use of some plastic products will be banned in three stages in 2020, 2022 and 2025. The purpose is to build up a plastic products industry management system and to effectively control plastic pollution.

Vox



Low gas prices in Old Orchard Beach, Maine, on March 30. | Derek Davis/Portland Press Herald/Getty Images

Coronavirus stimulus money will be wasted on fossil fuels

Oil and gas companies were already facing structural problems before Covid-19 and are in long-term decline.

By David Roberts | @drvox | david@vox.com | Updated Jun 29, 2020, 3:29pm EDT

Update, June 29: Chesapeake Energy Corp., a massive US oil and gas company that led the fracking boom, has filed for Chapter 11 protection in a bankruptcy court in Texas following the collapse of energy demand in the Covid-19 crisis. The following post, first published April 20, explains why companies like it faced challenges predating the pandemic. (It's not clear whether Chesapeake received stimulus funds before filing for bankruptcy.)

As countries across the world have gone into lockdown in response to **Covid-19**, economies are in free fall. Almost every sector is taking a hit, hemorrhaging jobs and value. And almost every sector will be shaped, for years to come, by the speed, amount, and

nature of public assistance it receives. There is a finite amount of time, resources, and political will available to get economies going again; not every sector will get what it wants or needs.

In short, the decisions legislators make in response to the coronavirus crisis will have an enormous influence on what kind of economies emerge on the other side.

In March, I wrote about **what an ideal recovery and stimulus package would look like**. Then I wrote about how shortsighted it is for Republicans (enabled by learned Democratic passivity) to **reject aid for the struggling clean energy industry**.



In this post, I take a look at why it is equally shortsighted for President Trump and congressional Republicans to remain so devoted to the fossil fuel industry.

The dominant narrative is still that fossil fuels are a pillar of the US economy, with giant companies like Exxon Mobil producing revenue and jobs that the US can't afford to do without. Even among those eager to address climate change by moving past fossil fuels to

clean energy — a class that includes **a majority of Americans** — there is a lingering mythology that US fossil fuels are, to use the familiar phrase, too big to fail.



President Donald Trump, flanked by House Minority Leader Kevin McCarthy, left, and Chevron CEO Mike Wirth, meets with energy sector CEOs at the White House on April 3. | Jim Watson/AFP/Getty Images

But the position of fossil fuels in the US economy is less secure than it might appear. In fact, the fossil fuel industry is facing substantial structural challenges that will be exacerbated by, but will not end with, the Covid-19 crisis. For years, the industry has been shedding value, taking on debt, losing favor among financial institutions and **investors**, and turning more and more to lobbying governments to survive.

It is, in short, a turkey. CNBC financial analyst **Jim Cramer put it best**, back in late January, before Covid-19 had even become a crisis in the US: “I’m done with fossil fuels. They’re done. They’re just done.”

“We’re in the death knell phase,” he said. “The world has turned on [fossil fuels].”

Cramer’s take is not yet conventional wisdom, but he’s right. Evidence in support appears in an April report from the Center for International Environmental Law (CIEL) called “**Pandemic Crisis, Systemic Decline**.” Let’s walk through it.

Fossil fuels are furiously lobbying for, and receiving, largesse from the US government

The UK-based think tank InfluenceMap recently did an **analysis** that tracks corporate lobbying in the face of the Covid-19 crisis. It found that, across the globe, the oil and gas sector has been the most active in lobbying for interventions, seeking, as CIEL summarizes, “direct and indirect support, including bailouts, buyouts, regulatory rollbacks, exemption from measures designed to protect the health of workers and the public, non-enforcement of environmental laws, and criminalization of protest, among others.” In Canada, Australia, and the UK, the industry is arguing that it must be subsidized and deregulated in order to survive.

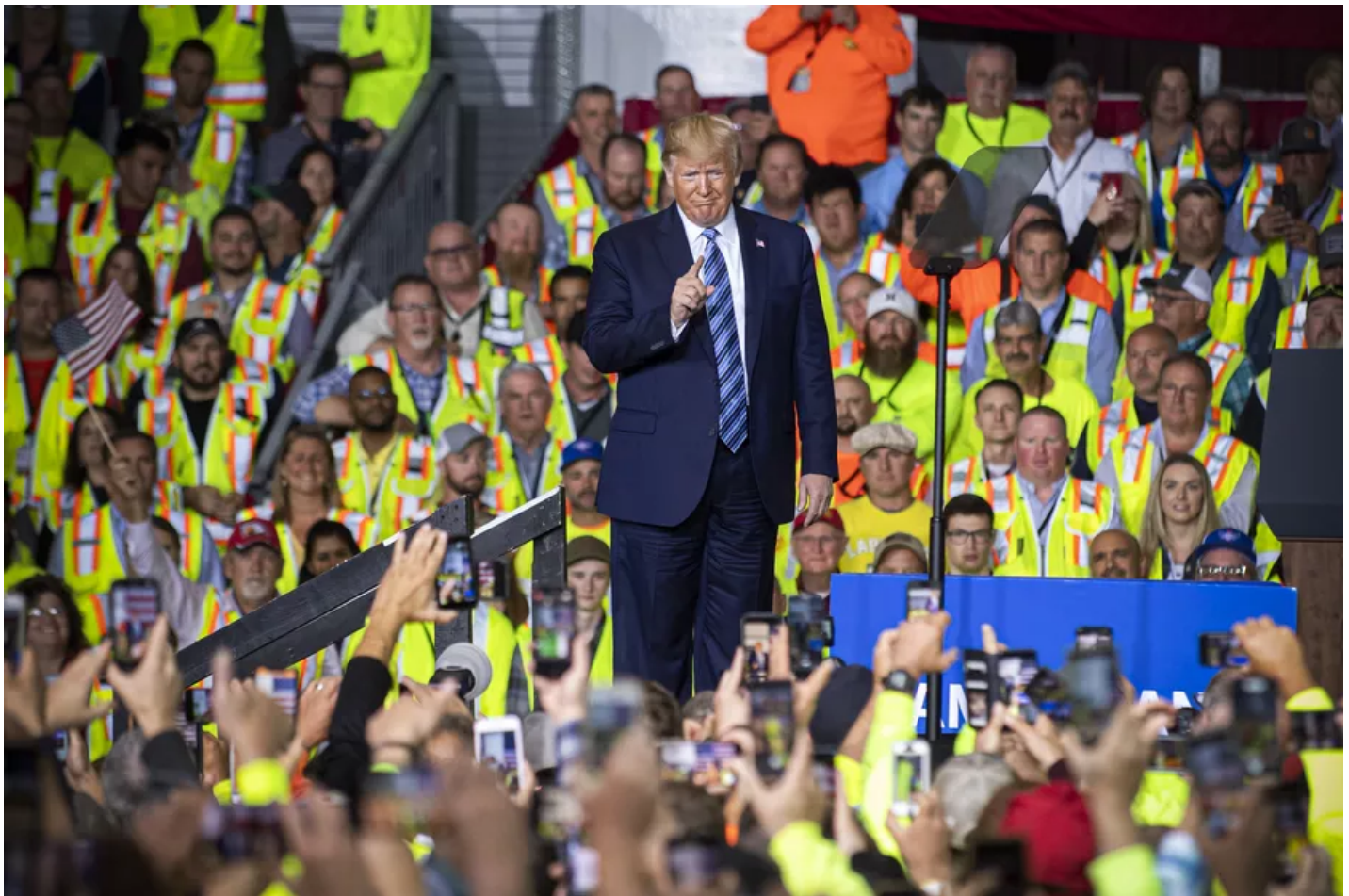
In the US alone, the industry is seeking access to a range of stimulus funds, relief from a variety of pollution regulations, and use of the strategic petroleum reserve to bolster prices. Journalist Amy Westervelt is tracking **at least a dozen other lobbying efforts**. Recently the Federal Reserve **changed its rules** to allow bigger businesses access to “Main Street loans” (widely seen as a sop to oil and gas companies) and, as Emily Holden **reports for the Guardian**, records show that fossil fuel companies have already gotten \$50 million in loans meant for small businesses.

The petrochemical and plastics industry, which is in large part an extension of the oil and gas industry, is exploiting the crisis as well. It has **lobbied** the federal government to declare an official preference for single-use plastic bags and **suggested** that more fresh produce should be wrapped in plastic.

The virus has not slowed down the Trump administration’s attempts to assist the industry. It is **gutting fuel economy standards**, which, by its own estimation, will increase pollution and **eliminate 13,500 jobs a year**. The EPA has **dramatically eased the enforcement of pollution regulations** and **moved forward with its “secret science” rule**, which will make it more difficult to understand and address the health impacts of air pollution — and more difficult to study the coronavirus.



The petrochemical industry has lobbied the federal government to declare an official preference for single-use plastic bags. | Timothy A. Clary/AFP/Getty Images



President Trump delivers a speech on energy sector jobs at the Shell Chemicals Petrochemical Complex in Monaca, Pennsylvania, on August 13, 2019. | Jeff Swensen/Getty Images

During a supply glut driven by historically low prices, the Interior Department is rushing to lease federal land for oil and gas development, despite an **anemic response**, rock-bottom prices, and **calls from conservative and taxpayer groups** to suspend leasing in the face of the coronavirus.

The administration seems **determined to bail out struggling shale gas companies**, despite that overleveraged, debt-ridden sector being **long overdue for a shakeout**. (For more on that, check out **Amy Westervelt's reporting at Drilled.**)

Trump is **negotiating with Saudi Arabia and Russia** on oil supply cuts, and has the Department of Energy **buying up millions of barrels of oil** for the strategic petroleum reserve, all to try to boost the price of oil to help **struggling oil majors**. A group of GOP senators is **lobbying for fossil fuel companies**, including coal companies, to be eligible for the small business recovery fund.

In April, EPA Administrator Andrew Wheeler announced that the administration, in defiance of an enormous body of evidence and **recommendations from EPA scientists and staff**, will **not tighten restrictions on soot pollution**. And on Friday, Wheeler announced that the EPA will **weaken standards on mercury and other toxic metals** from fossil-fueled power plants, again in opposition to the scientific consensus, based on rigged cost-benefit analysis that **deliberately excluded most benefits**.

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Trump's EPA balks at a chance to save black lives

Across the board, the administration is doing everything it can to help fossil fuels. But it's a mug's game. The industry is faltering for reasons that well predate Covid-19.

Fossil fuels were already facing structural problems before the coronavirus

US coal is in terminal decline, for reasons I've written about **many times before**. No amount of stimulus money or weaker pollution regulations can save it.

But on the surface, things look different for oil and gas. **Thanks to fracking**, production has been booming for the past decade, vaulting the US ahead of Saudi Arabia and Russia to become the the world's leading oil and gas producer.

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Coal left Appalachia devastated. Now it's doing the same to Wyoming.

And the same goes for petrochemicals and especially plastics, which have been **forecast** to be the main drivers of rising petroleum demand in coming years. The industry has issued rosy projections of plastics' growth and invested \$200 billion in new petrochemical and plastics infrastructure.

But dig below the surface and things don't look so good.

First, fracking was a **financial wreck** long before Covid-19 hit. US fracking operations have been losing money for a decade, to the tune of around \$280 billion. Overproduction has produced a supply glut, low prices, and an accumulating surplus in storage.

CIEL reports:

Since 2015, over 200 drillers have gone bankrupt, with 32 declaring bankruptcy in 2019. At the beginning of 2020, the industry continued to struggle as natural gas prices remained low due to sluggish demand growth. By the end of the first quarter, another seven drillers had declared bankruptcy, six additional drillers had their credit outlook downgraded, and several major banks had written down the expected value of many drillers' reserves. A recent analysis from Rystad Energy indicated that, at prevailing oil and gas prices, almost all new fracking wells drilled would lose money.

Even as its prospects grow dimmer, the enormous debt the industry has taken on over the years is coming back to bite it. Some \$40 billion will come due this year alone, and around \$200 billion in the next four years.

Second, both oil and gas prices were persistently low leading into 2019. Due to oversupply and mild winters in the US and Europe, there is a glut of both natural gas and oil, such that the entire world's spare oil storage is in danger of being filled. Many big oil deals in "frontier countries" with as-yet-unexploited reserves, like Guyana, Argentina, and Mozambique, are falling through as low prices drag on.

Third, renewable energy and electric vehicles are threatening oil and gas's dominance in both transportation, which represents 70 percent of global demand, and electricity. Natural gas's status as a "bridge fuel" in the power sector is in **increasing doubt**; since 2014, orders for new gas turbines (to generate power) have **fallen by half**. As for transportation, a **recent report** from the international banking group BNP Paribas concluded that "the economics of oil for gasoline and diesel vehicles versus wind- and solar-powered EVs are now in relentless and irreversible decline."



An electric car at a charging station in Bavaria, Germany, on March 26, 2020. | Sven Hoppe/picture alliance/Getty Images

Fourth, oil and gas majors are revealing their own weakness by writing down assets — effectively conceding that certain reserves cannot be profitably exploited. In 2019, Chevron wrote down \$11 billion worth; Spanish oil company Repsol recently wrote down \$5 billion worth. Exxon Mobil, after adding Canadian tar sands assets to its books in 2017, reversed course and wrote down 3.2 billion barrels last year.

Fifth, financial institutions — “institutional and retail investors, banks, insurers, and credit rating agencies” — are catching wind of fossil fuels’ weakness and beginning to back away. Many, like Wells Fargo, BlackRock, the European Investment Bank, and the World Bank Group, are restricting investments in carbon-intensive projects. As of March 2020, asset investors worth \$12 trillion had **declared that they would divest from fossil fuels**.

As financial institutions divest, the ones still invested in carbon-intensive projects face increasing vulnerability to lawsuits charging them with ignoring material risks. “As the risks of investing in the oil and gas sector become ever more apparent,” CIEL writes, “more and more investors subject to fiduciary duties will likely choose to steer clear of these companies.”

Like these other dismal trends, the financial turn from fossil fuels was underway well before Covid-19. Over the past decade, companies in the sector have spent more on stock buybacks and dividends than they have brought in through revenue, leading to a greater

and greater debt burden. Declining confidence in the sector has made it the worst-performing sector on the S&P Index.



The Dow Jones Index (black line) vs. the Dow Jones Oil & Gas Index (blue line), as of April 17, 2020. | S&P Dow Jones Indices

Finally, plastics, the great hope of the oil and gas sector, do not appear to be growing fast enough to justify the industry's optimistic projections. Much of the US plastics industry is geared for export, but countries across the world (127 and counting) are adopting restrictions on single-use plastics. The most recent such restrictions were **adopted by China**, the world's largest plastic producer and consumer. Plastics, like oil and gas, are suffering from the dual malady of overexpansion and underconsumption.

As an example that encompasses all these structural problems, CIEL cites Exxon Mobil. The company's plan for growth involves growth in its petrochemical operations, which is now in doubt; fracking in the Permian Basin, which is now in doubt; and expanding oil production in Guyana, which is now (owing to political instability) in doubt.

All these doubts are converging as Moody's recently revised the company's outlook to negative. It fell out of the S&P's top 10 for the first time, its stock hit its lowest price in a decade, the rapid rise of renewables and electric vehicles rendered billions (and perhaps soon trillions) of dollars of its assets worthless, and it is keeping shareholders happy with debt-financed dividends. The Institute for Energy Economics and Financial Analysis found that over the past decade, Exxon Mobil has **spent \$64.5 billion more on payouts to stockholders than it earned in free cash flow**. That can't go on much longer.

Again: All of these structural trends predate Covid-19. But the global lockdown in response to the virus has accelerated all of them.

Oil and gas are caught in a historic downturn

Into this already dismal situation for fossil fuels came the virus and the subsequent lockdown. The vertiginous plunge in consumer demand has hit every sector of the economy, but oil and gas, already facing oversupply and persistent low prices, were particularly vulnerable.

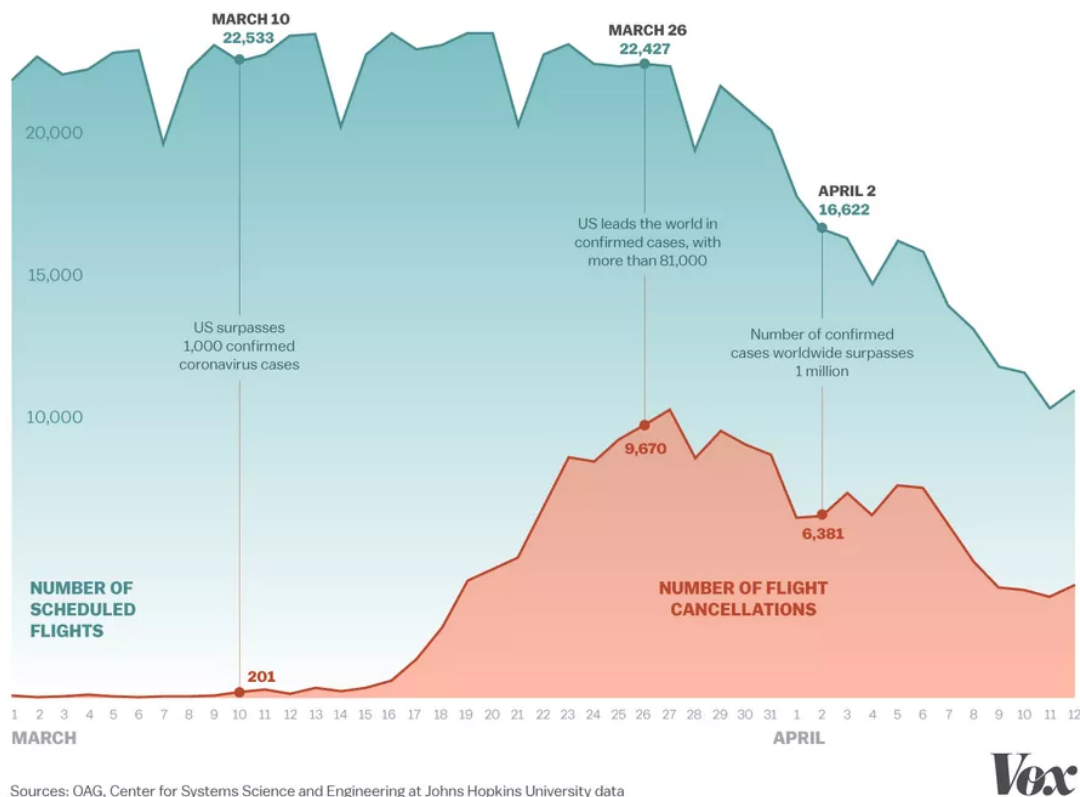
“Oil, gas, and petrochemical stocks have been affected more rapidly and much more deeply than almost any other sector,” CIEL writes. “The oil and gas sector lost more than 45% of its total value from the beginning of January to early April 2020.”

The already declining stocks of Exxon Mobil, Royal Dutch Shell, and Occidental Petroleum were sent tumbling even faster. In July 2014, Exxon stock hit a high of \$107; as of early April 2020, it was at \$42, its lowest level in decades. (On June 29, it was at \$44.)

Transportation represents 70 percent of petroleum consumption, but no one is moving. Rystad Energy **estimates** that as of March 2020, global traffic is down 40 percent. As lockdowns remain, that number will likely drop further.

Air travel has been the fastest-growing source of demand for transport fuels, but **no one is flying**. “In the final week of March 2020,” CIEL writes, “commercial air traffic was almost 63% lower than in 2019.”

Airlines in the US are canceling a staggering number of flights due to Covid-19



Vox

Christina Animashaun/Vox

Public health officials warn that there could be periodic outbreaks for months or even years. Meanwhile, there are rapid advances being made everywhere in the infrastructure, technology, and practices of working remotely from home. It's entirely possible that auto and air travel won't reach their pre-virus levels in the US for years, if ever.

Travel by ship is also taking a hit. Cruise ships, beset by a series of **viral horror stories**, have suspended operations and many analysts doubt they will ever fully recover.

Meanwhile, oversupply, exacerbated by the drop in demand, is taxing the nation's storage capacity — the International Energy Agency says global capacity is about **85 percent full**. "Nearly all observers have concluded that at projected levels of demand destruction," CIEL writes, "the total global capacity for storing unneeded oil and gas will soon be exceeded." At that point, many producers will be forced to simply **shut down operations** and write-downs will accelerate.

On top of all this has come a price war between Saudi Arabia and Russia, competing for the shrinking supply left over by the US supply glut. Global oil prices were at \$69 per barrel in January 2020. The price of a barrel of Canadian tar sands oil appears **headed into negative**

prices, as are **Texas oil** and **natural gas** in some parts of the US, for May futures (**June prices are higher**). The so-called OPEC+ group of oil-producing nations (OPEC + Russia) recently agreed to a 10 million barrel a day cut in production, but **analysts agree** that it is **unlikely to be sufficient to stabilize prices**.

(In the hours after this article was first published on April 20, oil futures for May fell to **negative prices**. Mind-boggling.)



Freight trains filled with oil in Krasnodar, Russia, on April 14. As supply exceeds demand and oil prices fall, oil producers find themselves confronted with storage challenges. | Igor Onuchin/TASS/Getty Images

When storage capacity runs out, producers are forced to pay people to take oil off their hands. (Raise your hand if you had “**negative oil prices**” on your 21st-century bingo card.) Even if storage doesn’t completely run out, it will be close to full, serving to suppress prices, for years. Petrochemicals and plastics don’t have it much better, with major investors delaying or dropping out of projects left and right.

“In the medium term,” CIEL writes, “the prospect of a full recovery for many of these revenue streams is, at best, uncertain, and, in many cases, unlikely.” Fossil fuels and

petrochemicals could struggle for years.

And even if they eventually manage to achieve something like their pre-virus trajectory, that trajectory was sloping downward. As CIEL summarizes: “the pandemic exposes and exacerbates fundamental weaknesses throughout the sector that both predate the current crisis and will outlast it.”

Wasting stimulus money on fossil fuels makes no sense, so Trump will probably do it

Slowly but surely, the world is beginning to take global warming seriously, shifting attention and investment to materials and sources of energy that do not produce greenhouse gas emissions. As more and more jurisdictions, institutions, and investors turn away from fossil fuels, explicitly citing climate change, those left holding carbon-intensive assets will become targets of increasingly intense legal and civic activism holding them responsible for the damages.

CIEL concludes with recommendations to investors, frontier countries, and local communities: Take heed of fossil fuels’ long-term weakness when making decisions about the future. CIEL also argues that public officials “should not waste limited response and recovery resources on bailouts, debt relief, or similar supports for oil, gas, and petrochemical companies.”

Given the well-established inclinations of Trump and congressional Republicans, that recommendation is likely to fall on deaf ears, at least in the US. If Democrats do not muster the courage to stop them — and it **does not seem they will** — the GOP is likely to continue showering the fossil fuel industry with favors while dismissing aid to the clean energy industry as frivolous.



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April 18, 2019

Brian Reissaus
Staff Chairperson
Committee on Foreign Investment in the United States
Office of Investment Security
Room 5012
U.S. Department of the Treasury
1500 Pennsylvania Avenue, NW
Washington, DC 20220

Sent via certified mail and email to: CFIUS@treasury.gov

RE: Potential foreign governmental control of Northwest Innovation Works

Dear Staff Chairperson Reissaus and CFIUS Members:

Northwest Innovation Works is a U.S. limited liability corporation that is owned by parent companies controlled by the Chinese Government. Northwest Innovation Works is currently seeking \$2 billion in financial assistance from the U.S. Government to continue its plans to construct a methanol refinery on the shores on the Columbia River that would make and ship methanol to China. Columbia Riverkeeper, a non-profit conservation organization, submits this letter to the Committee on Foreign Investment in the United States (CFIUS) seeking review, under section 721(b)(2)(E) of the Defense Production Act of 1950 (Section 721), as amended by the Foreign Investment and National Security Act of 2007 (FINSIA), of the Chinese-government parent company's acquisition of a major energy asset that may present national security considerations for our energy supply and transportation infrastructure. If CFIUS finds that the acquisition was a covered transaction under Section 721(d), the President may modify or prohibit the transaction.

Northwest Innovation Works is proposing to construct the nation's largest gas-to-methanol manufacturing and export facility at the Port of Kalama, in southwest Washington State. Relying on proprietary technology, Northwest Innovation Works would use North American natural gas as feedstock to create methanol. Northwest Innovation Works would then export methanol to China for use as fuel or petrochemicals. The proposal is similar to liquefied natural gas (LNG) export.

Northwest Innovation Works may soon receive over \$2 billion of financial assistance from the United States government. Specifically, Northwest Innovation Works applied to the U.S. Department of Energy for a federal loan guarantee to finance the proposed methanol

refinery, under Title XVII of the Energy Policy Act of 2005.¹ The U.S. Department of Energy is currently processing the loan guarantee request.

The Chinese government may have legal or actual control over Northwest Innovation Works. Exhibit 1 (attached) is an excerpt from a third-party appraisal that Northwest Innovation Works submitted to the U.S. Department of Energy to support an application for financial assistance. Exhibit 1 shows that Northwest Innovation Works is majority or wholly owned by a U.S. company called Pan-Pacific Energy Corp. (PPE). PPE is majority or wholly owned by a Chinese company called Shanghai Bi Ke Clean Energy Technology Co. Ltd. (commonly called “CECC”). Most shares (45%) of CECC are owned by the Chinese Academy of Sciences Holdings Co. Ltd. (CASH), which is a state-owned company and the investment management arm of the Chinese Academy of Sciences, a Chinese government agency. The other significant (44%) shareholder in CECC—called Double Green Bridge Hong Kong—appears to be composed of managers of CASH.² Moreover, Exhibit 2 (attached) makes clear that the Chinese Academy of Sciences is actually responsible for Northwest Innovation Works’ proposal. Exhibit 2 describes a meeting between the Governor of Washington and senior officials of the Chinese Academy of Sciences and CASH, as well as Northwest Innovation Works employees. The document strongly suggests that the Chinese Academy of Sciences controls the methanol proposal and merely “uses the dba of Northwest Innovation Works.” These and other circumstances suggest that the Chinese government has legal or actual control over Northwest Innovation Works.

Riverkeeper brings these facts to CFIUS’s attention because the transaction(s) that brought Northwest Innovation Works under foreign control may present national security considerations, within the meaning of Section 721(f) and the applicable guidance,³ as described below.

CFIUS review may be appropriate because foreign control of Northwest Innovation Works appears to have resulted from a “foreign government-controlled transaction” within the meaning of Section 721(f)(8). As explained by Section 721(a)(4), 31 C.F.R. § 800.214, and the guidance, a “foreign government-controlled transaction” occurs when a foreign government—or an entity controlled by or acting on behalf of a foreign government, including foreign government agencies and state-owned enterprises—acquires control of a U.S. business. As

¹ Pacific Standard, [*Taxpayers may soon be on the hook for a \\$2 billion fracked gas refinery*](#) (November 7, 2018).

² E&E News Energywire, [*Enormous Northwest refineries would feed China exclusively*](#) (November 17, 2015) (“Originally [CASH’s] partner was the oil company BP. Earlier this year, BP has sold its part to an investor group, called Double Green Bridge, made up of managers of CASH.”).

³ *Guidance Concerning the National Security Review Conducted by the Committee on Foreign Investment in the United States*, 73 Fed. Reg. 74567 (December 8, 2008).

explained above, the Chinese government, acting through the state-owned CASH (and perhaps other persons), appears to have gained control of the U.S. businesses Northwest Innovation Works. According to Section 721(b)(1)(B), if CFIUS “determines that the covered transaction is a foreign government-controlled transaction, the Committee *shall* conduct an investigation of the transaction” (emphasis added). Moreover, past practices of the foreign government at issue implicate national security considerations identified by Congress in the Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA).⁴

CFIUS review also appears warranted because of the potential for foreign control of critical infrastructure, including a major energy asset, as well as the long-term impacts to United States sources of energy. *See* Section 721(f)(6) and (8). Methanol is a versatile, energy-dense product, similar in some ways to gasoline, but easier to distribute than LNG or natural gas. Some energy analysts even suggest transitioning away from crude-oil-derived transportation fuels and towards methanol made from natural gas and other sources. One or more large new sources of methanol could therefore legitimately be considered a “major energy asset” within the meaning of Section 721(f)(6). Additionally, Northwest Innovation Works would consume a regionally significant amount of natural gas; on a per-day basis, one third as much natural gas as the entire state of Washington—and the company has plans for several more similarly sized methanol export refineries. The natural gas consumption required for this and similar projects proposed by Northwest Innovation Works may have long-term impacts on U.S. energy resources. CFIUS has reviewed similar transactions that “involved U.S. businesses in the energy sector at various stages of the value chain: The exploitation of natural resources, the transportation of these resources (*e.g.*, by pipeline), [and] the conversion of these resources to power,” as well as transactions affecting “the nation’s transportation system, including maritime shipping and port terminal operations.”⁵ Northwest Innovation Works’ proposal implicates all of these concerns. As such, foreign control of the project may present national security considerations within the meaning of Section 721(f)(6) and (8), justifying CFIUS review.

The following Northwest Innovation Works officials may be subject to CFIUS’s jurisdiction and possess additional information about foreign control of Northwest Innovation Works: Simon Zhang (Chief Executive Officer); Murray “Vee” Godley III (Chief Development Officer); Kent Caputo (General Counsel); and Richard DeBolt (Director of External Relations).

⁴ [Foreign Investment Risk Review Modernization Act of 2018](#), H.R. 5515, Section 1702(c)(1) – (3) (“It is the sense of Congress that, when considering national security risks, the Committee on Foreign Investment in the United States may consider— (1) whether a covered transaction involves a country of special concern that has a demonstrated or declared strategic goal of acquiring a type of critical technology or critical infrastructure . . . [and] (3) whether any foreign [government] engaging in a covered transaction with a United States business has a history of complying with United States laws and regulations”).

⁵ 73 Fed. Reg. 74567, 74570.

Riverkeeper has little connection to matters of national security but, after becoming aware of the facts and law described above, presents this information to CFIUS out of an abundance of caution. Riverkeeper understands that CFIUS review is typically initiated by a voluntary disclosure, but CFIUS may request information or unilaterally initiate review of any covered transaction, even after that transaction has been concluded.⁶ Please do not hesitate to contact me if Riverkeeper can be of further assistance.

Sincerely,



Miles Johnson
Senior Attorney
(541) 490 – 0487
miles@columbiariverkeeper.org

Exhibits:

1. Jacobs Engineering Inc., *Independent Engineers Report for Kalama Methanol Plant* (January 8, 2016) (excerpt).
2. Briefing Memo to Governor Inslee, *Meeting with Representatives of the Chinese Academy of Sciences* (February 12, 2015).

Cc'd via email or U.S. mail:

- Secretary Steven Mnuchin, Department of Treasury
- Attorney General William Barr, Department of Justice
- Acting Secretary Kevin McAleenan, Department of Homeland Security
- Secretary Wilbur Ross, Department of Commerce
- Acting Secretary of Defense Patrick M. Shanahan, Department of Defense
- Secretary Mike Pompeo, Department of State
- Secretary Rick Perry, Department of Energy
- Trade Representative Robert E. Lighthizer, Office of the U.S. Trade Representative
- Director Kelvin Droegemeier, Office of Science & Technology Policy
- Director Mick Mulvaney, Office of Management & Budget
- Senator John Cornyn
- Senator David Perdue
- Senator Tim Scott
- Senator Michael Crapo
- Steven Taracevicz, Satori Partners, Inc.
- media outlets

⁶ Section 721(b)(1)(D)(i); *see also* 31 C.F.R. § 800.401(b), (c); *see also* 73 Fed. Reg. 74567, 74569.



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A plan to build a natural gas–fueled petrochemical plant in Kalama, Washington, ran into a new legal hurdle last week, as a coalition of environmental groups raised new objections to its construction.

The Port of Kalama methanol plant, if built on the Columbia River between Washington and Oregon, would expand North America’s capacity to export products produced by fracked shale gas wells, and is part of a [\\$5.2 billion](https://www.seattletimes.com/business/international-trade/china-staking-52b-methanol-venture-in-state/) (<https://www.seattletimes.com/business/international-trade/china-staking-52b-methanol-venture-in-state/>) plan to develop methanol plants in this corner of the Pacific Northwest. It has applied for funding from a controversial Department of Energy “Advanced Fossil Energy Projects” program — an \$8.5 billion fund offering taxpayer subsidies to the fossil fuel industry.

In July, the Port of Kalama applied for an \$11.5 million U.S. Department of Transportation grant to fund building a dock and improving roads to support the methanol project. On September 16, the Port applied for an additional round of subsidies for the export project, a Port Infrastructure Development Grant.



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If built, the methanol refinery, the environmental organizations wrote, “would consume more fracked gas than all the power plants in Washington state combined” and “would become one of the top causes of greenhouse gas pollution in Washington state.” It would be used to transform raw materials from shale wells in



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The groups also questioned whether the U.S. government should offer any federal subsidies to a project linked to a foreign government.

“The Port is, essentially, asking the American taxpayer to give a private company called Northwest Innovation Works [NWIW] a \$11.5 million handout,” the groups wrote in a separate letter to Secretary of Transportation Elaine Chao. “That company is wholly owned by the Chinese Academy of Sciences, an agency of the Chinese government.”

Officials from NWIW disputed the letter's characterization of ownership, saying that the project involved investment from other organizations.

In an interview, NWIW also disputed the notion that the firm would be the only beneficiaries of the port's improvements, saying that improvements included a road that would be open to the public and that other port customers would be able to use the dock as well. “The claim there, I think is at best an exaggeration,” a spokesperson told DeSmog.

The Port of Kalama did not immediately respond to a request for comment.



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KALAMA SEPA
 Manufacturing & Marine Export Facility

From the cover of the final supplemental environmental impact statement for the Kalama methanol facility. Credit: [Kalama SEIS](https://kalamamfgfacilitysepa.com/)
 (<https://kalamamfgfacilitysepa.com/>)

“As the draft [Department of Energy (DOE)] presentation outlines, the Chinese government is one of the principle backers of NWIW,” Pacific Standard [reported](https://psmag.com/environment/taxpayers-may-soon-be-on-the-hook-for-2-billion-fracked-gas-refinery) (<https://psmag.com/environment/taxpayers-may-soon-be-on-the-hook-for-2-billion-fracked-gas-refinery>) in 2018, in an article about the company's \$1.8 billion federal loan guarantee application. “The majority shareholder in Shanghai Bi Ke Clean Energy Technology is the Chinese Academy of Science Holdings, which the DOE presentation describes as a 'wholly owned state company.' In other words, a significant portion — if not the majority — of NWIW will be owned by the Chinese government, while the risk of financing its construction could be put on U.S. taxpayers.”



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sense because the American taxpayer would assume all of the risk.

Throughout his time in office, President Trump has pursued an aggressive trade war against China — a trade war that has recently been [faulted](https://www.washingtonpost.com/business/2019/10/01/trump-is-heading-into-re-election-with-deep-manufacturing-recession/) (<https://www.washingtonpost.com/business/2019/10/01/trump-is-heading-into-re-election-with-deep-manufacturing-recession/>) for driving U.S. manufacturing to a 10 year low in September.

Without expressing a position on the wisdom of the trade war itself, the groups argued that approving the grant would create a situation where the left hand of the federal government was undoing with subsidies what the right hand had done with tariffs.

“A country that cheaply sells off its natural resources, only to buy back expensive goods manufactured elsewhere using those same resources, is unlikely to create a trade surplus,” Columbia Riverkeeper senior attorney Miles Johnson wrote. “If cheap methanol from Kalama is used to manufacture plastic and other products in China, many of those relatively expensive, value-added products would find their way back to China’s primary export market: America.”

'A Carbon Bomb'

The impacts to trade would be in addition to the climate change implications of going forward with the project.

“The proposed Kalama methanol refinery is a major carbon bomb that would lock Washington into decades of fossil fuel use when the state is vigorously moving in the direction of clean energy,” attorneys for EarthJustice wrote. “It is also a project designed to produce more plastic, at a time when plastic garbage is choking our oceans and shorelines.”


In April, an [OPB investigation](https://www.opb.org/news/article/methanol-plant-kalama-fossil-fuel-china/) (<https://www.opb.org/news/article/methanol-plant-kalama-fossil-fuel-china/>) found that NWIW had suggested to investors that methanol could be





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In May, Gov. Jay Inslee [announced \(https://tldr.com/news/local/inslee-changes-tune-opposes-kalama-methanol-project/article_5b1bbb68-e303-5e94-97f0-e54b29fe1662.html\)](https://tldr.com/news/local/inslee-changes-tune-opposes-kalama-methanol-project/article_5b1bbb68-e303-5e94-97f0-e54b29fe1662.html) that he could no longer “in good conscience” support construction of the plant.




Governor Jay Inslee  @GovInslee · May 8, 2019




Replying to @GovInslee

We've always leaned on science to guide our efforts on [#climatechange](#). The accelerating threat and the emerging science on the damaging impacts of natural gas mean we must focus our efforts on developing clean, renewable, fossil-fuel free energy sources.





Inslee announces opposition to two gas proj...
Gov. Jay Inslee today signed a bill banning hydraulic fracking for oil and natural gas ...
governor.wa.gov




Governor Jay Inslee  @GovInslee

Being committed now to [#100percentclean](#) electricity and signing a bill prohibiting fracking in WA, we want to be consistent to a spirit of progress. I cannot in good conscience support construction of a liquefied natural gas plant in Tacoma or a methanol facility in Kalama.

5:24 PM · May 8, 2019 

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 See Governor Jay Inslee's other Tweets

Climate change is at the center of a larger controversy over Department of Energy funding for fossil fuel projects at a time when the [United Nations warns that the world has just 11 years \(https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report\)](https://www.theguardian.com/environment/2018/oct/08/global-warming-must-not-exceed-15c-warns-landmark-un-report) left to take action to avoid catastrophic harms from a warming climate.



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[advance \(https://www.govtrack.us/congress/bills/116/hr2740\)](https://www.govtrack.us/congress/bills/116/hr2740) in the Senate.

In May, a coalition of 143 environmental groups had [signed onto a letter \(https://www.foodandwaterwatch.org/sites/default/files/organizational_sign_on_letter_opposing_dept._of_energy_backing_petro_hub-2.pdf\)](https://www.foodandwaterwatch.org/sites/default/files/organizational_sign_on_letter_opposing_dept._of_energy_backing_petro_hub-2.pdf) to Congress expressing opposition to Title XXVI funding for a [different petrochemical project \(https://www.prnewswire.com/news-releases/adg-invited-to-submit-part-ii-application-for-19-billion-in-loan-guarantees-under-does-title-xvii-loan-guarantee-program-300577137.html\)](https://www.prnewswire.com/news-releases/adg-invited-to-submit-part-ii-application-for-19-billion-in-loan-guarantees-under-does-title-xvii-loan-guarantee-program-300577137.html), the Appalachian Storage Hub.

A third petrochemical project, the Lake Charles Methanol plant in Lake Charles, Louisiana, was [offered \(https://www.energy.gov/lpo/articles/lpo-announces-first-ever-conditional-commitment-offer-advanced-fossil-project\)](https://www.energy.gov/lpo/articles/lpo-announces-first-ever-conditional-commitment-offer-advanced-fossil-project) \$2 billion in Department of Energy loan guarantees in December 2016. That \$4.4 billion project, not yet under construction, would turn petcoke ([a residue \(https://www.energy.gov/sites/prod/files/2013/05/f0/EIS-0464-DEIS-2013.pdf\)](https://www.energy.gov/sites/prod/files/2013/05/f0/EIS-0464-DEIS-2013.pdf) from refining petroleum) from the Gulf Coast to methanol and use carbon capture and sequestration.

The Lake Charles project, according to its website, would [enable the production \(https://www.lakecharlesmethanol.com/\)](https://www.lakecharlesmethanol.com/) of 4.5 million barrels a year of U.S. oil, using the carbon “sequestered” from the refinery to pump more oil out of the ground. In announcing the loan, the Department of Energy said the Lake Charles project would produce roughly a third less greenhouse gases throughout its lifecycle than a “typical” methanol plant.

In a separate September 27 letter to the Department of Energy, the same environmental groups argued that the Kalama methanol project should not be eligible for the Energy Department's Title XXVI funding because it is “intended for plastics production, not energy,” and because it will not reduce greenhouse gas emissions.

Main image: Proposed site of the Kalama methanol facility. Credit: [Port of Kalama \(https://portofkalama.com/methanol-manufacturing-facility-fseis-released/\)](https://portofkalama.com/methanol-manufacturing-facility-fseis-released/)

Anonymous Anonymous

We are experiencing immediate, devastating impacts of catastrophic climate change right now, where we live, work, and play!

It is ironic that public hearings on this fracked gas to methanol and marine export terminal are being held just as we are forced by climate 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 intensity of these destructive climate fires and its toxic air pollution is to keep fossil fuels in the ground.

In spite of the illusive rosy picture presented by proponents, and the speculation (not fact) that deceptively conjectures unsupported conclusions about reducing global emissions some time in the future, your SEIS makes clear that the operation of this facility will in fact pump 4.6 million tons of carbon dioxide pollution a year into Washington, for each of the next 40 years. This subverts rather than supports Washington's climate goals and is simply unacceptable at every level.

The claim that this company (with a track record of lying to regulators and the public) will voluntarily "mitigate" negative impacts is not worth the paper it is printed on. Without specifics, the "voluntary mitigation" promise is a house of cards and as toxic as the air we breathe in the aftermath of raging climate fires that are predicted to grow worse over time unless we set policies and make decisions that direct us away from fossil fuel facilities like this one.

This facility sentences our children to decades of adverse costs that you, the guardian of our environment for this and future generations, can not in good conscience ask them to bear.

The Oregon Conservancy Foundation beseeches you to carefully examine the climate facts (not speculations) in your own analysis. We ask that you deny the Shorelines Permit and ultimately reject this methanol refinery, for the health, safety and long term well being of our children and the survival of biological life support systems on this planet.

Low Carbon Prosperity Institute

Dear Mr. Doenges, authors, principal contributors, and relevant staff,

Thank you for the opportunity to offer both spoken and written comments regarding the Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement (DSSEIS). I would like to commend the agency on a detailed technical analysis considering a wide range of scenarios and assumptions as you weigh a major decision.

I am including two attachments for consideration:

- (1) A Cover Letter summarizing key findings of my review of the draft document;
 - (2) A Letter of Findings that goes into greater details on the key findings offered in this cover letter and a written version of my spoken comments;
- These key findings include:

The DSSEIS sensitivity analysis indicates a high likelihood of between 2 and 9 MtCO₂e/year more emissions in the absence of KMMEF, including "extremely limited" potential for emissions to be higher with KMMEF methanol. These results are similar to a December 2018 analysis by LCPI (likely range of 2.3 to 7.2 MtCO₂e/year) despite using a distinct and independent methodology. Consistent results across different methodologies lend increased confidence to the forecast and likelihood of net avoided emissions.

Inclusion of in-state emissions mitigation would increase the high-end range of net avoided emissions. This likelihood would be more certain if Ecology made it a formal permitting condition. In addition, the most accurate projections of the power grid under the Clean Energy Transformation Act would increase confidence in and the likeliest range of net avoided emissions.

Under much faster emissions intensity decline of global methanol substitutes than Ecology's analysis considers, the general findings remain consistent: It is very likely that net cumulative GHG benefits will accrue with KMMEF methanol compared to without it. This finding, based on new analysis available in the associated Letter of Findings, holds even with conservative assumptions that in-state emissions mitigation is ineffective and KMMEF methanol emissions intensity does not improve while competing methanol does rapidly. The additional stress and boundary testing indicate net global benefits through at least 2049, and very likely through end of facility life, even against a benchmark of a deeply decarbonized global industry. Nonetheless, it would likely be inconsistent to assume a major movement across the global industry while KMMEF emissions intensity remained static. This is not a given, and efforts should be made to ensure that KMMEF methanol remains well ahead of the curve.

A preliminary analysis finds it highly unlikely that substituting KMMEF methanol for gasoline end-use would be prevalent enough to lead to a net emissions increase. The combination of conditions required for there to be a net emissions increase represent an extreme outlier scenario. Even so, methanol availability as a fuel should not be used as a justification to stop pushing forward on primary solutions to meeting the global climate challenge, such as electrification of transport and

building end-uses. If fuel-use impacts are a concern, mitigation strategies that include accelerating electrification of transport and buildings should be considered under the proposed voluntary mitigation plan.

Thank you for your consideration of these key findings as they pertain to Ecology's decision-making process. I would be happy to follow-up regarding any questions that arise from the documents I am submitting or serve as a resource otherwise as you consider the range of GHG impacts associated with the KMMEF.

Sincerely,

Kevin Tempest



Letter of Findings - Reviewing Net GHG Impacts of KMMEF

Kevin Tempest, R&D Scientist, *Low Carbon Prosperity Institute*

This **Low Carbon Prosperity Institute (LCPI)** *Letter of Findings* reviews the latest Draft Second Supplemental Environmental Impact Statement (DSSEIS) published by the Department of Ecology to explore scenarios and sensitivities regarding the life-cycle GHG impacts of methanol produced from the proposed facility in Kalama, WA. *Time for research and writing was commissioned under contract between LCPI and Northwest Innovation Works (NWIW). The content of this letter is solely the work of the author.*

A. Key Findings

- The Ecology-led DSSEIS sensitivity analysis indicates a high likelihood of between 2 and 9 MtCO₂e/year more emissions in the absence of KMMEF, including “extremely limited” potential for emissions to be higher with KMMEF methanol. These results are similar to the December 2018 analysis from LCPI (likely range of 2.3 to 7.2 MtCO₂e/year) despite using a distinct and independent methodology. Consistent results across different methodologies lend increased confidence to the forecast and likelihood of net avoided emissions.
- Inclusion of in-state emissions mitigation would increase the high-end range of net avoided emissions. This likelihood would be more certain if Ecology made it a formal permitting condition. In addition, the most accurate projections of the power grid under the Clean Energy Transformation Act would increase confidence in and the likeliest range of net avoided emissions.
- Under much faster emissions intensity decline of global methanol substitutes than Ecology’s analysis considers, the general findings remain consistent: It is very likely that net cumulative GHG benefits will accrue with KMMEF methanol compared to without it. This finding, based on new analysis for this letter, holds even with conservative assumptions that in-state emissions mitigation is ineffective and KMMEF methanol emissions intensity does not improve while competing methanol does rapidly. The additional stress

and boundary testing indicate net global benefits through at least 2049, and very likely through end of facility life, even against a benchmark of a deeply decarbonized global industry. Nonetheless, it would likely be inconsistent to assume a major movement across the global industry while KMMEF emissions intensity remained static. This is not a given, and efforts should be made to ensure that KMMEF methanol remains well ahead of the curve;

- A preliminary analysis finds it highly unlikely that substituting KMMEF methanol for gasoline end-use would be prevalent enough to lead to a net emissions increase. The combination of conditions required for there to be a net emissions increase represent an extreme outlier scenario. Even so, methanol availability as a fuel should not be used as a justification to stop pushing forward on primary solutions to meeting the global climate challenge, such as electrification of transport and building end-uses. If fuel-use impacts are a concern, mitigation strategies that include accelerating electrification of transport and buildings should be considered under the proposed voluntary mitigation plan.

B. Project Background and Status

The Kalama Manufacturing and Marine Export Facility (KMMEF) would produce and export up to 3.6 million tonnes of methanol (Mt-MeOH) annually from the Port

of Kalama in Cowlitz County. Through methane gas consumption, on-site and purchased power, transport, and end-of-life methanol use, the project would generate greenhouse gas (GHG) emissions. These GHG emissions would occur within Washington state as well as globally, both upstream and downstream of Washington state. The predominant pathway for methanol from KMMEF is end-use in China where methanol is an intermediary for other higher value chemicals, most notably olefins that are used in plastics manufacturing, and as a fuel.

The Draft Second Supplemental Environmental Impact Statement (DSSEIS) analysis was completed under Department of Ecology (DOE) guidance and the draft was authored and released by DOE on September 2, 2020.¹ The DSSEIS followed a determination in the Fall of 2019 that the 1st SEIS lacked sufficient sensitivity and detail in order to receive Ecology approval for a Shoreline Conditional Use Permit (CUP). The DSSEIS was undertaken in order to conduct a wider sensitivity analysis covering emissions impacts from a range of possible assumptions, as well as a more detailed proposal for the voluntary mitigation of all in-state emissions related to KMMEF, a probable but not yet definite requirement for the CUP.² The DSSEIS is primarily focused on sensitivity analysis of the GHG impacts of the facility and the likeliest substitution for other competitive alternatives, most notably other methanol sources, but also olefins from crude oil naphtha.

The *net emissions impact* or *net avoided emissions* from KMMEF methanol's entry into global markets is the full life-cycle emissions of KMMEF methanol production and end-use, less those from what would have been produced and used from other manufacturers. Substitution of other methanol is the predominant mechanism determining the net emissions impact of KMMEF methanol, although secondary impacts could include substituting for naphtha-derived olefins or through induced additional demand from a marginal increase in lower cost supply.

Net impacts analysis and life-cycle analysis are both commonly accepted best practices to determine a best estimate of the full GHG implications of a project. An example of life-cycle analysis is the treatment of fuels under a Low Carbon Fuel Standard (LCFS) including upstream emissions and transport, through to combustion. Net impacts are commonly used, such as in Sound Transit's estimated GHG benefits due to displacement of cars from roads or in electric vehicles displacing gasoline consuming vehicles.

C. Overview of Findings

The Low Carbon Prosperity Institute [reviewed the First DSEIS](#) in December 2018 based on my research and writing. That LCPI analysis determined that the *net emissions impact* would fall very likely within a range of 2.3 to 7.2 million metric tons of avoided carbon dioxide equivalents (MtCO_{2e}).³ Expanding to technically possible though highly unlikely scenarios presented a boundary of net impacts from a 1.7 MtCO_{2e} *increase* to a 13.6 MtCO_{2e} decrease in net emissions impact each year. That analysis determined that these emissions savings are extremely likely through the 2030s, but decrease in certainty later in the projection.

To conduct a sensitivity analysis, an *Emissions Sensitivity Model* (ESM) was developed for Ecology's DSSEIS. Based on the full range of sensitivity explored, the DSSEIS use of the ESM "demonstrates that the potential for global GHG emissions from the project to exceed any other case is extremely limited" (DSSEIS p. 86), while "All ESM results using plausible input values demonstrate that the KMMEF is expected to result in less GHG emissions increases than the alternate cases." (DSSEIS p. 105).

The DSSEIS determined that, given dynamic market conditions and ample spare global capacity, KMMEF methanol would not influence the total global volumes of methanol or allocation to various end-uses, most

¹ In consultation with TRC Environmental, Keramida, Greene Economics, Cowlitz County, the Port of Kalama, and other relevant agencies.

² The DSSEIS almost exclusively considers methanol substitution with the exception of a higher oil price scenario in which methanol-to-olefin (MTO)

substitutes for some naphtha-to-olefin production. See page 53 of the DSSEIS for more information.

³ Kevin Tempest. *Kalama Methanol Plant – Review of Greenhouse Gas Impact Assessments*. December 2018.

notably the ratio of used for olefins versus fuels. Within the DSSEIS, 47 separate scenarios evaluated with the ESM are presented. Of these, 39 scenarios fall within the likeliest range of impacts. Eight additional scenarios were also presented, consisting of two “outlier scenarios” and six scenarios developed “to explore the boundaries of results that can be produced, even if under somewhat unrealistic combinations of input assumptions.”

The 39 most likely scenarios each assume an end-use mix of 60% olefins and 40% fuel while covering a range of sensitivities including different combinations of methanol substitution (from 20% coal and 80% natural gas pathways to 80% coal and 20% natural gas pathways), global warming potentials, methane leakage rates, emission rate intensities for key life-cycle steps (referred to as “input values”), demand growth based on pace of COVID-19 related recession recovery, and oil prices.

Across the 39 most likely scenarios, the *net emissions impact* ranges from 2.2 to 8.8 MtCO₂e/year greater in the absence of KMMEF than with it. This is the average, over 40-years with no discounting for impacts further out in time with KMMEF methanol emission intensity assumed unchanged over time, and includes modest decreases in the GHG intensity of the alternative methanol production over time. The *net emissions impact* includes a range of 4.2 to 5.8 MtCO₂e/year from the life-cycle of KMMEF methanol versus avoided emissions of 6.5 to 14.5 MtCO₂e/year.

The additional eight scenarios, testing less likely boundary conditions, such as outlier scenarios with 100% olefin or 100% fuel end-use, expand the range of *net avoided emissions* to 0.25 to 9.5 MtCO₂e per year with KMMEF methanol in the global market. This includes annual life-cycle emissions from KMMEF of 2.8 to 9.4 MtCO₂e and avoided emissions of 6.5 to 14.5 MtCO₂e.

High confidence in net avoided GHG emissions with KMMEF methanol is due, in large part, to the lack of lower-carbon production pathways which KMMEF methanol could displace, along with the high likelihood

that a substantial portion of the substituted methanol would have been produced starting from coal.

In the DSSEIS, nearly 80% of global methanol capacity was considered as potential substitution. The KMMEF methanol, due to novel Ultra Low Emissions technology, was determined to be lower emitting than every other potential source of methanol considered. This includes 29 manufacturing facilities importing to China, meaning KMMEF methanol would very likely be the lowest emissions intensity methanol available to the Chinese market. This is reinforced if, as the DSSEIS indicates, KMMEF pathways to olefins are less emission intensive than naphtha-to-olefin pathways (Table 3.5-10), although that finding appears to less certain and not fully resolved.

Nonetheless, in order for there to be a net emission increase from KMMEF methanol, the LCPI 2018 analysis previously determined that no more than 20% of the methanol could substitute for coal based-methanol if the remainder directly displaced naphtha-derived olefins or petroleum-based transportation fuels.⁴ That ratio is extremely unlikely, as also indicated by the DSSEIS range of likely substitution impacts.

The Ecology-led DSSEIS sensitivity analysis indicates a high likelihood of between 2 and 9 MtCO₂e/year more emissions in the absence of KMMEF, including “extremely limited” potential for emissions to be higher with KMMEF methanol. These results are similar to the December 2018 analysis from LCPI (likely range of 2.3 to 7.2 MtCO₂e/year) despite using a distinct and independent methodology. Consistent results across different methodologies lend increased confidence to the forecast and likelihood of net avoided emissions.

While both the initial LCPI analysis from late 2018 and the DSSEIS offer high confidence in net emissions benefits associated with KMMEF, there are additional factors that the ESM could consider. I consider the general implications of several of those factors here.

⁴ Kevin Tempest. *Kalama Methanol Plant – Review of Greenhouse Gas Impact Assessments*. December 2018.

D. Extending the sensitivity analysis

While the sensitivity analysis covers a wide array of important parameters, there are some additional parameters worth mentioning. The main motivation for enhancing the sensitivity analysis is to both account for all of the most likely sources of emissions sensitivity and, critically, to assess whether the long-term lifetime facility GHG impacts are likely beneficial even under collective global action to rapidly decarbonize.

1. *In-state Emissions Mitigation:*

The most readily assessable of these is the mitigation of all in-state emissions related to KMMEF. Details of the voluntary mitigation approach were one major determinant for requiring a second SEIS. This plan for mitigation is taking shape and is perhaps a likely, though not yet formal, requirement of permitting.

Given this, a range of mitigation effectiveness from none up to 100% of in-state emissions should be considered. This represents roughly up to 1 MtCO₂e/year of net emissions impact – although would be lower or higher depending on the scenario.

Inclusion of in-state emissions mitigation would increase the high-end range of net avoided emissions. This likelihood would be more certain if Ecology made it a formal permitting condition.

2. *Purchased Power*

The regulated transition to 100% carbon-free in-state electricity was established by the legislature in 2019 (net zero including offsets by 2030 and zero-carbon without offsets by 2045, known as the Clean Energy Transformation Act or CETA).⁵ The DSSEIS includes a medium estimate of 0.19 MtCO₂e/year from power purchases and a high estimate of 0.37 MtCO₂e/year

(DSSEIS Table 3.5-2).

The medium estimate attempts to account for CETA using a ratio of 80% renewable and 20% natural gas from 2030 to 2045. This overlooks two important factors: (1) The 20% of the mix from natural gas is required to be offset by mitigation of emissions elsewhere which, if done effectively enough to meet CETA requirements, would reduce the GHG impact of that power to zero; (2) The requirement of no more than 20% of the mix as natural gas is applied to each utility and not the statewide mix. Since many utilities are already below the 20% fossil fuel generation threshold, the statewide mix by 2030 is very likely to have less natural gas, roughly only 10% - half as much natural gas as is being assumed.⁶

As a result of these two factors, the current high case should use the value of the medium case – which should also likely be corrected to half as much natural gas input for 2030 to 2045, while the medium case should assume zero-carbon purchased power between 2030 to 2045 as a result of the carbon-neutral requirement of CETA.

Updating to more accurately reflect CETA requirements would increase confidence in and the likeliest range of net emissions reductions.

3. *Long-term emissions intensity of avoided methanol*

The DSSEIS applied some level of evolving production trends, but acknowledges that it does not capture potential technological improvements (p. 75) and “new policies or market shifts to occur in the markets for fossil fuels or plastics” (p. 105). Ultimately, the DSEIS settles on a “best current estimate of future emissions” for methanol production absent KMMEF that shows marginal improvements over time (Figure 3.5-10) of around a 20% decrease

⁵ <https://www.commerce.wa.gov/wp-content/uploads/2020/02/CETA-Overview.pdf>

⁶ *UPDATED: Effect of GHG Emissions and Rates from 100% Clean Power.* LCPI. March 5, 2019.

in emissions intensity over 40 years.⁷

There is legitimate concern that such modest decreases in emissions intensity are inconsistent with any deep decarbonization pathways and, therefore, could underestimate the production and technological improvements against which KMMEF would compete over the longer term.

While this is tricky to forecast, there are modelled pathways published for faster rates of improvement, such as the International Energy Agencies (IEA) *Future of Petrochemicals* report which was referenced often in the original LCPI report.

The IEA report includes a “reference technology scenario” or RTS with a 10% average emission intensity improvement through the end of the forecast window in 2050, a “clean technology scenario” or CTS with a nearly 60% decrease in average emissions intensity through 2050, and two lightly explored scenarios where the industry completely decarbonizes through bioenergy or electrolysis pathways. A couple of notes about these pathways:

The CTS forecasts a 45% decline in petrochemical CO₂ emissions from 2017 to 2050, halves ocean-bound plastics by 2030 over present levels and nearly eliminates them by 2050, and increases plastics recycling globally to beyond levels seen in Europe today.

Under fully decarbonized petrochemical scenarios, methanol production greatly increases as the only viable pathway to certain end-products that are currently supplied by other fuel sources. The more likely pathway, through bioenergy, sees global methanol demand more than double in 2050 versus the CTS while demand actually increases five-fold relative to the CTS in an electricity-pathway scenario.

A possible approach to stress-test the effects of more

rapidly evolving GHG reductions from the sector is to compare the net impacts of a substitution pathway in which the emissions intensity of the alternative methanol declines consistent with the CTS: 22% by 2030 and 58% by 2050.

Boundary conditions can also be queried against a scenario in which alternative methanol production shifts over time completely away from GHG emissions, reaching zero by the last year of the KMMEF lifespan in 2060.

For a first pass at such a stress-test and expanded boundary conditions, I evaluated 21 of the 39 most likely scenarios. This includes those for which the net avoided emissions were the lowest for KMMEF.⁸ I summarize my rough findings here, and provide some additional detail in an addendum to this Letter.

In comparison to the CTS-derived pathway, 18 out of the 21 scenarios show net cumulative emissions benefits from KMMEF methanol through end of facility life:

- In the reference case (RC), under all scenarios the net cumulative emissions savings over the life of KMMEF are **between 68 and 102 MtCO₂e**.
- In the lower coal case (LCC), net cumulative emissions savings range from **-17 to 6 MtCO₂e**.
- In the higher coal case (HCC), net cumulative emissions savings range from **111 to 152 MtCO₂e**.

None of these scenarios consider improvements over time in KMMEF emission intensity or credit any in-state mitigation, which could reach roughly 40 MtCO₂e of cumulative impact. Therefore, these ranges are likely conservative, and are best viewed as a stress test.

Notably, with effective in-state mitigation the

⁷ This is shown for the Reference Case using the central estimates, but may be different for other ESM scenarios.

⁸ Including the lower coal case (LCC) with 3% methane leakage or fast economic recovery, which have the lowest net benefits for KMMEF.

cumulative net impact of KMMEF would be a reduction in emissions under all scenarios compared to a “Clean Technology Scenario” pathway for global methanol production.

Of the 3 scenarios out of 21 that show a slightly higher cumulative emission with KMMEF than without, the cumulative emissions become greater in 2055 (under a 3% methane leakage scenario) or 2060 (under the “high” inputs case or using the highest GWP option, the AR5 20-year values).

These findings, a range of -17 to +152 MtCO₂e net benefit under a CTS pathway, without any in-state mitigation crediting or improvement of the carbon intensity of KMMEF production, are consistent with the main conclusion of the DSSEIS that it is highly unlikely that KMMEF methanol would result in a net increase in global GHG emissions.

Under a less likely, but more optimistic, scenario of a global mobilization to a zero emissions global industry by 2060, cumulative emissions are lower with KMMEF than without it in all of the RC and HCC scenarios. Under the LCC pathway for methanol substitution, KMMEF cumulative emission would surpass the alternative between 2049 and 2054 – reaching 25 to 50 MtCO₂e net emissions *added* by 2060. In all but one scenario (3% methane leakage), effective in-state emissions would push KMMEF methanol back into a cumulative net benefit.

A boundary condition of a rapidly decarbonizing global industry, to net-zero emissions by 2060, does show the possibility of a net addition to cumulative, global GHG emissions from the KMMEF, a threshold that in the worst-case conditions would be crossed between 2049 and 2054. As discussed in the next section, the concept that global methanol production would rapidly drop in emissions intensity but KMMEF methanol emissions intensity would remain static does not appear at all likely. There would be substantial pressure on KMMEF to improve its’ emissions intensity, and it would be well positioned to on-board

newer feedstocks than most other methanol facilities. Viewing the evolution of the global market as completely independent of KMMEF processes is, in my opinion, not realistic.

As one final note for this section, all scenarios tested included substantial net avoided emissions into the 2040s. Certainty in emissions reduction through these critical decades can slow climate change and buy vital time to ramp up global decarbonization solutions. The impacts in these earlier decades should not be underestimated.

Under much faster emissions intensity decline of global methanol substitutes than Ecology’s analysis considers, the general findings remain consistent: It is very likely that net cumulative GHG benefits will accrue with KMMEF methanol compared to without it. This finding, based on new analysis for this letter, holds even with conservative assumptions that in-state emissions mitigation is ineffective and KMMEF methanol emissions intensity does not improve while competing methanol does rapidly. The additional stress and boundary testing indicate net global benefits through at least 2049, and very likely through end of facility life, even against a benchmark of a deeply decarbonized global industry.

4. Long-term emissions intensity of KMMEF methanol

A static emissions intensity from KMMEF, particularly if in-state mitigation were deemed ineffective, does indicate higher risk of contribution a net increase to global GHG emissions under scenarios in which global production drives towards zero emissions over the lifespan of KMMEF.

Assuming that KMMEF production remains static while global markets rapidly shift, however, raises the question of how KMMEF fits into the evolution of lowest carbon pathways. The plastics and chemicals industries are noted as amongst the most

difficult to eliminate GHG emissions from. Governor Inslee's *Evergreen Plan* states that "eliminating climate pollution from industrial sources is an enormous challenge" and notes that "the federal government has a role to play exploring opportunities for industrial-sector carbon capture technologies".⁹

A key report referenced by the *Evergreen Plan* is the Energy Transitions Commission's *Mission Possible: Reaching Net-Zero Carbon Emissions from Harder to Abate Sectors by Mid-Century*. The report notes that plastics are likely to require the costliest supply-side measures of any of the sectors examined, at \$265-\$295/tCO₂e (see Exhibit 5 of *Mission Possible*). Even pushing as aggressively as possible for demand reductions, advanced recycling, substitution, and materials circulation measures, emissions from plastics are expected to increase 25% in 2050 over current emissions levels without additional supply-side measures (see Exhibit 5.3 of *Mission Possible*). This is a realistic best-case scenario for global consumption habits (demand-side measures).

Coal to natural gas switching is a highlighted approach, with continued applicability through 2040 (figure on Page 42 of the report). However, the biggest and most likely supply-side measures to reach net-zero for plastics over the long-term are very clearly bioenergy for chemical feedstocks and carbon capture.

Chemicals for feedstocks are the single largest demand sector for bioenergy in the decarbonization pathways shown in *Mission Possible* (Exhibit 6.11), with 28 EJ/year of demand (and another 6 EJ/year for chemical industry energy inputs). All other industrial sectors (steel, cement, and other industry) demand 22 EJ/year in the *Mission Possible* supply-side decarbonization pathway. Even this amount of bioenergy for feedstocks, 28 EJ/year, would cover only a fraction of feedstock needs, leading the report authors to state that

"The strategy for plastics decarbonization

must therefore combine an as complete as possible shift towards a circular model, with carbon sequestration – in the form of solid plastics placed in permanent, secure and leak-proof storage – and an as limited as possible use of bio-feedstock to compensate for inevitable losses in the value chain."

The limited supply of available bioenergy and the lack of additional approaches to net-zero in many industries – but notably plastics and aviation – merits that, in the words of the *Mission Possible* authors, "public support to biomass development should transition away from nonpriority sectors to high-priority sectors."

In addition to bioenergy, chemical production is projected in the *Mission Possible* deep decarbonization pathway to be the largest sector for carbon capture, including 1.9 billion metric tons of CO₂e per year (GtCO₂e) from carbon capture on the incineration of plastics and 1.4 GtCO₂e for energy of which natural gas is a primary input (Exhibit 6.12). This is about one-third of the total demand with the remaining two-thirds spread across 10 other sectors.

One other valuable resource for perspective is the IEA *Petrochemical Outlook* (IEA Outlook). The CTS scenario of the IEA Outlook does include a small amount of carbon capture for methanol, although requiring far less investment than is saved with capital savings from natural gas rather than coal investments (Figure 5.15 of the IEA Outlook). However, it is the two "Beyond the CTS" scenarios that are the most pertinent for this discussion.

These two pathways are for bioenergy and electricity. While methanol demand in 2050 is in the CTS is 179Mt, this demand jumps under lower carbon pathways to 380Mt in the bioenergy and 1000Mt in the electricity case. This is because methanol takes on increased prominence as the primary pathway to

⁹ Jay Inslee's *Evergreen Economy Plan*. Page 24.

additional end-products once petroleum-based feedstocks are off the table.

The bioenergy case, the more likely of the two to scale cost-effectively for methanol according to the *Mission Possible* report, would demand half of the global sustainable biomass supply to shift fully to bio-based routes for primary chemical production (Figure 5.18 of the IEA Outlook).

Given the likelihood that both bio-based methanol and carbon capture are needed to deeply decarbonize the industry, *even after circular economy and demand reduction approaches are leveraged*, it is reasonable to return to the question of how KMMEF fits into the lowest carbon pathways. The very likely answer is that KMMEF would fit into the lowest carbon pathways relative to other methanol production routes.

It would be very unlikely for major movement across the global industry to occur while KMMEF emissions intensity remained static. It is likely a better assumption, given the regulatory setting and the technological suitability for biogas as a feedstock along with regional biomass availability, that KMMEF would stay ahead of the curve.

Of course, assuming that KMMEF methanol would inevitably remain ahead of the curve as deeper decarbonization strategies are deployed should not be taken for granted. However, it is illustrative that KMMEF methanol appears to be much lower risk of “carbon lock-in”, or becoming a stranded asset left behind by a rapid and deep global decarbonization, than has been speculated.

E. The Question of Fuel-Use

The DSSEIS addresses the question of methanol being used as a fuel, assigning a 40% share of KMMEF

methanol to eventual fuel use for the full 40 years, also noting that there is no direct influence of KMMEF on the share of global methanol consumption for fuel versus olefins or other chemicals, due to a competitive global market and KMMEF as “price taker”. According to the DSSEIS, even if 100% of KMMEF methanol were to go directly for olefins, as required by the dock leasing agreement with the Port of Kalama, alternative uses of methanol would fill any fuel demand. The end result of these predicted market dynamics is that the *net emissions impact* is the same whether 100% of KMMEF methanol winds up as fuel or olefins.

It is the expressed intention of the KMMEF manufacturers to ensure that KMMEF methanol is used for olefin production. The merit of that intention was questioned in Spring of 2019 when internal documents from Spring of 2018 targeted at potential investors promoted methanol as a clean transportation option.¹⁰ Subsequently, the intent was reinforced by a dock lease agreement dictating that no methanol from KMMEF can be sold as a fuel, subject to penalties.¹¹

Shortly after the DSSEIS was released, NWIW announced a \$10 million investment from a Hafnia Limited, a major oil product shipping group.¹² Hafnia Limited has agreed to ship one-third of the methanol to market and intends to use “next-generation methanol dual-fueled ships” as part of a 19-year charter with NWIW. This follows an agreement with MOL in June to carry the other two-thirds of the methanol volume with an emphasis on natural gas derived fuels, including methanol, as a replacement for traditional bunker fuel and the use of natural gas fueled ships.¹³ NWIW representatives indicated that these ships would not be allowed to bunker fuel from KMMEF as part of the dock lease agreement.

¹⁰ Molly Soloman. *Controversial Kalama Methanol Plant May Be Misleading Public, Regulators*. OPB. April 29, 2019.

¹¹ Molly Soloman. *Port Of Kalama: Methanol Refinery Can't Export For Fuel*. OPB. June 13, 2019.

¹² Mallory Gruben. *Major oil product shipping group invests \$10M in Kalama methanol plant*. TDN. September 16, 2020

¹³ *Giant Japanese shipping firm to invest in \$2B Kalama methanol project*. The Daily News. June 18, 2020.

The efficacy of this intent in combination with the dock lease requirements on the eventual downstream market remains to be seen, and could likely be bolstered though additional purchasing agreement or even mitigation approaches that promote shifts in transport away from liquid fuels. The DSSEIS finds that there is likely to be limited to no impact on global methanol end-uses in either case.

Therefore, the primary impact of fuel end-use of KMMEF methanol is not the net emissions impact, but the gross emission impact. The combustion of methanol to provide energy – including transport or heat – releases GHGs, whereas those greenhouse gases are primarily sequestered into plastics via the olefin pathway. Emissions directly attributable to KMMEF methanol are higher if the methanol is combusted. However, the net impact of substituting KMMEF methanol for more emissions intensive methanol is the equivalent no matter the end-use. The difference is in the production pathway to the methanol, with the methanol through end-product effects being equivalent no matter the initial source of methanol.

Demand as a fuel, be it for transportation or heat, does raise concerns. Induced demand may occur through the addition of cheaper fuel to the market, such as in the case that KMMEF as a lower cost supplier could shift prices lower. The DSSEIS considers this scenario unlikely and/or small enough to not include as part of the sensitivity.

Nonetheless, added demand that materializes would lead to additional emissions, while cheaper fuel supply could also contribute to stifling competing

technologies that are much lower carbon, such as electrification of transport or heating. Although, according to the IEA Outlook, methanol as a fuel may provide capacity to reduce local air pollutants and, through blending, improve combustion performance of various fuels (page 70), it is certainly not a low-GHG fuel if derived from fossil fuel resources.

Testing this legitimate concern, that direct displacement of transportation gasoline plus induced additional fuel demand will lead to net *added* emission from KMMEF, merits a short analysis. To do so, I start by referencing previous analysis regarding the original EIS.¹⁴ That analysis pointed to prior research which indicated a 37% higher GHG emissions from 85% methanol blending with gasoline (M85) than from gasoline alone and it estimated that each gallon of methanol fuel could induce new demand of another 0.6 gallons of liquid fuel demand.¹⁵ Combining these impacts gives a worst-case scenario of a 120% increase in emissions per gallon-equivalent of M85.¹⁶

As in the 2018 LCPI analysis, I now pose the question: Given the very likely GHG benefits of methanol for methanol substitution, what ratio of methanol for gasoline-displacement would negate any net climate benefits? To do this, I compare the added emissions per tonne of methanol used as a gasoline substitute (as M85) with the avoided emissions of methanol substitution based on the DSSEIS. The steps are outlined below:

- **STEP 1:** Based on Figure 5.4 of the First SEIS in August 2019, the life-cycle gasoline emissions to substitute for the equivalent

¹⁴ Erickson, P. and Lazarus, M. (2018). *Towards a Climate Test for Industry: Assessing a Gas-Based Methanol Plant*. Discussion brief. Stockholm Environment Institute

¹⁵ Assumes 2% methane leakage and 20-year GWP. The 37% higher GHG emissions does not assume lower emissions intensity ULE methanol production which would likely reduce the impacts to around 26%. However, worst-case leakage rates of 3% would essentially counteract that reduction. Regarding the 0.6 gallons of induced demand, Erickson & Lazarus in a 2013 analysis of the Keystone XL pipeline (*Greenhouse gas emissions implications of the Keystone XL pipeline*) found that additional transport fuel demand could rise by as much as 60% beyond each barrel of fuel supplied. This assumed per barrel oil prices

in the \$100 range where the supply curve is steep relative to lower prices, however oil prices in 2019 averaged in the \$50 to \$60 range and long-term forecasts typically do not envision \$100 per barrel prices in the 2020s or 2030s. At lower oil-prices, given a flatter supply curve (small change in price for a given change in production), induced demand would be relatively muted compared to the Keystone XL analysis. A more recent analysis published in Nature by Erickson, Lazarus, and Piggot (2018, *Limiting fossil fuel production as the next big step in climate policy*) suggest a range of elasticities ranging from 0.2 to 0.6.)

¹⁶ 1.37×1.60 give 2.2, which is a 120% increase. Note that multiplying these two values assumes that the additional induced demand is for higher-emitting M85, rather than gasoline, which is another worst-case assumption.

methanol as a transport fuel are around 7 MtCO₂e per year, or about 1.9 tCO₂e per t-MeOH equivalent. A 120% increase works out to 2.3 tCO₂e additional emissions per t-MeOH;

- **STEP 2:** For the three reference cases, the avoided emissions per t-MeOH from KMMEF are 0.61 (for the LCC case with 20% coal-based methanol), 1.65 (for the RC case with 60% coal-based methanol), and 2.11 (for the HCC case with 80% coal-based methanol).¹⁷
- **STEP 3:** Comparing the result of step 1 with the range of results in step 2 provides the relative ratio of substitution in order to have a breakeven, net GHG impact:
 - LCC: 21% as M85 that displaces gasoline plus induces demand versus 79% that substitutes for other methanol for any end-use;
 - RC: 41% for gasoline displacement versus 59% for methanol substitution;
 - HCC: 47% for gasoline displacement versus 53% for methanol substitution;

This presents another boundary-condition: *gasoline displacement would need to be at least one-quarter of the overall methanol displacement, and very likely at least twice as high, in order to negate the net benefits of methanol substitution.*¹⁸ Each of the three assumptions (worst-case gasoline substitution impacts, KMMEF methanol creating significant new fuel demand, and new fuel demand displacing gasoline rather than other methanol sources) is not likely. The DSSEIS did not view even two of these three conditions (new fuel demand and that fuel demand displacing gasoline rather than methanol) as likely enough to include as a sensitivity test. While possible, the extremely unlikely combination of these three

conditions represents an outlier, or another boundary condition.

This short and preliminary analysis concludes that it is highly unlikely that substituting KMMEF methanol for gasoline end-use would be prevalent enough to lead to a net emissions increase. The combination of conditions required for there to be a net emissions increase represent an outlier scenario.

It is clear that methanol as a fuel is a sub-optimal outcome for global GHG emissions. The question remains whether KMMEF exerts any net influence on methanol volumes used as a fuel and if that influence is material to the overall net emissions impact. Without greater knowledge of the complex dynamics and interaction between the fuels market and chemicals market alongside technological and policy developments that could alter those markets, I am left to defer to the economic analysis of the DSSEIS.

That economic analysis finds that KMMEF methanol will not influence the eventual end-use markets for methanol in any significant way, with the exception of a small shift in naphtha olefin substitution under high oil price conditions. Given that, it is a safe assumption that these effects of induced demand or any potential delay of competing technologies are likely to be secondary to the substitution impacts, as concluded in the 2018 LCPI Analysis.

Evan so, ***methanol availability as a fuel should not be used as a justification to stop pushing forward on primary solutions to meeting the global climate challenge, such as electrification of transport and building end-uses. If fuel-use impacts are a concern, mitigation strategies that include accelerating electrification of transport and buildings should be considered.***

¹⁷ This includes an estimated impact of induced demand for coal in other sectors of the Chinese economy from the First SEIS. This was estimated, given 10% price elasticity, to be 0.057 tCO₂e per tonne of KMMEF methanol. Including this lowers the net avoided emissions attributed to KMMEF methanol.)

¹⁸ The other most likely pathway, substitution for naphtha-derived olefins, is small (on the order of 0.1 tCO₂e per tonne of MeOH in either direction) compared to the impacts of gasoline or methanol substitution. To the extent that naphtha displacement does occur, it would not greatly impact the ratio of gasoline displacement versus methanol displacement determined here.)

F. Thought Exercise: Does KMMEF ensure global emissions will rise, just less slowly?

In the DSSEIS, it is repeatedly noted that despite very likely net avoided emissions with KMMEF methanol production, that this will likely only “slow the global increase in emissions arising from methanol production and use” and should not be viewed as a means to decrease methanol related emissions.

This concept has been highlighted elsewhere as indicative that KMMEF is inconsistent with decreasing overall emissions from the sector. This is not accurate. *Net avoided emissions* analysis indicates that each ton of KMMEF methanol added to the market decreases global emissions. The overall impact can be seen in the IEA Outlook scenarios. Despite an 80% growth in methanol production from 2017 to 2050, annual emissions decline due to decreased emissions intensity between the RTS and the CTS. This is predominantly from coal to gas switching, with a small contribution from carbon capture.

To illustrate this point, I offer the following thought exercise. Assume that growth in methanol demand reaches the highest levels forecast in the DSSEIS (Figure 3.5-8) of 250 Mt of methanol per year by 2059, or 2.5 times current levels. Of the roughly 100 Mt of methanol produced annual at current rates, of which roughly 45 Mt is made from coal.

According to the DSSEIS (Table 3.5-10), coal-based methanol creates 3.8 tCO₂e/t-MeOH whereas KMMEF creates 0.64 tCO₂e/t-MeOH. Each coal-based t-MeOH substituted by a KMMEF-equivalent t-MeOH results in 3.16 tCO₂e avoided. Replacing 45Mt of methanol made from coal would reduce global emissions from current levels by 142 MtCO₂e. Increasing global production by 150 Mt of methanol (from 100 to 250) by 2059 through ULE technology would add back

about 96 MtCO₂e, leaving a net decrease in emissions of 46 MtCO₂e relative to current levels.

Some of that 46 MtCO₂e would be released through additional end-uses of methanol – and would certainly be exceeded by combustion of a substantial share of that methanol as a fuel. However, olefin production from methanol adds about 0.10 to 0.15 tCO₂e/t-methanol based on data taken from the DSSEIS. An additional 150 Mt of olefins would add another 15 to 23 MtCO₂e, leaving a net decrease in emissions of 23 to 31 MtCO₂e.

Presumably some, if not all, of that net decrease in emissions would be taken for eventual end-uses in plastics and end-of-life disposal of those plastics. This thought exercise is certainly not trying to suggest that our goal as a global society should be to consume 150 Mt of methanol more each year by 2059 for olefin and plastics production, which would be extremely unsustainable and carry many associated harmful impacts.

However, it does illustrate the following concept is incorrect: that committing to KMMEF emissions-intensity levels of methanol means accepting that increasing global demand inevitably leads to annual global emissions increases from the sector. From a GHG perspective, there is ample current coal-based methanol production to technically allow for a substantial expansion of the global methanol industry while decreasing net global emissions. This expansion of demand is theoretical and a pathway forward that should absolutely be avoided, but this exercise illustrates how KMMEF methanol can be viewed as compatible with a future in which all sectors play a role in decarbonizing.

Concluding thoughts

The DSSEIS presents a wide-ranging view of the GHG impacts of KMMEF methanol production through ESM scenarios. Life-cycle analysis and the net impact on alternative or reference consumption habits are common practice, and essential for ascertaining a full, best

estimate of the total impacts from any investment decision. Prominent examples are the use of marginal emissions rates for purchased power associated with the KMMEF as well as the substitution impacts of major public transportation infrastructure over long life-times. Life-cycle analysis is embedded in Low Carbon Fuel Standard being considered in Washington as well.

The DSSEIS findings are consistent with LCPI findings from late 2018, with a high likelihood of at least 2 MtCO₂e/year avoided global emissions from KMMEF's projected annual methanol production. An upside of 9 MtCO₂e per year is also within the highly likely range – which is slightly higher than LCPI's original findings.

Some of this benefit hinges on KMMEF methanol not inducing additional demand, particularly for fuel use, or going in any significant share to naphtha-olefin substitution, for which net emissions impacts are marginal in either direction. That is supported, although not guaranteed, by economic analysis presented in the DSSEIS. Even if this may, if anything, underestimate the market demand influence of KMMEF, such influence is unlikely to be large enough to alter the high likelihood of net avoided emissions.

In reviewing the DSSEIS, there are a few areas of sensitivity that could additionally be considered. In general, these would have some impact on broadening the likeliest range of outcomes as well as the outlying boundary conditions. In doing so, this added sensitivity does not materially alter the main conclusions of the DSSEIS that global emissions are very likely to be lower with KMMEF methanol than without over the lifetime of the facility, or that the chances that emissions would be greater with the facility than without it are extremely low.

The perspective offered by including a dynamic and more rapidly improving emissions intensity of methanol likely to be consumed absent KMMEF production reinforces that the net emissions benefits are almost certain to be positive into the 2050s and very likely to remain positive through end of facility life. This is true even if KMMEF does not improve emissions intensity in the face of rapid global improvement – an unlikely combination – and if the in-state emissions mitigation is deemed to be fully

ineffective.

To reinforce a near certain global emissions benefit over the full lifetime, I conclude with the same set of recommendations offered in late 2018, some of which have seen forward movement already. Over the life of KMMEF, steps should be taken towards the following, many of which could fit into a voluntary mitigation strategy that is made a formal requirement;

- Playing a leading role in actively sourcing and promoting industry best practices for low-leakage natural gas;
- Ensuring a robust voluntary mitigation program to annually offset the in-state share of emissions, one that relies on highest-standard markets and methodologies with regards to permanence and additionality of emissions reductions;
- To the extent they exist, executing on purchasing agreements and setting clear regulatory frameworks that prioritize the displacement of coal to methanol production; and
- With an eye to long-term industry evolution, research and consider opportunities through grants and partnerships, to further improve the global GHG impact of KMMEF. Such approaches could include adding alternative low-carbon feedstocks such as biogas or renewable natural gas to the mix;

Addendum 1: Methodology and Sensitivity around rapid GHG decline scenarios

In section D.4 of the report, I discuss some initial calculations for an extended scope of GHG emissions pathways for the most likely methanol KMMEF methanol would substitute out. In this section, I expand on the methodology and results. This methodology has been put together on a rapid timeframe, so these findings should be considered preliminary.

The context for this analysis is the DSSEIS best estimate that reference case scenario methanol against which KMMEF would enter the market is forecast to decline by approximately 20% between 2020 and 2059 (see DSSEIS Figure 3.5-10, copied here):

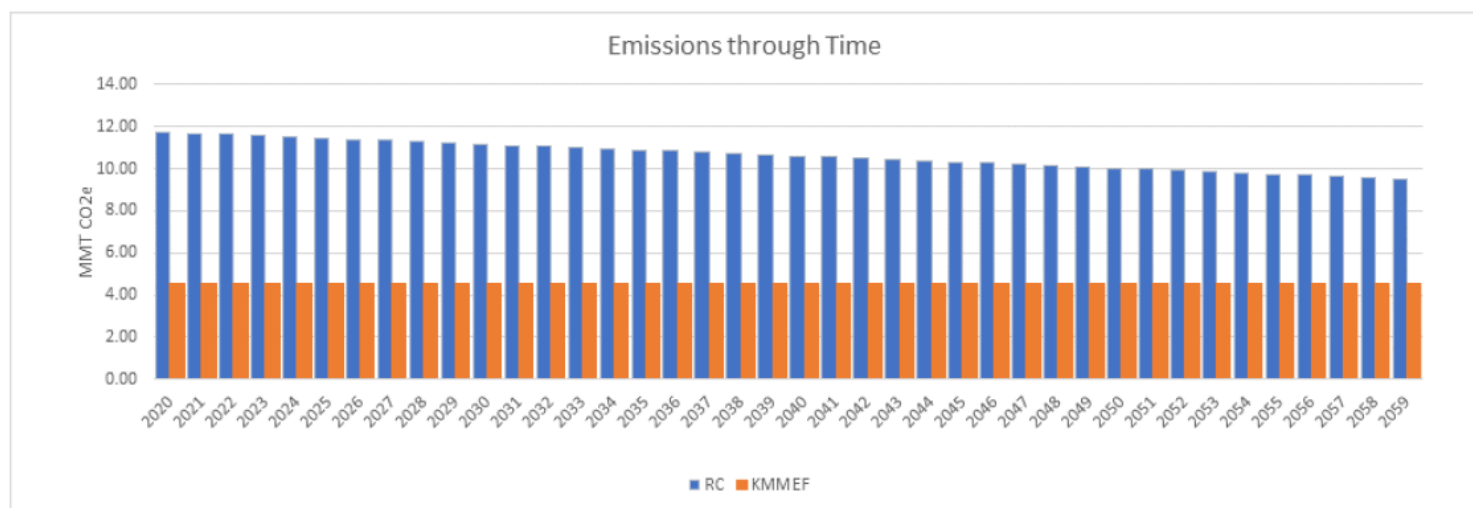


Figure 3.5-10. 20-Year Annual Expected Emissions, 2020 through 2059, RC and KMMEF

By comparison, the KMMEF methanol emissions are constant and static over the 40-year window for each scenario, although with variance for that emissions intensity between scenarios. In the scenario shown above, which is the best estimate presented in the DSSEIS, cumulative emissions through 2059 are 243 MtCO₂e lower with KMMEF than without it, a 57% decrease in net emissions versus the reference case.

Assuming a relatively slow rate of decline in emissions intensity makes it difficult to view the project through the lens of a climate litmus test. In part to address this, the DSSEIS compares KMMEF methanol to a “lower coal-based production case” (LCC) and finds emissions forecast to be 103 MtCO₂e lower, or roughly 36%, with KMMEF methanol than without it.

These comparisons present limited insights into an important question: Is KMMEF methanol compatible with ambitious low carbon pathways. In an attempt to answer this question, I looked at 21 of the 39 scenarios that the DSSEIS finds as within the highly likely range of outcomes. This range includes the worst performing KMMEF scenario on a net impacts basis – the LCC substitution mix with 3% methane leakage rates – as well as

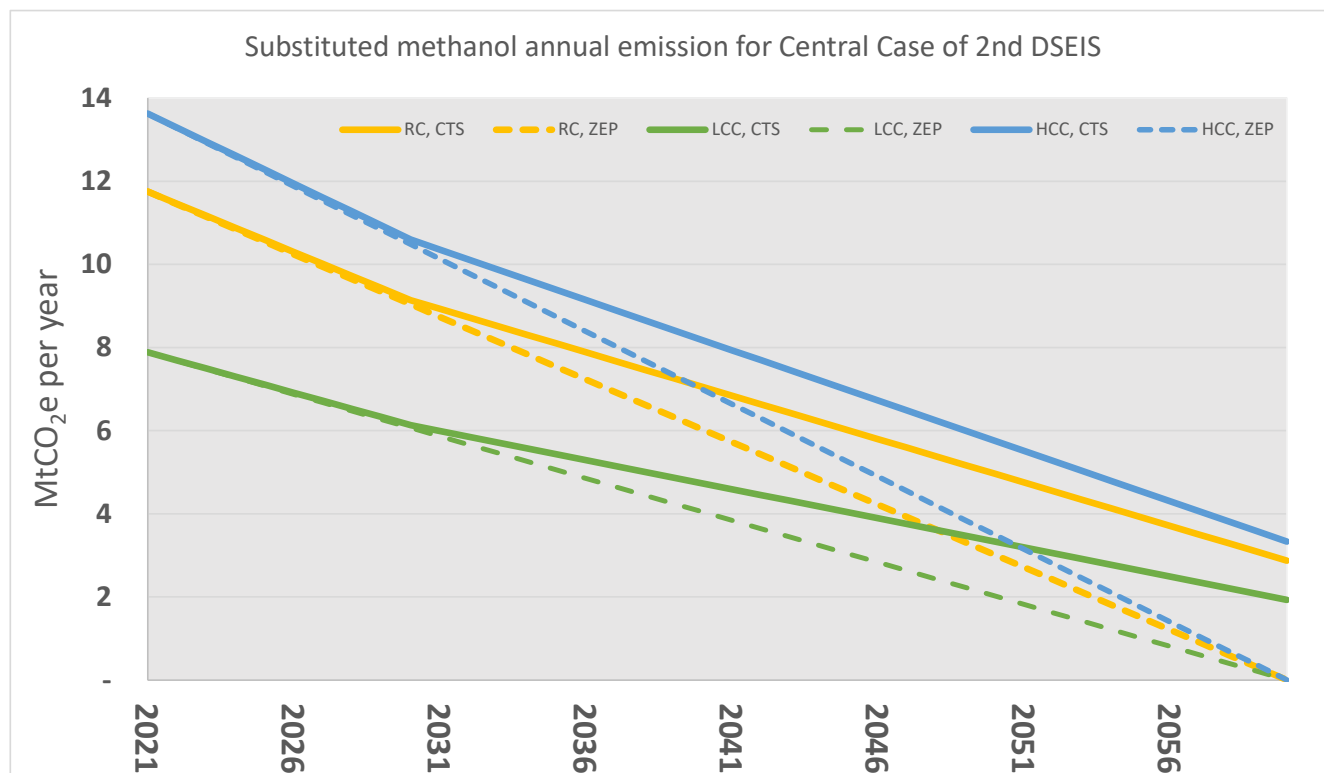
one of the best-performing KMMEF scenarios – the “high coal-based production case” or HCC using 20-year Global Warming Potentials from the IPCC 5th Assessment Report (AR5 20-year GWP).

To assess sensitivity around a more rapidly improving emissions intensity from the methanol sources most likely to be substituted with KMMEF, I developed two trajectories:

- One based on the IEA *Petrochemical Outlook* rate of decline under a “Clean Technology Scenario” (CTS) of 22% by 2030, 58% by 2050, extrapolated out through 2050 to a 76% decrease in emissions intensity. This represents an additional stress or sensitivity test around a scenario that would fall within the highly range of highly likely outcomes;
- And another based on a steady, linear decline in emissions intensity to zero by 2060, a fully “zero emissions pathway” (ZEP). This represents an extended boundary condition;

In both cases, to isolate the impact to changes of the methanol most likely to be substituted by KMMEF, I assume no change over time in KMMEF methanol emissions intensity, but hold it constant at the levels estimated for each scenario by the ESM approach of the DSSEIS.

The annual emissions intensities, including beginning and end year, are only shown for the central, reference case. For all other cases, only the 40-year average emissions intensity is presented. In order to turn all scenarios into annual averages, I scaled the initial emissions intensity for the year 2021 (I assume a first operational year of 2021 and a final operational year of 2060) for each scenario based on the ratio of first year emissions to average 40-year emissions in the reference case. From there, the rate of decline for each of the CTS and ZEP are applied. The graph below shows the annual emissions over time for the two scenarios and three substitution cases for the central set of cases presented in the DSSEIS.



To get a clear picture of the long-term global GHG emissions impacts, I present two measures, shown in the two tables below (the first for comparison to the CTS and the second for the boundary test using the ZEP). Those are the cumulative net emissions (CNE) benefits (substituted methanol *minus* KMMEF with no crediting for in-state emissions, consistent with the DSSEIS) as well as the year in which the CNE benefits from KMMEF would exceed the case without KMMEF, if any. The year CNE threshold would be crossed is presented both for zero in-state emissions mitigation and the crediting of total of 1 MtCO₂e/year mitigation every year for 40 years.

Case	Scenario	KMMEF Emissions (MtCO ₂ e)	Clean Technology Scenario Comparison	
			Cumulative Net Emissions (CNE) Impact of KMMEF (change in MtCO ₂ e)	Year CNE alternative scenario (w/ or w/out in-state mitigation)
Reference Case (RC)	Central	183	-99	NA / NA
	High	216	-90	NA / NA
	Low	167	-89	NA / NA
	3% Leakage	225	-68	NA / NA
	AR5 20-YR GWP	233	-102	NA / NA
	High Oil Price	183	-97	NA / NA
	Fast Econ Growth	183	-84	NA / NA
	AVERAGE	198	-90	31% to 45% average decrease
Lower Coal Production (LCC)	Central	183	-6	NA / NA
	High	216	3	2060 / NA
	Low	167	-6	NA / NA
	3% Leakage	225	17	2055 / NA
	AR5 20-YR GWP	233	1	2060 / NA
	High Oil Price	183	-4	NA / NA
	Fast Econ Growth	183	-1	NA / NA
	AVERAGE	198	1	0.3% average increase to 20% average decrease
Higher Coal Production (HCC)	Central	183	-144	NA / NA
	High	216	-137	NA / NA
	Low	167	-129	NA / NA
	3% Leakage	225	-111	NA / NA
	AR5 20-YR GWP	233	-152	NA / NA
	High Oil Price	183	-142	NA / NA
	Fast Econ Growth	183	-125	NA / NA
	AVERAGE	198	-134	40% to 52% average decrease

Across all scenarios modeled using a static KMMEF emissions rate and a CTS rate of emissions intensity decline, the overall cumulative net emissions impact is from 17 MtCO₂e increase to an avoided 152 MtCO₂e. By scenario averages, this works out to be a 0 to 52% average decrease in emissions. Even with 18 MtCO₂e of effective mitigation (an effectiveness of 45% out of a proposed 40 MtCO₂e), the net cumulative global impact would be lower emissions with KMMEF methanol than without it in all scenarios. In the worst-case scenario, KMMEF methanol would lead to a CNE reduction in every year until at least 2055, and would never lead to a CNE increase in 18 out of 21 scenarios.

For this sensitivity test, the results are consistent with the DSSEIS findings of an extremely limited likelihood that KMMEF would lead to a net emissions increase and, if it did, this threshold would not be crossed until well into the 2050s in the worst-case scenario.

			Zero Emissions Pathway Scenario Comparison	
Case	Scenario	KMMEF Emissions (MtCO ₂ e)	Cumulative Net Emissions (CNE) Impact of KMMEF (change in MtCO ₂ e)	Year CNE alternative scenario (w/ or w/out in-state mitigation)
Reference Case (RC)	Central	183	-52	NA / NA
	High	216	-40	NA / NA
	Low	167	-47	NA / NA
	3% Leakage	225	-20	NA / NA
	AR5 20-YR GWP	233	-47	NA / NA
	High Oil Price	183	-51	NA / NA
	Fast Econ Growth	183	-40	NA / NA
	AVERAGE	198	-42	18% to 34% average decrease
Lower Coal Production (LCC)	Central	183	25	2054 / NA
	High	216	38	2052 / NA
	Low	167	22	2054 / NA
	3% Leakage	225	51	2049 / 2058
	AR5 20-YR GWP	233	39	2053 / NA
	High Oil Price	183	27	2053 / NA
	Fast Econ Growth	183	29	2054 / NA
	AVERAGE	198	33	20% average increase to 4% average decrease
Higher Coal Production (HCC)	Central	183	-90	NA / NA
	High	216	-79	NA / NA
	Low	167	-80	NA / NA
	3% Leakage	225	-55	NA / NA
	AR5 20-YR GWP	233	-88	NA / NA
	High Oil Price	183	-88	NA / NA
	Fast Econ Growth	183	-74	NA / NA
	AVERAGE	198	-79	29% to 43% average decrease

The more stringent comparison to a boundary condition of the ZEP shows an increased likelihood that KMMEF methanol production could lead to a global emissions increase – although this would only occur against a LCC alternative. Given effective in-state mitigation, only 1 out of the 21 scenarios analyzed would project a net cumulative emissions increase. The full range projects anywhere from a 51 MtCO₂e increase in emission (crossing the net increase threshold in 2049) to a 90 MtCO₂e decrease in emissions.

This exercise provides boundary conditions under a low plausibility combination of assumptions: Optimistically, global industry moves rapidly to zero emissions. At the same time, KMMEF methanol does not improve emissions intensity at all despite being well positioned to do so (see section D.4 of the Letter of Findings). Even in this low plausibility case, the likeliest outcome would be a net global reduction in emissions. ***This indicates with high confidence that KMMEF methanol production is consistent with low carbon and even zero carbon pathways, strengthened by avoided emissions over at least the first two to three decades: an absolutely critical period of deployment and development of low and zero-carbon technology.*** I would also speculate that in a scenario where one, if not the most, expensive sector to decarbonize reaches zero emissions, it is highly likely that global transport and building fuel use is fully decarbonized and methanol is not in use, at least in significant volumes, in those sectors.

Addendum 2: Text of Public Comment

Public comment offered during the September 22nd, 10AM public hearing – with one factual correction:

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 to 7 million tons per year lower with this facility than in its absence.

The draft analysis arrives at similar conclusions through its own, separate methods, providing increased confidence.

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 to 9 million net emissions avoided per year and an extremely likely range of 0.25 to ~~12-million~~ 9.6 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 farther out in time. In a sector that Governor Inslee's ambitious *Evergreen Plan* found as 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 and 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 emissions source, and increasing the odds of compatibility with a net-zero emissions future.

Thank you for your time.



Attn: Rich Doenges
NWIW SSEIS
Washington Department of Ecology
PO Box 47600, Olympia, WA 98504-76

Dear Mr. Doenges, authors, principal contributors, and relevant staff,

Thank you for the opportunity to offer both spoken and written comments regarding the *Kalama Manufacturing and Marine Export Facility Draft Second Supplemental Environmental Impact Statement (DSSEIS)*. I would like to commend the agency on a detailed technical analysis considering a wide range of scenarios and assumptions as you weigh a major decision.

I am including two attachments for consideration:

- A **Cover Letter** summarize key findings of my review of the draft document;
- A **Letter of Findings** that goes into greater details on the key findings offered in this cover letter and a written version of my spoken comments;

These key findings include:

1. The DSSEIS sensitivity analysis indicates a high likelihood of between 2 and 9 MtCO₂e/year more emissions in the absence of KMMEF, including “extremely limited” potential for emissions to be higher with KMMEF methanol. These results are similar to a December 2018 analysis by LCPI (likely range of 2.3 to 7.2 MtCO₂e/year) despite using a distinct and independent methodology. Consistent results across different methodologies lend increased confidence to the forecast and likelihood of net avoided emissions.
2. Inclusion of in-state emissions mitigation would increase the high-end range of net avoided emissions. This likelihood would be more certain if Ecology made it a formal permitting condition. In addition, the most accurate projections of the power grid under the Clean Energy Transformation Act would increase confidence in and the likeliest range of net avoided emissions.
3. Under much faster emissions intensity decline of global methanol substitutes than Ecology’s analysis considers, the general findings remain consistent: It is very likely that net cumulative GHG benefits will accrue with KMMEF methanol compared to without it. This finding, based on new analysis available in the associated Letter of Findings, holds even with conservative assumptions that in-state emissions mitigation is ineffective and KMMEF methanol emissions intensity does not improve while competing methanol does rapidly. The additional stress and boundary testing indicate net global benefits through at least 2049, and very likely through end of facility life, even against a benchmark of a deeply decarbonized global industry. Nonetheless, it would likely be inconsistent to assume a major movement across the global industry while KMMEF emissions intensity remained static. This is not a given, and efforts should be made to ensure that KMMEF methanol remains well ahead of the curve.
4. A preliminary analysis finds it highly unlikely that substituting KMMEF methanol for gasoline end-use would be prevalent enough to lead to a net emissions increase. The combination of conditions required for there to be a net emissions increase represent an extreme outlier scenario. Even so, methanol availability as a fuel should not be used as



Kevin Tempest / R&D Scientist and Co-Founder / Low Carbon Prosperity Institute
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a justification to stop pushing forward on primary solutions to meeting the global climate challenge, such as electrification of transport and building end-uses. If fuel-use impacts are a concern, mitigation strategies that include accelerating electrification of transport and buildings should be considered under the proposed voluntary mitigation plan.

Thank you for your consideration of these key findings as they pertain to Ecology's decision-making process. I would be happy to follow-up regarding any questions that arise from the documents I am submitting or serve as a resource otherwise as you consider the range of GHG impacts associated with the KMMEF.

Sincerely,

Kevin Tempest

Kevin Tempest

Northwest Gas Association

Please see uploaded file



October 9, 2020

ATTN: Rich Doenges
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Mr. Doenges:

I am writing with regard to the Northwest Innovation Works – Kalama Manufacturing and Marine Export facility (NWIW), particularly the process by which the Department of Ecology (ECY) arrived at its conclusions in the Second Supplemental Environmental Impact Statement (SSEIS). ECY has intensely studied and assessed this project in two separate Environmental Impact Statements (EIS), both of which concluded that the project will drive a net global reduction in greenhouse gas emissions (GHGs).

What we liked about the process:

The SSEIS reflects an exhaustive effort to thoroughly analyze the NWIW project with unprecedented depth and a focus on GHGs. While we would argue over the utility of accounting for GHGs outside of the state's jurisdiction (upstream and downstream), the SSEIS relies upon definitive science and analysis conducted or published by bona fide government agencies to arrive at its conclusion of a net global benefit.

What we didn't like about the process:

The inclusion of "less likely" scenarios in the assessment contributed nothing to the conclusions drawn in the SSEIS. They are not the equivalent of project options or mitigation alternatives. Instead of informing the process, less likely scenarios serve only to obscure, even to confuse it.

ECY's determination that an additional supplemental EIS was required thereby preempting control from the lead agency appeared arbitrary. That appearance was only reinforced when, after more than another year's delay, ECY arrived at essentially the same conclusions as the lead agency. Other than satisfying ECY that the lead agency's original analysis was appropriately rigorous and arrived at the correct conclusion, the only thing accomplished by requiring a second SEIS was another year's delay (with associated costs).

On that note, several years to develop a project within ever-changing and uncertain guidelines is much too long and ambiguous a process. If viewed as a precedent for permitting future projects, this one will discourage environmentally beneficial projects from locating in our region.

What we'd like to see in future processes:

In a word: certainty.

Project developers must be able to rely on **a standardized process** for evaluating projects, as well as the consistent application of that process across jurisdictions. We are aware that ECY is in the midst of a rule making in this regard (i.e. Greenhouse Gas Assessment for Projects or GAP rule) and want to take this opportunity to offer some thoughts on what that process should include:

- The process must clearly and conclusively define up front what is to be measured and how it is to be measured. This will help inform project developers from the outset whether or not a project is viable, potentially saving time, energy and money.
- It must rely on definitive science and analysis. A standardized process will define acceptable data sources and preclude “cherry picking” the science. Public input should be encouraged and embraced (it often makes a project better), but the environmental assessment must be rooted in definitive science and analysis. Data sources should be limited to those produced by governmental entities with regulatory responsibilities.
- It must clearly delineate process timing. The timeline should be reasonable and predictable. It must include definitive decision points and preclude revisiting analyses except under defined parameters.

Mitigation requirements outlined in a standardized process should be calculated based upon in-state, project-related impacts. ECY’s current approach in this and other recent environmental impact statements considers upstream and downstream emissions that are outside of both the project proponent’s control and ECY’s jurisdiction to regulate. While Ecology may be able to require disclosure of these impacts there is no authority in SEPA to require mitigation of upstream and downstream impacts.

A standardized process should include a variety of acceptable **mitigation measures** for direct project emissions. To the extent possible, the process should be as expansive as possible when defining the spectrum of options available to mitigate GHG impacts. For example, mitigation measure options should include, but not be limited to:

- Purchase of credits or allowances from international or domestic carbon markets;
- Purchase of credits through recognized registries; or
- Offset projects that meet established carbon protocols.

Technological advancements that can reduce the overall GHG impact of a project are increasing. It is important to continue allowing, and not limit, market-based options as a tool. Until technology advances to the point where projects can be built and operated with zero emissions, market-based options and carbon offsets will be essential to helping projects attain a net zero status.

In conclusion, NWIW is a shining example of a major project that is both economically beneficial and environmentally responsible. Future permitting processes should facilitate the development of such projects through clarity and certainty.

Thank you for the opportunity to comment on the process for developing the NWIW SSEIS.

Sincerely,

A handwritten signature in blue ink, appearing to read "Dan S. Kirschner", with a long horizontal flourish extending to the right.

DAN S. KIRSCHNER
Executive Director

Lets Build This WA!

At the beginning of the public comment period, Northwest Innovation Works created a website -- LetsBuildThisWA.com -- to allow supporters of the Kalama methanol facility to sign a letter that would be submitted on their behalf to Director Watson and the Department of Ecology regarding the draft second supplemental environmental impact statement.

Below (and attached) is the letter that 524 individuals signed. We are submitting this not as one individual comment, but as 524 separate comments to illustrate the extraordinary support this project holds in many the communities across this state and beyond.

Director Watson,

The Dept. of Ecology's draft report on NWIW's proposed methanol facility in Kalama answers all of 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.

With this project, we can create jobs in America, where we pay real family-wage salaries and benefits and build things to extremely high and exacting environmental and safety standards by the most skilled workforce in the world.

There's never been a greater need in my lifetime for jobs, especially in rural areas like Cowlitz County, where the economic impact of this project would also provide \$30-40 million in tax revenue to local and state governments.

Finally, the science definitively shows that this project benefits the global environment. And the comprehensive mitigation plan ensures NWIW will do the right thing on a statewide basis, making Washington a leader in how to build a sustainable economy.

I urge you to move quickly to finalize this report and approve the permits needed for construction.

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I urge you to move quickly to finalize this report and approve the permits needed for construction.

Sincerely,

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October 9, 2020

Rich Doenges
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PO Box 47775
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Dear Mr. Doenges:

In a December 28, 2018 letter to the Port of Kalama and Cowlitz County, the Department of Ecology cited our work on greenhouse gas emissions associated with the proposed Kalama methanol facility. In the paper cited, “Towards a climate test for industry: Assessing a gas-based methanol plant”, we described some flaws in the then-current analysis of the greenhouse gas emissions associated with the proposed facility.

Subsequent versions of the SEIS have improved upon some of the issues we identified in our original critique. We described the improvements and remaining flaws in a December 27, 2018 letter to Port of Kalama.

Now, the Department of Ecology has released its own analysis, a draft, second SEIS for the facility. This SEIS again improves on some of the flaws of prior iterations. For example, the new version takes a more nuanced view on what methanol from the proposed facility might displace.

However, the draft second SEIS still makes critical, unsupported assumptions that limit its credibility for characterizing the climate implications of the proposed facility. Most importantly, the SEIS fails to evaluate the proposed facility against a low-carbon baseline consistent with the globally agreed goal to limit warming to “well below 2 degrees C” and the pace of emissions reductions achieving this goal requires, as reflected in Washington State’s own legislated greenhouse gas emissions limits.

Further, the draft second SEIS erroneously assumes 1-for-1 displacement of other fossil fuels, and offers contradictory evidence on how the facility could affect coal use in China. This undercuts the argument that the facility would reduce global greenhouse gas emissions. The recent announcement that China will strengthen its 2030 climate target, peak its carbon emissions in the next decade, and hit net zero by 2060 further undercuts this claim, while also casting further doubt on the relevance of baseline assumed for the SEIS. China’s commitment leaves little room for the expansion of coal-based methanol, and likely speeds its decline, *regardless* of whether the Kalama methanol proceeds.

The purpose of this letter is to describe these and other observations of the draft, second SEIS.

We are grateful for the opportunity to provide these comments and would be happy to answer any questions about them.

Sincerely,

Peter Erickson and Michael Lazarus
Senior Scientists
Stockholm Environment Institute, U.S.

SEI comments on Kalama Manufacturing and Marine Export Facility Draft Second SEIS

Peter Erickson and Michael Lazarus, Stockholm Environment Institute (SEI) U.S. Center
October 2020

In February of 2018, we published a discussion brief in which we examined the climate implications of the proposed Kalama methanol facility. The brief, entitled “Towards a climate test for industry: Assessing a gas-based methanol plant”¹, presented an approach for assessing whether the construction and operation of the facility would be consistent with internationally-agreed goals of keeping global temperature rise “well below 2 degrees C.”² Our brief critiqued the facility’s 2016 “Final” Environmental Impact Statement (FEIS)³, finding that it provided an incomplete and deeply flawed analysis of GHG emissions associated with the facility.

Later that year, a new Draft Supplemental EIS (DSEIS) was submitted by the Port of Kalama and Cowlitz County.⁴ In December 2018, we sent a letter to the Port of Kalama, in which we found that the DSEIS treatment of fugitive methane losses, though more comprehensive than in the FEIS, was still not credible.⁵ We also made further critiques, including related to the misplaced confidence that the DSEIS places in drawing a direct, causal connection between the planned production of the Kalama facility’s methanol and the displacement of coal-based methanol in China. The final version of that first SEIS was published in August 2019, and largely retained the same analysis from the DSEIS.

Now, the Department of Ecology has conducted additional analysis, releasing a draft, second SEIS. We have reviewed this second draft SEIS (hereafter, DSSEIS) and make six observations below.

The first observation is the simplest: the DSSEIS does not evaluate how the project against the globally agreed goal to limit warming to “well below 2 degrees C”. Relatedly, we find that the DSSEIS uses an incomplete and inconsistent logic as to what the facility’s methanol may displace.

Lastly, a final set of observations relate to how this draft, second SEIS treats methane. The current DSSEIS is an improvement over past iterations, but still falls to use up-to-date information.

1 The DSSEIS compares the proposed Kalama facility only to “business-as-usual”, ignoring how the project would fare in a low-carbon scenario consistent with the State’s – and now, China’s – own policy goals

The DSSEIS rightly notes that it is important to “evaluate how emissions from the proposed project would compare relative to a scenario without the project” (pp 49-50). The only such *without-project* scenario the DSEIS envisions is a business-as-usual scenario in which “global methanol demand increases over the next 40 years” and where methanol is made from coal and gas.

However, nations of the world have committed to the Paris Agreement, 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”². Pursing emission reductions consistent with limiting warming to 1.5 °C is also the policy of the State of Washington.⁶

The Intergovernmental Panel on Climate Change (IPCC) in its special report, *Global Warming of 1.5 °C*, shows that global carbon dioxide (CO₂) emissions must reach zero by about the year 2050 in order to meet the 1.5 °C with no or “limited” overshoot (exceedance) of the temperature limit. Between 2020 and 2040, global CO₂ emissions from fossil fuel combustion and industry would need to decline by more than 75%.⁷ Indeed, this is roughly the pace of required state-wide emission reduction codified into Washington State law this year.⁶

Use and production of all three major fossil fuels must decline dramatically to meet the 1.5 °C limit. Over the next two decades (through 2040), the IPCC finds that, to attain the 1.5 °C limit with no or limited overshoot, coal use must decline by an average of 8% annually (for a total of 82% between 2020 and 2040), gas use by an average of 3% annually (for a total of 43%), and oil use by an average of 5% annually (for a total of 65%).⁷

Were fulfilment of the Paris Agreement to be considered a reference, it is possible that the Kalama facility would *increase* global greenhouse gas (GHG) emissions relative to a *without-project* scenario. That outcome could arise since the project would lock in increased use natural gas for decades, and lock out lower-GHG pathways for making the end-products envisioned from the project's methanol. For example, vehicle and stationary fuels can be low-GHG electricity instead of methanol⁸; and olefins can be created from bio-based feedstocks⁹, from CO₂ captured from the air,¹⁰ from electrolytic hydrogen supplied by renewables⁸, or even from lower-GHG fossil pathways.^{5,11,12} Low-cost methanol from the Kalama facility could make it more difficult for these lower-carbon technologies to compete, leading to an increase in global GHG emissions compared to a situation without the project.

Assessing whether or not the project would increase or decrease GHG emissions relative to such a low-carbon, 1.5 °C or 2 °C scenario, is beyond the scope of this comment letter. However, to be complete, the DSSEIS assessment of the GHG emissions impacts of the project should consider as its reference with-out project scenario, not just a business-as-usual case, but also a low-carbon case, one that is consistent with the emission reduction goals that the state has adopted. The state's own emission reduction goals, the international Paris Agreement, and China's recent commitment to reach net-zero carbon dioxide emissions by 2060 all provide ample policy context for Ecology to consider a low-carbon, 1.5 °C or 2 °C scenario.

Considering alternative baseline scenarios in this way could also help align the DSSEIS with the Department of Ecology's recent thinking that such analyses should evaluate net GHG emissions "relative to alternative market scenarios".¹³ It would also help to resolve the fundamental inconsistency of the DSSEIS with the future scenario – aiming to keep warming to 1.5C -- that underlies the state's own policy framework.

2 The DSSEIS erroneously assumes 1-for-1 displacement of other fossil fuels

As described above, the DSSEIS evaluates global GHG emissions relative to a reference, *without-project* scenario. To characterize emissions in this "reference case", the DSSEIS assumes that each tonne of methanol from the project will perfectly displace another tonne of methanol (or equivalent) made from coal or natural gas somewhere else, 1-for-1, and then compares emissions between the two cases.

However, the underlying 1-for-1 displacement assumption is directly contradicted by other arguments in the DSSEIS.

Specifically, the DSSEIS shows how expanding the supply of methanol leads to an *increase* in the use (combustion) of methanol: when the supply of methanol increases, "the result is that a greater quantity of methanol is used" (Appendix B, page 16; since the Kalama facility is adding new methanol to the world market, it is helping to expand supply as shown in the chart on that page.). In other words, each unit of methanol added to the market would displace *less* than one tonne of other methanol, while also adding some to total world methanol consumption.

Despite this being a basic principle of economics, the SEIS fails to quantify the emissions implication of expanding the supply and use of methanol, stating that such a "question is outside the scope of this analysis."

This question should be *inside* the scope of analysis. Expanding the size of the methanol market could increase GHG emissions, since, as the DSSEIS acknowledges, more methanol would be combusted (releasing CO₂), as well as since other fuels that compete with methanol could well be lower-carbon (e.g. electricity for vehicle fuel or electrolytic hydrogen for chemical production, especially under a low-carbon scenario.⁸) Simplified methods to assess the effect of expanding fuel supply are available, and should be used here, because it is not rational to assume that Kalama’s methanol would perfectly substitute for other methanol^{14,15}.

Furthermore, Governor Inslee’s directive 19-18, which called for the Department of Ecology to adopt rules for environmental assessments, indicated that such analyses should include “market effects” and “any induced load or growth in fuel or energy consumption”¹⁶ when quantifying greenhouse gas emissions for industrial projects. Evaluating the emissions effects of the induced, increase in methanol consumption as a result of the project would be one way to do this.

3 The DSSEIS offers contradictory evidence on how the facility could affect coal use in China

One reason the DSSEIS finds that the Kalama facility could reduce global GHG emissions is that the project would displace coal-based methanol in China.

The logic for this assertion is that the Kalama project will be “more cost competitive and win market share by virtue of cost, causing other operations to produce less while the project is in operation” (page 52).

However, the DSSEIS appendix appears to contradict this claim. There, the DSSEIS argues that coal-based methanol will proceed in China *with or without* Kalama. It also argues that China is far from operating a competitive market and that a transition to such a market is “enormous... and will take a long time to accomplish” (Appendix B, p.16). Consequently, it is not clear that assertions of coal displacement due to cost competitiveness are very relevant.

Specifically, the DSSEIS appendix observes that coal is a low-cost source of methanol in China, that “there is likely a preference for expanding domestic production where feasible”, and that domestic capacity is under-utilized, arguing that “low-cost coal-based methanol will expand production in China” in the years to come. These observations apply, however, *regardless* of the presence of the Kalama facility. In other words, the Appendix appears to argue *against* there being a strong causal connection between the project and the reduction of coal use in China.

Furthermore, the recent announcement that China intends to peak its carbon dioxide emissions by 2030, reaching carbon dioxide neutrality by 2060¹⁷, further undercuts the claim that there is a causal connection between the Kalama facility and reduced coal use in China. China’s commitment, which could see the country reducing coal consumption by 96% between 2025 and 2060¹⁸, leaves little room for the expansion of coal-based methanol, and likely augurs its decline, *regardless* of whether the Kalama methanol proceeds.

The observations above all suggest that China’s move away from coal-based methanol will be driven more by policy – including climate policy – than by cost competition with international suppliers. This view is also shared by chemical industry consultant IHS Markit, which wrote last month that, despite the “increasing scrutiny” of coal-based methanol in China, the main reason for China to maintain some coal-based methanol is for national energy security.¹⁹

Regardless, the SEIS appears to offer a stronger argument that, instead of displacing coal, methanol from the Kalama facility may displace the importing of *gas*-based methanol to China from other sources. For example, in Appendix B, the SEIS argues that Kalama methanol and other gas-based

methanol providers will compete directly with each other: “absent KMMEF, other lower-cost natural gas-based exporters would also supply the growing market in China” (Appendix B, page 19).

This argument, if true, suggests that, instead of coal in China, a better comparison to Kalama would be gas-based methanol produced in other parts of the world. We address that argument next.

4 The DSSEIS assumes, without justification, that the Kalama facility is more efficient than alternative gas-based methanol facilities.

The SEIS describes that “it is likely that in the future, methanol production globally will move towards lower GHG emitting technologies (CR or ULE)” (page 46). However, in contradiction to this claim, the DSSEIS then assumes that other methanol importers to China are less efficient than the Kalama facility. However, it is entirely possible that other sources of methanol in this expanding market – which would also likely be *new* (not existing) facilities, just like Kalama – would be just as efficient as Kalama (or, in the future, even *more* efficient), such that project would offer *no* emissions benefits – and perhaps even an emissions increase – relative to alternative methanol producers.

Indeed, technologies for making methanol with fewer emissions than would the Kalama facility are advancing rapidly, including from methane pyrolysis (currently in test phase), which is expected to be commercial within a decade, and steam cracker electrification²⁰. These developments raise questions about whether the Kalama facility can be a lower-GHG methanol producer for most of its full 40-year lifetime (as assumed in the DSSEIS), let alone for the next decade.

5 The second SEIS analysis of methane loss, though improved, is still not up to date

The draft second SEIS analysis of upstream methane loss rate, though improved from the first SEIS, still does not use up-to-date information.

As background, in 2016, the FEIS made the serious error of assuming that the Kalama facility would lead to *no* upstream methane emissions from the production, gathering, processing, and transportation of natural gas. The 2019 sought to remedy this error by including estimates of upstream methane emissions, but still did so in a flawed manner that significantly underestimates these emissions.

Now, the DSSEIS improves the assessment of methane loss, but still uses the latest scientific understanding (i.e., Alvarez et al 2018,²¹ as interpreted by GREET modelers) as a “high” case, rather than as the central, best estimate.

The Alvarez analysis is important, because it looks at a decade worth of data collected across the country to reach the best possible estimate, taking into account the overall body of research. The key observation of the study and, indeed, from much of the last decade of research on methane emissions, is that the majority of methane losses from oil and gas operations occur not from “leaks” from individual pieces of equipment, but instead from much larger emissions events that occur during “irregular” situations, for example, where equipment fails to function, or where human error occurs.

Because of this scientific understanding of how and when methane loss occurs, the DSSEIS should use the best up-to-date science – as derived from Alvarez et al. 2018 -- as its central estimate, not as a sensitivity case.

6 The SEIS choice of global warming potential for natural gas still does not reflect recent science

Furthermore, the DSSEIS still uses, like those that came before it, an outdated figure for how methane contributes to global warming as its default values. Specifically, they use a value for methane's "global warming potential" of 25. (The number indicates how much more a given unit of mass of methane contributes to warming over 100 years than does carbon dioxide). That value of 25 is from the Intergovernmental Panel on Climate Change (IPCC)'s 2007 *Fourth Assessment Report*,²² but the IPCC has since updated the potential to 36 for fossil fuel sources in its 2013 *Fifth Assessment Report*.²³ (The DSSEIS uses a value of 28 as a sensitivity case to represent the *Fifth Assessment Report*, or "AR5" value, but that value is for biogenic, not fossil, methane, and omits climate-carbon feedbacks. Climate-carbon feedbacks are important to include, since warming from CH₄ also leads to other mechanisms, such as more water vapor in the atmosphere, that themselves also lead to warming.)

This use of an outdated GWP would also seem to stand in contrast to the Department of Ecology's latest thinking, which is to use the "most recent" IPCC assessments for the global warming potential (GWP) value.¹³

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Orca Network

Attached please find Orca Network's comments on the Kalama Manufacturing and Marine Export Facility.



*Connecting Whales and People
in the Pacific Northwest*

October 9, 2020

Laura Watson, Director
Washington Department of Ecology
300 Desmond Drive SE
Lacey, WA 98503

Submitted via 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 Manufacturing and Marine Export Facility (KMMEF).

Dear Director Watson,

Thank you for the opportunity to comment on the Draft Second Supplemental Environmental Impact Statement (DSEIS) for Northwest Innovation Works' Kalama Manufacturing and Marine Export Facility (KMMEF).

Orca Network is a 501(c)3 organization dedicated to raising awareness of the whales of the Salish Sea and the importance of providing them healthy and safe habitats. Our education, outreach and advocacy efforts include over 15,000 subscribers to our Whale Sighting Network, 160,000 Facebook members, and almost 30,000 visitors to our Langley Whale Center on Whidbey Island in 2019. We respectfully submit these comments on behalf of our staff and Board of Directors. We are writing to oppose the construction of the KMMEF based on the fact that it presents an unacceptable risk to our climate, to salmon, and to the whales of the Pacific Northwest, in particular gray whales and the endangered Southern Resident orcas. All whales are vulnerable to the effects of climate change and potential ship strikes, and the KMMEF increases those risks.

Washington Department of Ecology has determined that the total greenhouse gas emissions attributable to this facility are significant. If constructed, the proposed methanol facility would become one of the 10 largest sources of greenhouse gas emissions in Washington State, and would increase greenhouse gas emissions within Washington by almost one million metric tons of carbon dioxide equivalent a year. This is in direct conflict with limits adopted by our state legislature to reduce emissions to 95% below 1990 levels and achieve net zero emissions by 2050. ¹

Climate Impacts Group has modeled climate change impacts in the Pacific Northwest to include increased temperatures, decreased snowpack and earlier snowmelt, decreased water for fish, and changes in salmon migration and reproduction, among others. ² The increased emissions from this project and associated impacts on climate will

¹ Washington Department of Ecology Focus Sheet, Publication 20-06-012, September 2020.

² Ibid.

exacerbate the effects we are already seeing from climate change, and we are concerned about the impacts to salmon and whales in the Pacific Northwest.

Salmon

Salmon are an icon of the Pacific Northwest. They are important culturally for local tribes, many of whom hold treaty fishing rights, and they are the most important source of food for the endangered Southern Resident orcas, comprising over 90% of their diet. In addition to damage to important Columbia River salmon habitat that would be caused during the construction of the facility and associated runoff pollution into the river, salmon throughout the Pacific Northwest are vulnerable to climate change. In order to be successful, adult salmon need to be able to successfully reach spawning habitat, and the eggs and larvae rely on cool oxygenated water for their survival. Increased stream temperature can cause oxygen levels to decrease. It can speed up salmon metabolism, make them more susceptible to parasites and disease, and can cause young salmon to die. Decreased stream flow due to reduced snowpack affects their ability to travel and can leave them stranded and exposed to predators. Increased flooding can flush eggs and young fish from their nests.³

Salmon are also vulnerable to the effects of ocean acidification, or lower oceanic pH. Studies on juvenile Coho salmon exposed to low pH showed a disruption in olfaction, which plays a central role in salmon survival, navigation and reproduction. The salmon's ability to smell remained intact but rather than exhibiting a typical fear and avoidance behavior, they were indifferent to alarm odors.⁴ Ocean acidification can also have negative effects on plankton,⁵ thereby affecting the entire ocean food web and the prey that salmon rely on.

Southern Resident Orcas

Southern Resident orcas are a genetically, acoustically, socially, and culturally distinct population of fish-eating orcas. They were listed as endangered under the U.S. Endangered Species Act in 2005 but are continuing to decline despite the protection and recovery actions initiated by this listing. The population is currently at 74 individuals, the lowest number in four decades.⁶ Their main threats include a lack of available prey, namely due to a decline in their primary prey, Chinook salmon; environmental contaminants, particularly bio-accumulative organochlorines such as DDT, PBDEs, and PCBs; and vessel effects and sound, as well as increased potential for oil spills and disease.⁷ Of these threats, lack of prey is widely recognized as the biggest limiting factor in their recovery. Salmon depletion has led to changes in their social structure, decrease in presence in their core summer feeding areas, an increase in stress hormones and a miscarriage rate of almost 70%.⁸

Washington's Governor Inslee is committed to the recovery of the Southern Resident orcas, our state marine mammal. In 2018, he assembled the Southern Resident Orca Task Force with the directive to make recommendations on a suite of actions necessary to prevent the extinction of the Southern Residents. In addition to recommendations intended to increase salmon, decrease contaminants, and reduce noise pollution, the Task Force identified climate change and ocean acidification as a systemic threat that "if left unchecked, will undermine recovery efforts" and they

³ Global Warming Is Pushing Pacific Salmon to the Brink, Federal Scientists Warn. Bob Berwyn, InsideClimate News. July 29, 2019; Crozier et al. 2019.

⁴ Southern Resident Orca Task Force Final Report and Recommendation. November 2019.

⁵ Impact of ocean acidification on the structure of future phytoplankton communities. Dutkiewicz et al. 2015.

⁶ Center for Whale Research Orca Survey data

⁷ National Marine Fisheries Service. 2008. Recovery Plan for Southern Resident Killer Whales (*Orcinus orca*). National Marine Fisheries Service, Northwest Region, Seattle, Washington

⁸ Data from the Center for Whale Research; Wasser S.K. et al. 2017. Population growth is limited by nutritional impacts on pregnancy success in endangered Southern Resident killer whales (*Orcinus orca*).

included five recommendations to address climate change.⁹ Southern Resident orcas are affected by climate change through their food web and their strong reliance on salmon, particularly Chinook, chum and Coho. Ocean acidification increases the bioavailability of metals including iron and copper. It also makes communication and foraging more difficult by extending the spatial spread of underwater noise, and amplifying underwater noise by reducing natural sound absorption, making it more difficult for the orcas to locate their prey.¹⁰

Additional Task Force recommendations included oil spill prevention and noise pollution reduction efforts, but an increase in shipping traffic, including the increased number of vessels needed to carry the refined methanol to China from the KMMEF, will undermine those efforts and will increase the risk of a ship strike on this fragile population of orcas, particularly during the winter months when they are more likely to be off the coast feeding on Columbia River salmon. Data from sightings, acoustic recordings, satellite tagging, and prey and fecal samples show that Southern Resident orcas are traveling primarily in coastal habitat between October and May.¹¹ The data indicates that, of the total time the orcas spend in coastal habitat each year, approximately 50% of that time is spent off the coast of Washington, and the waters off the mouth of the Columbia River have been identified as a high-use foraging area for the population.¹²

Gray Whales

Eastern Pacific gray whales undertake one of the longest migrations of any mammal in the world, traveling up to 12,000 miles round trip each year between breeding grounds in Baja, Mexico and feeding grounds in the Bering and Chukchi Seas. Within this population, there is a smaller group of around 200 individuals, called the Pacific Coast Feeding Group (PCFG) who feed along the coast of Northern California to British Columbia during the summer months. Gray whales are baleen whales and they feed primarily on invertebrates such as amphipods and ghost shrimp that burrow in the mud. The population is considered stable and was removed from the Endangered Species List in 1994. However, they are currently undergoing an “Unusual Mortality Event” (UME) due to an unexpected significant die-off that began in 2019.¹³ As of October 2020 a total of 378 dead gray whales have stranded along the migration route from Mexico to Alaska, and this could represent only 10% of the actual mortality.¹⁴ Many of the deceased whales were thin or emaciated and appeared to have died of starvation. While it is too soon to determine an exact cause of this UME, climate change is one of the suspected causes. "Is this yet another symptom of climate change? We do know that they are suffering from malnutrition, and we do know it is because of larger sea ice changes. The public needs to wake up that everywhere you look, there are impacts of climate change." ~ Frances Gulland, Marine Mammal Commission.¹⁵

In the progressively warming Bering Sea, the sea ice, which is an important factor in nutrients and phytoplankton levels, was at a record low in 2018.¹⁶ This may be contributing to significant die offs of seabirds and seals in Alaska.¹⁷ It is possible that the gray whales were not able to consume enough prey during their feeding season in the summer,

⁹ Southern Resident Orca Task Force Final Report and Recommendation. November 2019.

¹⁰ Ibid.

¹¹ National Marine Fisheries Service Biological Report, 2019. Proposed Revision of the Critical Habitat Designation for Southern Resident Killer Whales.

¹² Hanson, M.B., E.J. Ward, C.K. Emmons, and M.M. Holt. 2018. Modeling the occurrence of endangered killer whales near a U.S. Navy Training Range in Washington State using satellite-tag locations to improve acoustic detection data.

¹³ <https://www.fisheries.noaa.gov/national/marine-life-distress/2019-gray-whale-unusual-mortality-event-along-west-coast>.

¹⁴ More Than 70 Gray Whales Dead in 6 Months, and Scientists Don't Understand Why. Kimberly Hickok, June 2019.

¹⁵ Researchers seek answers to gray whale deaths after 57 are stranded this year. Lynda Mapes, May 2019

¹⁶ Historic low sea ice in the Bering Sea. Kathryn Hansen, May 2018.

¹⁷ Why are birds and seals starving in a Bering Sea full of fish? Hal Bernton, November 2019.

and since they do not feed during the migration south and while in their breeding grounds, they simply did not have enough fuel to make it back to the northern feeding grounds.

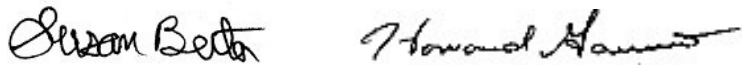
Ocean acidification also threatens the food source of gray whales by impacting the invertebrates they feed on and changing or eliminating shoreline habitat due to sea level rise. In addition to the climate change effects we are already seeing on the gray whale population as a whole, we also have grave concerns about the PCFG, effects to their food source during this UME, and the threat of a boat strike from the increase in tanker traffic due to this project.

Conclusion

Governor Inslee has made climate change a huge part of his campaign and one of his top priorities as Governor. In a May 7, 2019 press release he stated: "I cannot in good conscience support continued construction of a liquefied natural gas plant in Tacoma or a methanol production facility in Kalama. The age of consequences is upon us. We have to act based on clear science. Washington is embracing a clean energy future and the clean, healthy, sustainable jobs and benefits that come with it."

Orca Network stands with Governor Inslee and the many environmental and conservation organizations who oppose the KMMEF. This project is in direct conflict with the findings and recommendations of the Southern Resident Orca Task Force. Our state, our country and our planet are in the middle of a climate crisis and we simply cannot approve a facility that we know will contribute to climate change and have negative impacts on whales, salmon and our Washington State marine mammal, the Southern Resident orcas.

Sincerely,

The image shows two handwritten signatures in black ink. The signature on the left is 'Susan Berta' and the signature on the right is 'Howard Garrett'.

Susan Berta, Executive Director susan@orcانetwork.org

Howard Garrett, Board President howard@orcانetwork.org

Oregon Physicians for Social Responsibility

Please see the attached documents for Oregon Physicians for Social Responsibility comments on the SSEIS for Kalama Methanol.



October 9, 2020

To:

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

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Re: Comments on the Draft Second Supplemental
Environmental Impact Statement (DSSEIS) for Northwest
Innovation Works' Methanol Refinery and Export Terminal.

Director Watson:

It is becoming increasingly clear that climate change is one of the greatest human health crises the world has ever faced. Human-derived greenhouse gas emissions are increasing global temperatures and causing extreme weather events, harmful algal blooms, larger and more catastrophic wildfires, and more. These symptoms of a changing climate impact human health and safety in a wide range of ways, the most recent example being the unhealthy wildfire smoke and evacuations experienced by West Coast residents from California to British Columbia.

Northwest Innovation Works (NWIW) has for years attempted to market itself as a part of the solution to climate change even as they were caught giving contradictory accounts of the end

uses of the methanol that would be refined and exported at their proposed Kalama Methanol facility. Building this refinery and export facility in the small town of Kalama would both exacerbate the climate crisis and cause immediate impacts to the health and well being of Southwest Washington.

Oregon Physicians for Social Responsibility opposes the expansion of transport, storage, or shipment of fracked gas within the Pacific Northwest states on the basis of serious, credible threats to the health of our residents. Our commitment as health professionals to improving the health of the public and achieving equity in health outcomes demands that we clearly and unequivocally communicate the urgent need to transition away from fossil fuels to clean and equitable renewable energy sources.

To this end, we present our comments on the DSSEIS to the Washington Department of Ecology and request that the Shorelines permit for the Kalama Methanol Manufacturing Facility be rejected. Any other permits for this project and permission for this project must be denied as the facility is not in the best interests of the people of the State of Washington nor our fragile planet. We specifically call attention to the adverse health impacts of continued extraction, transport, processing and use of fracked gas, its impacts on catastrophic climate disruption, and omissions, inaccuracies, and faulty assumptions of the DSSEIS as the basis for our urgent request.

We urge Ecology to reject NWIW's proposal for the following reasons:

- **The proposal is inconsistent with the path laid out by the Intergovernmental Panel on Climate Change to reach global carbon neutrality by 2050.**
- **The Washington Tracking Network has identified the communities of Kalama and nearby Longview as among the most vulnerable in the state to the deleterious effects of climate change. The proposal, therefore, violates the tenets of environmental justice.**

- The greenhouse gas life cycle analysis (LCA) relies on a highly speculative market analysis of fossil fuels and plastics, which dismisses out of hand the effects of regulation and facilitates business as usual, which we know will not prevent climate catastrophe.
- The mitigation plan is voluntary and will likely rely on discredited or questionable carbon sequestration or carbon offset schemes.
- Current pipeline infrastructure in the state will not be adequate to handle projected needs. The LCA omits any analysis of the GHG effects of the construction and operation of new gas pipelines
- Multiple air toxins will be emitted by the facility. The cumulative effects on the local population of emissions, especially in combination with PM 2.5, have not been adequately assessed.
- No plans to mitigate the substantial risk of fire and explosion due to earthquake have been identified.
- Labor camps to accommodate the influx of workers for construction pose substantial public health hazards and costs to local residents

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Climate Catastrophe and Environmental Justice

In 2018 the IPCC issued a report that outlined how much carbon emissions needed to be reduced in order to keep global temperature rise to no more than 1.5 °C, the goal of the Paris Climate Agreement.¹ The scientific consensus is that a rise in temperature above 1.5°C would result in catastrophic and irreversible global warming. In order to reach this goal, climate scientists of the IPCC calculated that global carbon emissions would need to be reduced by 45% by 2030. This calculation is what lies behind the prediction that the global community had 12 years (now 10 years) to take the action necessary to put us on the path to carbon neutrality by 2050.²

In 2016 already, independent researchers drew on industry and governmental data sources to make the case that the current growth of fossil fuel production in the US if it continued unabated would prohibit achieving the IPCC goal of 1.5° C global warming.³ This level of growth is precisely what the DSSEIS supports. In other words, even the most optimistic projections of total net global greenhouse gas emissions from the Kalama methanol refinery are inconsistent with reaching a goal of 45% reduction of carbon emissions by 2030.

It is unthinkable for our survival on this planet to plan to extract, transport, process and use fossil fuels for the next 40 years, the proposed lifespan of this facility, when there is overwhelming scientific evidence that we must make drastic reductions in greenhouse gas emissions immediately. Ecology's conclusion flies in the face of common sense, as we are assaulted by multiple public health emergencies: catastrophic climate disruption causing increased heat, droughts, wildfires, floods, unbreathable air, increased illness and deaths from heat, storms, vector borne diseases, a pandemic of lung disease aggravated by air pollution, economic loss, displacement of thousands of people, and loss of water, food, and ecosystem supports. The adverse effects of climate disruption

¹ Masson-Delmotte, Valérie, et al, editors, "Global Warming of 1.5° C," Intergovernmental Panel on Climate Change, 2018,

https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_Full_Report_Low_Res.pdf

² Berwyn, Bob, "What does '12 Years (Now 11 years) to Act on Climate Change Really Mean", Inside Climate News, August 27, 2019,

<https://insideclimatenews.org/news/27082019/12-years-climate-change-explained-ipcc-science-solutions>

³ Mutitt, G. (2016, September). *The Sky's Limit: Why the Paris Climate Goals Require a Managed Decline of Fossil Fuel*. Retrieved from Oil Change International:

<http://priceofoil.org/2016/09/22/the-skys-limit-report/>

on human health are numerous, serious, cumulative and increasing as we forego opportunities to change our behavior and reduce greenhouse gas emissions. Figure 1 below from the CDC summarizes health impacts of climate change.

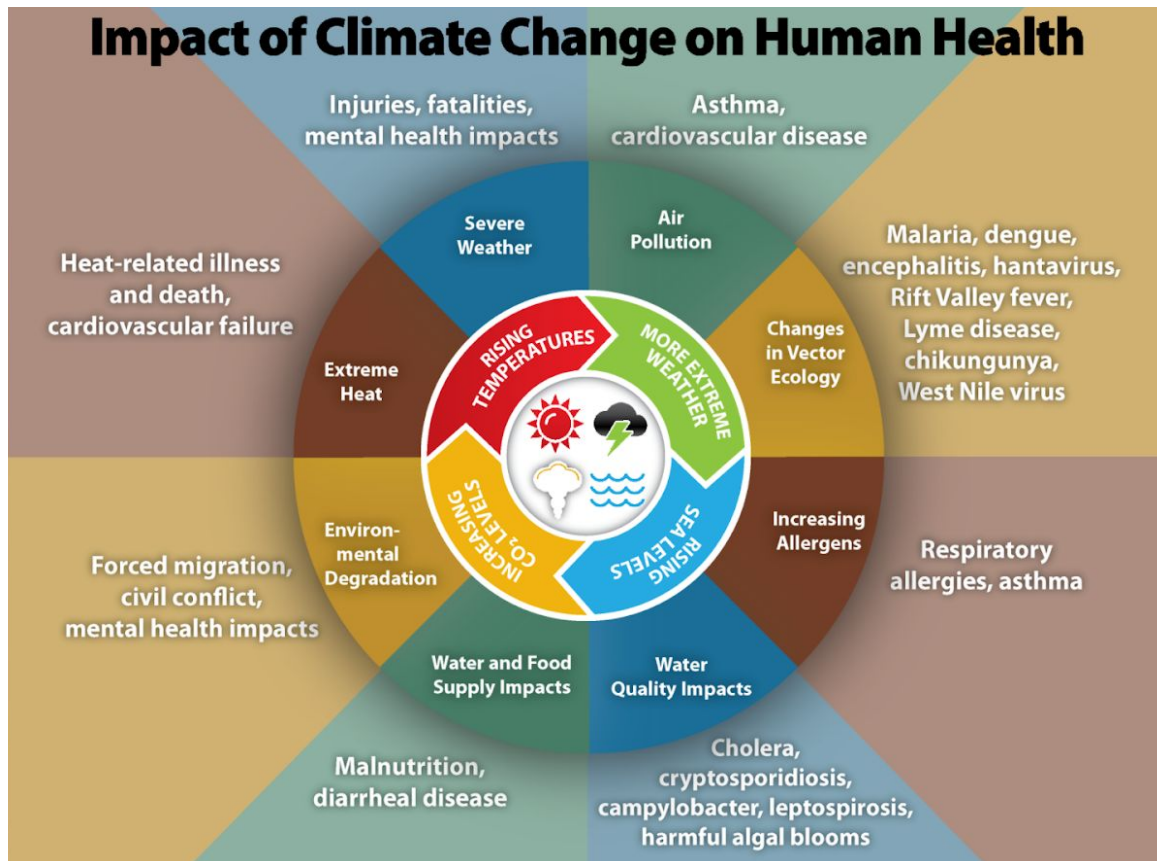


Fig. 1: Impact of Climate Change on Human Health (U.S. Centers for Disease Control and Prevention)

Furthermore, the adverse impacts of climate change will disproportionately affect low income, Black, indigenous, immigrant, houseless and other marginalized communities. Poor and underserved populations are at greater risks of illness and deaths due to heat related illnesses. They are also at increased risk of displacement, loss of jobs, homes and property resulting from the climate impacts of global warming.

Kalama, a small and beautiful rural town with a population of about 2,700 (2018), is nestled on the banks of the Columbia River in Cowlitz County. It is home to a busy and

thriving Port—the economic engine of the town—with miles of riverfront playground, beaches, public parks, and a marina that hosts many shops and restaurants. The Port’s stated mission is “to induce capital investment in an environmentally responsible manner to create jobs and to enhance public recreational opportunities.”⁴

Notwithstanding the fact that the Kalama Methanol refinery would be an eyesore—ugly, smelly and noisy—to this idyllic town and port, its climate impacts would have serious direct and adverse impacts on this vulnerable community, clearly an environmental injustice.

The Washington Tracking Network has identified those communities most vulnerable to climate change based on environmental exposure, environmental effects, population sensitivity, and socio-economic factors. Using this vulnerability index, Kalama has an index of 7 and nearby Longview 10 on a scale of 1-10 where 10 is highest.⁵

The disproportionate impact of climate change on Cowlitz County is related to the significant socioeconomic and health disparities experienced by its residents. These include a lower median income and higher percentage of persons living in poverty than Washington State as a whole. Cowlitz County has a higher age-adjusted mortality and higher mortality from cancer, cardiovascular and lung disease, diabetes and suicide than Washington State as a whole.⁶

The climate impacts to this community include an increase in the region’s wildfires, which not only release more greenhouse gases into the environment but result in air pollution that has both short and long term impacts on health, especially the health of the most vulnerable—children, the elderly, and those with underlying health conditions.⁷

⁴ Port of Kalama, About Page, <https://portofkalama.com/discover-port-of-kalama/about-the-port-of-kalama>, accessed 6 October 2020.

⁵ Oregon & Washington PSR, *Fracked Gas: A Threat to Healthy Communities*. June 2019.

⁶ Oregon & Washington PSR, *Fracked Gas: A Threat to Healthy Communities*. June 2019.

⁷ Oregon PSR, Airborne Particulate Matter and Public Health Fact Sheet (https://www.oregonpsr.org/environmental_health_factsheets)

A warmer climate results in warmer water which destroys salmon and fish habitat, resulting in a loss of important food sources and recreational opportunities. Higher temperatures mean a greater likelihood of water contamination and algal blooms. Heat-related illnesses and death, heat-related violence, drought related food insecurity, heavy rains, flooding, increased allergen-related illness, and vector-borne infectious diseases are all a result of climate change.

Importantly, the stress of all of the impacts of climate change, including displacement, results in anxiety depression, suicide, substance abuse, and violence, worse for those with underlying mental health conditions.⁸ Cowlitz County's suicide rate is already higher than the State as a whole. We all just experienced a taste of how difficult it is to remain inside because of air pollution and grieving the loss of acres of our carbon-sequestering forests and favorite hiking and fishing areas. Others experienced far worse, losing their homes in the wildfires. This is just the beginning of what we are now calling "the new normal."

Environmental injustice as the result of climate change would have an outsized impact on Native Americans. The Affiliated Tribes of Northwest Indians⁹ and the National Congress of American Indians¹⁰ oppose fracked gas projects, sited near tribal lands and major population centers. Although the percentage of Native Americans living in Cowlitz County is about the same as that of the State of Washington, this project would affect their traditional activities, both cultural and economic. The climate effects on fish and salmon habitat would make fishing and other traditional activities along the shoreline of the Columbia River difficult if not impossible.

⁸ Oregon & Washington PSR, *Fracked Gas: A Threat to Healthy Communities*. June 2019.

⁹ Indian Country Today, "Puyallup Battle LNG Facility in Tacoma", August 7, 2017.

<https://newsmaven.io/indiancountrytoday/archive/puyallup-battle-lng-facility-in-tacoma-Uas1XkEDVE-AKmnxc-cU1A/>

¹⁰ National Congress of American Indians. *Oppose the Siting of Liquefied Natural Gas Facilities in or Near Tribal Lands and Major Population Centers* (2018, October). Retrieved from National Congress of American Indians:

<http://www.ncai.org/resources/resolutions/oppose-the-siting-of-liquefied-natural-gas-facilities-in-or-near-tribal-lands-and-major-population-centers>

Of further concern is that there has not been a complete cultural evaluation of the land that would be crossed by the 3-mile Kalama Lateral Pipeline for tribal cultural and burial sites, a violation of tribal rights.¹¹ The spiritual and mental health impacts to tribal members of both the failure to consult with them as well as the destruction of traditional cultural and burial sites cannot be overstated.

The climate-warming effects of the greenhouse gases generated by this project on the residents of Kalama, Cowlitz County and the Native American community is significant, unjust and cannot be mitigated.

Global Greenhouse Gas Emissions

The DSSEIS arrives at the remarkable conclusion that Kalama Methanol will result in a reduction in net global greenhouse gas emissions. The analysis, however, is highly speculative and unsupportable, projecting a future that is simply business as usual and which fails to take into consideration an entire array of contingencies. It excludes any effect of environmental regulation, here or abroad, and relies entirely on market-based assumptions. Its standard of comparison is not the best available technology for production of plastic, but rather the worst. Cloaked in the guise of unimpeachable “science”, it does nothing more than support the gas industry claims that fracked gas is the answer to climate change. It is an odd stance for an agency whose mission it is to regulate the market in the interests of the public it serves.

The DSSEIS includes the key feature of an emission sensitivity model (ESM), the purpose of which is to delineate all possible greenhouse gas (GHG) emission outcomes from Kalama Methanol depending on:

1. alternate scenarios for the production of plastic in China
2. different end uses for the methanol produced, principally fuel

¹¹ Appendix B FERC Kalama Lateral Project Environmental Assessment, Northwest Pipeline LLC. Docket No. CP15-8-000

3. status of the global fossil fuel market and “other external forces”¹²

Many of the problems of previous drafts have been remedied in this analysis. For example, the analysis takes into consideration both the 20 and 100 year global warming potential (GWP) of methane; the GWP value for methane from the most recent Intergovernmental Panel on Climate Change (IPCC 5), and an upstream leakage (fugitive emission) rate as high as 3%. The use of these more conservative variables does not alter the outcome, however. The problems lie in other failures and omissions of the analysis.

To begin with, the ESM assumes that the market for plastics will continue to grow. Industry watchers do not agree. Carbon Tracker Initiative is an independent think tank which analyzes the impact of energy transition on capital markets for potential investors. They note that: “Policymakers in Europe and China are implementing much more stringent regulatory regimes [for plastics] using the five key tools of taxation, design rules, bans, targets, and infrastructure.”¹³ Business Wire reported in 2018 that rising demand for plastics will face “significant new market pressures that threaten the future of plastics demand growth.”¹⁴ In addition, the International Energy Agency predicted that the COVID-19 pandemic will reduce demand for plastic by around 4% in the near term.¹⁵

The oil industry¹⁶ as well as the IEA¹⁷ expect plastics to make up an increasing share of the demand for oil, or more specifically the petrochemicals refined from oil. Due to this,

¹² DSSEIS, 2020

¹³ Bond, Kingsmill, et al, *The Future is not in Plastics*, Carbon Tracker, September 2020, <https://carbontracker.org/reports/the-futures-not-in-plastics/>

¹⁴ Business Wire, “As Global Plastics Demand Expands Rapidly, Sustainability is Key to Future of Plastics Industry, IHS Markit Says,” May 18, 2018. <https://www.businesswire.com/news/home/20180518005048/en/As-Global-Plastics-Demand-Expands-Rapidly-Sustainability-is-Key-to-Future-of-Plastics-Industry-IHS-Markit-Says>.

¹⁵ International Energy Agency, *Global Energy Review 2020*, April 2020. <https://www.iea.org/reports/global-energy-review-2020>

¹⁶ Carpenter, Scott, “Why the Oil Industry’s \$4B Bet on plastics could backfire,” Sept 5, 2020, <https://www.forbes.com/sites/scottcarpenter/2020/09/05/why-the-oil-industrys-400-billion-bet-on-plastics-could-backfire/#46edd08943fe>

¹⁷ International Energy Agency, “The Future of Petrochemicals,” October 2018. <https://www.iea.org/reports/the-future-of-petrochemicals>

all analyses predict that falling demand for plastic will result in downward impacts on both the production and the price of oil. As oil prices fall, feedstock for plastic production in China will gravitate to the cheaper, oil-derived naphtha-based olefin manufacture, displacing methanol. Ultimately this increases the net GHG calculus for Kalama Methanol as methanol is diverted to use as a fuel.

Nowhere is the scenario of reduced demand for plastic considered in the DSSEIS. The analysis 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 [Kalama Methanol refinery].” As further stated in the DSSEIS, “Scenarios with substantially different global policies (fossil fuel/plastics phase outs or bans for example) are too uncertain to include in this analysis.” (DSSEIS, 2020) However, both investors and forward-looking segments of the fossil fuel and plastics industries themselves are taking into consideration, planning for and even aligning themselves with scenarios that Ecology claims are too uncertain to consider.

In effect, Ecology has chosen to exclude from analysis the very kinds of global changes that are needed to avert climate catastrophe. This is a clear abrogation of its responsibility to the public. It also flies in the face of current global trends. On September 22, 2020, for example, China pledged its intent to acquire 20% of its energy needs from renewables by 2025 and become carbon neutral by 2060.^{18,19} On that same day, General Electric announced it will halt construction of any coal-fired plants.²⁰ One day later the governor of California signed an executive order that will ban the sale of gas-powered cars in the state by 2035.²¹ It is puzzling how Ecology can consider these

¹⁸ Sengupta, Somini, “China, in pointed message to US, tightens its climate targets”, *New York Times*, Sept 22, 2020, <https://www.nytimes.com/2020/09/22/climate/china-emissions.html>

¹⁹ “RMI and ETC Salute China’s Carbon Neutral Pledge, Rocky Mountain Institute, Energy Transitions Commission, September 23, 2020, <https://rmi.org/rmi-and-etc-salute-chinas-carbon-neutral-pledge/>

²⁰ Mufson, Steve and Dennis, Brady, “US companies make new vows to tackle carbon emissions, even as global action falls short,” *The Washington Post*, Sept 22, 2020, https://www.washingtonpost.com/climate-environment/2020/09/22/climate-clock-week/?utm_campaign=w_p_energy_and_environment&utm_medium=email&utm_source=newsletter&wpisrc=nl_green

²¹ Grandoni, Dino, et al, “California to phase out sales of gas-powered cars by 2035”, *The Washington Post*, Sept 23, 2020,

kinds of initiatives as more uncertain than the assumption of ongoing unfettered demand for fossil fuels. Ecology should at least consider the possibility that governments around the world will act to reduce reliance on fossil fuels or reduce the consumption of plastic.

The ESM also assumes that, once it recovers from the current pandemic-induced contraction, the market for methanol will continue to grow unabated for the next 40 years. Underlying this assumption are many more assumptions, even apart from the idea of continuous growth in the market for plastics. The ESM does not consider, for example, the possibility of another pandemic, or serial pandemics. Infectious disease and environmental experts tell us otherwise.^{22,23} The adverse economic impacts of the current pandemic have been profound, particularly on the fossil fuel market. The International Energy Agency (IEA) predicted that 2020 will see a drop in demand for oil, coal and gas of respectively 9%, 8% and 5%.²⁴ Failure of the current pandemic to completely resolve and/or more pandemics to follow would create downward pressure on fossil fuel consumption and price that would profoundly alter the prospects of the methanol refinery as well as the calculus around GHG emissions. As discussed above, industry observers are warning of substantial stranded assets in the petrochemical industry. Kalama Methanol is likewise at risk.

The ESM further assumes global political and economic stability, that there will not be significant trade wars or disruptions in long-standing economic relationships, no significant social or political unrest which would further shape the choices of nation-states, and no significant military conflicts. But authoritarian governments are on

https://www.washingtonpost.com/climate-environment/2020/09/23/california-electric-cars/?utm_campaign=wp_energy_and_environment&utm_medium=email&utm_source=newsletter&wpisrc=nl_green

²² Lustgarten, Abrahm, *How Climate Change Is Contributing to Skyrocketing Rates of Infectious Disease*, Propublica, May 2020. <https://www.propublica.org/article/climate-infectious-diseases>

²³ Vaughan, Carson, *How do climate change, migration and a deadly disease in sheep alter our understanding of pandemics?* ENSIA and Food and Environment Reporting Network, September 3, 2020. <https://ensia.com/features/pandemics-climate-change-migration-globalization-emerging-infectious-diseases-covid19/>

²⁴ IEA, 2020

the rise globally,^{25,26} which will have profound but unpredictable consequences for future spheres of influence, military conflict, global migration, the organization of regional markets, trade relations and a host of other issues, all of which will, in turn, influence the supply and demand for fossil fuels.

An additional factor will be changes related to increasing climate-induced human migration. In 2018 the World Bank predicted that up to 143 million persons could be displaced by 2050.²⁷ A recent report from the Brookings Institute²⁸ notes some of the likely outcomes of this massive migration: “Intensifying intra- and inter-state competition for food, water, and other resources...; increased frequency and severity of disease outbreaks; increased U.S. border stress due to the severe effects of climate change in parts of Central America.” We have already experienced the downward economic impacts of disease outbreaks and conflicts over declining natural resources. These will likely continue into the future.

The ESM also takes at face value NWIW’s current statement of intent to target the plastics industry, a key factor underlying Ecology’s assumption that no more than 40% of methanol will be diverted for use as fuel. NWIW has already demonstrated its willingness to mislead the public about its intentions for marketing the methanol it generates.^{29,30} In addition, for the first SEIS, the lifecycle analysis of methane emissions

²⁵ World Politics Review, *What’s Driving the Rise of Authoritarianism and Populism in Europe and Beyond?*, September 11, 2020.

<https://www.worldpoliticsreview.com/insights/27842/the-rise-of-authoritarianism-and-populism-europe-and-beyond>

²⁶ Beavers, Olivia, *National Security Experts Warn of the Rise in Authoritarianism*, The Hill, February 26, 2019.

<https://thehill.com/policy/national-security/431646-national-security-experts-warn-of-rise-in-authoritarianism-efforts>

²⁷ Rigaud, Kanta Kumari, et al, *Groundswell : Preparing for Internal Climate Migration*. World Bank, Washington, DC. © World Bank, 2018. <https://openknowledge.worldbank.org/handle/10986/29461>

²⁸ Brookings Institute, “The Climate Crisis, Migration and Refugees,” 2019.

https://www.brookings.edu/wp-content/uploads/2019/07/Brookings_Blum_2019_climate.pdf

²⁹ Aizhu, C. (2017, December 4). *China’s CAS Plans Gas-to-methanol plant on U.S. West Coast*. Retrieved from Reuters:

<https://www.reuters.com/article/us-china-usa-gas-methanol/chinas-cas-plans-gas-to-methanol-plant-on-u-s-west-coast-idUSKBN1DZ0BH>

³⁰ Solomon, M. (2019, April 19). *Controversial Kalama Methanol Plant May Be Misleading Public, Regulators*. Retrieved from Oregon Public Broadcasting:

<https://www.opb.org/news/article/methanol-plant-kalama-fossil-fuel-china/>

for Kalama Methanol paid for by NWIW knowingly used outdated metrics to skew the results in its favor. It used the 2007 GWP of 25, (Erickson, 2018) which was scientifically recalculated and updated by the IPCC in 2018 to 34. The NWIW sponsored analysis also employed a methane fugitive emission rate of 0.32%, while the most recent science places the figure as high as 3%, as noted in the DSSEIS. (DSSEIS, 2020)

Apart from its problems with truth-telling and lack of allegiance to scientific integrity, NWIW, like all corporations, is beholden only to its investors and will market its methanol in whatever way it can 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, the assumption that only 40% of the methanol will end up being used as fuel is particularly untenable.

But most egregious of all is the total lack of consideration in the ESM 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 benchmark climate-saving scenarios, for example, a ban on single-use plastics, which alone could reduce the production of plastics by up to 40% with a substantial positive impact on reducing global GHG production. GHG lifecycle analyses of global plastic production and disposal have been estimated to be equivalent to the GHG emissions of 189 500-megawatt coal power plants.³¹

Allowing the Kalama Methanol proposal to move forward locks the community of Kalama into supporting the fossil fuel industry, which is doing immeasurable harm to our planet. In 2016, independent researchers drew on industry and governmental data sources to make the case that the current growth of fossil fuel production in the US, if it

³¹ Hamilton, Lisa Ann, et al, "Plastic and Climate: the Hidden Costs of a Plastic Planet," Center for International Environmental Law, May, 2019, <https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf>

continued unabated, would prohibit achieving the IPCC goal of 1.5° C global warming.³² This level of growth is precisely what the DSSEIS supports.

One trend that seems not uncertain is the growth in demand for renewables. The IEA predicted, even in the context of a global pandemic, that solar will grow by 16% and wind by 12%.³³ Carbon Tracker notes that falling costs, improved technology, and growing demand to reduce pollution and avert climate disaster all favor a growth in the market for renewables.³⁴ Allied Market Research, which conducts market research for corporate entities (including Amazon, Google, Dow and Dupont, among others) predicts continuous robust growth in renewables at least through 2025 and cites the rise in government down-regulation of fossil fuels in both developed and developing nations as the chief driver.³⁵ The market relationship between fossil fuels and renewables is complex, but driving the price of fossil fuels down will likely depress the market for renewables, until the price of renewables falls below that of fossil fuels. The most worrisome aspect of a massive influx of methanol from Kalama Methanol into the Chinese market is that it will squeeze out the development or deployment of renewables and delay global transition to carbon neutrality.

The ESM purports to present the sum total of probable market scenarios for fossil fuels stretching into the next forty years. The driving assumption of the analysis is that the market for methanol will continue to grow for the next forty years. However, despite presenting a dizzying array of future scenarios, the analysis makes unsupportable claims about corporate behavior, makes highly speculative assumptions about fossil fuel market trends, and forecloses on the very opportunities we have to save our way of life in the Pacific NW.

³² Mutitt, 2016

³³ International Energy Agency, *Global Energy Review 2020*, April 2020.
<https://www.iea.org/reports/global-energy-review-2020>

³⁴ Bond, Kingsmill, Was 2019 the peak of the fossil fuel era?", Carbon Tracker, May 1, 2020.
<https://carbontracker.org/was-2019-the-peak-of-the-fossil-fuel-era/>

³⁵ Narune, Amit and Prasad, Eswara, "Renewable Energy Market by Type (Hydroelectric Power, Wind Power, Bioenergy, Solar Energy, and Geothermal Energy), and End Use (Residential, Commercial, Industrial, and Others): Global Opportunity Analysis and Industry Forecast, 2018–2025," Allied Market Research, May, 2019. <https://www.alliedmarketresearch.com/renewable-energy-market>

It seems unwise at best and at worst, reckless, to endorse a project that will spew tons of carbon into our air every year for 40 years based on a speculative version of the future. When faced with threats and uncertainty, the prudent response is to reverse harmful practices and instead invest in a renewable and equitable energy future.

Air Pollutants

Toxic air pollutant emissions caused by the Kalama Methanol refinery would include benzene, formaldehyde, acetaldehyde, nickel, ammonia, polynuclear aromatic hydrocarbons and diesel particulate matter. Several of these are known carcinogens. Individually, the estimated amounts released of each toxin would comply with current standards. But, there is no consideration of the cumulative effects of exposure to multiple cancer causing agents from different sources at once. There is no analysis of the increased exposures to these carcinogens when they are absorbed onto fine particulate matter and transported through the lungs to the blood and brain. What is the cumulative effect of exposure to a number of carcinogens combined? One can assume that the risks of cancers are increased. Exposure to even very small amounts of these toxins can increase the risk of cancers in the community as well as among workers exposed at the site and at neighboring worksites. Stating that the levels of exposure are below a certain standard is not the same as saying the risk of cancer is not increased.

According to the 2016 FEIS³⁶ that this DSSEIS supplements, the acceptable source impact level (ASIL) for Diesel Particulate Matter, based on Ecology's 2008 analysis, is 0.00333 micrograms per cubic meter of air which the FEIS states represents a negligible risk. In 2011, the US Environmental Protection Agency estimated the existing diesel particulate matter concentration in the Kalama site census tract at 0.61 micrograms per cubic meter of air. (EPA 2011) This is 183 times the ASIL, so we can assume that existing conditions in Kalama present more than a negligible risk to the health of workers and residents.

³⁶ Final Environmental Impact Statement, Kalama Methanol, Sept 2016.
<https://kalamamfgfacilitysepa.com/>

We know that fine particulate matter (PM2.5) causes serious health problems including cancer, heart and lung disease, neurodevelopmental disorders and problems in pregnancy. Diesel emissions contain finer particles than PM2.5, known as black carbon, and can penetrate further into the lungs and into the bloodstream carrying toxic pollutants. It is also well established that reductions in exposure to black carbon have reduced the incidence of disease.³⁷ During construction and operation the methanol refinery would generate increases in diesel emissions in the Kalama area with increases in disease risk.

Elevated diesel emissions add to the other health threats from climate disruption such as increased extreme heat, storms, droughts, floods, wildfires, threats to our air, water, and food supplies. Amidst a respiratory pandemic we know that exposure to air pollution, and specifically fine particulate matter, increases susceptibility to the coronavirus.^{38,39,40} We know that with climate related ecosystem disruption we are and will be exposed to greater risks of emergent and migrating diseases. We know that poor and underserved populations are at greater risks of illness and deaths due to heat related illnesses. We know that poor and underserved populations are at increased risks of displacement, loss of jobs, homes and property resulting from the climate impacts of global warming. The value of reversing course and denying permits for new fossil fuel facilities is clear not only in eliminating greenhouse gas emissions but also toxic pollutants like diesel which adversely affect our health.

Mitigation

³⁷ Oregon & Washington PSR, *Fracked Gas: A Threat to Healthy Communities*. June 2019.

³⁸ Xiao Wu, Rachel C. Nethery, Benjamin M. Sabath, Danielle Braun, Francesca Dominici. Exposure to air pollution and COVID-19 mortality in the United States: A nationwide cross-sectional study. <https://doi.org/10.1101/2020.04.05.20054502>

³⁹ Petroni, Michael et al 2020 Environ. Res. Lett. 15 0940a9, Hazardous air pollutant exposure as a contributing factor to COVID-19 mortality in the United States

⁴⁰ Tung, Nguyen Thanh et al. "Particulate matter and SARS-CoV-2: A possible model of COVID-19 transmission." *The Science of the total environment*, vol. 750 141532. 5 Aug. 2020, doi:10.1016/j.scitotenv.2020.141532

Mitigation of greenhouse gas emissions is one of the main justifications for allowing the Kalama Methanol project to move forward. Mitigation does not reduce carbon emissions, and we have excellent evidence that we have no more time to allow any increases in those emissions if we are to avert the worst effects of climate disruption. Rather than permitting projects emitting more greenhouse gases and then attempting to offset them with carbon-sequestering or renewable energy projects at best, or purchasing carbon offsets at worst, we must not allow these emissions to begin with. We must increase carbon sequestration and renewable energy to “offset” the greenhouse gases that are already damaging our planet.

The DSSEIS indicates that “The project owner, NWIW, has proposed a framework Appendix D to account for and mitigate 100 percent of these direct and indirect greenhouse gas emissions on an annual basis for the life of the project, which is expected to be 40 years.” We raise the following concerns with this proposal:

1. The “framework” proposed by NWIW is called a Voluntary Mitigation Program Framework. This is not mandatory nor a requirement by Ecology or Cowlitz County for its Shoreline or other permits and relies solely on the corporate goodwill of NWIW. We know that NWIW has a history of misleading the public; there is no reason to trust their promises.⁴¹ We have no reason to believe that, once the facility and the pipeline are built and the facility is fully operational (having been granted the required permits and received grants and tax breaks), NWIW would continue to pay for mitigation.
2. NWIW proposes to mitigate 100% of all direct and indirect greenhouse gases emitted in Washington only. According to the DSSEIS (Table 3.5-14, p. 85), the amount of greenhouse gases emitted in Washington would be from 786,117 MT CO₂e/yr (low estimate) to 1,421, 748 MT CO₂e/yr (high estimate), which is less than 1/3 of the total greenhouse gases emitted by the project, 4.67 MMT CO₂e/yr. This means that there is no plan for mitigation of the majority of

⁴¹ Solomon, Molly, “Controversial Kalama Methanol Plant May Be Misleading Public, Regulators,” *Oregon Public Broadcasting*, 19 April 2019
<https://www.opb.org/news/article/methanol-plant-kalama-fossil-fuel-china/>

emissions, both upstream and downstream, i.e. 1) fracking of gas to power the plant and for use to manufacture methanol, 2) transporting of methanol by ship to China, 3) manufacturing plastics, nor 4) burning methanol as fuel for transportation. Mitigation of less than one third of climate warming gases is not a substantive mitigation plan. Greenhouse gas emissions are a global, not local, problem.

3. The Voluntary Mitigation Program would be “governed” by a Board made up of “state, tribal and local governments, environmental and environmental health nonprofit organizations, and labor organizations.” The accountability lies with the Department of Ecology and Cowlitz County. What does accountability mean? Would the “Framework” be set up such that NWIW would be expected to pay fines if it fails to meet the goals set by the Board? Because mitigation is voluntary and not mandated or required, neither Ecology nor Cowlitz County would have any legal authority to enforce mitigation. If fines were imposed, these would not mitigate the harm of greenhouse gases, and fines are frequently considered by corporations simply to be the cost of doing business.
4. The Board will “award and disperse funding for voluntary mitigation projects or, where necessary, the purchase of carbon credits.” Although Appendix D does provide a methodology for calculating the budget for mitigation based on greenhouse gas emissions, how will the Board assure that NWIW is responsible for fully funding the mitigation work? Will NWIW ask that the Board raise some of the money for these projects or request reductions in fees or taxes from the State or County?
5. No specific projects or strategies were discussed except the purchase of carbon credits from U.S. carbon credit markets or voluntary U.S. carbon registries. Although the DSSEIS states that the priority for projects would be those that would benefit the local area, State of Washington, and the Pacific Northwest, the option for purchasing carbon credits is left open. Carbon registries may be

elsewhere and thus would not be of direct benefit to Washington. Given the ease of this option, it seems likely that NWIW would take advantage of this, such that there would be no direct benefit to local and Washington residents.

6. Even assuming that 100% of the greenhouse gas emissions attributable to Kalama Methanol could be mitigated, including those that occur outside of Washington state, mitigation of greenhouse gas emissions via the purchase of carbon offsets is not equivalent to avoiding the emissions of those greenhouse gases. Carbon offsetting, usually through the preservation of carbon-sequestering forests, is notoriously prone to fraud, unforeseen circumstances, and unreliable accounting of how much carbon dioxide is captured. Researchers have found that carbon sequestration gains from carbon offsets projects are often lost over time or inaccurately measured to begin with.⁴² Even assuming that a forest offset project accurately offsets the emissions of a project like Kalama Methanol, a single forest fire can release nearly all of the sequestered carbon of a forest offset project. A study from the Stockholm Environmental Institute in 2015 found that 75% of the carbon offsets credits issued by the global offsets program Joint Implementation were unlikely to represent real reductions, and that if countries had cut pollution on-site instead of relying on offsets, global carbon dioxide emissions would have been 600 million tons lower.⁴³

Corporations use the promise of mitigation to pretend they are reducing emissions. For example, carbon sequestration often means planting monoculture non-native trees, a

⁴² Song, Lisa and Moura, Paula. "Why Carbon Credits For Forest Preservation May Be Worse Than Nothing," *ProPublica*. 22 May 2019.
<https://features.propublica.org/brazil-carbon-offsets/inconvenient-truth-carbon-credits-dont-work-deforestation-redd-acre-cambodia/>

⁴³ Kollmuss, Anja; Schneider, Lambert, and Zhezherin, Vladyslav. "Has Joint Implementation reduced GHG emissions? Lessons learned for the design of carbon market mechanisms." Stockholm Environmental Institute, August 2015
<https://mediamanager.sei.org/documents/Publications/Climate/SEI-WP-2015-07-JI-lessons-for-carbon-mechs.pdf>

destructive practice leaving forests more vulnerable to disease and wildfires.⁴⁴ We have good evidence that tree farms planted to replace logged forests burn hotter and leave a sterile landscape. It takes many years for newly planted trees to sequester significant amounts of carbon.

Most importantly the climate-changing effects of greenhouse gases cannot be mitigated. How can lost life from wildfires be mitigated? How can lost salmon due to the heating up of rivers and streams be mitigated? How can losses to the economy of the State from droughts, wildfires, floods, reduced snowpack, loss of wildlife and wildlife habitat be mitigated? These losses all result from continued use of fossil fuels including fossil gas, as is proposed for this methanol refinery.

Furthermore, any mitigation that is proposed must be based on demonstrated methods that are known and specified in detail by the applicant for a permit, with specifics about exactly what amounts of emissions each mitigation is known from experience to compensate. The Department of Ecology and the State of Washington cannot accept unsupported promises that may never happen or mitigation methods that fail. Given the uncertainty in the global markets for fossil fuels in the midst of an ever-worsening climate emergency, NWIW's funding mitigation over the course of 40 years, even for its Washington-based GHG emissions, is not based on reality in a market-driven economy. Mitigation must not be left to the voluntary good will of a major international corporation whose primary motivation is profit. Ecology must mandate reliable mitigation as a condition for granting permits, and the mitigation must include 100% of the greenhouse gas emissions generated by this project.

Considering only Washington emissions for mitigation is irresponsible. Washington does not exist in isolation from the rest of the country and the world. As we have seen with the COVID-19 pandemic, each entity that works for its own interests in isolation succeeds only in preventing control of an emergency that does not respect borders and jurisdictions. And, as we hear repeatedly, we are all in this together. If we do not

⁴⁴ Ingalsbee, Timothy. *Incendiary Rhetoric: Climate Change, Wildfire, and Ecological Fire Management*. Firefighters United for Safety, Ethics, and Ecology, 2020 www.fusee.org, pg. 10.
https://static1.squarespace.com/static/5e2c7d5a807d5d13389c0db6/t/5ecbfda2e8296a24e17436f5/1601670278230/Incendiary+Rhetoric_2020-6.pdf

combine our talents and resources to respond to emergencies as a planet full of people, we will not survive. It is that simple.

Fire and Explosion Risk from Earthquake

The proposed facility represents a substantial safety risk for workers and the Kalama community at large. The facility proposed by NWIW is far larger than what is currently in operation anywhere in the world. The plant would process massive quantities of fracked gas into liquid methanol. The highly flammable methanol would be stored on site in eight tanks, each capable of holding more than 8 million gallons of methanol.⁴⁵ Methanol has a very low flash point, 54 degrees F/12 degrees C, which is the lowest temperature at which its vapors will ignite and the maximum temperature at which the substance can be safely stored. This means that even at ambient storage temperatures, let alone hot weather or hot facility environments, a lot of vapor is produced, creating a high risk of fires or explosions. Methane is also extremely flammable and the combination of two volatile substances at the proposed plant compounds the risk of explosions and fires.

Under normal operating conditions, the risk of fire and explosion would be very low at the plant. However, due to its position on the Cascadia Subduction Zone the area is vulnerable to earthquakes. Experts estimate a 15% likelihood of a magnitude 9 earthquake in the region in the next 50 years⁴⁶ and a 42% likelihood of an earthquake up to a magnitude of 8.0 within the next 50 years.⁴⁷ Kalama, in other words, faces a 15 to 42% chance of experiencing a major quake during the lifetime of the methanol project. An earthquake of magnitude 8 would cause severe and widespread damage. A magnitude 9 earthquake would devastate the Northwest. The most severe impacts,

⁴⁵ Luck, Melissa, "Risk of methanol explosion a hot topic in Kalama," *The Daily News*, Dec 10, 2016. https://tdn.com/news/local/risk-of-methanol-explosion-a-hot-topic-in-kalama/article_45a048f1-438e-52d1-b688-42364bed0c5a.html

⁴⁶ Goldfinger, Chris, et al, *The importance of site selection, sediment supply, and hydrodynamics: A case study of submarine paleoseismology on the northern Cascadia margin, Washington USA*. *Marine Geology*, 384, 4–46, (2017). <https://doi.org/10.1016/j.margeo.2016.06.008>

⁴⁷ Goldfinger, Chris, et al, *Turbidite event history — Methods and implications for Holocene paleoseismicity of the Cascadia subduction zone: USGS Professional Paper 1661-F*. (2012) <https://pubs.usgs.gov/pp/pp1661f/>

including soil liquefaction, landslides, and tsunamis, would fall on coastal areas.⁴⁸ In case of a tsunami, the immense force of the initial surge would carry marine vessels, other objects and debris inland, smashing coastal buildings and structures.⁴⁹ Weeks of inundation that could follow would compound the damage.

According to the Final Environmental Impact Statement (FEIS) for the Kalama methanol facility, sand and silt below groundwater levels at the site are susceptible to liquefaction. The FEIS estimated that liquefaction could occur as deep as 100 feet underground, which could cause soils underlying the refinery, dock and tank farm to spread and severely damage key infrastructure. The risks of earthquakes for pipelines in wildfire-prone forested areas include not just destruction of infrastructure but unmanageable wildfires in remote areas resulting from the release of gas. The destruction of communities with injuries and loss of life from a major earthquake could be compounded by catastrophic fires.

In an independent worst-case scenario analysis requested by Columbia Riverkeeper, a plane crash, terrorist attack, or a Cascadia Subduction Zone magnitude 9.0 earthquake, could rupture multiple tanks and if sparked, could possibly lead to an explosion in the remaining intact tank.⁵⁰ If catastrophic tank failure were to occur, leaking methanol could catch fire, and the vapor, if trapped, could cause an explosion that could shatter glass as far away as Longview and Rainier, destroy buildings within a six-mile radius and cause serious injuries in Kalama.

The Final Environmental Impact Statement for the Kalama project identifies seismic protections as part of construction plans; however, it states that a “ground improvement plan” will be designed as the project is being built, leaving questions about what such a

⁴⁸ Harvey, H. *Fifty simulations of ‘The Really Big One’ show how a 9.0 magnitude earthquake in Cascadia could play out*, October 23, 2017.

<http://www.washington.edu/news/2017/10/23/50-simulations-of-the-really-big-one-show-how-a-9-0-cascadia-earthquake-could-play-out/>

⁴⁹ Venturato, Angie, et al, *Tacoma, Washington, Tsunami Hazard Mapping Project: Modeling Tsunami Inundation*. Pacific Marine Environmental Laboratory/National Oceanic and Atmospheric Administration, January, 2007. <https://www.pmel.noaa.gov/pubs/PDF/vent2981/vent2981.pdf>

⁵⁰ Luck, 2016

plan would include and how it might protect workers and the surrounding community from consequences of a severe seismic event.⁵¹ The risk of such an event is hardly trivial. Given the geologic vulnerabilities of the proposed site, a detailed engineering plan for meeting seismic standards should be vetted prior to construction to reassure residents that seismic standards can in fact be met.

New Fracking Wells and Pipeline

The refinery will use up to 320 million cubic feet of gas per day. This is more gas than is used by the region's biggest cities combined (See Figure 2). The amount of greenhouse gas emissions from the wells and pipelines supplying the refinery, i.e. "upstream" sources, are greater than that of the refinery itself. The upstream analysis of greenhouse gas (GHG) emissions comes from the estimates of GHGs generated by fracking and from the pipeline currently bringing gas to Washington. (DSSEIS, p. 80, Figure 3.5-12 below)

The refinery would become a destination for fracked gas produced by the American fracking industry and therefore serve to maintain or expand U.S. fracking operations. Fracking in the United States is already having a serious detrimental effect on health nationwide. One of the health impacts of fracking is potential exposure to the nearly 1 trillion gallons of wastewater brine produced by the U.S. fracking industry per year, nearly 10 times the amount of oil and gas that is extracted from the process of hydraulic fracturing.⁵² This wastewater has high concentrations of naturally-occurring radioactivity, making it especially harmful for human exposure. Radioactive waste material from fracking is already impacting the Pacific Northwest, as evidenced by the February 2020 discovery of 2.5 million pounds of radioactive waste material that was dumped into the Arlington landfill in Oregon over the course of several years.⁵³

⁵¹ Final Environmental Impact Statement, Kalama Methanol, Sept 2016.

<https://kalamamfgfacilitysepa.com/>

⁵² Nobel, Justin, "America's Radioactive Secret," *Rolling Stone*, January 21, 2020,

<https://www.rollingstone.com/politics/politics-features/oil-gas-fracking-radioactive-investigation-937389/>

⁵³ Samayoa, Monica. "2.5M Pounds Of Radioactive Waste Illegally Dumped In Oregon Landfill", *Oregon Public Broadcasting*, 14 February 2020.

<https://www.opb.org/news/article/radioactive-fracking-waste-oregon-landfill-illegal-dump/>

As noted by Columbia Riverkeeper it is likely that “another major fracked gas pipeline into the Pacific Northwest that would be triggered by NWIW’s massive fracked gas consumption.”⁵⁴ (Enclosure 1 Riverkeeper, et.al. Comments December 2018, p. 19-21)

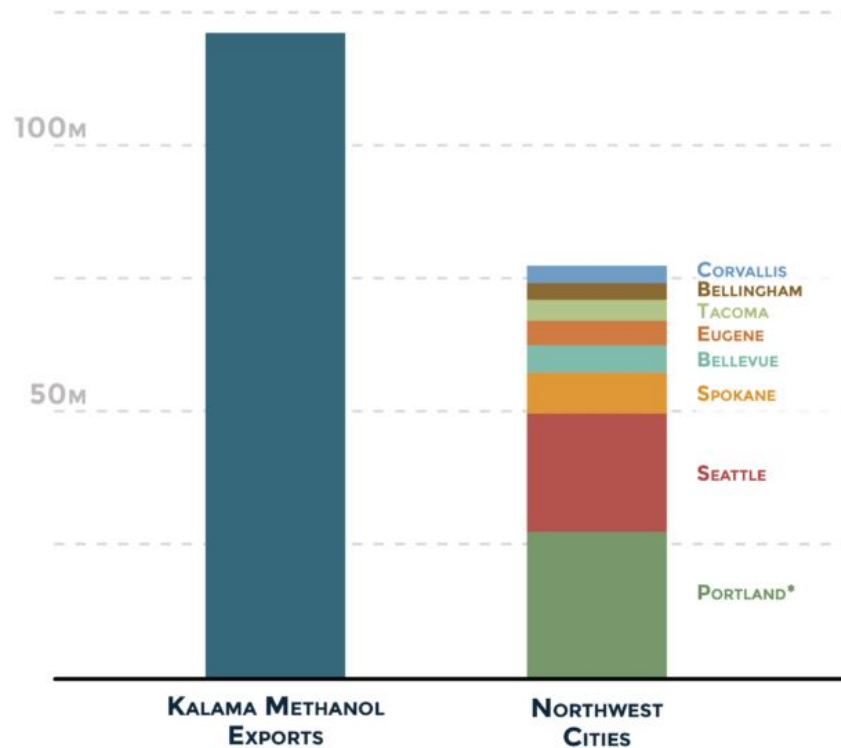
In 2018 the Northwest Industrial Gas Users (NWIGU) told the Oregon Public Utilities Commission that “our region is now experiencing high [gas] prices...not from an actual supply shortage but from an infrastructure constraint” (i.e. limited pipeline capacity into the Northwest). Riverkeeper, et.al. notes that the additional capacity required by the Kalama Methanol Refinery would “push the region over the threshold which a new regional pipeline would be constructed...”⁵⁵ (Enclosure 1 Riverkeeper, et.al. Comments December 2018, p. 19-21) The DSSEIS makes no mention of the probable need for additional gas and pipeline capacity nor is there an estimate of the amount of greenhouse gases that would be emitted from the construction of both new fracking wells and pipeline capacity. This is a serious omission that must be addressed by the DSSEIS. Additionally, the process of constructing a new gas pipeline in Washington State may not be feasible and could cause Kalama Methanol to be delayed or become a stranded asset, based on the history of delays and denials other gas pipeline proposals have recently experienced across the U.S.

⁵⁴ Enclosure 1 Riverkeeper, et.al. Comments December 2018, p. 19-21

⁵⁵ Enclosure 1 Riverkeeper, et.al. Comments December 2018, p. 19-21

The Kalama methanol project would consume far more gas than the region's biggest cities combined.

Annual gas consumption
(millions of dekatherms)



* Portland refers to Multnomah County

Source: Local greenhouse gas inventories, recent years, compiled by Sightline Institute

Fig. 2: Gas Consumption of Kalama Methanol Compared to Northwest City Consumption⁵⁶

⁵⁶ de Place, Eric and DeStephano, Paelina. "What consumes more gas than many of Cascadia's cities combined?" *Sightline Institute*. 2 July 2018.
<https://www.sightline.org/2018/07/02/what-produces-more-gas-than-many-of-cascadias-cities-combined/>

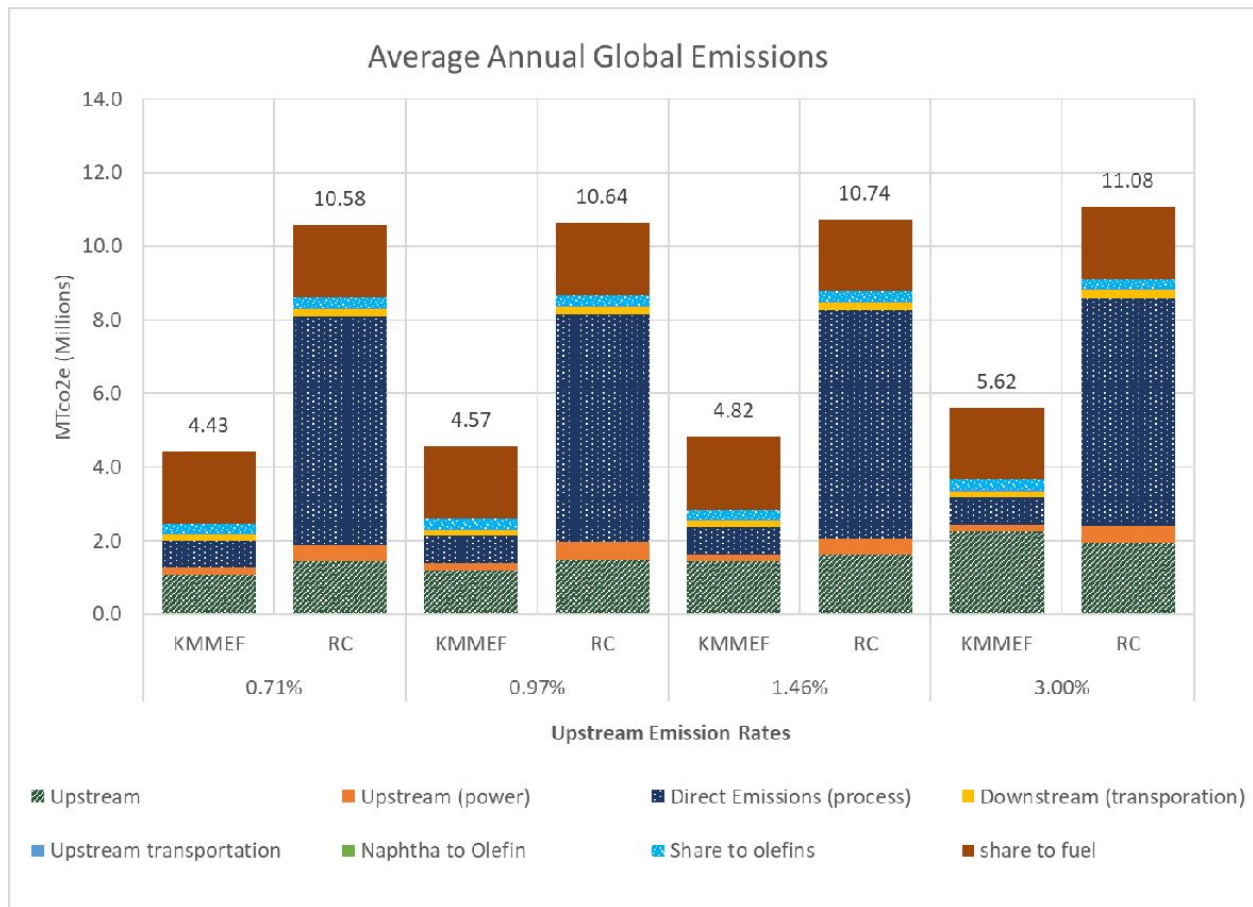


Figure 3.5-12. Average Annual LCA GHG Emission Estimates, with Kalama Methanol the RC Using Upstream Emission Rate of 0.71, 0.97, 1.46, and 3.0 -- page 80, DSSEIS

Temporary Labor Camps

Although the purpose of DSSEIS is to provide an accurate analysis of greenhouse gases generated by this Project, Ecology must consider the impacts to communities directly impacted by the Refinery. Greenhouse gases have no boundaries and vulnerable communities are at much greater risk of the health consequences of climate catastrophe.

Construction of the Refinery would bring a large influx of labor into the Kalama area. Temporary labor camps, so called “Man Camps” are often built to accommodate the

workforce. It has been well documented that the presence of extractive industries in a community place significant burdens on local infrastructure, public services and public health and increasingly on nearby tribal communities through increases in crime, drug use, assaults, kidnapping, sex trafficking, and sexually transmitted infections (STI).⁵⁷ For example, North Dakota has reported a significant increase in cases of HIV/AIDS in the State's western oil fields.⁵⁸

James Anaya, the United Nations special rapporteur, opened the meeting in 2014 of the UN Permanent Forum, stating "It has become evident...that extractive industries many times have different and often disproportionately adverse effects on indigenous peoples, and particularly on the health conditions of women." He detailed the effects on Native American women and girls, including increased rates of STIs and HIV/AIDS, physical assault, and sexual harassment and violence. He additionally noted that "contamination of indigenous lands and natural resources resulting from extractive activities has significant implications for reproductive health, having contributed in many cases to birth defects, delayed child development and disease among community members." In addition, he noted, the full range of health effects are yet to be determined, igniting fears among Native Americans about the unknown intergenerational effects that the contamination will have on their communities."^{59,60}

The epidemic of "Missing and Murdered Indigenous Women," identified by many Human Rights groups, has found that "Native American women are murdered and sexually assaulted at rates as high as 10 times the average in certain counties in the United States—crimes overwhelmingly committed by individuals outside the Native American community. These crimes are particularly likely in remote settings where transient

⁵⁷ Oregon & Washington PSR, *Fracked Gas: A Threat to Healthy Communities*. June 2019.

⁵⁸ Associated Press. "North Dakota HIV/AIDS rate rises with population growth" 13 October 2014. https://billingsgazette.com/news/state-and-regional/montana/north-dakota-hiv-aids-rate-rises-with-population-%20growth/article_a939fed6-f737-5cfb-957f-ab800673f4d7.html

⁵⁹ Oregon & Washington PSR, *Fracked Gas: A Threat to Healthy Communities*. June 2019.

⁶⁰ Anaya, James. Statement: Thirteenth Session of the United Nations Permanent Forum on Indigenous Issues, 2014. <http://unsr.jamesanaya.org/?p=1170>

workers - oil workers, for example - live in temporary housing units called “man camps” on and near Tribal lands.”⁶¹

Therefore, the impact of building new fossil fuel infrastructure, generating massive amounts of greenhouse gas emissions, on vulnerable communities, especially Native American women, would violate the principles of human rights and environmental justice.

Conclusion

The Kalama Methanol project would emit an unacceptably high level of greenhouse gases both inside and outside Washington state that are not mitigable in the ways that the DSSEIS outlines. Impacts on air pollution, water consumption, and environmental justice are also substantial. In order to safeguard the health of current and future Washingtonian generations and the livability of Kalama, the state of Washington must reject this project and move toward a clean, renewable, and sustainable energy future.

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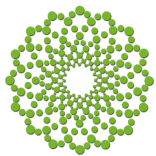
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December 27, 2018

Ann Farr
Port of Kalama
110 W. Marine Drive
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Sent Via Email to: SEIS@KalamaMfgFacilitySEPA.com

Re: Comments on the Draft Supplemental Environmental Impact Statement for Northwest Innovation Works' Methanol Refinery and Export Terminal.

Mrs. Farr:

The undersigned organizations (collectively "Commenters") have reviewed the Port of Kalama's ("Port") and Cowlitz County's ("County") Draft Supplemental Environmental Impact Statement and the accompanying lifecycle greenhouse gas study (collectively "DSEIS") for the

proposed Kalama methanol refinery and export terminal (the “proposal”) and submit the following comments.

Commenters represent tens of thousands of members and supporters working to protect and restore Washington’s environment and the Columbia River. Commenters’ members and supporters work, live, and recreate in and along the Columbia River and the surrounding landscape near Kalama, the location of Northwest Innovation Works’ (“NWIW”) proposed methanol refinery and export terminal. Commenters and their members are deeply concerned by plans to construct a 100-acre methanol refinery, export terminal, pipeline, and associated facilities in and along the lower Columbia River. The project would undermine local and regional efforts to protect water quality, recover endangered and threatened species, support vibrant fishing communities, protect human health and safety, transition to a low-carbon economy, and combat climate change. NWIW’s proposed methanol refinery is the latest in a disturbing trend of fossil fuel and petrochemical export terminals that would industrialize and pollute the lower Columbia River and increase Washington’s contribution to climate change.

Commenters oppose NWIW’s petrochemical refinery and export proposal because of its impacts on the Columbia River and our climate. Commenters call on Cowlitz County and the Washington Department of Ecology to deny NWIW’s requested permits based on these agencies’ authorities under the Washington Shorelines Management Act,¹ the substantive authority granted by the State Environmental Policy Act,² and the public trust doctrine.³ Issuing permits for 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. Recent reports by the Intergovernmental Panel on Climate Change (IPCC)⁴ and the U.S. Government⁵ illustrate that severe climate change impacts could be felt by 2040, including “inundating coastlines and intensifying droughts and poverty.”⁶ A recent hot year, 2015, provided an unwelcome window into the near future of the Pacific Northwest if climate change continues unabated: “low stream levels and warm water resulted in fish die-offs; agricultural losses were between \$633 million and \$773 million in Washington alone; a combination of low snowpack and extreme precipitation deficit in spring and summer led to the most severe wildfire season in Northwest

¹ See WAC 173-27-140(1) (“Review criteria for all development.”) referencing RCW 90.58.020(1).

² RCW 43.21C.060.

³ See *Illinois Cent. R.R. Co. v. Illinois*, 146 U.S. 387, 459–60 (1892).

⁴ IPCC, [*Special Report: Global Warming of 1.5 °C*](#) (October 1, 2018).

⁵ U.S. Global Change Research Program, [*Fourth National Climate Assessment, Volume II: Impacts, Risks, and Adaptation in the United States*](#) (November 23, 2018).

⁶ New York Times, [*Major Climate Report Describes a Strong Risk of Crisis as Early as 2040*](#), (October 7, 2018).

history.”⁷ And Washington’s critically important coastal areas are projected to experience sea level rise measured in feet, not inches.⁸ Washington simply cannot respond to these immediate threats by permitting NWIW to build a massive new petrochemical refinery that would cause millions of tons of new climate pollution each year. As Fatih Birol, the executive director of the International Energy Agency recently said: “We have no room to build anything that emits CO₂ emissions.”⁹

Incorporated by reference are all previous State Environmental Policy Act (SEPA) comments submitted by Columbia Riverkeeper and others on this proposal and exhibits thereto, including but not limited to comments on the scope of the SEIS. Because those documents are already in the Port and County’s possession, Commenters do not attach them as exhibits to this letter but do request their inclusion in the record for the Supplemental EIS.

I. Washington State Environmental Policy Act.

In adopting SEPA, the Washington Legislature declared the protection of the environment to be a core state priority.¹⁰ In SEPA, “[t]he legislature recognizes that each person has a fundamental and inalienable right to a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.”¹¹ This policy statement, which is stronger than a similar statement in the federal counterpart of NEPA, “indicates in the strongest possible terms the basic importance of environmental concerns to the people of the state.”¹²

The point of SEPA is to fully analyze the environmental impact of projects that have a significant impact on the environment.¹³ The primary purpose of an environmental impact statement “is to ensure that SEPA’s policies are an integral part of the ongoing programs and actions of state and local government.”¹⁴ SEPA “sets forth a state policy of protection, restoration and enhancement of the environment.”¹⁵ This is often characterized as the “look

⁷ Columbia Basin Bulletin, [*Federal Climate Report Suggests More Warm Years Such As 2015 Will Be A Reality For Columbia Basin*](#) (November 30, 2018).

⁸ See Washington Coastal Resilience Project, [*Projected Sea Level Rise for Washington State*](#), p. 6 (2018).

⁹ The Guardian, [*World has no capacity to absorb new fossil fuel plants, warns IEA*](#) (November 12, 2018).

¹⁰ RCW 43.21C.010.

¹¹ RCW 43.21C.020(3).

¹² *Leschi v. Highway Comm’n*, 84 Wn.2d 271, 279–80 (1974).

¹³ RCW 43.21C.031(1).

¹⁴ WAC 197-11-400.

¹⁵ *Polygon Corp. v. City of Seattle*, 90 Wn.2d 59, 63 (1978); RCW 43.21C.010.

before you leap” concept, meaning that an agency must ensure that environmental effects are known and carefully considered before it is too late.¹⁶

The scope of impacts that must be examined in a SEPA document, similar to NEPA, includes direct, indirect, and cumulative impacts.¹⁷ SEPA regulations define impact as “the effects or consequences of actions.”¹⁸ Agencies must “carefully consider the range of probable impacts, including short-term and long-term effects and shall include those that are likely to arise or exist over the lifetime of a proposal or, depending on the particular proposal, longer.”¹⁹ It is implicit in SEPA that an “agency cannot close its eyes to the ultimate probable environmental consequences of its current action.”²⁰

Under SEPA, an EIS must provide a reasonable set of alternatives: the preferred action and one or more alternatives (distinct and separate from mitigation measures).²¹ The range of alternatives considered must be sufficient to permit a reasoned choice as opposed to the kind of constrained choices that lead to only one project or conclusion.²²

II. The world’s largest fracked gas-to-methanol refinery would have unavoidable significant adverse impacts under SEPA.

NWIW’s methanol refinery would likely become the first or second single largest source and cause of GHG pollution in Washington,²³ increasing the state’s total carbon footprint by 1 to 2 percent. The DSEIS’ conclusion that NWIW’s climate pollution is not “significant” at the state level defies logic. As set forth in our prior comments, this project would result in significant environmental impacts, including impacts from increased greenhouse gas (GHG) emissions—such as sea level rise and altered hydrologic cycles resulting in increased droughts, floods and storm events—as well as direct impacts from construction on local resources, including harm to marine life, including protected species, and marine ecosystems through increased vessel traffic and sediment deposition.

¹⁶ See *Marsh v. Oregon Natural Res. Council*, 490 U.S. 360, 371 (1989).

¹⁷ WAC 197-11-792.

¹⁸ WAC 197-11-752.

¹⁹ WAC 197-11-060(4)(c).

²⁰ *Cheney v. City of Mountlake Terrace*, 87 Wn.2d 338, 344 (1976).

²¹ WAC 197-11-440(5) and (6); see also *Organization to Preserve Agr. Lands v. Adams Cty.*, 128 Wn.2d 869, 913 (1996).

²² *Solid Waste Alternative Proponents v. Okanogan Cty.*, 66 Wn.App. 439, 444–45 (1996) (citing *Methow Valley Citizens Council v. Regional Forester*, 833 F.2d 810, 815 (9th Cir. 1987), *rev’d on other grounds*, *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332 (1989)).

²³ See DSEIS, Table 3-1. Top 15 Individual GHG Emission Sources in Washington (2016).

The DSEIS—relying on a suspect coal displacement theory and a vague, unsupported promise of “voluntary” mitigation—concludes that NWIW’s GHG pollution will have “no unavoidable significant adverse impacts” at the state or global levels.²⁴ As explained throughout this Comment, however, the DSEIS systematically minimizes and understates the true climate costs of NWIW’s proposal. The many deficiencies in the DSEIS identified in this comment letter render the analysis incomplete and in violation of the Washington SEPA. The responsible SEPA officials must therefore revisit the “no unavoidable significant adverse impacts” determination and provide a full analysis of the adverse impacts this project would have on the environment, as SEPA requires.

III. The DSEIS violates SEPA by underestimating lifecycle GHG emissions.

There are several shortcomings of the life cycle analysis of the GHG emissions attributable to the proposal. As set forth below, the DSEIS’ reliance on insufficient and misrepresented information renders the analysis entirely incomplete and suggests that the project would have much greater impacts than what is presented. Moreover, this insufficient analysis violates SEPA’s mandate that an EIS contain a “reasonably thorough discussion of the significant aspects of a [proposal’s] environmental impacts”²⁵ This standard boils down to the requirement that an EIS take a “hard look” at the proposal and its impacts on the environment and human health.²⁶ The self-serving life cycle analysis commissioned by NWIW does not meet this standard, for the following reasons.

a. The DSEIS’ upstream methane leakage rate estimate is too low.

The DSEIS uses an implausibly low estimate of the amount of greenhouse gases that will be emitted by “upstream” activity, *i.e.*, producing, processing, and transporting gas to the Kalama facility. The DSEIS calculates these emissions using an estimate of the “leak rate,” which is the percentage of the methane extracted from the ground that escapes to the atmosphere (whether through inadvertent leaks or through equipment that vents gas by design) before reaching its end use destination.²⁷ The DSEIS surveys a fraction of the available literature on methane emissions and selects a leak rate that is the absolute lowest, by far, of the provided

²⁴ DSEIS, p. 3-31.

²⁵ *Toward Responsible Dev. v. City of Black Diamond*, No. 69418-9-I, 2014 Wash. App. LEXIS 197, at *1 (Ct. App. Jan. 27, 2014).

²⁶ *See Pub. Util. Dist. No. 1 of Clark Cnty. v. Pollution Control Hearings Bd.*, 137 Wash. App. 150, 158 (2007).

²⁷ DSEIS Appx. A, p. 117.

estimates: 0.32 percent.²⁸ Other estimates listed in the DSEIS are 3 to 7 times higher.²⁹ The 0.32 estimate cannot be reconciled with the wide body of peer reviewed literature regarding emissions from gas production³⁰ and reliance on that figure does not constitute the hard look that SEPA requires.

Most of the estimates cited in the DSEIS are either peer reviewed publications or readily available government reports, such as the EPA's annual greenhouse gas inventory.³¹ The 0.32 figure, however, is simply cited as "GHGenius 2016." There reference list cites the general GHGenius website, which introduces the modeling tool, but nothing in the DSEIS identifies an actual report or publication. Not only is the .32 percent figure lower than the others provided in the DSEIS, but we are not aware of *any* peer reviewed or published government study of the gas lifecycle that adopts an estimate anywhere near this low.

The DSEIS fails to justify the disparity between the estimate it uses and other available estimates. The DSEIS asserts that the other cited literature concerns North America as a whole, but that gas production in British Columbia is lower-emitting.³² This explanation is incomplete at best. The DSEIS does not provide any citation to actual data for portions of the upstream process beyond the wellhead.³³ Although the DSEIS generally cites aspirations for effective regulation of gas production in British Columbia, production throughout North America is subject to similar rules, and the DSEIS offers no support for the contention that these rules are more stringent or better enforced in British Columbia. And the body of the DSEIS tempers the claim that B.C. emissions are lower: when comparing scenarios in which the Project receives all gas from British Columbia vs. from North America generally, the DSEIS asserts this change would increase upstream methane emissions by 44 percent.³⁴ However, the peer reviewed or EPA estimates of North American gas production provide a leak rate that is 300–700 percent, not 44 percent, higher than the figure used in the DSEIS. Of these, the most credible is the highest estimate, which is the most recent, peer reviewed, and builds on prior data.³⁵

²⁸ DSEIS, p. 3-14; DSEIS Appx. A, pp. 117–18.

²⁹ DSEIS Appx. A, pp. 117–18.

³⁰ Exhibit 1, Alvarez, *et al.*, *Assessment of methane emissions from the U.S. oil and gas supply chain*, Science (2018); *see also* Tong *et al.*, [*Comparison of Life Cycle Greenhouse Gases from Natural Gas Pathways for Medium and Heavy-Duty Vehicles*](#), 49 Environ. Sci. Technol. 12, p. 7126 (2015) (estimating methane leakage rates of 1.5–3.3 percent); *see also* Exhibit 2, Sierra Club, *Fracked Gas: Nothing "Natural" About It* (2018) (reviewing literature and estimating leakage rate of 3 percent).

³¹ DSEIS Appx. A, pp. 117–18.

³² DSEIS Appx. A, p. 118.

³³ DSEIS Appx. A, p. 118

³⁴ DSEIS Appx. A, pp. 48, 97.

³⁵ Exhibit 1; *see also* Tong *et al.* (2015) (estimating methane leakage rates of 1.5–3.3 percent).

b. The DSEIS methodology for calculating methane leakage is flawed and has been discredited.

Even the higher estimates cited in the DSEIS are almost certainly underestimates because they primarily rely on a “bottom-up inventory” methodology that multiple peer-reviewed publications have found to “systematically underestimate total emissions.”³⁶

“Bottom-up” studies use an estimate of the average emissions from an individual piece of equipment or an individual event, such as a high-bleed pneumatic device or a well completion, and multiply that per-component value by an estimate of the total number of components or events of that type (*i.e.* assuming that each well has X pneumatic controllers that emit Y tons of methane). A different method of estimating oil and gas sector methane emissions is a “top down” approach, where researchers measure the methane accumulation in the atmosphere in areas where oil and gas activity is occurring and then estimate the fraction of this methane attributable to emissions from oil and gas activity. For example, a researcher might measure methane concentrations upwind and downwind of gas activity and then subtract out the methane estimated to have been emitted from other sources. Certainty in source attribution has increased in recent years as scientists are better able to distinguish methane sources based on detected levels of co-occurring compounds such as ethane or isotopic composition of atmospheric methane.

Recently, peer-reviewed publications utilizing top-down techniques to estimate methane emissions from oil and gas have proliferated, and these studies provide compelling evidence that the aggregate methane emission estimates based on “bottom up” studies (such as those cited in the DSEIS) underestimate gas production methane emissions by a significant margin. For example, two studies in Colorado’s Denver-Julesburg Basin concluded that, during gas production alone (not including emissions from downstream segments of the industry, like transmission and distribution), the gas leak rate was about 4%.³⁷ The same team of researchers found even higher methane leak rates in Utah’s Uinta Basin, estimating escaped methane at $9 \pm$

³⁶ Exhibit 1, p. 2; *see also* Brandt, *et al.*, [Methane leaks from North American natural gas systems](#) *Energy and environment*, 343 *Science* 6172 (February 14, 2014).

³⁷ Petron, *et al.*, [A new look at methane and non-methane hydrocarbon emissions from oil and natural gas operations in the Colorado Denver-Julesburg Basin](#), 119:9 *J. Geophys. Res. Atmospheres* (June 3, 2014). This is consistent with an earlier study, by the same lead author, which estimated using top-down techniques that 2.3 to 7.7 percent of production was vented in the studied and concluded more generally that “the methane source from natural gas systems in Colorado is most likely underestimated by at least a factor of two.” Petron, *et al.*, [Hydrocarbon emissions characterization in the Colorado Front Range: A pilot study](#), 117:D4 *J. Geophys. Res. Atmospheres* 4304 (February 21, 2012).

3% of total production.³⁸ Other research has confirmed that this problem is not unique to the mountain west, and that North American emissions as a whole are understated.³⁹

The peer reviewed literature offers compelling explanations for why bottom-up estimates are systemically too low. The bottom-up methodology relies on sampling methane leaks from various pieces of equipment under “ideal operating conditions.”⁴⁰ However, evidence indicates that there are “a small number of ‘superemitters’” with emissions that are much higher than anticipated by the emission factors used in the bottom-up estimates.⁴¹ For example, one analysis of 75,000 components at five different facilities found that just 50 leaks and compressor seals were responsible for 58% of overall emissions.⁴² These rare but severe leaks are unlikely to be represented in the data used to inform bottom-up calculations, which may be based on surveys of a few dozen, or even a hundred, components. This is especially so because site and equipment operators can be expected to operate especially diligently when they know they are being surveyed, such that “there are reasons to suspect sampling bias” in the surveys used to develop the emission factors used in bottom up analysis.⁴³ On the other hand, these superemitters are likely to be captured by top-down estimates.

In summary, the DSEIS’s estimates of upstream emissions rely on a leakage rate that is doubly suspect: it is irrationally and drastically lower than the rates provided in the published literature cited by the DSEIS, but even those other estimates largely rely on a methodology that is known to systemically underestimate emissions. The SEPA “hard look” requires accounting for top-down studies of methane emissions and the flaws of bottom-up estimates.⁴⁴

c. Assuming that NWIW’s gas will come from the Montney shale formation in British Columbia does not pass SEPA’s “hard look” test.

³⁸ Karion, *et al.*, [Methane emissions estimate from airborne measurements over a western United States natural gas field](#), 40:16 Geophysical Research Letters 4393 (August 27, 2013); *see also* J. Tollefson, [Methane leaks erode green credentials of natural gas](#), Nature (January 2, 2013).

³⁹ Brandt *et al.* (2014) at pp. 733–35.

⁴⁰ Exhibit 1, p. 2.

⁴¹ Brandt *et al.* (2014) at p. 733.

⁴² EPA, [Cost-Effective Directed Inspection and Maintenance Control Opportunities at Five Gas Processing Plants and Upstream Gathering Compressor Stations and Well Sites](#), Table 2 (March 2006).

⁴³ Brandt *et al.* (2014) at p. 734.

⁴⁴ *Toward Responsible Dev. v. City of Black Diamond*, 179 Wash. App. 1012 review denied, 180 Wash. 2d 1017, 327 P.3d 54 (2014) (unpublished opinion) (“Courts review an EIS as a whole and examine all of the various components of [the] agency’s environmental analysis ... to determine, on the whole, whether the agency has conducted the required ‘hard look.’”).

Without a guarantee, or even any supporting documentation such as a completed contract, the DSEIS asserts that “NWIW will be contracting and receiving Canadian natural gas, primarily from the Montney formation in British Columbia.”⁴⁵ Because the DSEIS provides no real evidence to support that the Montney formation will be the sole (or even primary) source of NWIW’s gas for the next 40 years, a cynical reader might conclude that the project proponents selected the Montney field because it had a low reported methane leakage rate and because the British Columbian Ministry of Natural Gas Development government styles its self as “home to Best Practices”⁴⁶ for the fracking industry.

In reality, however, “is not clear why [NWIW’s] assumption should “be expected to hold true for the 40-year lifespan of the Project, especially as United States natural gas production has increased substantially in recent years.”⁴⁷ NWIW’s massive new demand for fracked gas could “cause fuel shuffling that results in an increased use of non-Canadian natural gas for other projects.”⁴⁸ Other sources of natural gas that the project could utilize would have a higher methane leakage rate, and therefore the DSEIS is using an unsupported assertion to minimize the potential emissions associated with the project, in violation of SEPA.

Even if the Montney region would ultimately supply a significant amount of NWIW’s gas, the DSEIS’ predictions about upstream methane leakage from this gas field are unlikely to hold true. First, as explained in Section III(b), above, the ultra-conservative “bottom-up” leakage rate estimates for the Montney field relied on in the DSEIS are unreliable and underestimate the actual leakage likely to occur. Second, most of the Montney field is actually in Alberta, and therefore not regulated by the British Columbian provincial government, undermining the DSEIS’s reliance on the “Best Practices” that may be employed.⁴⁹

d. The DSEIS obscures the climate pollution caused by making methanol into olefins.

NWIW’s self-serving DSEIS attempts to have it both ways: on one hand insisting that this proposal is exclusively focused on producing olefins while on the other hand obscuring the

⁴⁵ DSEIS Appx. A, p. 27.

⁴⁶ DSEIS Appx. A, p. 118.

⁴⁷ Exhibit 3, Washington Attorney General, *Comment to PSCAA on DSEIS for PSE LNG Project*, p. 1 (November 21, 2018).

⁴⁸ Exhibit 4, Washington Department of Ecology, *Comment to PSCAA on DSEIS for PSE LNG Project*, p. 1. (November 21, 2018).

⁴⁹ See Canadian National Energy Board, [*Frequently Asked Questions - An assessment of the unconventional petroleum resources in the Montney Formation, West-Central Alberta and East-Central British Columbia*](#) (Updated September 13, 2018).

climate pollution that would result from actually making NWIW's methanol into olefins.⁵⁰ The DSEIS states that the downstream GHG pollution caused by turning methanol into olefins would total 0.42 million tonnes of CO₂e, but that figure is “not reflected in the overall LCA conclusion.”⁵¹ The result of this omission is that the DSEIS repeatedly misrepresents the proposal's total direct and indirect emissions as 2.17 million tonnes CO₂e per year,⁵² instead of 2.59 million tonnes. Thus, the DSEIS purposefully obscures a very significant source of downstream emissions and the overall impacts of the project, even though the GHG emissions related to olefin production are reasonably foreseeable if—taking NWIW at its word—the proposal would only produce methanol destined to become olefins.

SEPA does not allow NWIW to obscure the actual emissions attributable to the project by claiming that carbon emissions resulting from olefin production from methanol would be the same as olefins produced from coal. The excuse that the emissions “would occur either way” does not comport with SEPA's requirement to disclose a foreseeable indirect impact of making methanol to be turned into olefins.⁵³ And, as discussed below, this reasoning conflates the lifecycle analysis with NWIW's dubious “displacement” theory and makes it more difficult than necessary for the public and decisionmakers to understand the actual downstream climate pollution resulting from NWIW's proposal. Ignoring the foreseeable GHG emissions caused by turning methanol into olefins violates SEPA's requirement to take a hard look at a proposal's impacts.

IV. NWIW's market displacement theory does not pass SEPA's “hard look” test.

For the reasons below, NWIW's reliance on the theory that its methanol will displace the use of Chinese coal-derived methanol for the next 40 years does not constitute the “hard look” that SEPA requires. To comply with SEPA, an EIS must contain a “reasonably thorough discussion” of a proposal's environmental impacts, sometimes referred to as a “hard look.”⁵⁴ The coal displacement theory is merely a loose association of unfounded assumptions selectively grouped together to prop up NWIW's proposal. As explained in the subsections below, these

⁵⁰ See DSEIS, p. 3-19; *see also* DSEIS Appx A, p. 92 (lifecycle emissions would be “2.59 million tonnes of GHG emissions if the MTO facility is counted”).

⁵¹ *Id.*; *see also* DSEIS Appx. A, p. 92 (NWIW lifecycle emissions would be “2.59 million tonnes of GHG emissions if the MTO facility is counted”).

⁵² See, e.g., DSEIS, pp. 1-6, 3-23; Fig. 3-12.

⁵³ See WAC 197-11-792 (explaining that the scope of an EIS includes direct, indirect, and cumulative impacts).

⁵⁴ *Toward Responsible Dev. v. City of Black Diamond*, 179 Wash. App. 1012 (2014); *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 “hard look” under NEPA sufficient for SEPA review).

assumptions, and the “displacement” theory they support, crumble when subjected to the “hard look” scrutiny that SEPA requires. Accordingly, **the displacement theory must be eliminated from any future SEPA analysis of this proposal.** Given the proposals’ massive direct GHG emissions and the need for immediate GHG reductions to avoid the worst impacts of climate change, this unsupported theory is yet another attempt to paper over the proposal’s actual impacts on our climate.

a. NWIW cannot predict or control the fluctuating fossil fuels prices that underpin its displacement theory.

NWIW’s putative ability to “displace” coal-based methanol—without displacing other, lower GHG-intense sources of olefins like naphtha—is premised on NWIW’s undisclosed assumptions about world fossil fuel prices. Even assuming, for the sake of argument, that NWIW would displace coal-based olefins under *current* fossil fuel prices, those prices are almost certain to change during the next 40 years in ways that NWIW can neither predict nor control. As the United States Court of Appeals for the D.C. Circuit recently 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.”⁵⁵ Considering the radical and often unforeseen fluctuations in the prices of coal, crude oil, natural gas, and methanol that have occurred in the past decade, any projection that relies on those prices remaining static over the next 40 years is arbitrary and unhelpful.

b. NWIW’s market analysis cannot accurately predict olefin production or consumption in China’s planned economy.

The coal displacement theory is also unreliable because it ignores existing non-market forces—and cannot predict potential future non-market forces—that may significantly impact how olefins are produced and consumed in China. The Chinese economy is a planned economy, subject to government control over how, where, and when to produce and consume certain commodities.⁵⁶ The Chinese government has set aggressive air pollution and GHG reduction goals that are having, and will continue to have, a significant impact on the amount of coal mining, coal burning, and coal-to-olefins production in China. Additionally, the U.S. and China are engaged in an ongoing trade dispute which, via import tariffs, would directly affect the price of NWIW’s methanol and its ability to displace other sources of methanol or olefins in Chinese markets. The DSEIS acknowledges some of these realities but does not explain how or why a classic supply curve—which does not account for some existing, and all future, non-market

⁵⁵ *Sierra Club v. United States DOE*, 867 F.3d 189, 194 (D.C. Cir. 2017).

⁵⁶ *See, e.g.*, DSEIS Appx. A, p. 59 (describing China’s strict regulation of natural gas consumption by economic sector).

forces—provides a reasonable or helpful prediction of how China’s planned economy would respond to increased methanol supply from NWIW.

Instead, the DSEIS states that the displacement “analysis is based on the assumption that no government subsidy is provided to the producer or the buyer and that the cash price of the product must cover the cost of production.”⁵⁷ Under the existing circumstances, however—which involve escalating tariffs, massive financial support stateside for NWIW from state and federal agencies,⁵⁸ and a Chinese government with a history of subsidizing its own domestic industries—this assumption, and the displacement analysis it is intended to support, are not credible.

Specifically, the displacement analysis rests on the unsupported assertion that—if denied access to NWIW’s product—China will simply increase its domestic coal-to-methanol production indefinitely to meet growing demand for methanol and olefins.⁵⁹ But 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.⁶⁰ NWIW’s assumption that Chinese coal-to-methanol production will automatically rise to meet methanol and olefin demand is based on an irrational application of free-market principles to a planned economy. In reality, China is already acting to reduce coal-to-methanol production, appears likely to continue to do so without this project, and NWIW should not claim credit for “causing” reductions in coal-based methanol that are actually the result of Chinese domestic policy.

Alternatively, it is plausible that China would decide to produce and consume *more* coal-derived methanol, despite the market forces that NWIW foresees. The Final SEIS should discuss whether production and consumption of coal-based methanol in China is strictly market driven or whether it is driven “more by 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.”⁶¹ If coal-based methanol production in China is not strongly linked to market forces, NWIW’s production seems unlikely to influence the amount of coal-based methanol produced or consumed in China. Regardless, the SEIS needs to analyze

⁵⁷ DSEIS Appx. A, p. 58.

⁵⁸ See, e.g., Pacific Standard, [*Taxpayers May Soon Be on the Hook for a \\$2 Billion Fracked Gas Refinery*](#) (Nov. 7, 2018).

⁵⁹ DSEIS Appx. 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.”).

⁶⁰ DSEIS Appx. A, pp. 59–60.

⁶¹ Center for International Environmental Law, [*Fueling Plastics: How Fracked Gas, Cheap Oil, and Unburnable Coal are Driving the Plastics Boom*](#), p. 6 (2017).

the actual emissions associated with the project, and not attempt to minimize or ignore those emissions through an illogical and unsupported displacement theory.

c. NWIW's methanol production may add to other methanol and olefin production in China.

NWIW's entire claim to GHG reductions is based on its theory that NWIW's methanol will be consumed *instead of* coal-based methanol. But if the Chinese methanol-to-olefin industry consumes NWIW's methanol *in addition to* the available coal-based methanol, then NWIW's proposal would result in millions of tons of increased CO₂e pollution each year. Unfortunately, the market analysis in Appendix A of the DSEIS never explains why NWIW's plan to provide more and cheaper methanol to China's olefin producers will not just result in more overall methanol consumption.

First, the market analysis ignores the fundamental economic principle that increasing and cheapening the supply of a good usually results in increased demand for that good.⁶² For instance, when crude oil production spikes and gasoline prices at the pump fall,⁶³ drivers respond, in part, by buying more gasoline.⁶⁴ Similarly, cheapening the production of olefins (by selling NWIW's cheap methanol to Chinese methanol-to-olefin plants) should decrease the market price of olefins, increasing the demand for olefins and their precursor—methanol. Accordingly, the DSEIS' assumption of a 1-to-1 displacement of coal-based methanol (and its GHG emissions) is likely incorrect because the DSEIS does not appear to account for increased olefin demand and consumption as a result of cheapening olefin production. In order to adequately address this issue, the final SEIS would need to examine the market for plastics and other end-uses for olefins. Unless the demand for plastics is static, and demand does not fluctuate in relation to price, cheaper plastics made from NWIW's cheaper methanol would result in increased plastics consumption and a concomitant increase in the GHG pollution associated with plastics manufacture.

Second, the displacement analysis does not deal realistically with China's rapidly expanding demand for methanol or the impact of that expanding demand on future GHG emissions. NWIW's market analysis essentially boils down to this statement: "the low delivered cost" of NWIW's methanol "will displace higher delivered cost product [Chinese coal-based methanol] *in a stable demand environment*."⁶⁵ But the demand for methanol in China is far from

⁶² See The Balance, [Elastic Demand with Its Formula, Curve, and Examples](#) (August 13, 2018).

⁶³ See The Balance, [How Crude Oil Prices Affect Gas Prices](#) (October 29, 2018).

⁶⁴ See New York Times, [When Gas Becomes Cheaper, Americans Buy More Expensive Gas](#) (October 19, 2015).

⁶⁵ DSEIS Appx. A, p. 80 (emphasis added).

stable. Elsewhere, the DSEIS admits that there is “rapid grow in Chinese methanol consumption”⁶⁶ and that “demand for methanol is growing.”⁶⁷ The downfall of NWIW’s theory is that, as demand for methanol in China continues to grow, the Chinese methanol-to-olefin industry will ultimately absorb both NWIW’s production *and* all of the higher-cost methanol produced by Chinese coal-to-methanol plants. At that point, the GHG emissions from NWIW’s proposal would add to, rather than displace, GHG emissions from China’s coal-to-methanol plants. The SEIS must account for this potential increase, and analyze the impacts to the environment as SEPA requires.

NWIW essentially admits that increasing demand for methanol in China will, at some future date, undercut its coal displacement theory, as described in the preceding paragraph.⁶⁸ NWIW’s response to this obvious deficiency in its market analysis is that—at any future level of increased methanol demand—NWIW’s cheap methanol would still be displacing methanol made by some hypothetical future high-cost, high-GHG coal-to-methanol plant that would occupy the marginal position on the methanol supply curve.⁶⁹

The first problem with NWIW’s dismissal of the impact of increasing methanol demand on the displacement theory is that NWIW assumes that China would increase its coal-to-methanol production if methanol demand ever exceeds the capacity of China’s existing coal-to-methanol facilities (plus imports). As explained in Section IV(b) above, China may not necessarily increase its coal-to-methanol production if methanol demand exceeds supply. China recognizes the problematic nature of coal-to-methanol, has already taken steps to limit its production, and could decide to prohibit the construction of any new coal-to-methanol facilities in the future (as China has prohibited natural gas-to-methanol facilities, albeit for different reasons). If China caps or restricts future coal-to-methanol production, the hypothetical future coal-to-methanol plant that NWIW envisions displacing would never have existed anyway and NWIW’s GHG emissions will merely add to the emissions of the existing coal-to-methanol plants that would be operating at full capacity to meet increased methanol demand. Again, the DSEIS fails to account for this reasonably foreseeable outcome.

The second problem with NWIW dismissing the impact that increasing methanol demand will have on displacement is that, even if NWIW would displace some hypothetical future high-cost source of methanol, that source might not be a coal-to-methanol plant (as the DSEIS

⁶⁶ DSEIS Appx. A, p. 64.

⁶⁷ *Id.* at p. 78.

⁶⁸ See DSEIS Appx. A, p. 80 (“As the methanol market continues to grow, some of this displacement of higher cost existing supply may be mitigated . . .”).

⁶⁹ See DSEIS Appx. A, p. 80 (asserting that, even at high levels of methanol demand, “the continued development of high cost CTM or CTO plants will be reduced”).

assumes). As demand increases, the methanol provider on the margin of the supply curve could change from a coal-to-methanol plant to some other source of methanol with higher production costs than coal—but a smaller carbon footprint than NWIW. For instance, if the marginal supplier in a high-demand scenario turns out to be a facility that makes methanol via electrolysis powered exclusively by solar energy,⁷⁰ then NWIW’s methanol would wind up “displacing” a lower-GHG source of methanol. Given rapidly increasing demand for methanol, constantly shifting fossil fuel prices and regulations, and rapidly evolving petrochemical technologies, it is not reasonable to assume that any particular source of methanol will be on the margin of the supply curve in three, five, fifteen, or forty years. Accordingly, NWIW’s assertion that it will be displacing high-GHG coal-derived methanol for the entire lifetime of the Kalama proposal is mere salesmanship and cannot survive the “hard look” required by SEPA.

d. Cheap crude oil and naphtha-derived olefins may displace coal-based olefins independently of NWIW’s proposal.

NWIW’s displacement analysis, focused exclusively on the methanol-to-olefin market, conveniently side-steps the impact that naphtha-derived olefins may have on the production of Chinese coal-based olefins. If the cost of naphtha-based olefins dips (as a result of low crude oil prices) below the cost of coal-based olefins, then (by NWIW’s logic) olefin consumers would purchase naphtha-based olefins to the exclusion of coal-derived olefins. Nevertheless, NWIW fails to explain what crude oil price would allow naphtha-derived olefins to undersell coal-derived olefins or why NWIW expects world crude prices to remain above that magic number for the next 40 years, especially in the current volatile market. One study found that coal-based olefin production in China became unprofitable—and olefin derived naphtha became even more profitable—when the world price of crude was less than \$65 per barrel.⁷¹ As of December 21, 2018, crude oil was trading at around \$50 per barrel.⁷² In fact, WTI crude has only barely climbed above \$65 per barrel on a few occasions in the last four years.⁷³ The displacement theory NWIW has relied on disintegrates under that scenario because cheap crude oil and naphtha could easily remove the Chinese CTO industry with or without NWIW, a possibility conveniently ignored in the DSEIS.

⁷⁰ 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).

⁷¹ Exhibit 5, Qun *et al.*, *A comparison between coal-to-olefins and oil-based ethylene in China: An economic and environmental prospective*, 165 Journal of Cleaner Production 1351–1360, 1356 (2017).

⁷² See Oilprice.com (last accessed December 21, 2018).

⁷³ See Macrotrends, [WTI Crude Oil Prices - 10 Year Daily Chart](http://Macrotrends.com/WTI-Crude-Oil-Prices-10-Year-Daily-Chart) (last accessed December 21, 2018).

NWIW's rejoinder is that the supply of "refinery co-produced olefins [*i.e.* naphtha-derived olefins] will not increase without an expansion in oil refining capacity,"⁷⁴ so Chinese coal-to-olefins will remain marketable because demand for olefins is increasing and there is not a sufficient supply of naphtha to meet that demand. The DSEIS, however, does not provide any data to support its implication that the current or future demand for olefins in China exceed existing naphtha-based olefin supplies. Further, NWIW incorrectly implies that world petroleum refining capacity is not expanding. It is, and growth in global demand for refined products, like naphtha, is tapering off at the same time.⁷⁵ With crude prices remaining low and refinery capacity increasing, cheap naphtha-based olefins could easily disrupt China's coal-to-methanol-to-olefins market. If cheap naphtha displaces coal as a raw material for olefins because of low crude prices, NWIW cannot reasonably claim credit for reducing the GHG footprint of China's olefin industry. The DSEIS therefore does not provide the "hard look" that SEPA requires.

Contrary to the impression generated by the DSEIS, most of the olefins consumed in China are not derived from methanol made from coal *or* fracked gas. The most significant source of olefins consumed in China is actually naphtha,⁷⁶ so comparing the GHG emissions produced by making olefins from naphtha versus NWIW's proposed method should be a key part of the DSEIS. Unfortunately, the DSEIS merely contains this terse statement: "The LCA evaluated the GHG emissions from [the naphtha-to-olefins] process and found it to have greater GHG emissions than the proposed project."⁷⁷ The apparent basis for this statement, found in Appendix A, does not rely on the best available peer-reviewed science. Appendix A asserts that making olefins from naphtha results in 2.32 kg CO₂e/kg olefin, while NWIW's process is slightly more efficient, emitting 1.85 to 2.26 kg CO₂e/kg of olefin.⁷⁸ This comparison overestimates the GHG intensity of producing olefins from naphtha and understates the GHG emissions from NWIW's olefins, making NWIW's proposal appear "greener" than making olefins from naphtha. The GHG intensity of NWIW's olefins is actually higher than reported in this comparison because, as explained in Section III, above, NWIW's estimated upstream methane leakage rate is likely an order of magnitude too low. Conversely, the GHG intensity of naphtha-based olefins reported in peer-reviewed literature is lower than the figure used in this comparison, a reality that the DSEIS acknowledges but fails to explain.⁷⁹ The final SEIS should compare olefin production from

⁷⁴ DSEIS Appx. A, p. 141.

⁷⁵ See Bloomberg Businessweek, *Shale? Here's the Other Wave Washing Into the Oil Market* (March 6, 2018) (noting that the International Energy Agency predicted a 7 million gallon per day increase in refinery capacity by 2023).

⁷⁶ DSEIS Appx. A, p. 141 (acknowledging that "naphtha steam cracking has the largest share of the olefin market").

⁷⁷ DSEIS, p. 3-23.

⁷⁸ DSEIS Appx. A, Table 5.12.

⁷⁹ DSEIS Appx. A, p. 141.

naphtha versus fracked gas once the GHG emissions of production from naphtha and fracked gas are adequately quantified.

V. Additional Problems with the Life Cycle Analysis.

a. The DSEIS presents outdated and irrelevant information about methane's impact on our climate.

The DSEIS relies on outdated scientific information about methane's global warming potential (GWP). Specifically, the DSEIS uses a value for methane's GWP of 25, which is from the IPCC's 2007 Fourth Assessment Report (AR4), but it has since been updated by the IPCC's Fifth Assessment Report (AR5).⁸⁰ While some governments may still use the 2007 value to report GHG emissions for consistency, it would be arbitrary to ignore the latest science in a SEPA document assessing the actual impacts of the Kalama facility's GHG emissions.⁸¹

The DSEIS violates SEPA by exclusively using the 100-year GWPs. To disclose the near-term impact of emissions, the DSEIS should use the 20-year GWP instead of, or at least in addition to, the 100-year value.⁸² As the IPCC explained, "The choice of emission metric and time horizon depends on type of application and policy context"⁸³ Twenty years is a far more relevant time scale for discussing climate impacts due to methane pollution than one hundred years. Reducing GHG emissions and impacts over these next 20 years is crucial because that is the time period in which our global society must take action to limit climate change: CO₂e emissions need to reach net zero around 2050 to have a 50 percent chance of limiting warming to 1.5 degrees Celsius.⁸⁴ Recent reports by the IPCC⁸⁵ and the U.S. government⁸⁶ also illustrate that severe climate change impacts could be felt as early as 2040 if current emission trends continue. Because avoiding these GHG thresholds and impacts are relevant policy goals, ignoring the 20-

⁸⁰ DSEIS Appx. A, p. 4.

⁸¹ See *W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *16 (D. Mont. Mar. 26, 2018) (holding, in analogous context, that agency acted arbitrarily by only evaluating methane using outdated global warming potential).

⁸² See, e.g., Tong, *Comparison of Life Cycle Greenhouse Gases from Natural Gas Pathways for Medium and Heavy-Duty Vehicles*, 49 Environmental Science & Technology 12 (2015) (a study, cited in the DSEIS, that presented both the 20- and 100-year methane GWPs when describing the life cycle methane emissions from fracked gas production).

⁸³ IPCC, AR5, p. 87 (2014).

⁸⁴ Rogelj *et al.*, [*Energy system transformations for limiting end-of-century warming to below 1.5°C*](#), Nature Climate Change, Vol. 5 (June 2015).

⁸⁵ IPCC, [*Special Report: Global Warming of 1.5 °C*](#) (October 1, 2018).

⁸⁶ U.S. Global Change Research Program, [*Fourth National Climate Assessment, Volume II: Impacts, Risks, and Adaptation in the United States*](#) (November 23, 2018).

year GWP of NWIW's methane pollution violates SEPA's purpose, because it will result in uninformed decision-making. Moreover, in an analogous case in under the National Environmental Policy Act, a federal court decided that an agency acted arbitrarily by only evaluating the long-term GWP of methane pollution.⁸⁷ The DSEIS' proffered justification for using the 100-year GWP—"for consistency with International, United State and Washington reporting requirements"⁸⁸—has little if any relevance to the merits of NWIW's proposal. Discussing the 100-year global warming potential of methane is not helpful to decision-makers or the public because the effects of, and meaningful responses to, methane emissions must occur much sooner.

The 20-year GWP of methane is used in the lifecycle analysis just once—buried on page 99 of Appendix A of the DSEIS. Even accepting the DSEIS' untenably low upstream methane leakage rate, using the 20-year GWP of methane brings the life cycle GHG emissions attributable to NWIW's proposal to around 3 million tons of CO₂e per year. That would make NWIW the second largest individual cause of GHG pollution in Washington, and the largest when TransAlta is decommissioned.⁸⁹ The DSEIS also misleadingly suggests that using the 20-year GWP of methane actually makes NWIW's proposal *better* for our climate in the near-term.⁹⁰ Here again, NWIW is relying on its dubious "coal displacement" theory, and some very aggressive estimates of coal-bed methane leakage, to obscure the methanol proposal's huge climate footprint. As set forth above, reliance on the coal displacement theory is arbitrary and capricious, and the DSEIS therefore fails to provide the "hard look" at methane emissions that SEPA requires.

b. The life cycle analysis should describe the GHG emissions from burning NWIW's methanol as fuel.

Based on the publicly available information, it is just as likely that NWIW's methanol will be burned for fuel as converted into olefins. While the DSEIS states—without any documentary evidence, guarantee, or enforceability—that NWIW "intended" for all of the methanol to be made into olefins,⁹¹ Wu Lebin, president of the Chinese Academy of Sciences Holding Company (which controls NWIW) has recently and repeatedly told media outlets that some or all of NWIW's methanol could be used for fuel.⁹² Given the growing demand for

⁸⁷ See *W. Org. of Res. Councils v. U.S. Bureau of Land Mgmt.*, No. CV 16-21-GF-BMM, 2018 WL 1475470, at *16 (D. Mont. Mar. 26, 2018).

⁸⁸ DSEIS Appx. A, p. 4.

⁸⁹ See DSEIS, Table 3-1. Top 15 Individual GHG Emission Sources in Washington (2016).

⁹⁰ DSEIS Appx. A, p. 99.

⁹¹ DSEIS, p. 3-23; DSEIS Appx. A, pp. ix, 1, 6.

⁹² *Columbia Riverkeeper et al., Scoping Comments on the New EIS for the Kalama Methanol Refinery*, p. 10 (March 1, 2018).

methanol for fuel and olefin production in China, either outcome is entirely plausible. The DSEIS, however, cannot merely rely on empty statements of intent, especially where those assertions have been undermined by statements made elsewhere by the project proponent. SEPA requires a hard look at the reasonably foreseeable consequences of each proposal, not the project proponent's intended consequences.

The GHG emissions resulting from using methanol to make fuel is quantifiable and the analysis of such emissions should be included as a foreseeable alternative end product and included in SEPA analysis. Moreover, NWIW's representations about the end use of the methanol are suspect because the company understands that the viability of its proposal likely hinges on NWIW's ability to distinguish methanol from LNG and other fossil fuel exports that are unpopular in the Pacific Northwest. Therefore, the final SEIS lifecycle analysis should contain an alternative that discloses the GHG emissions attributable to burning NWIW's methanol as fuel, as well as an alternative focused on turning it into olefins.

VI. SEPA requires the disclosure, and analysis of the impacts, of a new regional fracked gas pipeline.

Commenters reiterate their request, contained in multiple previous SEPA comments, that the final SEIS disclose and discuss the impact of a new regional gas pipeline that would be an indirect and/or cumulative impact of NWIW's Kalama proposal, as required by SEPA.⁹³ The DSEIS discusses non-GHG related changes and information updates to NWIW's proposal, as well as related actions like the Kalama Lateral Pipeline and electrical supply improvements.⁹⁴ Similarly, the DSEIS should have addressed new information on the construction of another major fracked gas pipeline into the Pacific Northwest that would be triggered by NWIW's massive fracked gas consumption.

a. A new regional gas pipeline into the Pacific Northwest would be an indirect impact of NWIW's demand for fracked gas.

A new regional fracked gas pipeline into the Pacific Northwest is an indirect effect of the Kalama methanol refinery that must be addressed in the EIS. "A proposal's effects include . . . indirect impacts caused by the proposal" and include the impacts resulting from growth—such as new regional pipeline infrastructure—caused by a proposal.⁹⁵ Given the nature of the Kalama methanol refinery and the state of the regional gas pipeline system, the most reasonable assumption is that gas supply for the Project will require expansion of the regional pipeline

⁹³ WAC 197-11-792 (requiring analysis of a proposal's indirect and cumulative impacts).

⁹⁴ DSEIS, p. 1-4.

⁹⁵ WAC 197-11-060(4)(d).

system.⁹⁶ As such, the expansion of the regional pipeline system necessitated by NWIW's massive gas demand is an indirect effect of the methanol refinery that must be addressed in the EIS.

New information supports Commenters' long-held assertion that the Kalama methanol facility would place a strain on regional pipeline capacity and ultimately cause a new regional pipeline to be built. A representative of the Northwest Industrial Gas Users (NWIGU) recently told the Oregon Public Utilities Commission that "our region is now experiencing high [gas] prices . . . not from an actual supply shortage but from an infrastructure constraint"⁹⁷ (*i.e.* limited pipeline capacity into the Northwest). Similarly, in early 2018, NWIGU told the Washington Utilities and Transportation Commission that the "Northwest Pipeline capacity into [the Puget Sound area] is fully contracted" and "the need for an expansion of Northwest Pipeline to meet growth in peak day demand" could occur within "a year or two."⁹⁸ The Northwest Gas Association's 2018 Outlook also demonstrates that the Pacific Northwest has a tight supply-demand balance under current circumstances.⁹⁹ Accordingly, the addition of 320,000 Dth/D of new demand from the Kalama methanol refinery would push the region over the threshold at which a new regional pipeline would be constructed, making a new regional pipeline an undisclosed indirect impact of NWIW's proposal in violation of SEPA.

b. A new regional gas pipeline into the Pacific Northwest would be a cumulative impact of NWIW's demand for fracked gas.

A new regional fracked gas pipeline into the Pacific Northwest is, at least, a cumulative impact of the Kalama methanol refinery that must be addressed under SEPA.^{100, 101} The Washington Shorelines Hearings Board explained that SEPA requires agencies "to consider the effects of a proposal's probable impacts combined with the cumulative impacts from other

⁹⁶ See Columbia Riverkeeper, *Supplemental Comments on Kalama Methanol Draft EIS* (September 12, 2016).

⁹⁷ Willamette Week, [*A Natural Gas Pipeline Explosion in British Columbia Spikes Prices in Portland and Raises Questions About Oregon's Energy Future*](#) (December 12, 2018).

⁹⁸ See Exhibit 6, NWIGU, *Comments on Puget Sound Energy's 2017 Final IRPs* (February 22, 2018).

⁹⁹ Northwest Gas Association, [*2018 Outlook*](#), Appendix A5 (2018).

¹⁰⁰ WAC 197-110060(4)(e); WAC 197-11-330(3)(c) ("Several marginal impacts when considered together may result in a significant adverse impact."); *White v. Kitsap Cnty.*, SHB No. 09-019 at 17 (2009) (cumulative impacts of a proposed action together with the impacts of pending and future actions should be considered).

¹⁰¹ See also Exhibit 7, Columbia Riverkeeper, *Letter to Army Corps of Engineers Regarding Cumulative Impacts of the Kalama Methanol Refinery* (August 9, 2018).

proposals. . . .”¹⁰² As explained in more detail below, the incremental impact of the Kalama methanol refinery’s demand for fracked gas—when added to the existing demand for fracked gas in the Pacific Northwest and the reasonably foreseeable demand from NWIW’s proposed Port Westward methanol refinery—would necessitate the construction of a new regional fracked gas pipeline into the Pacific Northwest. A new regional gas pipeline into the Pacific Northwest is therefore a cumulative impact of the Kalama methanol refinery.

Together, the demand for fracked gas created by NWIW’s proposed methanol refineries at Port Westward and Kalama would exceed our region’s existing gas pipeline supply capacity, necessitating a new regional fracked gas pipeline. NWIW cannot reasonably dispute this fact because Clay Riding—long-time gas industry expert and Vice President of Energy Resources for NWIW—recently admitted it.¹⁰³ Gas industry documents supplied in Section VI(a), above, also explain that NWIW’s proposed refineries, which would together likely exceed 600 dekatherms per day of fracked gas demand, would exceed the supply capacity of the regional gas pipeline system.

NWIW’s additional gas demand is reasonably foreseeable because NWIW has a specific, active proposal to construct a fracked gas to methanol refinery at Port Westward, Oregon. As of today’s date, the “Projects” page of NWIW’s website explains that NWIW is “investing nearly \$4 billion in the construction of facilities at the Port of Kalama in Washington State and Port Westward in Oregon State” and that “NWIW is working closely with the Port of St. Helens in Oregon to develop plans for a facility at the Port Westward Industrial Park.” NWIW also has a detailed lease option agreement to allow construction and operation of the proposed methanol refinery at Port Westward.¹⁰⁴ And earlier this year, NWIW reaffirmed its interest in developing the proposed methanol refinery at Port Westward by negotiating an extension of its exclusive lease option until February 2020.¹⁰⁵

The parameters of NWIW’s proposal at Port Westward are sufficiently defined to allow the inclusion of the Port Westward methanol refinery’s fracked gas demand in the cumulative impacts analysis for the Kalama methanol proposal. As NWIW president Vee Godley explained to Port of St. Helens Executive Director Doug Hayes on March 17, 2018:

¹⁰² *Quinault Indian Nation v. Hoquiam*, SHB No. 13-012c, Order on Summary Judgment, p.18 (Dec. 9, 2013)

¹⁰³ Personal communication between Clay Riding, Vice President of Energy Resources for NWIW, and Jasmine Zimmer-Stucky, Senior Organizer for Riverkeeper (May 25, 2018) (further documentation available upon request).

¹⁰⁴ *Lease Option Agreement between NWIW and Port of St. Helens*, pp.6–7 (February 12, 2014) (available upon request).

¹⁰⁵ See [Port of St. Helens Resolution 2018-3](#) (February 14, 2018).

“NW[IW] is in the process of developing a world scale state of the art methanol manufacturing facility at your Port Westward location producing 10,000 Tonnes per day of methanol for the dedicated use in the fine chemicals materials industries. To manufacture methanol, we have various utility and feedstock requirements including a requirement for approximately 210 megawatts of steady state power.”¹⁰⁶

The amount of methanol, and the electricity demand, referenced in Mr. Godley’s letter are identical to the Kalama refinery proposal, so the fracked gas demand from both refineries should be similar if not identical. Additionally, correspondence from the Port of St. Helens to Columbia County described the exact location of the planned refinery and contained NWIW’s representations about some details of the Port Westward and Kalama proposals.¹⁰⁷ Even though the Port Westward methanol refinery is neither fully permitted nor absolutely certain to be constructed, the availability of specific information and NWIW’s prolonged interest make the Port Westward methanol refinery a “reasonably foreseeable” proposal for NEPA purposes that must be addressed in the cumulative impacts analysis for NWIW’s Kalama methanol refinery.

VII. NWIW’s proposed mitigation is misleading, incomplete, and violates SEPA.

The DSEIS impermissibly conflates the requirement to consider a range of alternatives with the requirement to consider mitigation measures. Alternatives analysis and mitigation requirements are two distinct concepts and requirements under both SEPA and its federal analog, the National Environmental Policy Act (NEPA). Both are necessary for compliance with the law. Yet the DSEIS conflates and muddles the requirements, using the ULE process “alternative”—and other “alternatives” such as shore power for berthed vessels—to pose as “mitigation.” Conflating these two core EIS requirements violates SEPA and misleads the public and decision makers about the actual nature of the GHG mitigation that NWIW is proposing.

An EIS, or a supplement thereto, must provide a reasonable set of alternatives (the preferred action and one or more alternatives) as well as separate discussion of mitigation measures.¹⁰⁸ The section of an EIS that includes analysis of mitigation measures is “not intended to duplicate the [alternatives] analysis in subsection (5) and *shall avoid doing so to the fullest extent possible*.”¹⁰⁹ Regarding mitigation, the EIS must “[c]learly indicate those mitigation measures (*not described in the previous section as part of the proposal or alternatives*), if any,

¹⁰⁶ *Letter from Godley (NWIW) to Hayes (Port of St. Helens)* (March 17, 2018) (available upon request).

¹⁰⁷ *Email and attachments from Paula Miranda (Port of St. Helens) to Henry Heimuller (Columbia County)*, (April 10, 2018) (available upon request).

¹⁰⁸ WAC 197-11-440(5) and (6)

¹⁰⁹ WAC 197-11-440(6)(b)(iii) (emphasis added).

that could be implemented or might be required”¹¹⁰ Alternatives and mitigation are further defined in the regulations as separate and distinct concepts.¹¹¹ Based on Washington regulations alone, the DSEIS’ consideration of the ULE refining process as both an alternative production process and mitigation of the emissions from production violates SEPA.

Washington case law also demonstrates that the two concepts must be kept separate. In *Citizens for Safe and Legal Trails v. King County*, the court explained that while “alternatives” include analysis of alternatives for achieving the project purpose that may be less environmentally damaging than the preferred action, mitigation measures are to address environmental impacts after an alternative is chosen.¹¹² That is, any alternative may have environmental effects, and mitigation measures address the effects that will occur regardless of the choice of alternatives.¹¹³

Similarly, federal NEPA case law¹¹⁴ addresses alternatives and mitigation analysis as two separate components, with mitigation analysis required in addition to discussion of alternatives. The Ninth Circuit recently stated that the discussion of mitigation measures in an EIS is intended to show how adverse environmental impacts that will occur after the construction of a project might be alleviated, regardless of whichever alternative is chosen.¹¹⁵

NWIW’s continued reliance on this approach in the DSEIS is directly contrary to the plain requirements of Washington regulation and case law. The ULE process and the use of shore power cannot serve as both project alternatives and “mitigation.” Doing so tests the logical definition of mitigation and merely incentivizes applicants like NWIW to manufacture alternatives that would have worse impacts than the preferred alternative and, rejecting them, call that “mitigation.” The DSEIS’s “mitigation” is just the choice between two manufacturing alternatives, both of which would create a huge increase in greenhouse gas pollutants from a new petrochemical plant.

¹¹⁰ WAC 197-11-440(6)(c)(iii) (emphasis added).

¹¹¹ See WAC 197-11-768 and 786.

¹¹² *Citizens for Safe and Legal Trails v. King County*, 118 Wn. App. 1048 (2003).

¹¹³ See *Citizens for Safe and Legal Trails*, 118 Wn. App. at ¶ 9. See also *Victoria Tower Partnership v. City of Seattle*, 59 Wn. App. 592, 601 and 603 (1990) (holding that the primary function of an EIS is to first identify potential adverse impacts from an action to then enable the agency decision-maker to ascertain whether and to what extent to require mitigation or to deny the proposal).

¹¹⁴ Washington courts will look to federal case law interpreting and applying National Environmental Policy Act (“NEPA”) for guidance in interpreting and applying SEPA. 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); *Gebbers v. Okanogan PUD No. 1*, 144 Wn.App. 371 (2008).

¹¹⁵ *Protect Our Communities Foundation v. Jewell*, 825 F.3d 571, 582 (9th Cir. 2016).

Besides being incomplete and misleading, NWIW's newly-disclosed "100 percent" mitigation proposal is completely devoid of substance or enforceability. SEPA guidance requires NWIW to "clearly identify the mitigation measures" NWIW is proposing and describe whether those measures are mandatory or potential.¹¹⁶ And Ecology recently reiterated its preference for GHG emission mitigation measures that are real, specific, identifiable, quantifiable, verifiable, and permanent.¹¹⁷ NWIW's vague offer to mitigate a portion of its GHG emissions by paying for unknown, unspecified carbon credits from undisclosed carbon markets, banks, or funds does not meet any of these requirements. Vaguely promising partial "voluntary" mitigation, but failing to provide any details about that mitigation or its impacts, does not satisfy Ecology's SEPA guidance regarding mitigation or the "hard look" requirement.

Most of NWIW's sizeable carbon footprint would come from GHG pollution occurring outside of Washington's borders. In response, NWIW recently promised to mitigate "100 percent of its GHG emissions"—but only those that occur inside Washington.¹¹⁸ This makes little practical sense and will not provide meaningful offsets to mitigate the impacts of the project. This further ignores the fact that NWIW's upstream and downstream GHG emissions will affect Washington's climate, natural resources, and communities in exactly the same way as NWIW's emissions that occur inside of Washington.

VIII. NWIW's proposal would add to the plastic pollution choking our oceans.

Plastic pollution, especially in the world's oceans, is a long-acknowledged problem and the focus of increasing global concern. A recent study concluded that, in 2010 alone, between 4.8 and 12.7 million metric tons of land-based plastic garbage found its way into our oceans.¹¹⁹ And the "quantity of plastic waste available to enter the ocean from land is predicted to increase by an order of magnitude by 2025."¹²⁰

If, as NWIW intends, its methanol would be made into plastic products, the SEIS should explain the amount and likely fate of those plastic products at the end of their useful life and the consequent impacts on the human environment. First, the SEIS should explain how much plastic would be generated from NWIW's methanol over the project's lifetime. The EIS should also explain how methanol-based plastic waste makes its way into the environment and, specifically,

¹¹⁶ Washington State Department of Ecology, *Publication No. # 98-114: State Environmental Policy Act Handbook*, p. 57 (2003).

¹¹⁷ Exhibit 4, p. 2.

¹¹⁸ DSEIS, p. 3-31.

¹¹⁹ Jambeck, *et al.*, *Plastic waste inputs from land into the ocean*, 347 *Science* 769–771 (2015).

¹²⁰ *Id.*

the world's oceans. After being used, what percentage of plastics is recycled, put into landfills, burned, or reach the ocean?

To the extent possible, the SEIS should estimate how much of the plastic derived from NWIW's methanol would ultimately enter the ocean, based on the total volume of plastic produced over the project's lifetime, the likely destinations and uses of such plastic products, and the rate at which such plastics enter the world's oceans. Data presented in the article in the journal *Science*, "Plastic waste inputs from land into the ocean,"¹²¹ may assist in making such calculations.

The SEIS should also examine the cumulative impact of how the growth of North American petrochemical facilities, like NWIW, affects the quantity of plastic trash entering our oceans. There is a direct link from cheap and plentiful North American shale gas to expanded plastics production, and from there to increased marine plastic pollution.¹²² Even if the direct impact of NWIW's contribution to marine plastics pollution difficult to describe, NWIW is part of a continent-wide increase in the manufacture of plastics precursors driven by a glut of cheap shale gas. This industry growth will increase plastics production by 40 percent,¹²³ with corresponding and measurable increases in marine plastics pollution. The SEIS should therefore at least discuss the cumulative impact of marine plastics pollution from NWIW and similar facilities that are currently proposed or recently activated in North America.

IX. The Port, NWIW, and Life Cycle Associates' conflicts of interest undermine the DSEIS' conclusions.

The entities responsible for producing the DSEIS—the Port, NWIW, and Life Cycle Associates—each have significant financial incentives to produce a report showing the lowest possible climate impact. The political and regulatory realities surrounding this proposal are clear; Washington's leaders and public demand real action to address the worsening impacts of climate change. Admitting that this project would result in a massive net addition of greenhouse gas (GHG) pollution into our atmosphere would severely jeopardize the proposal's ability to obtain key permits and millions of dollars in public subsidies.

The financial incentives are clear. NWIW hopes to reap massive profits by arbitraging cheap North American fracked gas, exported in the form of methanol. According to NWIW's

¹²¹ *Id.*

¹²² The Guardian, [*\\$180bn investment in plastic factories feeds global packaging binge*](#) (December 26, 2017).

¹²³ *Id.*

2013 projections, the project would generate \$150 million of profit each year.¹²⁴ The Port is guaranteed at least \$1.8 million in cash each year based on methanol wharfage alone, and this amount does not include rent or dockage fees also guaranteed to the Port.¹²⁵ Finally, Life Cycle Associates is substantially more likely to obtain similar lucrative contracts from project developers in the future if it under-estimates NWIW's climate impacts. Indeed, Life Cycle Associates' highly questionable analysis of the upstream methane emissions from the Tacoma LNG facility¹²⁶ likely enticed NWIW to retain the firm. Handing SEPA review over to these three entities is the regulatory equivalent of appointing the proverbial fox to guard the henhouse.

Unfortunately, but unsurprisingly, the financial interests of the project proponents and their consultant resulted in a self-serving and inaccurate assessment of the proposal's climate impacts. This bias permeates the entire DSEIS, but is highly visible when, for example, the DSEIS ignores the best available science about upstream methane leakage rates or switches between using the 20- and 100-year GWP for methane based on which portrays the proposal more favorably.

This conflict of interests was completely foreseeable and could have been avoided had the Washington Department of Ecology (Ecology) not abdicated its authority¹²⁷ to perform the SEPA analysis (or had the Washington Energy Facility Site Evaluation Counsel exercised its jurisdiction over this massive fossil fuel export facility). Despite these missteps, if the project proponents insist on carrying forward their flawed and self-serving analysis into a Final SEIS, Ecology should to prepare its own SEIS¹²⁸ to objectively describe the proposal's GHG emissions prior to deciding whether, and under what conditions, to approve the Shorelines Conditional Use Permit.

CONCLUSION

Please re-examine the DSEIS' 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 public health. NWIW's proposal—which, at its core, is no different than previously rejected coal, crude oil, and LNG export schemes on the

¹²⁴ Exhibit 8. Pan-Pacific Energy Corp, *Port of Kalama Methanol Project Business Plan*, p.28 (Dec. 2013).

¹²⁵ See *Dock Usage Agreement between the Port of Kalama and NWIW Kalama, LLC*, §§ 1.10, 1.11, 4.1, and 4.2 (April 9, 2014).

¹²⁶ See Exhibit 3; see also Exhibit 4.

¹²⁷ WAC 197-11-938(9); see also *Letter from Vee Godley (NWIW) to Sally Toteff (Ecology)*, p. 1 (Aug. 25, 2015) ("Ecology could have taken on the SEPA lead agency duties for the Kalama proposal under WAC 197-11-938(9) given that the storage tanks' capacity exceeded 1,000,000 gallons") (available on request).

¹²⁸ As contemplated and authorized by WAC 197-11-600(3)(b) & (c).

Columbia—does not embody the “global transition to a carbon-free future”¹²⁹ that Washington State demands and deserves.

Sincerely,



Miles Johnson, Senior Attorney for Columbia Riverkeeper

Submitted on behalf of:

*Columbia Riverkeeper
Sierra Club
Center for Biological Diversity
Stand.earth
Oregon Physicians for Social Responsibility
Food and Water Watch
Washington Physicians for Social Responsibility
350 PDX
Rogue Climate
350 Seattle
350 Tacoma
350 Eastside
Bark
Green Energy Institute
Center for Sustainable Economy
Cascadia Wildlands*

Exhibits:

- Exhibit 1: Alvarez, *et al.*, *Assessment of methane emissions from the U.S. oil and gas supply chain*, Science (2018).
- Exhibit 2: Sierra Club, *Fracked Gas: Nothing “Natural” About It* (2018).
- Exhibit 3: Washington Attorney General, *Comment to PSCAA on DSEIS for PSE LNG Project* (Nov. 21, 2018).

¹²⁹ Governor Jay 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)).

- Exhibit 4: Washington Department of Ecology, *Comment to PSCAA on DSEIS for PSE LNG Project* (Nov. 21, 2018).
- Exhibit 5: Qun *et al.*, *A comparison between coal-to-olefins and oil-based ethylene in China: An economic and environmental prospective*, 165 *Journal of Cleaner Production* 1351–1360, 1356 (2017).
- Exhibit 6: NWIGU, *Comments on Puget Sound Energy's 2017 Final IRPs* (February 22, 2018).
- Exhibit 7: Columbia Riverkeeper, *Letter to Army Corps of Engineers Regarding Cumulative Impacts of the Kalama Methanol Refinery* (August 9, 2018).
- Exhibit 8: Pan-Pacific Energy Corp, *Port of Kalama Methanol Project Business Plan* (Dec. 2013).

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WASHINGTON
PHYSICIANS
FOR SOCIAL
RESPONSIBILITY

FRACKED GAS INFRASTRUCTURE:

A THREAT TO HEALTHY COMMUNITIES

A Special Report and Recommendations to the Governors of Oregon and Washington
by
Oregon Physicians for Social Responsibility
and
Washington Physicians for Social Responsibility

June 2019

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ACKNOWLEDGEMENTS:

Oregon Physicians for Social Responsibility (OPSR) and Washington Physicians for Social Responsibility (WPSR) wish to thank the following collaborators for their expert review, comments, and contributions to this document: Eric de Place, Dr. Alice Suter, Dan Serres, Erin Lee, and Patricia Weber.

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10. Hydraulic Fracturing Chemicals

EXECUTIVE SUMMARY

Introduction

- Six major fracked gas¹ infrastructure projects are proposed in Oregon and Washington, including pipelines, refineries, liquefaction, and export facilities.
- The locales targeted for these developments are economically stressed and suffer a disproportionate burden of underlying morbidity and mortality.
- The new gas infrastructure threatens to degrade the health of these communities.
- Massive increases in greenhouse gas emissions associated with the infrastructure would also contribute significantly to climate change.

Climate Change and Health

- Regional climate change effects include drought, floods, extreme weather events, forest fires, sea-level rise, and ocean acidification.
- Climate change related adverse health effects include traumatic injury, death, heart disease, lung disease, infectious disease, heat-related disorders, stress, and mental health disorders.
- Those most susceptible to the ill effects of climate change include low income and immigrant persons, communities of color, babies, pregnant women, the elderly and those with chronic disease.

Communities at Risk

- Communities targeted for gas infrastructure development have lower median household incomes and higher unemployment rates.
- Residents also suffer higher rates of overall mortality, premature mortality, cancer, cardiovascular disease, and lung disease.
- Nearly all targeted communities are rated as those most vulnerable to climate change.
- Tribal communities would suffer disproportionate impacts on their traditional economic, spiritual, and cultural practices.

¹ The major share of so-called natural gas entering the Pacific Northwest, the chief component of which is methane gas, is extracted through the unconventional process of hydraulic fracturing or “fracking.” Throughout this document it will be referred to as “fracked gas.”

Air Pollution

- The full extent of air pollution due to the fracked gas industry is under-researched and inadequately understood due to a lax regulatory environment, inadequate air quality monitoring, and industry secretiveness.
- Documented toxic emissions from fracked gas transport and processing facilities include diesel particulate matter, nitrogen oxides, carbon monoxide, volatile organic compounds, polycyclic aromatic hydrocarbons, formaldehyde, ozone, and heavy metals.
- These air toxics are linked to cancer; cardiovascular, pulmonary, neurological, hormonal and developmental disorders; and poor pregnancy outcomes.

Water Pollution

- Local economies are dependent on abundant clean and fresh water for human consumption, agriculture and livestock, manufacturing, transportation, energy production, and recreation.
- Fracked gas infrastructure consumes massive quantities of water while discharging thousands of chemicals, with known adverse health effects, including cancer, into waterways and drinking water systems.
- Pipeline construction and operation can increase turbidity, remove riparian vegetation and increase stream temperatures, increasing the risk of harmful algae blooms and loss of drinking water.
- Construction and operation of pipelines and processing plants and/or related dredging degrade aquatic habitat for commercially and culturally important fish, shellfish, and other wildlife.

Noise Pollution

- Fracked gas infrastructure is associated with high levels of both intermittent and continuous noise.
- Exposure to high levels of noise is linked to hearing loss, hypertension, reduced learning and productivity, hormonal disruption, and heart disease.
- Construction activities are exempt from noise regulation in both Oregon and Washington.

Natural and Human-caused Disasters

- Fracked gas and its products are highly flammable and explosive; gas pipelines have a particularly poor safety record.

- Fracked gas infrastructure in the Pacific Northwest is uniquely vulnerable to the risks of earthquake, tsunami, inundation, and wildfire.
- Fires, explosions, and vapor clouds lead to traumatic injury and death as well as toxic releases into air and water.

Occupational Health and Safety

- The gas industry is exempt from disclosing the chemicals they use and from most federal statutes protecting worker health and safety.
- Workers in the fossil fuel industry are exposed to myriad health risks and are killed on the job at rates four to seven times higher than other industries.
- Workers in the fracked gas industry are vulnerable to industrial accidents, exposure to benzene, hydrogen sulfide and other toxins, silicosis, and exposure to radiation and noise.

Temporary Labor Camps

- Temporary labor camps associated with fracked gas facilities impose outsized impacts on local infrastructure, public services, and public health through increases in crime, drug use, assaults, kidnapping, sex trafficking, and sexually transmitted infections.
- Native American communities, especially women and girls, have suffered disproportionately from these impacts.

Health Effects of Hydraulic Fracturing (Fracking)

- Most of the gas piped into Oregon and Washington is fracked gas.
- The fracking process degrades the environment of surrounding communities through toxic contamination of air and water with hundreds of chemicals with known associations to cancer, heart and lung disease, developmental disorders, and poor pregnancy outcomes.

INTRODUCTION

Planet Earth, according to the October 2018 special report from the Intergovernmental Panel on Climate Change (IPCC),² has now already warmed by 1.0° C above pre-industrial levels. The report, by the United Nations body for assessing the science related to climate change, reiterates the need to limit global warming to 1.5° C to avoid rendering large swaths of the world uninhabitable with devastating effects on human health and well-being.

But according to a January 2019 report by Oil Change International, “Between now and 2030, the United States is on track to account for 60 percent of world growth in oil and gas production, expanding extraction at least four times more than any other country.”³ Independent researchers drew on industry and governmental data sources to make the case that this level of production would prohibit achieving the IPCC goal of 1.5° C global warming.⁴

The Pacific Northwest figures large in the gas sector’s plans for transporting, refining, processing, liquefying, and exporting fracked gas and its products. The fracking boom in the U.S., along with growing Canadian extraction of gas, has produced an abundant supply of cheap gas⁵ which has outstripped domestic markets, leading corporate owners to seek overseas markets, primarily in Asia. To the gas industry, the West Coast is ideally situated for the development of processing and export facilities. Six separate proposals in Oregon and Washington, if brought to completion, would entail massive increases in global fracked gas consumption and greenhouse gas (GHG) emissions and would accelerate the pace of global warming.^{6 7 8} This unprecedented expansion of fracked gas infrastructure on the lands, waterways, and coastlines of the Pacific Northwest presents unacceptable risks to the health of our communities, both local and global.

² (Intergovernmental Panel on Climate Change, 2018)

³ (Trout, January, 2019)

⁴ (Mutitt, 2016)

⁵ (U.S. Energy Information Administration, n.d.)

⁶ (DePlace E. &, 2018)

⁷ (Erickson, Towards a Climate Test for Industry: Assessing a Gas-based Methanol Plant, 2018)

⁸ (Stockman & McGarry, Jordan Cove and Pacific Connector Pipeline Greenhouse Gas Emissions, 2018)

The Projects

Proposals for new fracked gas infrastructure include:

- Jordan Cove Liquefied Natural Gas (LNG) project, also known as the Jordan Cove Energy Project, in Coos Bay, Oregon, which proposes to receive up to 1.2 billion cubic feet of gas per day and export up to 7.8 million metric tons of LNG annually to markets in Asia.⁹ The LNG facility would be located on the north spit of Coos Bay, 7.5 miles upstream from the mouth of the channel. Less than a quarter mile across the waterway lies the town of North Bend and the Southwest Regional Airport. The 500-acre parcel of land on which the facility and terminal would be sited also lies on the traditional territory of the Coos Tribe, Siletz Tribe and others.
- Jordan Cove LNG includes construction of the Pacific Connector Gas Pipeline (PCGP), a three-foot diameter, 229-mile pipeline through four rural counties in southwest Oregon, which would transport up to 1.2 billion cubic feet of fracked gas per day to the Jordan Cove facility. The pipeline would stretch between the town of Malin in Klamath County to Jordan Cove in Coos County, slashing through pristine wilderness areas of southwest Oregon, multiple drinking watersheds, as well as hundreds of farms, ranches, and small towns and the traditional territories of many tribes, including the Klamath, Yurok, and Karuk tribes who oppose the project. Eminent domain would need to be deployed to force hundreds of local landowners to accommodate the pipeline.
- Curzon Energy coal bed methane extraction wells, which involve an unconventional extraction process distinct from hydraulic fracturing. Curzon owns 47,000 acres of coalbed gas accumulations in rural Coos County where they have drilled 5 wells and laid 4 miles of pipeline.¹⁰ As of December 2018 the project has been suspended due to lower than expected yields.¹¹ However, an April 2019 report to investors states that deeper drilling and exploration in Coos County is proceeding.
- Kalama Methanol Refinery, the world's largest methane to methanol refinery in the Port of Kalama, Washington, which would produce up to 3.6 million tons of methanol annually for export to China.¹² ¹³ The company, Northwest Innovation Works (NWIW), also proposes a

⁹ (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

¹⁰ (Curzon Energy, n.d.)

¹¹ (Proactiveinvestors, 2018)

¹² (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

methanol refinery of similar size in Port Westward, Oregon.¹⁴ The refinery in Kalama would be sited on the Columbia River at the north end of the Port of Kalama Marine Park, about 2 miles from downtown Kalama and less than 1 mile from residences. The project includes construction of a new 3-mile pipeline, the Kalama Lateral Pipeline.

- The second NWIW proposed methanol refinery would be constructed at Port Westward, in the Columbia River Estuary, which includes juvenile salmon habitat. It could be located about 8 miles away from the town of Clatskanie and in the midst of prime agricultural land.
- Pacific Coast Fertilizer, a proposed fertilizer plant in Longview, Washington, would utilize 50 million cubic feet of methane per day to produce anhydrous ammonia-based fertilizer for local markets.¹⁵ The plant would be located on the Mint Farm Industrial Park which lies in close proximity to residential neighborhoods.
- Puget Sound LNG in Tacoma, Washington, which would produce up to 500,000 gallons of LNG per day for use primarily as a domestic commercial marine fuel.^{16 17} The facility is being constructed on 33 acres of the Blair-Hylebos Peninsula in the Port of Tacoma, directly on top of traditional and culturally important Puyallup Indian tribal lands. The site is also adjacent to 3 sites still undergoing clean-up processes related to historic industrial contamination. The project will require construction of 5 miles of connecting gas pipelines.

A map illustrating the locations of these facilities can be found [here](#).

The gas industry also hopes to expand local residential and commercial markets for gas through smaller projects like the Williams Company upgrade of the North Seattle Lateral Pipeline. This seemingly modest project would have the potential to increase carbon pollution in Washington State by as much as 5%, while attracting less regulatory attention.¹⁸

No hydraulic fracturing (fracking) wells are currently operational or proposed in either Oregon or Washington. According to the U.S. Energy Information Administration neither Oregon

¹³ (Draft Supplemental Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, 2018)

¹⁴ (Zimmer-Stucky, 2018)

¹⁵ (DePlace E. &, 2017)

¹⁶ (Final Environmental Impact Statement: PSE LNG, 2016)

¹⁷ (Draft Supplemental Environmental Impact Statement: Proposed Tacoma Liquefied Natural Gas Project, 2018)

¹⁸ (DePlace E. , Small Seattle Pipeline Expansion would mean Big Carbon Pollution Increase , 2019)

nor Washington has significant gas reserve potential for fracking.¹⁹ Oregon has only one gas producing site near the town of Mist in Columbia County, which deploys conventional drilling to extract gas from porous sandstone. The Snake River Basin is thought to be another source of gas reserves. Three permits have been issued for conventional gas drilling in the area, but no drilling has taken place.²⁰

No gas has been produced in the state of Washington for decades.²¹ However, the Pacific Coal Region lies along the western and eastern flanks of the Cascade Range, extending from Canada into southern Oregon.²² The coal beds are known to contain methane, which could be extracted through an unconventional process called coal bed methane extraction. Coal bed methane extraction does not entail injection of fracking fluids under pressure, but does result in accumulation of many of the same toxic fluids and presents similar problems with aquifer and groundwater contamination. The only proposed unconventional gas extraction project in the Pacific Northwest is Curzon's coal bed project, noted above. Figure 1 illustrates the location of the coal beds and currently permitted projects in Oregon.

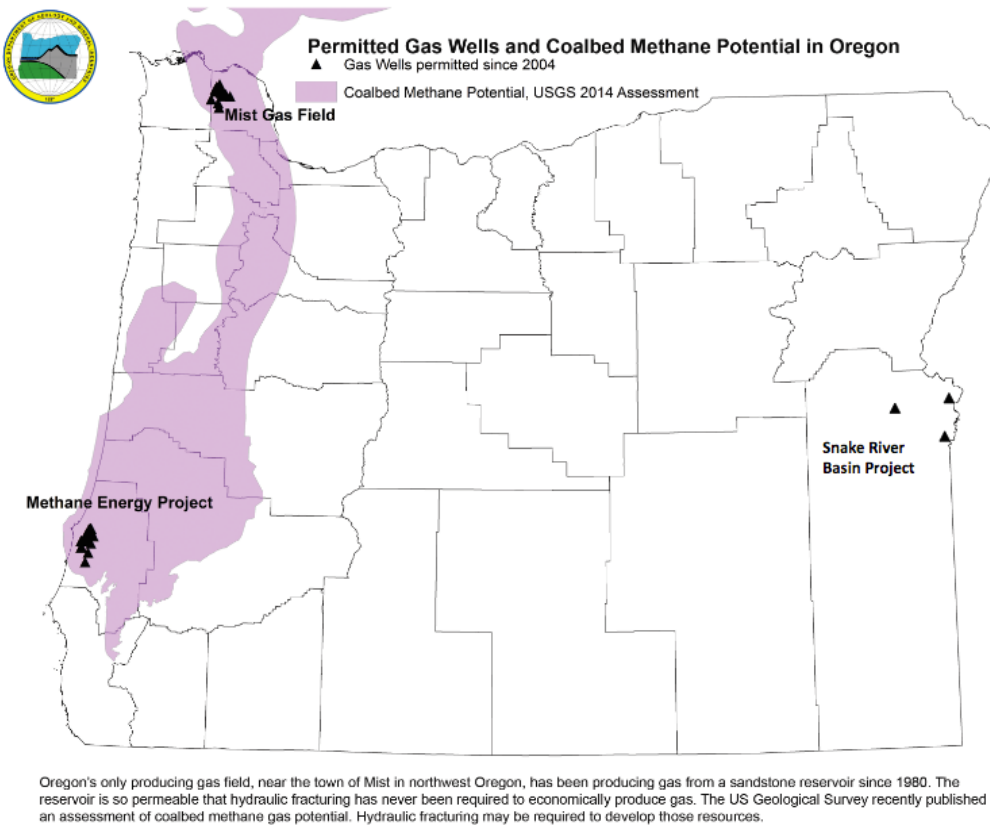
¹⁹ (U.S. Energy Information Administration, n.d.)

²⁰ (Oregon Department of Geology and Mineral Industries, 2019)

²¹ (Washington State Department of Natural Resources)

²² (U.S. Environmental Protection Agency, 2004)

Figure 1



In 2019, the Oregon Legislature passed a 5-year moratorium on fossil fuel fracking, which was signed by the governor on June 17th, 2019.²³ The moratorium exempts coalbed extraction wells with existing permits, like the Curzon project. Also in 2019, the Washington Legislature passed a permanent ban on fracking, which the governor has signed into law.²⁴

The Corporations

The corporate entities behind fracked gas infrastructure proposals claim that jobs and tax revenue would benefit host communities.^{25 26 27 28} Rarely, if ever, do their calculations include the economic losses and human suffering associated with the projects through toxic contamination of air, land and water; human-caused and natural disasters; displacement of economic activities such as

²³ (Oregon State Legislature, n.d.)

²⁴ (Washington State Legislature, n.d.)

²⁵ (Jordan Cove LNG, n.d.)

²⁶ (North West Innovation Works, n.d.)

²⁷ (Pacific Coast Fertilizer, n.d.)

²⁸ (Puget Sound Energy, n.d.)

fishing, recreation, and tourism; desecration of culturally and historically significant sites; and loss of habitat and despoliation of the environment. All of these deleterious effects are associated directly or indirectly with increased sickness and death in affected communities.

Corporate sponsors additionally claim that the net effect of these projects would be a *decrease* in global greenhouse gas emissions,^{29 30 31 32} an assertion challenged by several independent scientific researchers.^{33 34 35 36 37 38 39 40} Intentionally or not, companies frequently base their claims on outdated or corporate-sponsored data. For example, the [lifecycle analysis](#) of methane emissions for the Kalama methanol refinery, paid for by NWIW, uses the 2007 [global warming potential metric](#) (GWP) of 25,⁴¹ which was scientifically recalculated and updated by the IPCC in 2018 to 34.⁴² The NWIW sponsored analysis also employs a methane [fugitive emission](#) rate of 0.32%, while the most recent science places the figure at 2.3% or higher.⁴³

Similar misleading metrics were applied in the lifecycle analysis (LCA) of Puget Sound LNG included in the 2019 Final Supplemental Environmental Impact Statement (FSEIS), which employed, for example, only a 100-year time frame for estimating GHG effects of methane rather than including a time frame of 20 years.⁴⁴ This in itself reduces the apparent GWP of methane by nearly threefold. The erroneous metrics and unrealistic assumptions result in analyses that are deeply flawed and a gross underestimate of the actual impact of the facilities on global warming.

The lifecycle analysis for Kalama's methanol refinery additionally asserts that 100% of the refined methanol would replace dirtier coal in the manufacture of plastics in China, a claim that is impossible to support.⁴⁵ At the same time the chairman of the Chinese parent company of Northwest Innovation Works told Reuters that the company wants to “drive use of methanol as a transportation

²⁹ (Hoard, 2018; Ecology and Environment, Inc, 2019)

³⁰ (Northwest Innovation Works, n.d.)

³¹ (Pacific Coast Fertilizer, n.d.)

³² (Ecology and Environment, Inc, 2019)

³³ (Erickson, Towards a Climate Test for Industry: Assessing a Gas-based Methanol Plant, 2018)

³⁴ (Mutitt, 2016)

³⁵ (Stockman & McGarry, Jordan Cove and Pacific Connector Pipeline Greenhouse Gas Emissions, 2018)

³⁶ (Trout, January, 2019)

³⁷ (DePlace E. , 2016)

³⁸ (Byrnes, 1990)

³⁹ (Sanders, 2012)

⁴⁰ (Stockman, Burning the Gas 'Bridge-fuel' Myth, 2017)

⁴¹ (Erickson, SEI Comments on Kalama DSEIS, 2108)

⁴² (Intergovernmental Panel on Climate Change, 2018)

⁴³ (Alvarez, 2018)

⁴⁴ (Ecology and Environment, Inc, 2019)

⁴⁵ (DePlace E. &-D., 2018)

fuel for cars and ships” in China.⁴⁶ In early 2019 Columbia Riverkeeper came into possession of documents that revealed how NWIW is selling the project to investors as a source of fuel for China, not for use in the plastics industry.⁴⁷ The evidence calls into question the entire lifecycle analysis for the project and illustrates the company’s willingness to mislead or outright lie to the local community and regulators.

Citizens in Tacoma have faced the additional aggravation of both public and private entities that are reluctant to or outright refuse to share information about the LNG facility, which is already under construction in the heart of their community without the proper permits in place.⁴⁸ Tarika Powell, an environmental lawyer and researcher with Sightline Institute, testified in court about this issue and related violations of the public’s “right to know.”⁴⁹ Much farther south, Oregon’s Department of Environmental Quality (DEQ) took Jordan Cove LNG to task for failing to respond to their requests for specific information.⁵⁰

The fossil fuel industry is notorious for promoting misleading and erroneous information.⁵¹ Perhaps not all the corporations seeking a toehold in the Pacific Northwest engage in duplicity, utilize outdated science, or withhold information, but they have amply demonstrated a lack of ethics, transparency, and integrity. Communities in Oregon and Washington are justifiably wary of partnering with them.

The gas industry is, in addition, a poor investment for communities to make. Supply is at an all-time high and prices at an all-time low. The record amount of gas produced over the past decade has been at a loss and gas companies are in debt.^{52 53} The industry’s attempt to force prices up by increasing demand, that is, by expanding their markets in Asia through export from west coast terminals, will only backfire. As gas prices go up, they will not be able to compete with cheaper renewable energy sources, whose prices continue to fall.⁵⁴ Local communities would then be stuck with dirty and unprofitable infrastructure, saddling their economies with the costs of decommissioning and clean-up.

⁴⁶ (Aizhu, 2017)

⁴⁷ (Solomon, 2019)

⁴⁸ (Hanchard, 2017)

⁴⁹ (Powell T. , Sightline Testifies at Hearing for Tacoma LNG Protesters, 2018)

⁵⁰ (Oregon Department of Environmental Quality, 2018)

⁵¹ (Hope, 2019)

⁵² (Mikulka, The Inevitable Death of Natural Gas as a 'Bridge Fuel', 2019)

⁵³ (Mikulka J. , 2019)

⁵⁴ (Mikulka, The Inevitable Death of Natural Gas as a 'Bridge Fuel', 2019)

The fracked gas industry has capitalized on decades of de-regulation, tax favors, and weakening of both the public sector and citizen rights to flood the market with cheap gas, accelerate the pace of global climate change, and degrade our health and well-being. Local communities targeted for new fracked gas infrastructure are confronted with a false choice between a healthy economy and a healthy environment. In fact, the two go hand-in-hand, but the fracked gas industry has no contribution to make to either.

The Communities

Proposed projects could directly harm hundreds of thousands of persons, including:

- Hundreds of farms, ranches, and small towns in rural SW Oregon
- North Bend and Coos Bay Oregon, which have yet to recover from the collapse of the fisheries and timber trade
- Residents of prime agricultural land around Port Westward, Oregon
- Port towns of Kalama and Longview, which struggle to find their economic footing
- The city of Tacoma, still in recovery from its toxic industrial past
- Native American communities of both Oregon and Washington

Almost without exception, the port cities and towns and rural areas targeted for fracked gas infrastructure development are those which have been left behind in the economic expansion following the Great Recession of 2008. Compared to statewide averages, these locales are characterized by higher unemployment rates, lower median household incomes, and a disproportionate burden of morbidity and mortality, including cancer, heart, and lung disease; people in these communities are sicker and they die younger. All of these locales are, or were, places of stunning natural beauty and abundant natural resources like native forests, wildlife, fish, shellfish, and clean water.

Native American communities would bear additional adverse impacts on their cultural heritage and traditional economic activities. Many tribal nations of both Oregon and Washington are deeply opposed to projects constructed on tribal lands that impact their livelihoods and threaten their ways of life.

Private landowners in the path of the Pacific Connector Gas Pipeline would also face devaluation of their property, environmental degradation of their lands, and increased risks of fire, explosion, and toxic spills. For the pipeline to be built, property would need to be seized from

reluctant landowners through declarations of eminent domain. In its 2016 denial of the pipeline project, the Federal Energy Regulatory Commission concluded that the public benefits of the project did not justify the use of eminent domain.⁵⁵

Most of these communities are desperate for jobs and tax revenue and are understandably eager for economic development. Economic prosperity is a necessary condition for healthy communities. Any benefits of fossil fuel infrastructure, however, represent short-term economic gains at most. If benefits come at all, they would be at the expense of short- and long-term economic losses, environmental degradation, increased global warming, and increased rates of sickness and death.

The construction and operation of these facilities alone would exact a toll including:

- Toxic pollution of air, water, and land
- Noise pollution
- Increased risk of natural and human-caused disasters
- Occupational health and safety risks
- Adverse impacts of large, temporary encampments of workers

These targeted communities have the most to lose. They are among the areas where the adverse health impacts of climate change will hit the hardest. In addition, local authorities lack resources and expertise to adequately evaluate the welter of technical data presented in the proposals. When debates are dominated by technical issues, more fundamental issues become obscured. Who benefits? Who loses? Who assumes the risks to safety and health? How do these projects square with local cultures, values, and ways of life? These are questions that are too often lost or ignored, but they are the questions basic to the future communities want to build for themselves.

A Just Transition

The precautionary principle of public health holds that when an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically.⁵⁶

⁵⁵ (Federal Energy Regulatory Commission, 2016)

⁵⁶ (Vu, 2017)

In accordance with the precautionary principle, the American Public Health Association has called for a cessation of all unconventional (which includes fracking) gas and oil exploration and development. The APHA notes that: “In contrast to the precautionary principle employed through most of Europe, the United States employs a risk-based approach wherein, in most cases, companies utilizing unconventional drilling and its associated technologies are issued drilling permits and extraction is conducted before there is a full understanding of potential risks to the environment and human health.”⁵⁷

The states of Oregon and Washington are uniquely positioned to put the brakes on the expanded production and export of fracked gas. Gas that cannot be processed and exported or otherwise brought to market is gas that is no longer profitable to produce. State resources and policies should alternatively aim at a just transition to clean and renewable energy, sources that impose far less risk to health and safety. (U.S. Environmental Protection Agency, n.d.)

The EPA defines environmental justice as the “fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. This goal will be achieved when everyone enjoys the same degree of protection from environmental and health hazards, and equal access to the decision-making process to have a healthy environment in which to live, learn, and work.”⁵⁸

A just transition means ensuring that nobody is left behind in the shift from fossil fuels to a clean energy economy. It includes deep investments in clean and green economic opportunities for stressed and at-risk communities. A just transition would include:

- Dedicating funds to help communities affected by climate change
- Government support for workers who lose their jobs in the phase-out of fossil fuel facilities
- Upgrading and weatherization of existing buildings to achieve energy efficiency, safety, and affordability
- Repairing and upgrading public infrastructure such as bridges, roadways, and water systems
- Building or upgrading power grids to provide efficient and affordable electricity
- Investing in renewable power sources
- Supporting family farming and investing in sustainable farming

⁵⁷ (American Public Health Association, 2018)

⁵⁸ (U.S. Environmental Protection Agency, n.d.)

- Investing in public transit and zero-emission vehicle infrastructure and manufacturing
- Restoring ecosystems through land preservation and reforestation
- Cleaning up existing hazardous waste and abandoned sites

Oregon and Washington are two of eighteen states that signed on to the U.S. Climate Alliance, pledging to “accelerate new and existing policies to reduce carbon pollution and promote clean energy deployment.”⁵⁹ Allowing the Pacific Northwest to become a national hub for processing and shipment of fracked gas and its products flies in the face of this pledge. Promotion of fracked gas only delays the necessary transition to clean energy.⁶⁰ Expansion of fracked gas infrastructure locks communities into decades of dependence on fossil fuel that crowds out development of cleaner, safer alternatives.⁶¹

The adverse effects of global climate change are already upon us and will only worsen in the coming years in the absence of vigorous and sustained reductions in GHG emissions. The effects will land hardest on the youngest, the oldest, the sickest, and most economically stressed among us. These same individuals and communities should not be forced out of economic necessity to tie their futures to a polluting and dying fossil fuel industry.

Climate change mitigation, on the other hand, would produce immediate health benefits for our communities.⁶² Promoting healthy communities is a key strategy toward mitigation of, preparation for, and recovery from climate-related events and disasters. Denying the fracked gas industry access to our lands and our waterways is a necessary step toward building the healthy communities that will help ensure our future prosperity.

⁵⁹ (United States Climate Alliance: About Us, n.d.)

⁶⁰ (Staddon P L, 2015)

⁶¹ (Trout, January, 2019)

⁶² (Vossler M. , Thomas, Kitchell, Idzerda, & Cornett, 2018)

RECOMMENDATIONS

Oregon Physicians for Social Responsibility and Washington Physicians for Social Responsibility oppose any expansion of transport, storage, or shipment of fracked gas within our states on the basis of very serious, credible threats to the health of our residents. Further, we call upon the governors of Washington and Oregon, as well as agencies in both states, to deny permits that facilitate the expanded production, transport, storage, and/or handling of fracked gas. Our commitment as health professionals to improving the health of the public and achieving equity in health status demands that we clearly and unequivocally communicate the urgent need to transition away from fossil fuels to clean and equitable renewable energy sources.

We further endorse the many recommendations of the American Public Health Association regarding all activities associated with unconventional (fracked) gas,⁶³ including:

- No new development of fracked gas infrastructure.
- A strategic phase-out of existing fracked gas infrastructure, consistent with CO2 reduction goals and minimization of harm to communities economically dependent on fracked gas infrastructure.
- Requirements that energy companies disclose and receive approval for all chemicals proposed for use in fracked gas infrastructure.
- Monitoring of air, soil, and water quality impacted by ongoing fracked gas activities, during the period of phase-out and following shut-down, until recovery is achieved.
- Establishment of a registry for active surveillance of community and worker health affected by fracked gas-related activities.
- Immediate cessation of fracked gas activities if negative human health or environmental effects are observed, until further evidence indicates that operations can be safely resumed.

⁶³ (American Public Health Association, 2018)

CLIMATE CHANGE AND HEALTH

Analyses of current scientific evidence predict the following impacts of climate change on the Pacific Northwest:^{64 65 66 67}

- An overall warming trend
- More extreme heat events
- Significant loss of snowpack
- Increased drought
- Increased flooding
- Higher intensity and increased distribution of wildfires
- Sea-level rise
- Increased ocean acidity

These effects will have wide-ranging impacts on the health and well-being of Pacific Northwest communities, as summarized in Figure 2 from the Fourth National Climate Assessment (NCA4).⁶⁸

⁶⁴ (May, 2018)

⁶⁵ (Hamilton, 2009)

⁶⁶ (Vynne, 2011)

⁶⁷ (Snover, 2013)

⁶⁸ (Ebi, 2018)

Figure 2
Social, Economic, and Environmental Impacts of Climate Change

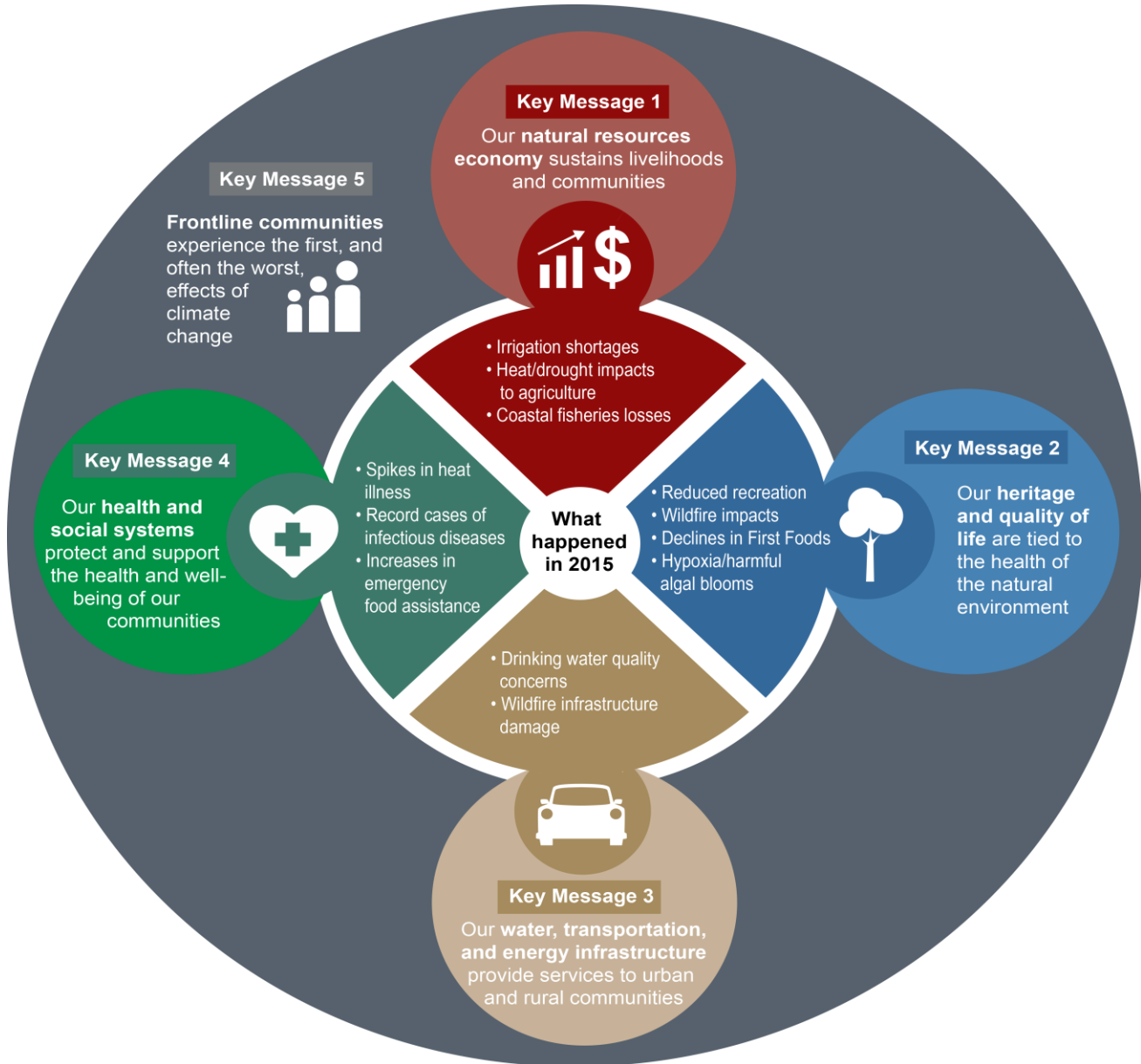
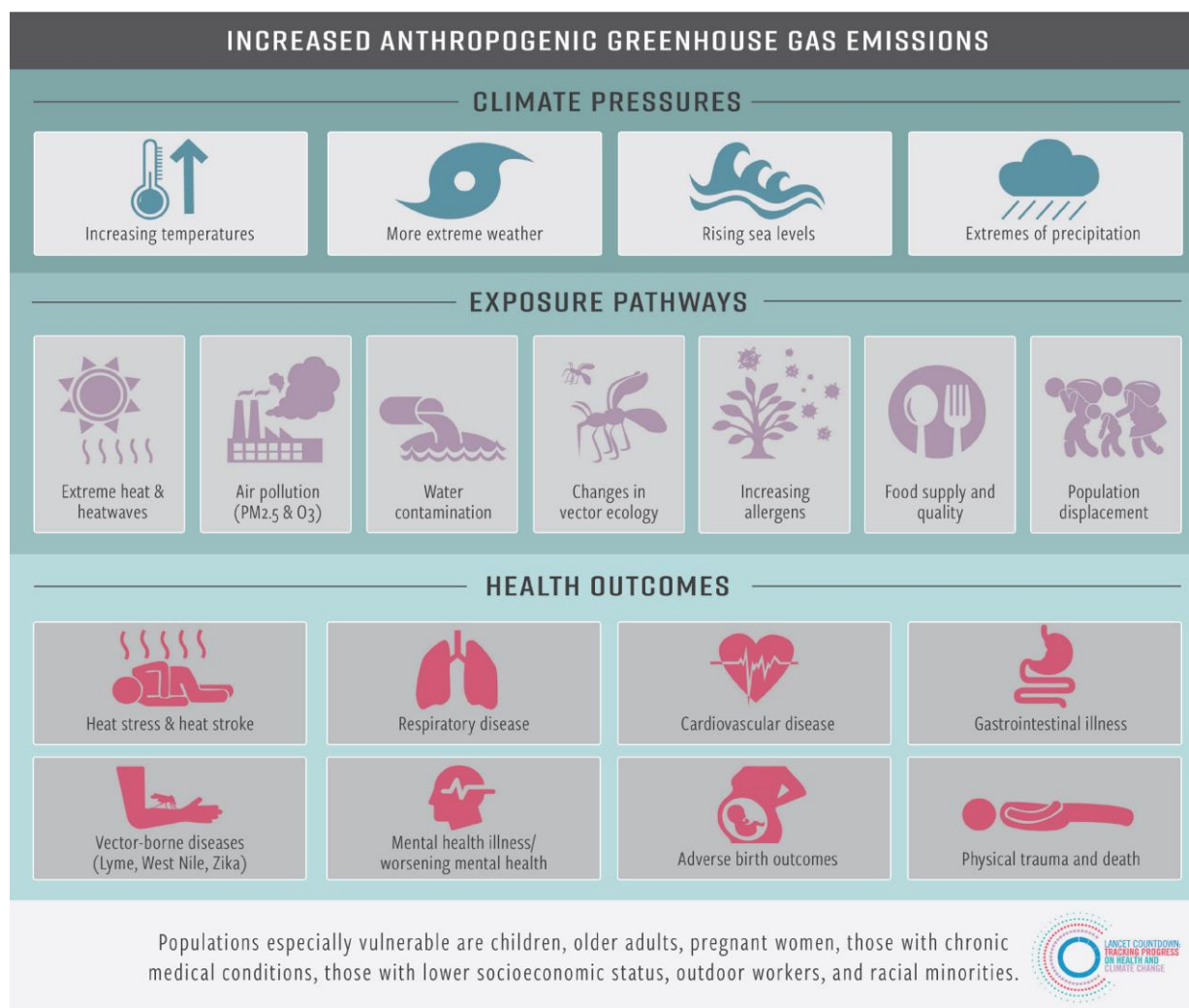


Figure 3 from the Lancet Countdown on Climate Change and Health⁶⁹ summarizes the effects of climate change on health outcomes.

Figure 3
Health Effects of Climate Change



Multiple studies have identified those persons and communities most at risk for adverse outcomes of climate change in Oregon and Washington.^{70 71 72 73 74 75} Table 1, adapted from these reports, summarizes the major health risks of climate change and the populations most at risk.

⁶⁹ (Salas, 2018)

⁷⁰ (Ebi, 2018)

⁷¹ (Salas, 2018)

⁷² (Haggarty B. e., 2014)

Table 1: Climate Change Health Effects and Susceptible Populations: Pacific Northwest

	Outcomes	Susceptible Populations
Heat related illness	Heat rash, heat cramps, heat exhaustion, heat stroke	Very young and very old, pregnant women, people with chronic disease, socially isolated, houseless, outdoor workers
Heat related death	Heart attack, stroke, renal failure, heat stroke, respiratory failure	Very young and very old, people with chronic disease, socially isolated, houseless, outdoor workers
Heat related violence	Homicide and intentional injury	Children and young adults especially in communities with pre-existing higher rates of interpersonal violence
Heat related air pollution and ozone formation	Chest pain, coughing, throat irritation, exacerbation of emphysema, bronchitis and asthma, cancer and cardiopulmonary death	Children, those living in areas with pre-existing air pollution, persons with pre-existing cardiac and respiratory conditions
Drought related food insecurity	Hunger and malnutrition	Low income, communities of color, pregnant women, children
Smoke pollution from wildfires	Asthma, bronchitis, pneumonia, cardiopulmonary disease, motor vehicle crash, injuries, death	Very young and very old, those with pre-existing respiratory and cardiac disease, vehicle operators, passengers
Drought and heat related harmful algal blooms	Toxic contamination of drinking water affecting liver, skin, gastrointestinal tract, nervous system	Residents dependent on affected water systems
Wildfires	Accidental injury and death	Those who live or work in fire-prone areas
Heavy rains	Accidental injury and death	Those who live, work or attend school near or on unstable slopes, including houseless
Flooding	Accidental injury and death, water borne disease, exposure to toxins	Those who live, work or attend school in low lying areas, including houseless
Weather related increase in mold, pollens and other allergens	Exacerbation of asthma and allergic rhinitis	Those with pre-existing allergic disorders
Infectious disease	Vector borne disease, food and water borne disease, fungal disease	Low income, those with pre-existing chronic disease, very young and very old, immune-compromised
Stress related to extreme weather events	Anxiety, depression, suicide, substance abuse, violence	Those with pre-existing mental health disorders and pre-existing socioeconomic stressors
Stress from weather-related displacement	Anxiety, depression, suicide, substance abuse, violence	Low income, residents of flood- and fire-prone areas, coastal communities

⁷³ (Haggarty B. , 2015)⁷⁴ (Washington Environmental Health Disparities Map, n.d.)⁷⁵ (Snover, 2013)

COMMUNITIES AT RISK

Malin is a tiny farming town near the border with California in Klamath County, Oregon, a community of about 800 persons, which grew up on the cattle and timber trade. Grains and potatoes, along with cattle, are now the principle commercial crops. (All population figures cited are from the 2017 US Census Bureau population estimates.⁷⁶) As the crow flies it's about 200 miles west and north, across public, private, and tribal forests, ranches, and farms to the closely related coastal towns of Coos Bay and North Bend, where some 26,000 people make their home. After white settlement, the local economy was based on the timber and fishing industries, which fell into decline in the late twentieth century. The last major lumber mill closed in '89. Since then the main economic activities have been tourism and recreation, remnants of the timber and fishing trades and agriculture.

Much farther north, lies the Columbia River Port of Kalama. The port is among the busiest on the west coast⁷⁷ and is a key economic engine of the town, which is home to 2,700 persons. About a dozen miles downstream sits Longview, another former lumber town of nearly 40,000 persons. Like North Bend, Longview has struggled to recover from the late 20th century decline in the timber trade as well as the closure of an aluminum mill. Across the river on the Oregon side and another 15 miles downstream is the rural town of Clatskanie, population 1,800. The Port of Columbia County administers Port Westward, an industrial port on the salmon-bearing river. This is primarily farm and forest country.

Farther north yet on the southern reach of Puget Sound lies the city of Tacoma, home to 213,000 people. The city has a mixed economic base of industrial, transport, manufacturing, tourist, retail and service sectors, including a busy container-handling port, many high-tech companies, an oil refinery, and a paper and pulp mill. Two Superfund sites with ongoing clean-up activities, the unfortunate legacy of its industrial past, are located on Commencement Bay within the city.

These are the communities, historically dependent on rich natural resources, that are now targeted by the fracked gas industry. What they also have in common are depressed economies with higher rates of poverty and unemployment compared to statewide averages. Local governments are cash-strapped. Their residents suffer higher rates of death and disease (see Tables 2 through 6

⁷⁶ (United States Census Bureau, n.d.)

⁷⁷ (World Port Source, n.d.)

below). Most suffer additional burdens of toxic industrial and commercial waste and pollution. They are some of the region's most vulnerable locales to adverse effects of climate change.

Native American Communities

Living within these locales are also a number of Native American communities. Across the country tribal communities often find themselves frontline communities, those places first and hardest hit by the deleterious effects of the fossil fuel industry and its associated climate change effects. Proposed fracked gas infrastructure would have an out-sized effect on these communities. Adverse impacts on the spiritual and traditional ways of life are not trivial. They result in emotional harm, in addition to economic harm, both of which degrade quality of life and lead to increases in morbidity and mortality.

Sovereign tribal nations in both Oregon and Washington have registered complaints about the failure of corporate and governmental entities to adequately consult the tribes about impacts on their lands, waters, people, cultural and spiritual practices, and sacred grounds. A 2019 report from the Government Accountability Office validated those allegations⁷⁸ The GAO report verified what House Natural Resources Chairman Raúl Grijalva (D-Ariz.) has long heard from tribal nations. "Avoiding discussions until after decisions are made is not consultation," Grijalva said.⁷⁹

Six tribal nations, including the Confederated Tribes of the Grand Ronde Community of Oregon; the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw Indians; the Klamath Tribes (Klamath, Modoc, and Yahooskin); the Yurok Tribe; the Karuk Tribes; and the Cow Creek Band of Umpqua Tribe of Indians, have filed motions to intervene in the Jordan Cove project, citing potential excavation and destruction of important burial and other sacred sites.^{80 81} They note potential habitat destruction due to construction and operation of the facility and the threat to traditional fishing and shellfish harvesting activities of the tribes. Five federally recognized tribes oppose the project, including the Klamath Tribes, the Yurok Tribe, the Karuk Tribe and the Tolowa Dee-Ni. In March of 2019 the Siletz Tribe also voted to formally oppose the Jordan Cove project and pipeline, citing multiple environmental concerns: "We really cannot support a project that's potentially this degrading to the environment and to sensitive habitat for several species, and could compound the

⁷⁸ (U.S. Government Accountability Office, 2019)

⁷⁹ (Yachnin, 2019)

⁸⁰ (Confederated Tribes of Coos, Lower Umpqua & Siuslaw Indians, 2013)

⁸¹ (Klamath Tribes Tribal Council, 2017)

disastrous effects of a Cascadia earthquake. We don't believe this project will continue our tradition of being good stewards of our land, which we need to protect in all ways that we can.”⁸²

The Puyallup Indian Reservation is located directly south of Puget Sound LNG. The Puyallup Indian Tribe opposes Puget Sound LNG, citing concerns over pollution of water, unearthing toxic contaminants in the soil, and further degradation of local fish habitat which has already suffered the toxic effects of prior industrial activities.⁸³ ⁸⁴ Affiliated Tribes of Northwest Indians⁸⁵ and the National Congress of American Indians⁸⁶ also oppose this and other fracked gas projects.

Climate Change Susceptibility

The U.S. Global Change Research Program is a federal program mandated by Congress to conduct scientific assessments of the global environment. They determined that vulnerability to the adverse health effects of climate change depend on three factors: exposure, sensitivity, and adaptive capacity, which are illustrated in Figure 4.⁸⁷ All three factors are at play in the cities, towns, and rural locales that would host new fracked gas infrastructure.

⁸² (The News Guard, 2019)

⁸³ (350 Tacoma, 2018)

⁸⁴ (Mapes, 2018)

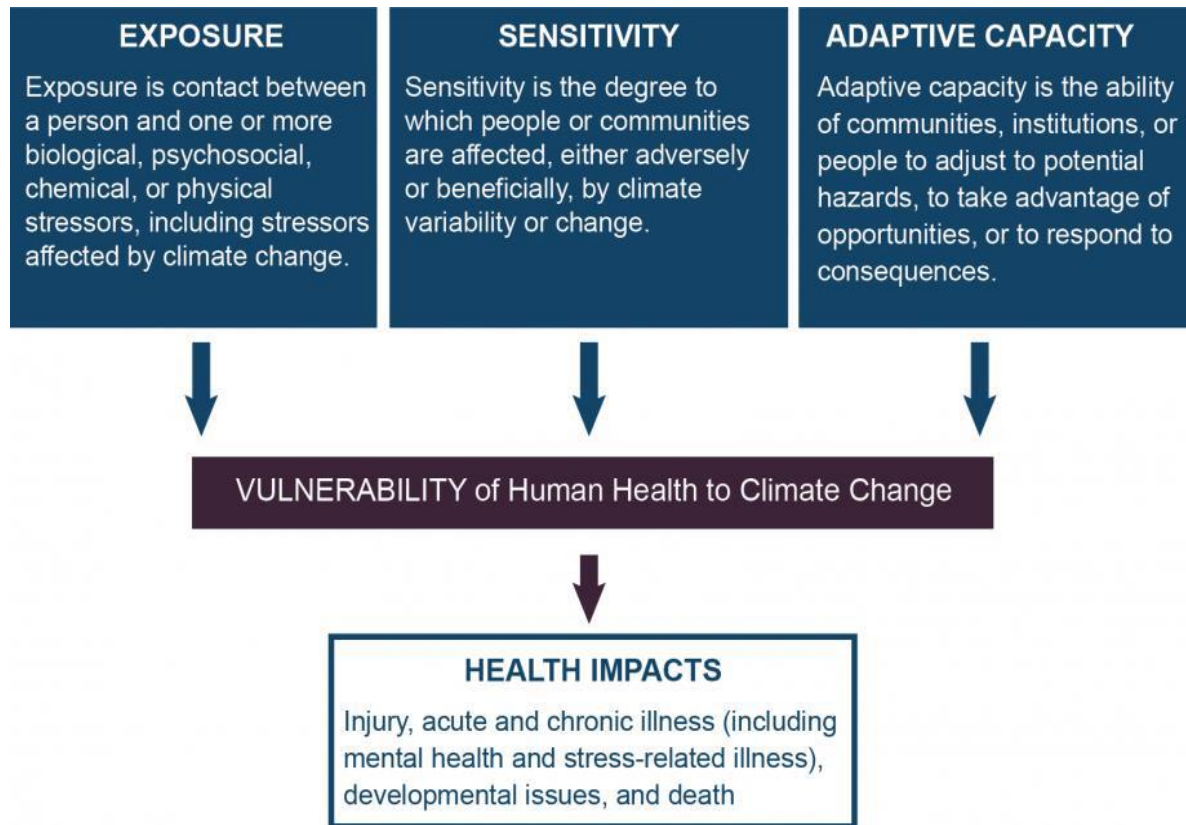
⁸⁵ (Indian Country Today, 2017)

⁸⁶ (National Congress of American Indians, 2018)

⁸⁷ (Crimmins, 2016)

Figure 4

Climate Change Susceptibility



Researchers at Portland State University combined demographic variables of income, race, education, employment, and age with exposure variables to toxic air pollution.⁸⁸ The resulting index score identifies communities by census tract in Oregon that are most at risk to the effects of climate change. In Figure 5 the vulnerability index score is given as a percentage; a higher percentage reflects greater vulnerability.

⁸⁸ (Zapata, 2017)

Figure 5

Census Tracts Most Vulnerable to Climate Change in Oregon

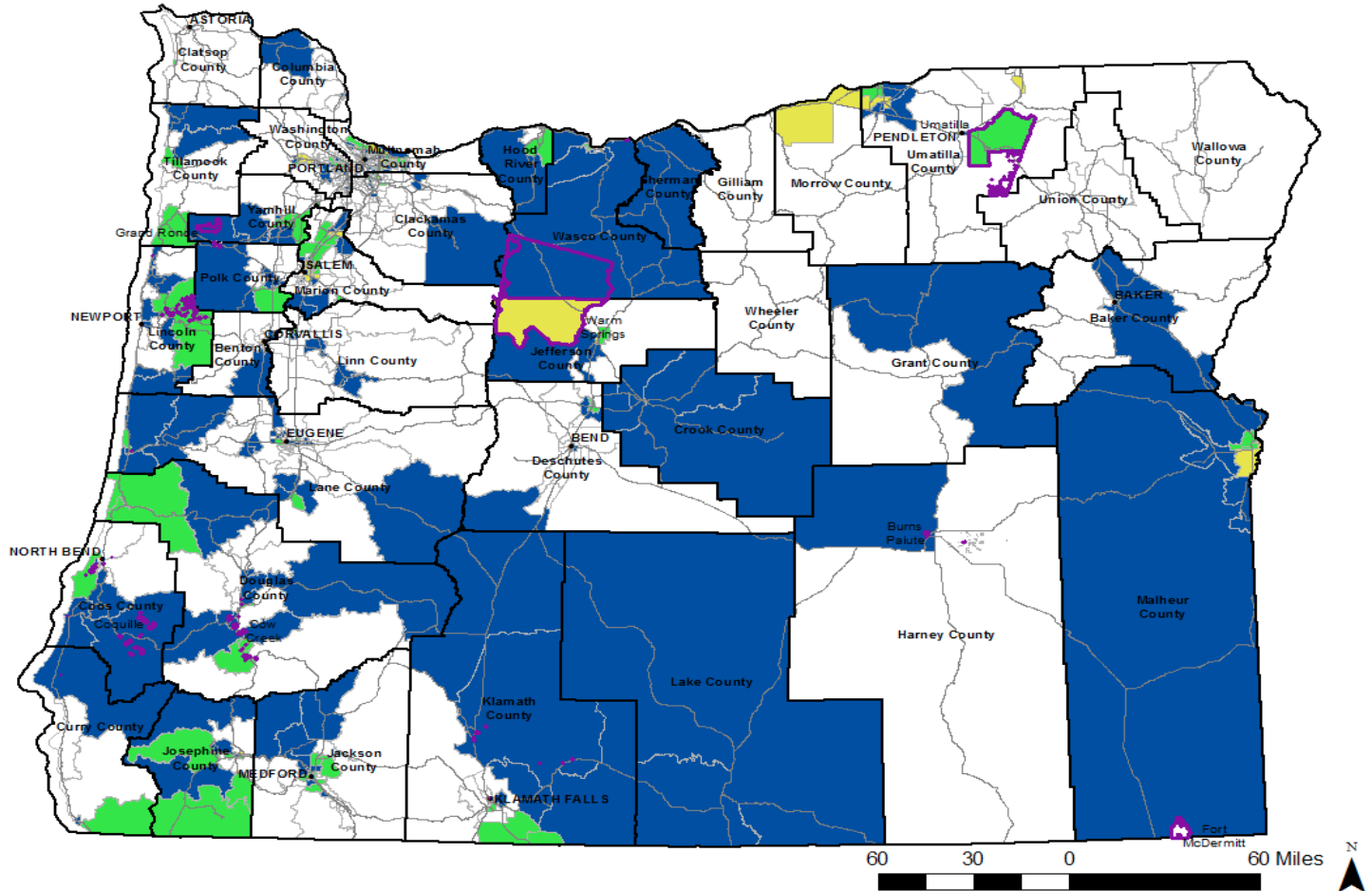


Figure 5: Top 10%, 25%, and 50% of Census Tracts Most Vulnerable to Climate Change in Oregon. *GIS data source: US Census Bureau and State of Oregon. Index scores are based on data from: U.S. Census American Community Survey (ACS) 2011-2015 5- year estimates and the National Air Toxics Assessments (NATA) 2011. Purple indicates Indian reservations, village, and towns.*

Figure 6 identifies economically distressed areas and the top 50% of Census Tracts Based on the Vulnerability Index. Figure 7 overlays this map with the location of already existing greenhouse gas emitting facilities.

Figure 6
Economically Distressed Areas of Oregon

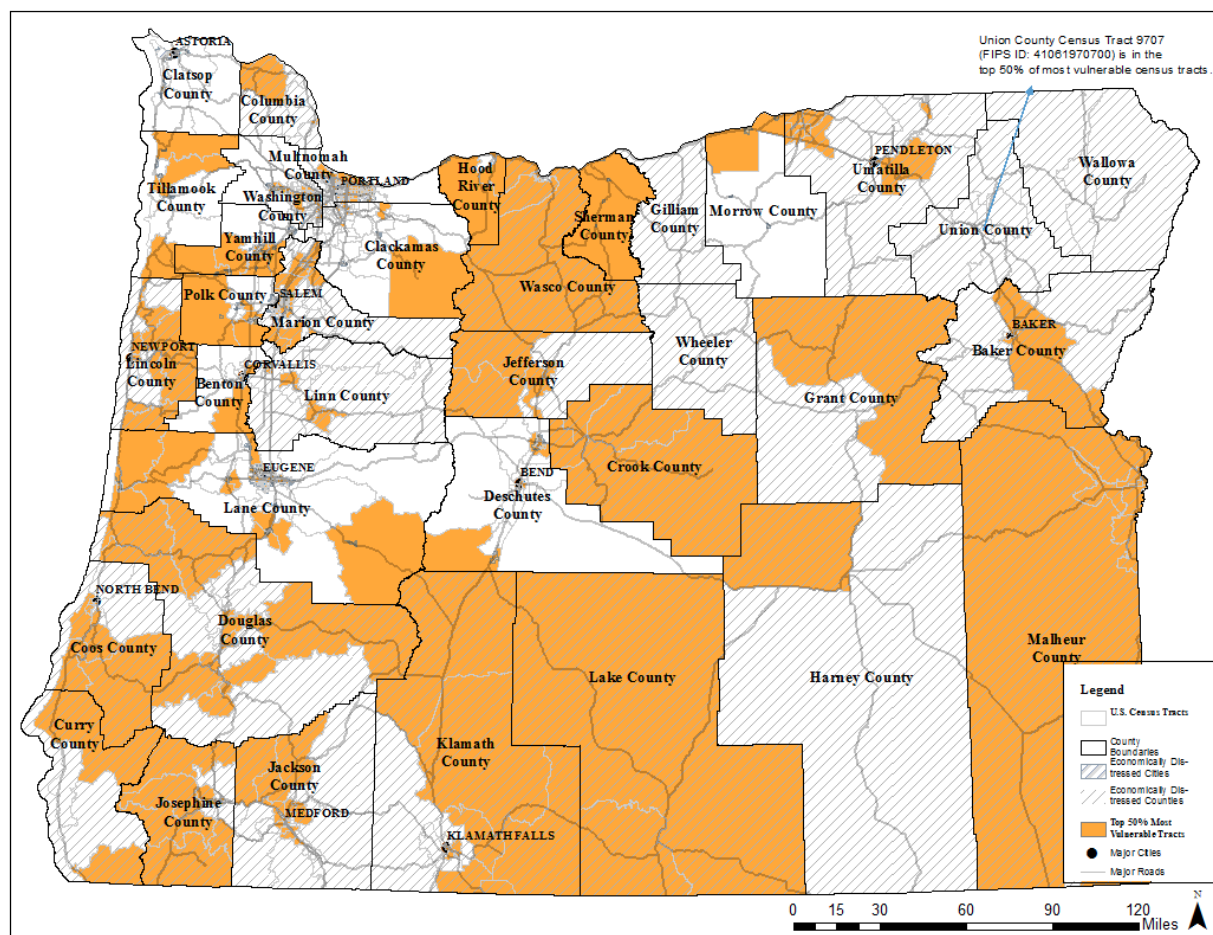


Figure 6: Economically Distressed Areas and Top 50% of Census Tracts Based on Vulnerability Index. GIS data source: US Census Bureau and State of Oregon. Index scores are based on data from: U.S. Census American Community Survey (ACS) 2011-2015 5- year estimates and the National Air Toxics Assessments (NATA) 2011.

Figure 7

Distribution of Greenhouse Gas Emitting Facilities in Oregon

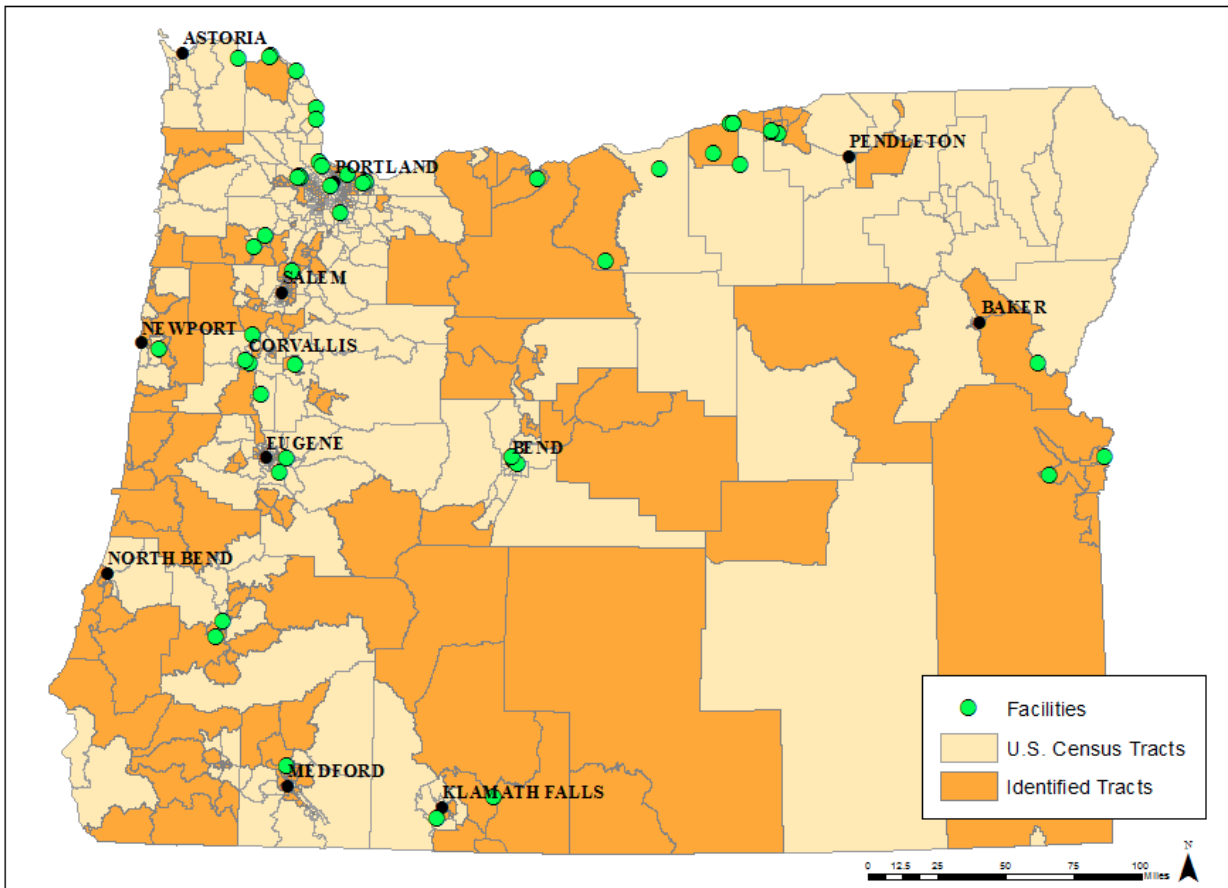


Figure 7: Distribution of Greenhouse Gas Emitting Facilities in Relationship to U.S. Census Tracts Identified as Most Vulnerable to Climate Change. All facilities with Air Quality Permits from the Oregon Department of Environmental Quality that produced over 25,000 metric tons of CO₂e emissions in 2015. Data source: Oregon Department of Environmental Quality 2015 Greenhouse Gas Facility Emissions (2017b). Most vulnerable to climate change census tracts include the top 50% of census tracts with the highest vulnerability index score.

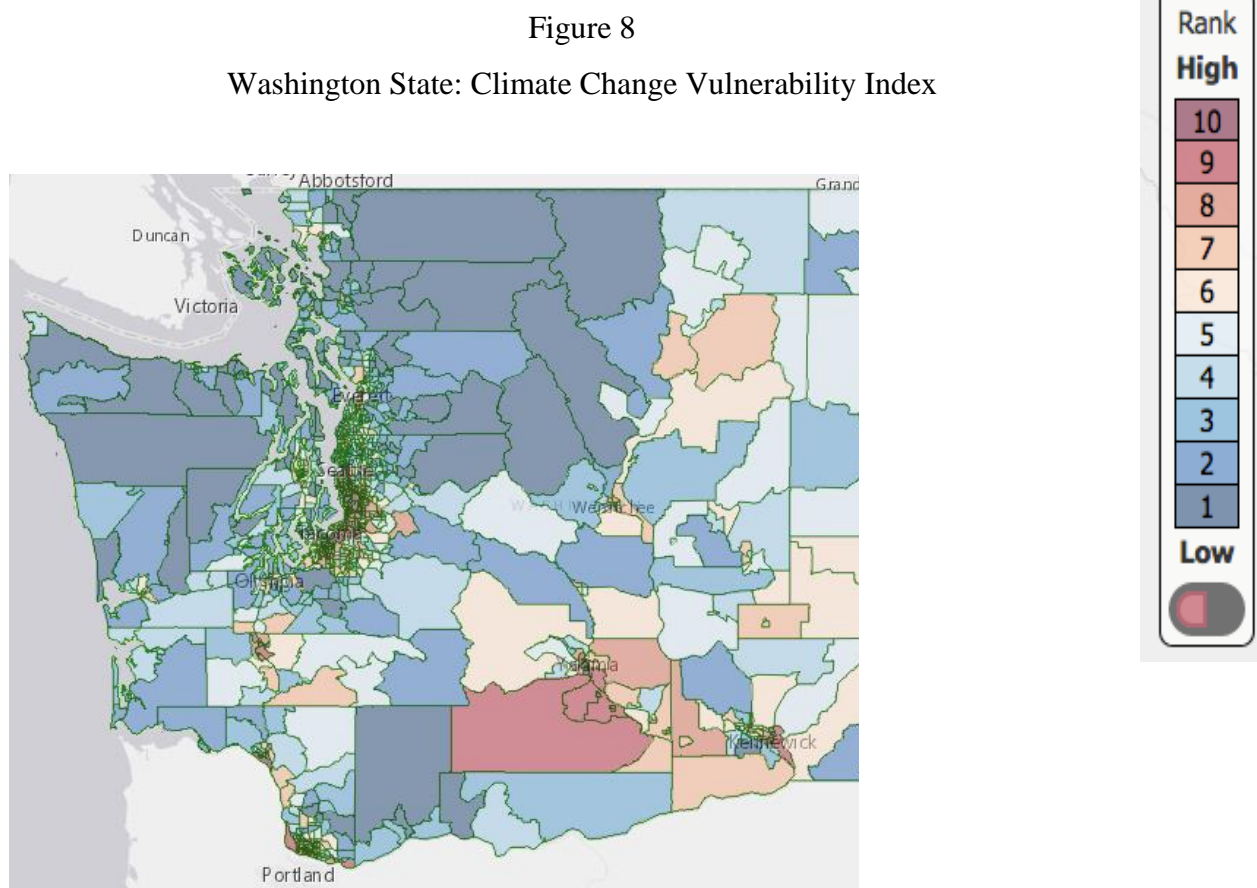
The Washington Tracking Network similarly identified those communities in Washington most vulnerable to climate change based on a vulnerability index.⁸⁹ This index combined nineteen variables in four areas:

- *Environmental Exposures:* nitrous oxides; diesel emissions; ozone concentration; particulate matter; proximity to heavy traffic roadways; toxic release from facilities

⁸⁹ (Washington Environmental Health Disparities Map, n.d.)

- *Environmental Effects*: lead risk from housing; proximity to hazardous waste treatment, storage, and disposal facilities; proximity to superfund sites; proximity to Risk Management Plan facilities; wastewater discharge)
- *Sensitive Populations*: death from cardiovascular disease; low birth weight
- *Socioeconomic Factors*: limited English; no high school diploma; poverty; race - people of color; transportation expense; unaffordable housing; unemployed

Figure 8 depicts Washington State as a whole.



Figures 9 and 10 zoom in on Pierce and Cowlitz Counties respectively, where three major fracked gas projects are currently proposed or are in progress. In Figure 9, the Port of Tacoma (the site for the LNG facility) is located on the finger-like peninsulas jutting out into Puget Sound in the middle of the map.

Figure 9
Tacoma: Climate Change Vulnerability Index

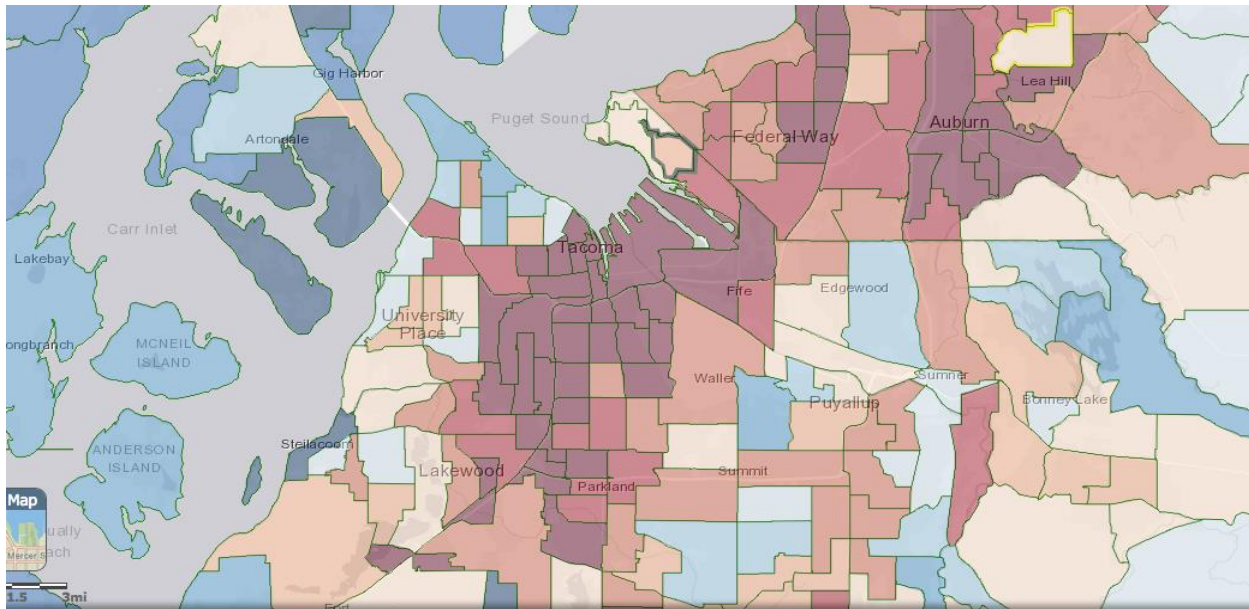
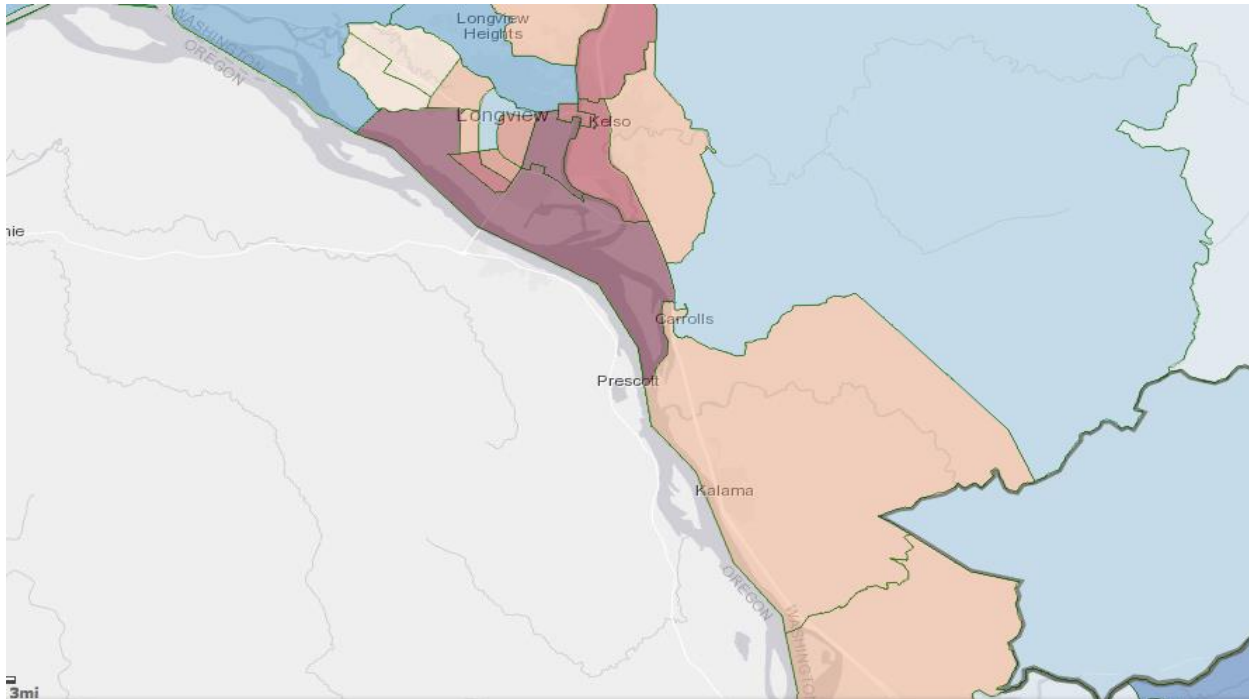


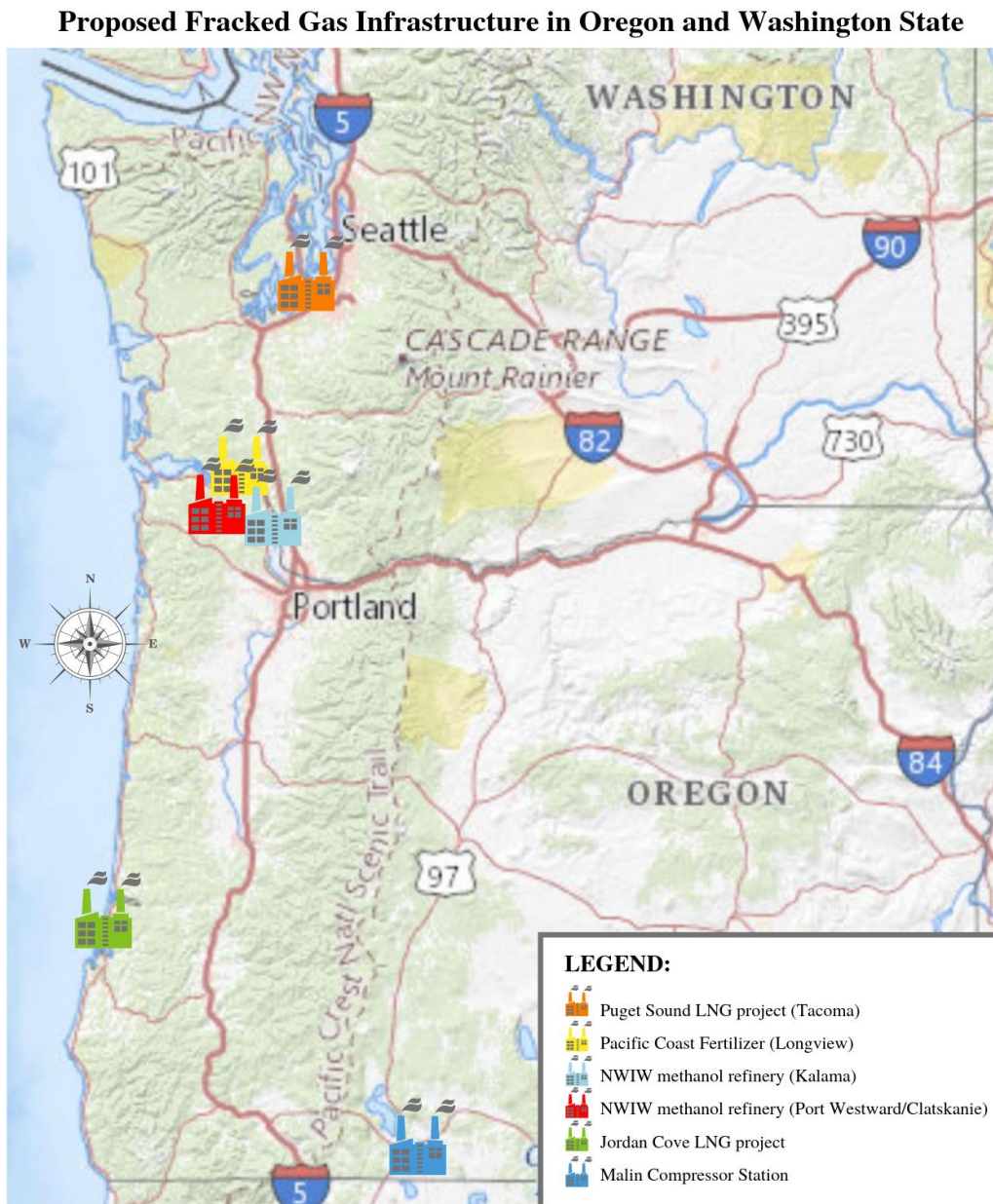
Figure 10
Kalama and Longview: Climate Change Vulnerability Index



Social and Economic Profiles of Regions at Risk

Figure 11 maps the location of currently proposed major fracked gas infrastructure in Oregon and Washington.

Figure 11 Proposed Fracked Gas Infrastructure Oregon and Washington



Underlying map sourced from USGS
(<https://viewer.nationalmap.gov/advanced-viewer/>)

The counties where new fracked gas infrastructure is proposed have some of the worst social, economic, and health profiles compared to statewide averages, especially Cowlitz County (Pacific Coast Fertilizer and Kalama methanol refinery), Coos County (Jordan Cove LNG) and Klamath County (PCGP).

The affected counties tend to have small populations of immigrants or persons of color with the exception of Klamath County, which has a large Native American and Latinx population.

Table 2: Demographics: Race, Ethnicity, Language⁹⁰ (2017 Population Estimates)							
	% Non-Hispanic African American alone	% American Indian and Alaskan Native alone	% Asian alone	% Native Hawaiian /Other Pacific Islander alone	% Hispanic or Latino	% Non-Hispanic White alone	% Who Do Not Speak English at Home
Oregon State	2.2%	1.8%	4.7%	0.4%	13.1%	75.8%	15.2%
Columbia	0.6%	1.5%	1.1%	0.2%	5.2%	88.5%	4.0%
Coos	0.8%	2.9%	1.3%	0.3%	6.5%	85.2%	5.1%
Douglas	0.5%	2.1%	1.1%	0.2%	5.9%	87.8%	3.8%
Jackson	0.9%	1.6%	1.5%	0.4%	12.9%	80.9%	9.5%
Klamath	1.0%	4.9%	1.2%	0.2%	13.1%	77.8%	8.3%
Multnomah	6.0%	1.4%	7.9%	0.7%	11.6%	69.9%	20.0%
Washington State	4.2%	1.9%	8.9%	0.8%	12.7%	68.7%	19.1%
Cowlitz	1.0%	2.0%	1.6%	0.4%	9.0%	83.7%	7.3%
Pierce	7.5%	1.7%	6.7%	1.7%	10.9%	67.0%	14.2%

⁹⁰ (U. S. Census Bureau, n.d.)

Each of these counties has higher rates of unemployment and lower high school graduation rates, as depicted in Table 3.

Table 3: Social and Economic Factors				
	Unemployment*	Median Household Income**	Persons in Poverty ***	High School Graduation****
Oregon State	3.9%	\$56,119	13.2%	75%
Columbia	4.9%	\$57,449	12.3%	73%
Coos	5.3%	\$40,848	19.9%	58%
Douglas	5.2%	\$44,023	14.9%	64%
Jackson	4.8%	\$48,688	14.3%	75%
Klamath	6.3%	\$42,531	19.2%	72%
Washington State	4.3%	\$66,174	11.0%	81%
Cowlitz	5.6%	\$49,804	16.4%	79%
Pierce	4.9%	\$63,881	10.2%	84%

*Oregon Unemployment, 11/18⁹¹; Washington Unemployment, 11/18⁹²

** 2013-2017, in 2017 dollars⁹³

*** Percentage of persons living in poverty from the Small Area Income and Poverty Estimates⁹⁴

**** Percentage of ninth-grade cohort that graduates in 4 years, 2014-2015⁹⁵

⁹¹ (State of Oregon Employment Department, n.d.)

⁹² (Employment Security Department: Washington State, n.d.)

⁹³ (U. S. Census Bureau, n.d.)

⁹⁴ (U. S. Census Bureau, n.d.)

⁹⁵ (Robert Wood Johnson Foundation, n.d.)

Adult and child mortality are higher in nearly every locale. Infant mortality is particularly high in Klamath County.

Table 4: Mortality ⁹⁶			
	Premature Age-adjusted Mortality*	Child mortality**	Infant Mortality***
Oregon State	310	40	5
Columbia	330	30	#
Coos	420	50	#
Douglas	390	60	6
Jackson	330	40	4
Klamath	390	60	9
Washington State	290	40	5
Cowlitz	390	50	5
Pierce	330	50	5

*Premature age-adjusted mortality: Number of deaths among residents under age 75 per 100,000 population (age-adjusted) 2010-2013.

**Child mortality: Number of deaths among children under age 18 per 100,000, 2010-2013.

***Infant Mortality: Number of all infant deaths (within 1 year), per 1,000 live births.

2006-2012

no data available

⁹⁶ (Centers for Disease Control and Prevention: National Center for Health Statistics, n.d.)

Over all death rates are higher in targeted counties, sometimes strikingly so, and especially for cancer, heart and lung disease, and suicide (a marker for community socio-economic stress).

Table 5: Oregon: Age-adjusted Death Rate per 100,000, by County ⁹⁷ *

	All Causes	All Cancer	Heart Disease	Stroke	Chronic Lung Disease	Diabetes	Homicide	Suicide
State Total	834.1	198.4	191.8	68.8	49.1	66.6	3.3	15.0
Columbia	940.3**	228.7**	214.1**	74.3	58.4	66.4	2.3	18.7
Coos	949.9**	224.1**	226.3**	66.4	59.9**	78.8**	4.7	22.6**
Douglas	905.5**	209.5	203.0	63.0	62.4**	78.5**	3.4	16.7
Jackson	830.8	199.0	186.4	71.5	51.4	61.3	3.3	20.4**
Klamath	947.3**	204.8	217.6**	56.4**	70.5**	79.1**	4.6	23.3**

* Age-adjusted death rate per 100,000 population, 2017

** Statistically significant difference

Table 6: Washington: Age-adjusted Death Rate per 100,000, by County *

	All Causes	All Cancer	Major Cardiovascular Disease	Chronic Lung Disease	Diabetes	Homicide	Suicide
State Total	690.0	157.0	187.6	39.9	22.5	3.4	15.6
Cowlitz	820.0	189.5	202.4	64.1	36.7	#	24.2
Pierce	760.0	170.3	205.8	46.5	22.9	4.9	17.6

*Age-adjusted death rates per 100,000 population, 2015 ⁹⁸

data unavailable

Note: measures of statistical significance not available

These are locales that are already experiencing the deadly intersections of depressed economies, environmental degradation, and ill health. Fracked gas infrastructure will not bring the hoped-for economic prosperity necessary for healthy communities. It will only further degrade living conditions.

⁹⁷ (Oregon Health Authority, n.d.)

⁹⁸ (Washington State Department of Health, n.d.)

Stress and Mental Health

Often neglected in the discussion of impacts on communities targeted for major fracked gas infrastructure development is the associated psychological stress. Mental health impacts arise from proposals to build fracked gas infrastructure due to uncertainty of risks to health, life, property, security, sense of well-being, and inability to plan for the future. Noise exposures during construction and operation of fracked gas terminals also have the potential to increase stress and exacerbate mental health disorders among workers and nearby residents.

The threat of loss of land and property through eminent domain puts people in the path of proposed pipelines into long-term limbo, having to wait for many years to determine whether a project will go through. While they wait, they are reluctant to make changes or improvements to their homes, are unable to plan for the future, and are confronted with impossible decisions about whether to sell or lease right of way to their land, whether to leave or stay. Many poorer communities have been divided by the prospect of windfall profits for some but not all of the community. Confounding the profit motive is the threat of damage to health, environment, ecosystem supports, and cultural values. Threats of accidents or toxic releases increase concerns about the location of schools, hospitals, residences, and other businesses.

Residents of communities experiencing large influxes of temporary labor are caught between the lure of jobs and the threat of physical harm from toxic emissions to air and water, or from accidental releases, explosions, and fires. Added to those uncertainties, temporary labor influxes put stress on the resources of communities such as fire, police, and health care, and infrastructure such as roads, water, and sewage systems. Communities are faced with unforeseen burdensome expenses, with further loss of comfort and well-being.

For Native American communities, the prospect of loss of valued resources and traditional values after centuries of forced migration and marginalization is a source of increased mental and physical stress. Furthermore, increases in violence, assault, and disappearances among Native American women and girls have been documented near fossil fuel infrastructure projects. Threats to well-being, safety, and security are threats to mental as well as physical health and marginalized communities, including tribal nations, are disproportionately affected by these adverse impacts.⁹⁹

⁹⁹ (Hayes, 2018)

AIR POLLUTION

Toxic air pollutants (TAPs), also known as hazardous air pollutants, are agents known or suspected to cause cancer or other serious health effects, such as lung and heart diseases, adverse effects on reproduction, or birth defects. They are often measured by lifetime cancer risk and respiratory hazard index. As the scientific understanding of TAPs has evolved, levels considered “safe” have consistently gone down. The standards for U.S. air quality have been set under considerable influence of industry and the standards set by the World Health Organization are often significantly lower and more protective.

Current National Ambient Air Quality Standards (NAAQS), established by the U.S. Environmental Protection Agency (EPA), cover only six air pollutants, known as criteria air pollutants: nitrogen dioxide (NO₂), sulfur dioxide (SO₂), carbon monoxide (CO), ozone, particulate matter (PM₁₀ and PM_{2.5}), and lead.¹⁰⁰ Fracked gas installations are known emitters of many of these air pollutants and many others. Ambient air quality standards do not exist for these additional pollutants, though Oregon DEQ has ambient benchmarks for some of them.

Safe levels of air pollutants are often assumed to fit all persons. Estimates of risk may be based solely on healthy adult exposure with no consideration for differences due to gender, race, age, size or pre-existing health conditions. In addition, emissions for any one air pollutant may comply with air quality standards, but that single pollutant benchmark fails to take into account the cumulative effects of exposure to several pollutants at once (which is by far the usual case) or how one pollutant might increase the power or the effect of another. For example, the potency of airborne carcinogens is increased when they are adsorbed onto fine particulate matter and transported through the lungs to the blood and brain and placenta. Stating that the levels of exposure are below a particular standard is not the same as saying the risk of harm is not increased. Any amount of exposure to a carcinogen increases the risk of cancer. Lastly, for some air pollutants no level of exposure exists which does not harm human health. A prime example is fine particulate matter (PM₁₀ and PM_{2.5}), a major pollutant associated with fracked gas infrastructure which causes a host of health problems.

In 2010 the American Heart Association (AHA) revised and reissued its position on fine particulate matter: “The overall evidence is consistent with a causal relationship between particulate

¹⁰⁰ (U.S. Environmental Protection Agency, 2015)

matter 2.5 exposure and cardiovascular morbidity and mortality. This body of evidence has grown and has been strengthened substantially... [and] because the evidence reviewed supports that there is no safe threshold, it appears that public health benefits would accrue from lowering PM2.5 concentrations even below present-day [EPA standards] ... to optimally protect the most susceptible populations.”¹⁰¹ The American College of Obstetricians and Gynecologists along with the American Society of Reproductive Medicine;¹⁰² the American Academy of Pediatrics;¹⁰³ and the World Health Organization¹⁰⁴ have also issued statements calling for prompt action to revise air quality standards and reduce public exposure to toxic air pollutants, especially particulate matter.

Beyond extraction, every stage of fracked gas transport, storage, combustion, refinement, and processing is responsible for levels of air pollutants that threaten public health. Common air toxics produced over the life-cycle of fracked gas include:

- *Volatile organic compounds* (VOC), organic chemicals that form vapors easily. VOCs contribute to the formation of ozone and smog.
- Ground level *ozone*, formed from nitrogen oxides (NO_x) and VOCs. While ozone is a key constituent of the upper atmosphere, ground level ozone is created by human activities (largely the combustion of fossil fuel) and is a constituent of smog.
- *Particulate matter* (PM), tiny particles of solid or liquid suspended in a gas. The burning of fossil fuels (particularly diesel) in vehicles, power plants, and industrial processes generates significant amounts of particulate matter. PM is often referred to by size: PM10 and PM2.5.
- *Nitrogen oxides* (NO_x), expelled from high temperature combustion. They can be seen as a brown haze above or as a plume downwind of cities.
- *Carbon monoxide* (CO), a colorless and odorless gas. It is a product of combustion of fuel such as gas, coal, or wood.
- *Formaldehyde*, a VOC that is listed by the International agency for Research on Cancer (IARC) as a known cause of nose and throat cancer.

¹⁰¹ (Brook, 2010)

¹⁰² (American College of Obstetricians and Gynecologists, 2013)

¹⁰³ (Kim, 2004)

¹⁰⁴ (World Health Organization, 2013)

- *Benzene*, also a VOC, a colorless, flammable liquid with a sweet odor. Benzene is a natural part of crude oil and gasoline (and therefore motor vehicle exhaust), as well as cigarette smoke. It is classified by IARC as a known carcinogen.
- *Polycyclic aromatic hydrocarbons* (PAH), a particular type of volatile organic compound produced by the thermal decomposition of organic matter, such as in engines and incinerators or when biomass burns in forest fires. It is a prime carcinogen in cigarette smoke. Examples of PAHs include naphthalene and benzo[a]pyrene, which is classified by the IARC as a known carcinogen.

In both Oregon and Washington air quality is monitored primarily for particulate matter in the larger cities and towns, industrial sites, and transportation corridors.¹⁰⁵ ¹⁰⁶ Very few sites monitor for carbon monoxide, nitrogen oxides, sulfur dioxide, ozone, or lead. Toxic air pollutants rarely monitored. In Oregon, no air quality monitoring stations exist in Coos or Columbia Counties.

¹⁰⁵ (Oregon Department of Environmental Quality, 2019)

¹⁰⁶ (Washington State Department of Ecology, n.d.)

Table 7 summarizes the key health effects of toxic air emissions associated with fracked gas.

Table 7: Health Effects of Air Pollutants Associated with Fracked Gas Infrastructure	
Air Pollutant	Health Effects
Volatile organic compounds	Cancer, watery eyes, coughing, nausea, skin irritation, eye, nose and throat irritation, frequent headaches, damage to the liver, kidney and central nervous system
Ozone	Lung damage, inflammation of the lining of the lung, chest pain, coughing, throat irritation, worsening of bronchitis, emphysema, and asthma
Particulate matter	Strokes, heart disease, autism, attention deficit hyperactivity disorder, Alzheimer's Disease, lung cancer, worsening of bronchitis, emphysema, and asthma
Nitrogen Oxides (NO _x)	Lung inflammation, increased lung infections
Carbon Monoxide	Short term: headache, dizziness, nausea; unconsciousness and death (at high levels of acute exposure) Long term: heart disease
Formaldehyde	Nasopharyngeal cancer, watery eyes, burning in eyes, nose and throat, wheezing, nausea, skin irritation
Benzene	Cancer: acute myelogenous leukemia, other blood cancers (leukemias and lymphomas), anemia, myelodysplastic syndrome
Polycyclic Aromatic Hydrocarbons	Testicular, skin and colon cancer, cataracts, kidney and liver damage, birth defects, developmental disorders, hormonal disruption

Table 8 summarizes types of fracked gas infrastructure with best documented emissions of air pollutants and is not an inconclusive list.

Table 8: Air Pollutants Associated with Fracked Gas Infrastructure						
	Particulate Matter	Volatile Organic Compounds	Ozone	NO_x	CO	Other
Compressor stations; pipelines	yes	yes (formaldehyde, benzene, hexane)	unknown	yes	yes	sulfur dioxide, lead
LNG facilities	yes	yes	yes	yes	yes	unknown
Methanol refining	yes	yes (benzene, formaldehyde, PAHs)	unknown	unknown	yes	ammonia, nickel
Ammonia production facilities	yes	yes	unknown	yes	yes	unknown

Jordan Cove LNG

The air quality status of the local environment is unknown. According to the JCEP Final Environmental Impact Statement (FEIS), the closest monitoring sites for criterion air pollutants are in Eugene and Lane County. For all monitored air pollutants, emissions at the plant are expected to fall well below NAAQS.¹⁰⁷

The LNG facility will also emit Hazardous Air Pollutants. In the Coos Bay area ambient levels of HAPs were last measured in 2005, in terms of lifetime cancer risk, and again in 2011, using the respiratory hazard index. Levels were found to be low, although no safe levels have been established for these hazardous air pollutants. The 2017 JCEP Resource Report 9 notes that the LNG

¹⁰⁷ (Office of Energy Projects: Federal Energy Regulatory Commission, 2019)

terminal will be a source of HAPs, emitting 8.1 tons per year and 3.1 tons per year of n-hexane, a known neurotoxin as well as many others including benzene, formaldehyde, polycyclic aromatic hydrocarbons, arsenic, cadmium, and mercury.¹⁰⁸

Compressor Station of the Pacific Connector Gas Pipeline

Compressor stations provide the force which propels gas through pipelines. They emit significant amounts of air pollution, both from the operation of the engine which powers the pump as well as from venting. When the pressure in the pipeline exceeds levels meant to ensure safety (by not creating dangerous pressure on the pipeline), the contents of the pipeline are vented intentionally and directly into the ambient air. Fugitive leaks may occur as well. Compressor stations and meter stations, which also vent methane, VOCs and PM, are often located every 40 to 100 miles along fracked gas pipelines. A meter station is proposed for Coos County as part of the Jordan Cove LNG project. The Klamath Compressor Station for the Pacific Connector Gas Pipeline would be located in a rural area with 16 homes in the vicinity. Two compressor stations related to existing large pipelines are already located near this proposed compressor station.

In New York State a study on the health effects of the emissions from 18 fracked gas compressor stations found that, collectively, these sites released 40 million pounds of 70 different contaminants over a 7-year period (the seventh largest point source of air pollution in the state for that time period). The largest emissions (by volume) were nitrogen oxides, carbon monoxide, volatile organic compounds (VOC), formaldehyde and particulate matter.¹⁰⁹

Studies of gas compressor stations in Pennsylvania and New York demonstrated that compressors emitted highly variable plumes of methane that spread downwind and were measurable a full mile away at levels that could expose nearby residents, especially during temperature inversions.¹¹⁰ High levels of methane, especially in an enclosed space, can cause suffocation, loss of consciousness, headache and dizziness, nausea and vomiting, weakness, and loss of coordination.

High levels of formaldehyde were found near compressor stations in Arkansas, Pennsylvania, and Wyoming. Formaldehyde is a byproduct of incomplete combustion from the gas-fired engines. It is also created when fugitive methane, which escapes from compressor stations, is exposed to sunlight. Other hazardous air pollutants detected near compressor stations in this study were benzene

¹⁰⁸ (Jordan Cove LNG, 2017)

¹⁰⁹ (Russo, 2017) https://www.albany.edu/about/assets/Complete_report.pdf

¹¹⁰ (Payne, 2017) doi: 10.1016/j.scitotenv.2016.12.082

and hexane. One air sample collected near a compressor station in Arkansas contained 17 different volatile compounds.¹¹¹

According to the JCEP Resource Report 9, monitoring stations in proximity to the proposed route focus primarily on monitoring of PM10 and PM2.5 (related to particulate matter emissions from wood heating in the region). No stations monitor for SO2 and NO2 in the multi-county area of southern/southwestern Oregon and northern California. Monitoring for CO was performed in Medford through 2010, after which the monitor site was closed. Per this report, NAAQS are met at the Klamath Compressor Station and along the path of the PCGP with the exception that approximately 4.3 miles of pipeline would be located within the Klamath Falls PM2.5 nonattainment area (out of compliance with NAAQ standards) and approximately 300 feet of pipeline would be located within the PM10 maintenance area (formerly out of compliance).

Hazardous air pollutants (HAPs) are also generated both with construction and operation of the Compressor Station and Pipeline, primarily formaldehyde. The JCEP Resource Report 9 states that these levels meet current standards, although no safe levels have been established.

During 2014 and 2015, Klamath Falls experienced elevated PM2.5 ambient concentrations due to wildfires in southern Oregon.¹¹² During the 2018 fire season the highest concentration of wildfires in the state was in Southern Oregon and air quality alerts were issued to residents of Klamath Falls.¹¹³ However, the DEIS for Jordan Cove does not consider cumulative effects of toxic pollution from fires with ongoing toxic emissions, particularly from compressor stations.¹¹⁴

Kalama Methanol Refinery

Methanol refining is an industrial process that emits significant amounts of air pollution. Methanol itself is toxic when ingested or inhaled. It affects the nervous system, particularly the optic nerve, and is the toxin responsible for the cases of blindness from drinking homemade spirits (moonshine). Principle TAPs from the refinery would include nitrogen oxides, sulfur dioxide, carbon monoxide, and VOCs. PM2.5 emissions from the refinery are particularly worrisome because no safe level exists for these pollutants.

¹¹¹ (Macey, 2014) doi: 10.1186/1476-069X-13-82

¹¹² (Jordan Cove LNG, 2017)

¹¹³ (Linares, 2018)

¹¹⁴ (Office of Energy Projects: Federal Energy Regulatory Commission, 2019)

According to the FEIS, all toxic air emissions beyond the industrial site itself would fall within limits set for Washington State. Within the physical confines of the operation, however, the levels of PM_{2.5} would exceed standards by five-fold. (Table 4.6¹¹⁵) The emission estimates assume the use of Ultra-Low Emissions (ULE) technology which, according the FEIS, is expected to decrease the emissions of GHGs and toxic air pollutants.

Two possible technologies for producing methanol from methane are considered in the Final Environmental Impact Statement. Combined reformer (CR) technology is currently deployed in all large-scale methane to methanol refineries worldwide. The alternative proposed for the Kalama methanol plant is ULE, which would reduce PM_{2.5} emissions by about 60%. However, while ULE technology has been used to produce other chemicals from methane, it is a new technology for methanol production and has only been deployed in one small methanol plant in Australia. It has never been applied at any full-scale methanol production facility. Table 9 (reproduced from the FEIS¹¹⁶) displays total expected annual emissions from normal facility operations, based on the two different technologies.

Table 9: Air Pollutants from Methanol Refinery		
Pollutant	Combined Reformer	Ultra-Low Emissions
nitrogen oxides (NO _x)	124 tons/year	75 tons/year
carbon monoxide (CO)	584 tons/year	72 tons/year
particulate matter (PM)	161 tons/year	64 tons/year
sulfur dioxide (SO ₂)	46 tons/year	46 tons/year
volatile organic compounds (VOC)	105 tons/year	54 tons/year

¹¹⁵ (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

¹¹⁶ (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

Diesel exhaust is another source of concern. During construction and operation of the terminal, diesel exhaust emissions will arise from construction and support vehicles, generators, and marine vessels servicing the terminal. It is composed of various pollutants including VOCs, NO_x, and PM_{2.5} and is carcinogenic. But to estimate cancer risk of diesel emissions at the refinery the FEIS drew on a 2002 EPA statement that “human-response data [related to diesel exhaust] are considered too uncertain to derive a confident quantitative estimate of cancer unit risk.”¹¹⁷ In fact, in 2012 the IARC (World Health Organization) upgraded its classification of diesel particulate matter to a known and certain carcinogen.¹¹⁸

Anhydrous Ammonia

Anhydrous ammonia (NH₃) is a common nitrogen containing fertilizer used in industrial agriculture to promote rapid plant growth. Its agricultural use results in significant contributions to worldwide GHG emissions. NH₃ is also used as a refrigerant and is a key chemical in the illicit production of methamphetamine. Numerous thefts of NH₃ have occurred for the purposes of producing methamphetamine resulting in leaks and releases due to improper handling and storage.

Exposure to anhydrous ammonia can cause severe eye, nose and throat irritation, breathing difficulty, wheezing, chest pain, pulmonary edema (fluid build-up in the lungs), burns, blisters, and frostbite. According to The Centers of Disease Control and National Institute of Occupational Safety and Health, exposure is fatal at concentrations as low as 300 parts per million.

The production of ammonia is energy intensive and accounts for 1-2% of worldwide energy use and 3% of worldwide greenhouse gas emissions.¹¹⁹ But Cornell University and the Environmental Defense Fund recently released a study demonstrating that methane gas emissions from fertilizer plants are “vastly underestimated” and may be as much as 100 times higher than the self-reported estimates of the industry.¹²⁰ This industrial process also releases other types of air pollution.

The proposed Pacific Coast Fertilizer plant, which would be sited in Longview, Washington’s Mint Farm Industrial Park, would produce anhydrous ammonia using fracked gas. The Draft EIS (DEIS) is expected in the spring of 2019. However, toxic emissions would be similar to

¹¹⁷ (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

¹¹⁸ (International Agency for Research on Cancer, 2012)

¹¹⁹ (Lehigh University, 2018)

¹²⁰ (Garris, 2019)

the Dyno-Noble Fertilizer plant in nearby St Helens, Oregon, which emits particulate matter, nitrous oxides, carbon monoxide, and VOCs.¹²¹ The proposed Longview plant is expected to produce four to six times as much fertilizer per year, compared to the Dyno-Noble plant, with a proportional increase in the amount of toxic emissions.

Puget Sound LNG

Toxic emissions, as modeled for the Puget Sound LNG FEIS, do not exceed the critical statutory thresholds for air pollution.¹²² For reasons elaborated above this does not ensure that air quality would not be degraded and harmful to both workers and the community. Emissions from construction, which include stirring up contaminants in the earth from prior industrial activities, would create a toxic mix of nitrous oxides, carbon monoxide, sulfur dioxide, PM2.5, volatile organic compounds, and other toxic air pollutants (TAP).

Operations of the facility would result in emissions from the pretreatment heater, enclosed ground flare, emergency flare, LNG vaporizer, 1600KW backup diesel generator as well as fugitive emissions from pipelines and storage tanks and refrigerant leaks and losses. These emissions would include the same pollutants as listed above for construction, plus sulfuric acid.

Tacoma-Pierce County was out of compliance with National Ambient Air Quality Standards (NAAQS) for PM2.5 for several years. Compliance was attained in March of 2015 (daily PM2.5 = 33 micrograms per cubic meter/one-year average; threshold for non-compliance = 35).¹²³ As this same report notes, however, serious adverse health effects are experienced at levels below the NAAQS. The LNG facility would only add to this problem.

Methane has been promoted as a “clean” fuel for maritime vessels, particularly in comparison to diesel. But measurements of the gaseous and particulate emissions of a cruise ferry on the Baltic Sea using a dual-fuel engine showed that LNG is not such a clean fuel for ships.¹²⁴ Methane made up about 85 percent of the vessel’s hydrocarbon emissions. Particulate emissions showed substantial amounts of volatile and nonvolatile particles, both of which are hazardous to human health.

¹²¹ (Oregon Department of Environmental Quality)

¹²² (Final Environmental Impact Statement: PSE LNG, 2016)

¹²³ (Washington State Department of Ecology, 2016)

¹²⁴ (Anderson, 2015)

WATER AND LAND POLLUTION

Clean, fresh water is one of the most important and abundant natural resources in the Pacific Northwest. It is also one of the region's features that attracts the gas industry, which requires staggering amounts of water for construction and operation of its infrastructure, especially refineries. At the same time, the infrastructure threatens to pollute and degrade watersheds and waterways that communities and wildlife rely upon. Adverse impacts on land are closely related and include loss of farmlands, wetlands, and forest and despoilment of the natural beauty of the Pacific Northwest.

Oregon and Washington economies are highly dependent on reliable water and water systems for human consumption, agriculture and livestock, manufacturing, transportation, energy production, and recreation. Clean water is essential to our environmental health, for trees and vegetation, wetlands, aquatic life, and human health. Drought related to climate change has already negatively impacted lands and water systems in the Pacific Northwest.

As noted by the Oregon Department of Environmental Quality, "Many studies have shown that it is more cost-effective to prevent pollution in the environment than to remove it through treatment or to implement restoration."¹²⁵ Reducing or eliminating pollutants through protection and prevention can:

- lower treatment and maintenance costs for public water providers
- improve long-term viability of groundwater drinking water sources
- reduce the need for equipment replacement or upgrades
- reduce risks associated with many contaminants (including ones known to be toxic, persistent, and/or bio-accumulative)
- promote long-term assurances of a safe and adequate drinking water supply
- help protect property values and preserve the local and regional economic growth potential
- enhance public confidence in their drinking water
- reduce the need for expensive treatment in both surface water and groundwater

Alternatively, pollution of drinking water associated with fracked gas infrastructure may saddle water providers and ratepayers with costly new monitoring and treatment systems.

¹²⁵ (Oregon Department of Environmental Quality Environmental Solutions: Watershed Management Section, 2018) <https://www.oregon.gov/deq/FilterDocs/SurfaceWaterResourceGuide.pdf>

Pacific Connector Pipeline

The proposed Pacific Connector Pipeline (PCP) has vast potential to degrade water quality and quantity on public, private, and tribal land for drinking water and other beneficial uses. The project would directly harm approximately 480 Oregon rivers and streams by clearcutting through riparian areas, building new roads to access these rivers, damming and diverting water, cutting trenches and laying a 36-inch pipeline directly through riverbanks and riverbeds. Horizontal drilling beneath the wild and scenic Rogue, Umpqua, Coquille, Coos, and Klamath Rivers could result in pollution of waters with toxic drilling fluids. At least twelve public drinking water sources are located in watersheds to be transected by the proposed pipeline. (See Appendix III for detailed information.)

The pipeline would slash a 95-foot wide swath through forest, ranch, and farm land and would also cross the popular recreational hiking trail, the Pacific Crest Trail. Clear cuts along the trail and elsewhere would be permanently maintained by cutting and spraying fertilizers, herbicides and pesticides.

During construction, testing of the pipeline to determine if it will hold gas would utilize enormous quantities of fresh water in areas that are designated as drought affected. For example, the Klamath Basin and those who rely on Klamath water (irrigators, tribal communities, endangered species, wildlife refuges, and associated wildlife) already experience extreme strain on water resources. Testing could require over 60 million gallons of fresh water. If the project re-uses water to test multiple segments of pipe, it would still consume at least 16 million gallons of water.¹²⁶ Discharged test water would be contaminated with materials used to construct the pipeline.

According to the Oregon DEQ and the Oregon Health Authority, water contamination “depends on three major factors: 1) the occurrence of a land use/activity that releases contamination, 2) the location of the release, and 3) the hydrologic, ecological, and/or soil characteristics in the source area that allow the transport of the contaminants to the waterbody and thereby the intake.”¹²⁷

Human factors affecting water quality include:

- All activities and facilities within riparian areas
- Road locations and conditions, especially stream crossings, and roads near streams, on steep slopes, and with drainage systems connected to the stream network

¹²⁶ (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

¹²⁷ (Oregon Department of Environmental Quality Environmental Solutions: Watershed Management Section, 2018)

- Stormwater runoff from contaminated lands, for example, with high phosphorus or nitrogen content
- Recently managed forestland which has been harvested, replanted, and treated with herbicides.
- Quarries, construction, and other industrial sites
- Hazardous material sites
- Solid waste landfill sites

Each of these factors is associated with the proposed pipeline.

Some landscapes are more sensitive to disturbances and contamination has greater potential to impact the water supply.¹²⁸ Sensitive areas include:

- Riparian areas
- Springs, seeps, and wetlands
- Steep slopes (>70-85%)
- Floodplains
- Areas with high soil erosion or runoff potential, for example, disturbed or bare soil
- High water table areas
- Areas of high soil permeability
- Areas within 1000 feet of rivers and streams.

The proposed pipeline would pollute streams, wetlands and riverbeds; blast rock and hillsides; clear-cut and destroy vegetation in each of these sensitive areas within municipal watersheds. Potential adverse impacts include:

- increased water temperature from loss of forest cover and riparian area buffers
- increased erosion from loss of forest cover and riparian areas leading to increased sediment and turbidity
- increased use of chlorine due to higher turbidity levels, leading to increased chemical by-products that carry their own health risks
- contamination of water and soil by oil, lubricants, and chemicals
- movement of non-native species into watersheds on tires of vehicles, on boats, and equipment

¹²⁸ (Oregon Department of Environmental Quality Environmental Solutions: Watershed Management Section, 2018)

- fires due to construction and blasting accidents and rupture or failure of the pipeline
- wildfire leading to pipeline explosion leading to larger wildfire
- water contamination through accidental application of fire suppressants/retardants
- post-fire slope failures, debris flows, landslides, increased turbidity, loss of drinking water, increased cost for replacement of drinking water, increased costs for water treatment
- disruption of surface water connection with groundwater (from blasting and water diversions)
- disruption of groundwater connection with wells and surface water (from blasting and water diversions)
- contamination of water by herbicides like picloram (to maintain right-of-way free of vegetation on and near the pipeline route) which could persist in the groundwater for years
- contamination of water by intensive use of fertilizers to re-plant cleared area around pipeline
- increased incidence of harmful algal blooms

Construction and operation of the pipeline would also degrade habitat for aquatic life, especially the endangered Coho salmon, with negative impacts on fishing and traditional activities of tribal communities. Habitat degradation would occur through loss of forest canopy, removal of riparian vegetation, decreased summer flows, warming of water, and addition of fertilizers/nutrients to encourage re-growth of vegetation on certain properties following installation of the pipeline.

These same effects would increase risk of harmful algal blooms (HAB). According to the Centers for Disease Control and Prevention, HAB can produce toxins that cause illness in people, companion animals, livestock and wildlife.¹²⁹ Exposures to the toxins can occur when people or animals have direct contact with contaminated water by:

- Swimming
- Breathing in aerosols (tiny airborne droplets or mist that contain toxins) from recreational activities or wind-blown sea spray

¹²⁹ (Centers for Disease Control and Prevention, n.d.)

- Swallowing toxins by drinking contaminated water or eating contaminated fish or shellfish

Human and animal illnesses and symptoms vary depending on the nature and length of exposure and the particular HAB toxin involved. Common toxins include cyanotoxins which can be toxic to the nervous system, liver, skin, or the gastrointestinal tract. No human deaths in the United States have been caused by cyanotoxins; however, companion animal, livestock, and wildlife deaths caused by cyanotoxins have been reported throughout the United States and the world.¹³⁰

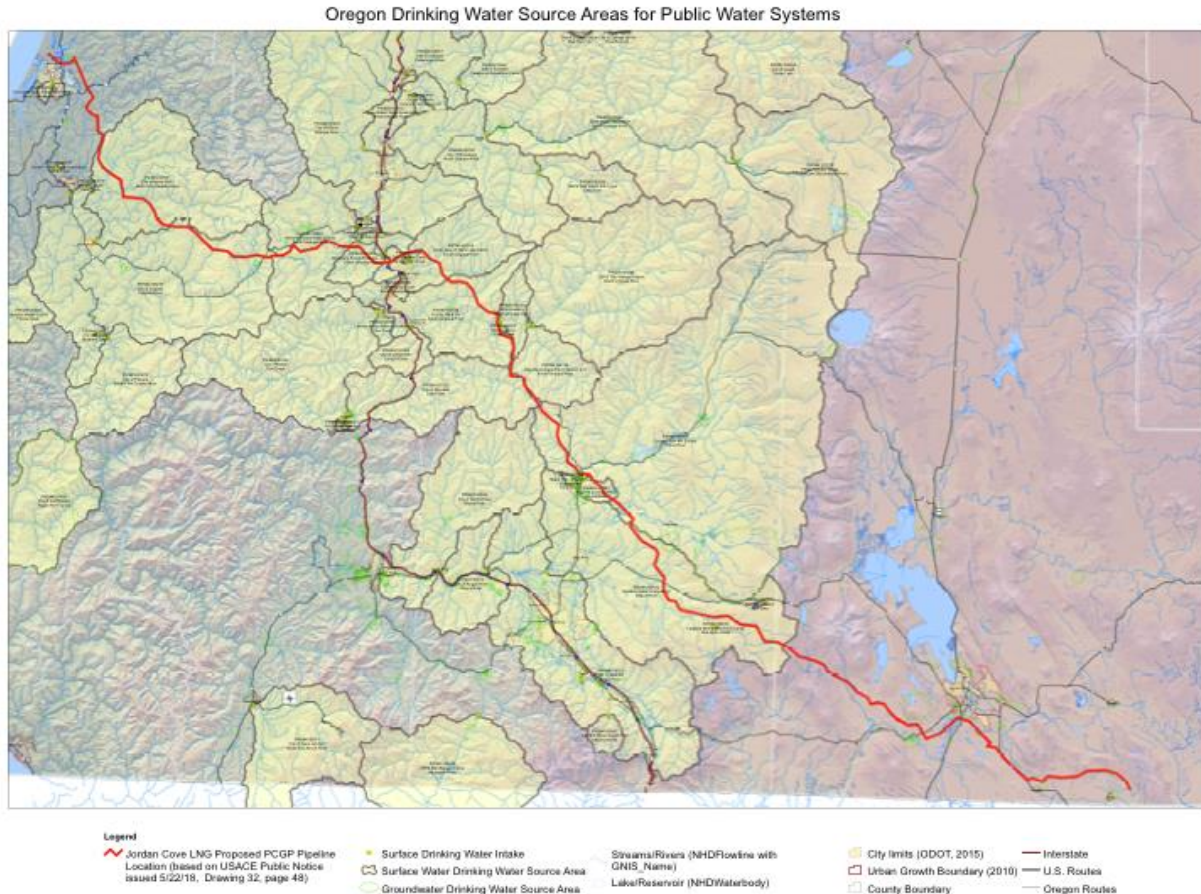
During the summer of 2018, a state of emergency was declared by Governor Brown when the drinking water supply for the City of Salem was tainted by HABs. Eight drinking watersheds in SW Oregon that would be transected by the PCGP are today at risk for HAB.¹³¹ The construction and maintenance of the proposed Pacific Gas Connector Pipeline would greatly exacerbate that risk.

The following map illustrates the course of the proposed pipeline and the many drinking watersheds that would be directly disturbed and degraded by the project. Many more drinking water sources could be damaged if a fire associated with the PCP were to start in a small watershed, jump a ridge and burn out of control within and/or beyond the larger Rogue, Umpqua, Coquille, Klamath or Coos watersheds.

¹³⁰ (Centers for Disease Control and Prevention, n.d.)

¹³¹ (Oregon Health Authority, 2018)

Figure 12
Pacific Connector Gas Pipeline and Drinking Water Sheds



According to the Jordan Cove DEIS, “If a groundwater supply is affected by the Project, Pacific Connector would work with the landowner to provide a temporary supply of water; if determined necessary, Pacific Connector would provide a permanent water supply to replace affected groundwater supplies.”¹³² The same claim is made for mitigation for a temporary or permanent loss of surface water supplies. Replacement of a permanently contaminated aquifer or surface water drinking source would, however, require trucking in bottled water or piping it in from an alternative source. This would be costly, difficult, and in some cases impossible. It would represent a permanent erosion of quality of life as well as significant reduction in land value. Lack of an affordable and reliable source of clean water renders a landscape uninhabitable over the long term.

¹³² (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

Jordan Cove LNG

Construction and operation of the terminal would require massive dredging operations in the Coos Bay Estuary, which is critical habitat for Coho salmon and is home to thriving oyster farms, traditional shellfish gathering areas, as well as other aquatic and estuarine life. Dredging and disposal of dredged material will increase turbidity, degrade the shoreline and the bay and negatively impact habitat in the area.

The project would remove roughly 6 million cubic yards from the Coos Bay Estuary. A related channel deepening project would increase the overall dredging to 18 million cubic yards in the estuary, and would be one of the largest dredging proposals in Oregon's history.¹³³ Suspended sediment will make the water murky and increase turbidity. Dredging of this scope would stir up contaminated sediments from past industrial activities, including polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), heavy metals, petrochemicals, pesticides and other persistent and toxic contaminants. These could enter the food chain, accumulate in the tissues of animals and fish and present significant health risks to people consuming these foods. Contaminated sediments also pose a major threat to shellfish such as oyster beds, a major local industry.

Endangered Oregon Coast Coho salmon would be negatively impacted. Impacts on one stock of salmon can degrade fishing throughout Southern Oregon and Northern California, threatening loss of livelihood and food source to communities in the region. Diminished access to salmon and shellfish would especially harm tribal nations and their protected resources, exacerbating injustices to these and other communities that rely on aquatic resources for their livelihoods.

LNG vessel traffic in Coos Bay would further interfere with ocean-based fisheries.¹³⁴ The Dungeness crab fishery is consistently the most valuable single species commercial fishery in Oregon, making the crustacean's well-being of special significance to the economy of Coos Bay and the State of Oregon itself.¹³⁵ According to Professor Sylvia Yamada, Assistant Professor of Senior Research in the Department of Zoology at Oregon State University, Coos Bay is a crucial "nursery" habitat for the Dungeness crab.¹³⁶ The highest number of juvenile crabs are found in soft sediments and eel grass beds of estuaries, where the young crabs find food and shelter from predators.

¹³³ (Oregon Department of Environmental Quality, n.d.)

¹³⁴ (Rogue Climate, 2019)

¹³⁵ (Knoder, 2018)

¹³⁶ (Yamada, 2019)

Not only would the turbidity during the construction phase of the LNG terminal negatively impact the ecological community, the ongoing dredging to maintain the berth and shipping channels would continue to disturb the ecosystem. In a study by Professor Yamada designed to simulate a dredging operation, she found that 45 - 85% of the Dungeness crabs exposed to the operation died. Over the four-year estimated construction period, Dungeness crabs would face repeated exposure to dredging activities that could substantially increase their rates of mortality.

Michael Graybill is the former manager of the South Slough National Estuarine Research Reserve, a fisherman, and current resident of Coos Bay. He testified in public hearings in January of 2019 that individual boats involved in commercial fisheries including the Dungeness crab, salmon and pink shrimp work as a fleet.¹³⁷ When Dungeness crab season opens and weather conditions permit, the boats in the fishery head toward sea in unison. Particularly in winter, which is commercial crab season, boats at sea monitor weather conditions and the effects on the bar. In declining or marginal weather conditions, the fleet of boats reverses direction and heads together for the bar. Their safe return can consume the entire window of suitable incoming high tide conditions. When the tide reverses and begins to ebb, conditions on the bar deteriorate rapidly. Boats that miss this window are forced to ride out the storm at sea until the next high flood tide. Adding LNG ship traffic would negatively impact the existing use of the navigation channel by the fishing fleet. Closing the bar for the necessary thirty minutes over high tide to accommodate passage of an LNG carrier risks stranding one of the fishery fleet boats at sea in bad weather, a serious if not life-threatening outcome.

Coal Bed Methane Extraction

Oregon DEQ issued a Discharge Elimination System permit in 2007, which was renewed in 2012 and remains active until 2020. While in some coal bed methane (CBM) developments wastewater is reinjected back into the ground, the Coos County project is permitted to treat and then discharge wastewater into the Davis Slough five miles south of Coos Bay.¹³⁸ The discharge is contaminated with a number of hazardous chemicals that may include benzene, toluene, ethylbenzene and heavy metals including arsenic, cadmium, lead, mercury, and copper. Although

¹³⁷ (Graybill, 2019)

¹³⁸ (Oregon Department of Environmental Quality, 2018)

extraction is currently suspended, the pre-existing Curzon wells are exempt from the 2019 5-year moratorium on gas fracking in Oregon.¹³⁹

Kalama Methanol Refinery

The methane to methanol refinery would be the largest methanol plant in the world, and it would sit on the banks of the Columbia River, adjacent to wetlands and overlying the alluvial aquifer associated with the Columbia and Kalama rivers and from which the City of Kalama draws its water. The refinery will significantly impact water resources during both construction and operation.

During construction stormwater and surface runoff would be discharged into the Columbia River and adjacent wetlands, carrying sediment, debris, fuel, oil, grease, and other hazardous pollutants that could affect water quality, especially if accidental spills occur.¹⁴⁰ Dredging to accommodate shipping vessels and installation of concrete and steel pipes will cause turbidity in the Columbia River, which can be harmful to aquatic life. Dredging could also disturb sediments, releasing accumulated hazardous chemicals into the water.

During operations, real and potential adverse impacts on water resources include:

- Degradation of water quality of the aquifer due to contaminated stormwater runoff and accidental spills of methanol or other hazardous chemicals
- Increased vessel traffic on the Columbia River with increased potential for toxic spills
- Consumption of the vast quantities of fresh water

Toxic spills of bunker fuel or methanol into the Columbia from ships, as well as toxic spills at the refinery of chemicals used in producing methanol and waste products such as heavy metals could contaminate the underlying aquifer, which supplies drinking water to the thousands who live nearby. Neither the FEIS or Draft Supplemental EIS (DSEIS) seriously examine this possibility.

A healthy Columbia River basin is essential to northwest fisheries and to the Columbia River tribes who rely on the fish for food, cultural, and spiritual resources. In addition, at a time when Southern Resident killer whales are on the verge of extinction, impacts on Chinook salmon and other fisheries in the Columbia River basin must be considered.¹⁴¹ Yet the FEIS gives short shrift to the issue, mentioning fish rarely and whales not once. The FEIS concedes that increased marine traffic “would have the potential to result in cumulative impacts to wildlife and fisheries resources,

¹³⁹ (Loew, Oregon Senate passes 5-year fracking moratorium for oil, natural gas, 2019)

¹⁴⁰ (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

¹⁴¹ (Nations of Yakama, Umatilla, Warm Springs and Nez Perce, n.d.)

including increased potential for the introduction of invasive species, ship strikes, and wake stranding.”¹⁴² Despite this, the FEIS made no attempt to quantify these impacts on fisheries. It goes on to say the refinery will increase the overall risk of spills and erosion impacting not only fish, but the riparian and aquatic vegetation as well.

Endangered Southern Resident killer whales are in decline. With only 78 animals remaining, they are among our nation’s most endangered species.¹⁴³ According to the National Oceanic and Atmospheric Administration (NOAA), the threats facing the Southern Residents are reduced prey (Chinook salmon), vessel traffic, noise, and toxic contaminants and spills. These are the very impacts, identified in the FEIS, that the refinery operations would have on the Columbia River. It would indirectly harm whales by putting further pressure on their primary food source, the Chinook salmon that spawn in many western rivers, but in the greatest numbers in the Columbia. Southern Residents rely most heavily on this particular source.

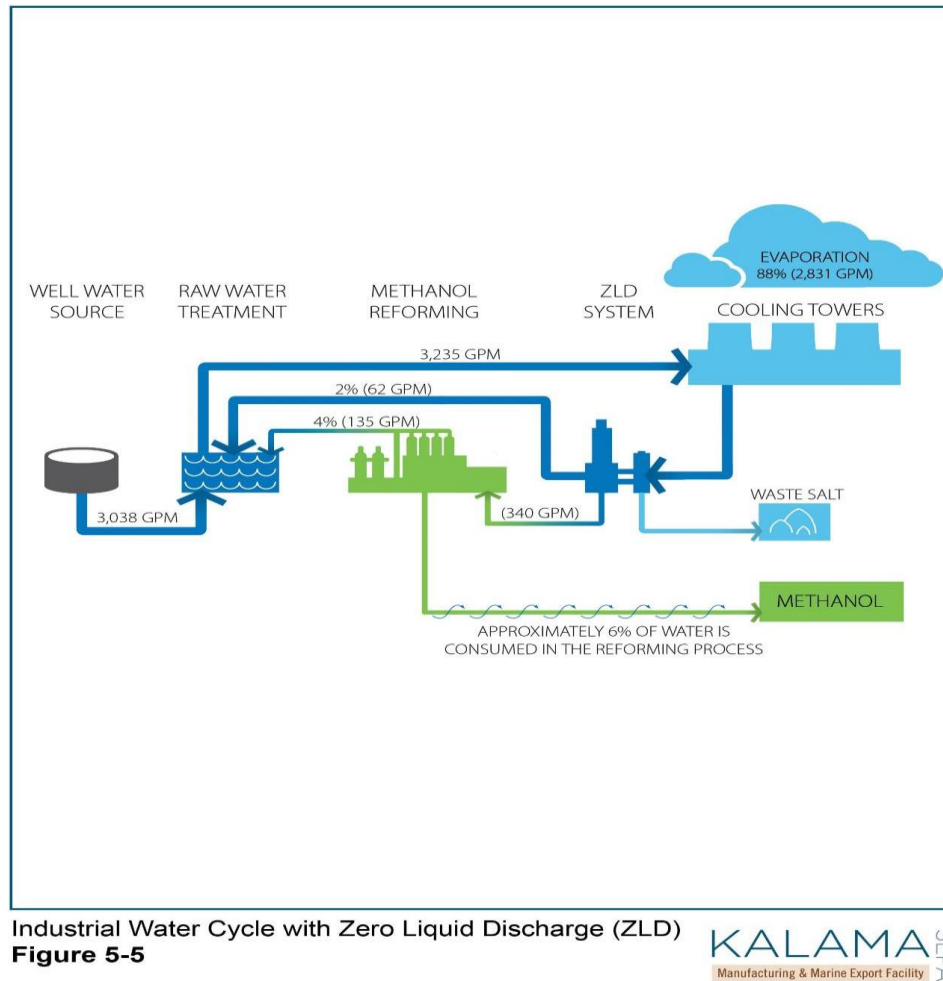
Methanol refineries consume huge quantities of fresh water. The proposed refinery at Kalama would use as much as 5 million gallons/day and would require construction of a new groundwater collector well that would dip into the underlying alluvial aquifer, the water source that supplies the City of Kalama. Nearly 90% of the water (2831 gallons/min) would be lost as evaporation from the cooling towers. The typical Kalama household of four uses 250 gal/day, and the population of Kalama is 2700, which means the refinery alone would consume more than seven times the amount of water used by the residents of Kalama.¹⁴⁴ Figure 13 illustrates the proposed industrial water use cycle. The largest share of the water used would be discharged as water vapor, which is itself a greenhouse gas.

¹⁴² (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

¹⁴³ (National Oceanic and Atmospheric Administration, 2018)

¹⁴⁴ (City of Kalama, n.d.)

Figure 13
Kalama Methanol Plant Industrial Water Cycle



Industrial Water Cycle with Zero Liquid Discharge (ZLD)
Figure 5-5

As conceded in the FEIS, “Groundwater levels could be affected by the operation of the proposed well, which could affect water supplies at other wells located in the alluvial aquifer.”¹⁴⁵ It concluded that water supply would be sufficient, based on tests showing that a pumping rate of up to 6,600 gallons/minute would have no discernible drawdown on the aquifer. The new well would draw at 3440 gallons/min, so the tests exceeded the proposed draw rate by less than two-fold.

According to the Climate Impacts Group, climate change in our region will bring decreased water for irrigation, fish, and summertime hydropower production; increased conflicts over water;

¹⁴⁵ (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

and increased urban demand for water.¹⁴⁶ The Fourth National Climate Assessment predicts a decrease in summer precipitation by up to 30 percent and low stream flows west of the Cascades.¹⁴⁷ The massive fresh water consumption of the methanol plant would only add to the growing pressure on water resources from drought predicted in the coming decades.

All of these concerns apply to the proposed refinery at Port Westward, which would, in addition, require a controversial re-zoning of more than 800 acres of prime agricultural land for industrial use,¹⁴⁸ which would only add to adverse impacts on agriculture predicted by current climate change science.¹⁴⁹

Longview Anhydrous Ammonia Plant

Pacific Coast Fertilizer has proposed an anhydrous ammonia manufacturing facility in Longview at the Mint Farm Industrial Park, which borders residential neighborhoods and sits a half-mile from the Columbia River. The facility will manufacture 1,650 tons of ammonia per day, consuming about 2.5 million gallons of water and discharging about 1 million gallons of wastewater.¹⁵⁰ The cooled liquid ammonia will be stored on site for subsequent delivery to west coast destinations by truck and to international markets by marine vessels, with an estimated 12 to 15 ships per year transiting the Columbia River.

The Longview ammonia facility would be located less than fifteen miles from the proposed Kalama methanol refinery, along the same stretch of the Columbia River, raising many of the same concerns. An EIS is under way for the ammonia facility, which will provide more details about its impact during construction and operation.

During construction stormwater and surface runoff would carry sediment, debris, fuel, oil, grease, and other hazardous pollutants, with the potential that these contaminants would find their way to the Columbia River and/or the aquifer, which supplies the drinking water for residents of Longview.

Operation of the facility raises similar concerns enumerated for the Kalama methanol plant, including:

¹⁴⁶ (Snover, 2013)

¹⁴⁷ (Ebi, 2018)

¹⁴⁸ (Zimmer-Stucky, Conservation Groups File Lawsuit to Protect Important Farmland, Salmon Habitat Near Controversial Columbia River Port, 2018)

¹⁴⁹ (Ebi, 2018)

¹⁵⁰ (DePlace E. &, 2017)

- impacts on water quality of groundwater due to contaminated stormwater runoff, accidental spills of ammonia or hazardous chemicals used in its manufacturing, and discharge of wastewaters, including contamination of the drinking water for local residents
- impacts on the Columbia River due to increased vessel traffic and the potential for toxic spills
- consumption of large quantities of fresh water required for ammonia manufacturing

These two facilities alone would consume 7.5 mill gallons/day, or about three times the amount of water consumed by all the residents of Longview and Kalama combined.

Anhydrous ammonia poses additional risk to the Columbia River and Northwest fisheries. Extremely small quantities of ammonia can kill freshwater fish. A small-scale tractor accident in 2016 spilled ammonia into an Indiana creek, killing at least 500 fish and in 2004 a larger ammonia pipeline spill killed 25,000 fish in a nearby Kansas creek.¹⁵¹ In 2001, a tanker spill near West Milton, Ohio created a “two-mile plume of anhydrous ammonia in Ludlow Creek,” killing 103,300 fish.¹⁵² As noted in this report by the Center for Effective Government, accidents involving ammonia plants are not rare. From 1998 to 2013, almost 1,000 accidents have occurred at 678 facilities storing large quantities of anhydrous ammonia in the United States.

Puget Sound LNG

Puget Sound Energy has begun building an unpermitted LNG facility on the Blair-Hylebos Peninsula on Commencement Bay and where the Chinook Landing Marina, owned by the Puyallup Indian Tribe, is also located. Elements of the project will cross two drainage basins and two watersheds.¹⁵³ The LNG will be used for fueling maritime vessels and other purposes.

Both construction and operation raise concerns about water pollution. As detailed in the FEIS, construction will entail substantial in-water work, including the demolition and removal of a pier, a dock, and a catwalk, and the installation of 150 piles to build a trestle and loading platform. These activities carry the risk of erosion and sedimentation, along with migration of debris and sediment, all very damaging to salmon and other marine life. Construction stormwater and surface runoff carrying sediment, debris, fuel, oil, grease, and other hazardous pollutants could find their

¹⁵¹ (DePlace E. &, 2017)

¹⁵² (Plagakis, 2013)

¹⁵³ (Final Environmental Impact Statement: PSE LNG, 2016)

way to groundwater or Commencement Bay. Existing subsurface contamination could also spread into groundwater during construction. Advisories already exist that limit the quantities of fish from Commencement Bay and nearby waters that can be safely eaten.¹⁵⁴ Further pollution would harm fish, killer whales, and other marine life, with negative consequences for the Puyallup Indian Tribe, whose land overlaps with the facility site.

Operation of the facility carries the same risks of contaminated stormwater and surface runoff. More serious risks are associated with bunkering (fueling) of vessels with LNG on the waterways, which include barge-to-ship bunkering, truck-to-ship bunkering, along with pipeline transfer of LNG. The bunkering operations entail risks of spills of the barge and truck diesel fuels, as well as a risk of an LNG spill. Marine traffic will increase, contributing to the risk of spills from collisions. Barge and truck fuels are particularly dirty, making spills or leaks especially damaging to the groundwater and Commencement Bay. The impacts on the waterways have not been fully addressed in the FEIS with respect to the Puyallup Indian Tribe activities and resources, as well as marine wildlife including fish and Southern Resident killer whales.

A major accidental spill into the waterways or Commencement Bay could happen during fueling, as a result of collision with another ship or due to intentional (e.g. terrorist) activity. The spilled LNG would create a spreading, evaporating pool that could ignite. According to the Sandia National Laboratories, a collision causing a small to medium spill would likely lead to a fire that would cause damage and injury within a half mile radius; a larger spill (e.g. due to intentional breach) would cause damage and injury more than a mile away.¹⁵⁵ These are unlikely scenarios but must be considered due to the proximity of residential areas of Tacoma and the Puyallup Tribal lands and cultural resources.

Industry and U.S. Coast Guard guidelines specify that LNG port terminals be located in remote areas of ports, not near civilians, narrow waterways, or other facilities that could produce sparks.^{156 157} The siting of the LNG facility on the Blair-Hylebos Peninsula violates each of these conditions. The U.S. Coast Guard has not yet approved the Waterway Suitability Analysis report for this facility.¹⁵⁸

¹⁵⁴ (Washington State Department of Health, n.d.)

¹⁵⁵ (Hightower, 2004)

¹⁵⁶ (Hay, n.d.)

¹⁵⁷ (U.S. Coast Guard, 2008)

¹⁵⁸ (Final Environmental Impact Statement: PSE LNG, 2016)

Tacoma's Commencement Bay was declared a Superfund site in 1983. After decades of cleanup and the recovery of critical populations of birds, fish, and other marine animals,¹⁵⁹ construction and operation of an LNG processing and bunkering facility only threatens to undo those environmental gains. Portions of the LNG site are already contaminated with industrial solvents from Occidental Chemical (OxyChem). The OxyChem Superfund cleanup is incomplete, raising concerns about whether construction activity would facilitate further water pollution from OxyChem's legacy pollution.¹⁶⁰

NOISE POLLUTION

Construction and operation of fracked gas terminals, methanol refineries, anhydrous ammonia plants, compressor stations, metering stations, and pipelines expose workers and nearby residents to high levels of noise with significant adverse health impacts. The World Health Organization (WHO) estimates at that least one million years of healthy life years are lost every year in western European countries because of environmental noise.¹⁶¹

Goines and Hagler noted in their review of noise pollution that noise violates one of the six guaranteed constitutional rights, the right of domestic tranquility. They stated "the potential health effects of noise pollution are numerous, pervasive, persistent, and medically and *socially significant*" and identified seven adverse effects of noise:¹⁶²

- hearing impairment
- interference with spoken communication
- sleep disturbances
- cardiovascular disturbances
- disturbances to mental health
- impaired task performance
- negative social behavior and annoyance reactions

¹⁵⁹ (National Oceanic and Atmospheric Administration, 2018)

¹⁶⁰ (DePlace E. , Who Should Pay for Tacoma's Last Big Cleanup?, 2017)

¹⁶¹ (World Health Organization, 2011)

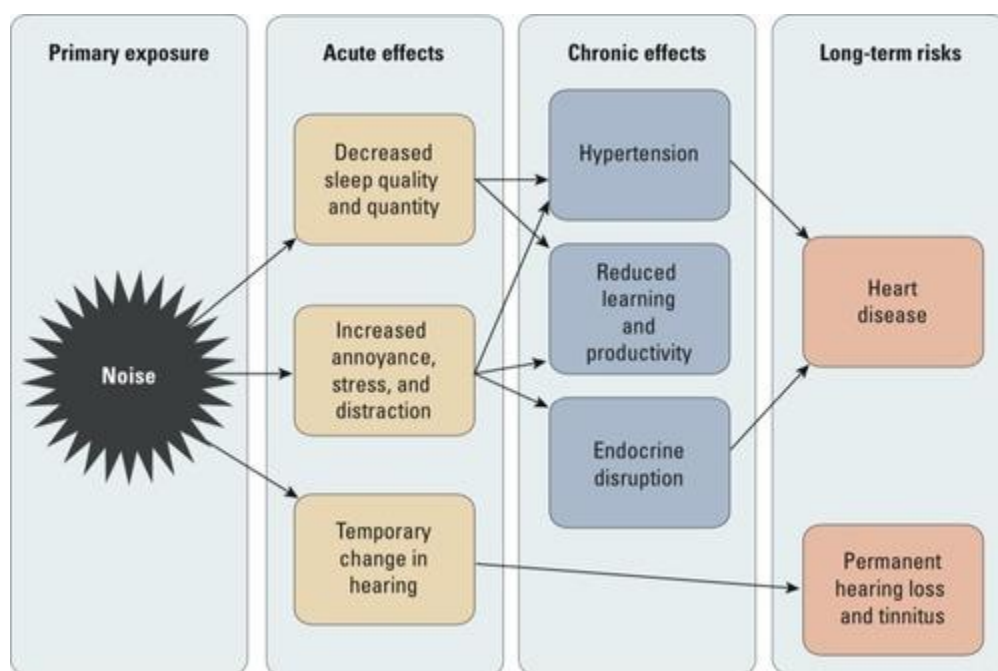
https://www.who.int/quantifying_ehimpacts/publications/e94888.pdf?ua=1

¹⁶² (Goines, 2007) <https://www.ncbi.nlm.nih.gov/pubmed/17396733>

The populations most vulnerable to these effects include those with chronic disease, fetuses, infants and young children, and the elderly.¹⁶³

Hammer, et.al. notes these effects in Figure 14.¹⁶⁴

Figure 14
Health Effects of Noise Pollution



Noise pollution adversely affects health primarily by increasing stress. Experienced as annoyance and distraction, noise activates our “fight and flight” hormones, increasing blood pressure and heart rate, ultimately causing hypertension, ischemic heart disease (angina and heart attack) and stroke.^{165 166} People in noisy environments experience a subjective habituation to noise, but their cardiovascular system does not habituate.

Noise at night similarly triggers a stress response with the same consequences. Activating the sympathetic nervous system (adrenalin), noise decreases the quality and quantity of sleep, changing the stage of sleep from deep sleep to a less restorative lighter stage.¹⁶⁷ Increased levels of stress hormones—epinephrine, norepinephrine, and corticosteroids—result in increased blood pressure,

¹⁶³ (Goines, 2007) <https://www.ncbi.nlm.nih.gov/pubmed/17396733>

¹⁶⁴ (Hammer M.S., 2014)

¹⁶⁵ (Hammer M.S., 2014)

¹⁶⁶ (Münzel, 2018)

¹⁶⁷ (Muzet, 2002)

heart rate, cardiac output, and vasoconstriction and disruption of circadian rhythms. Ultimately the health consequences are hypertension and ischemic heart disease.¹⁶⁸

- Continuous noise in excess of 30 decibels (dB) disturbs sleep. For intermittent noise, the more frequent the events the higher the likelihood of awakening.¹⁶⁹
- Sleep disturbance, characterized by difficulty in falling asleep and frequent awakenings, when experienced over a long period of time can lead to less productivity at work, greater need for health care services and increased risk of injury.¹⁷⁰
- In addition to resulting in less restful sleep, sleep disturbance due to noise has been associated with changes in the body's inability to regulate blood pressure and other changes in the cardiovascular system.¹⁷¹ The 2018 WHO Environmental Guidelines detail evidence of the cardiovascular and metabolic effects of environmental noise.¹⁷²
- Extended exposure to high noise levels can lead to inflammation and oxidative stress which can increase the risk of heart disease, such as coronary artery disease, hypertension, stroke, diabetes, and heart failure.¹⁷³
- Adverse health effects are related to total noise exposure from all sources rather than the noise from any single source.¹⁷⁴

Stress experienced by members of the community comes not only from the noise itself and disrupted sleep but from having no control over their environment. In Ohio, interviews of 34 residents living near sites of unconventional gas development reported significant psychological stress from noise pollution and, in some instances, considered moving from the area.¹⁷⁵

A version of sound, referred to as low frequency noise (LFN), since it is in a range typically not audible to most people, has also been shown to adversely affect health. A systematic review of seven observational studies between 2000 and 2015 found associations between exposure to LFN and self-reported annoyance, as well as various other symptoms including hypertension, sleep-related problems, concentration difficulties and headache, in the adult population living in the

¹⁶⁸ (Sforza E., 2004)

¹⁶⁹ (Berglund B. a., 1995)

¹⁷⁰ (Colton, 2006) <https://www.ncbi.nlm.nih.gov/pubmed/20669438>

¹⁷¹ (Berglund B. e., 1999) <https://apps.who.int/iris/handle/10665/66217>

¹⁷² (World Health Organization, 2018) <http://www.euro.who.int/en/health-topics/environment-and-health/noise/environmental-noise-guidelines-for-the-european-region>

¹⁷³ (Münzel, 2018)

¹⁷⁴ (Goines, 2007)

¹⁷⁵ (Fisher, 2018) <https://doi.org/10.1016/j.jenvp.2017.12.008>

vicinity of a range of LFN sources.^{176 177 178} WHO, in their 2018 Environmental Noise Guidelines, recommend that LFN be further studied.¹⁷⁹

Noise Regulation

Regulation of the level and duration of noise at the federal, state, and local levels is not sufficient to protect the American public from the negative health impacts of noise pollution.

- In 1972, the Noise Control Act was passed by Congress, declaring, "... it is the policy of the United States to promote an environment for all Americans free from noise that jeopardizes health and welfare."¹⁸⁰
- In 1974, the Environmental Protection Agency (EPA) estimated that nearly 100 million Americans lived in areas where the daily average noise levels exceeded those identified as being safe.¹⁸¹
- In 1982, the government abruptly terminated federal funding for the Office of Noise Abatement and Control. The lack of funds threw total responsibility for noise control to the states.^{182 183}
- The EPA recommends average outdoor noise levels < 55 dB and indoor levels <45 dB.¹⁸⁴
- The most recent WHO noise guidelines, based on systematic reviews of the current science on connections between noise and health, consider average daily exposure levels and night time specific levels based on noise from road traffic, railways, aircraft, wind turbine, and leisure activities. The guidelines recommend < 30 dBA in bedrooms at night for optimal sleeping and 40 dBA outside of bedrooms to prevent adverse health effects of noise. Daytime noise recommendations range from 45-54 dBA.¹⁸⁵ (An A-weighted sound level (dBA) is the sound level in decibels which more closely approximates the frequency response of the human ear and correlates better with subjective reactions to noise.)¹⁸⁶

¹⁷⁶ (Baliatsas, 2016)

¹⁷⁷ (Leventhal, 2004)

¹⁷⁸ (Berglund B., 1996)

¹⁷⁹ (World Health Organization, 2018)

¹⁸⁰ (Goines, 2007)

¹⁸¹ (U.S. Environmental Protection Agency, 1974)

¹⁸² (Shapiro, 1991)

¹⁸³ (Bronzaft, 2000)

¹⁸⁴ (U.S. Environmental Protection Agency, 1974)

¹⁸⁵ (World Health Organization, 2018)

¹⁸⁶ (Beranek, 1992)

- Oregon and Washington specifically exempt construction activities from noise regulations. They also may exempt the operations of the facilities, as well.^{187 188}

Jordan Cove LNG

The proposed LNG terminal would be located in Coos Bay, near the town of North Bend, the Southwest Regional Airport, residential areas, camping and recreational areas (Oregon Dunes Recreational Area). These areas already experience higher than recommended levels of noise, primarily from transportation sources. Both construction and operation of the terminal will add to the existing noise levels.

Construction is projected to take five years with the greatest noise generated in year three. (All information and data about noise sources, levels and duration is derived from Resource Report 9 submitted by JCEP to FERC June 2017.)¹⁸⁹ Noise would be generated from heavy construction equipment and vehicles, pile driving and dredging of the bay, all of which may occur simultaneously and at night. Pile driving would be the dominant noise source and would occur over a two-year period 20 hours per day, creating intermittent high intensity noise that would be intrusive, annoying, and disturbing to the local community, wildlife, and fish. Peak construction activities would result in intermittent noise levels of 129 dBA during the day and 125 dBA at night. Existing ambient noise levels are reported to range from 53-65 dBA, measured at Noise Sensitive Areas (NSA), levels which are already above recommendations, especially at night (>40-45 dB). (NSAs are those areas adjacent to a proposed activity which would be adversely affected by excessive noise levels, for example, homes, hotels, hospitals, schools and churches.) Construction activities are predicted to increase average noise levels significantly, up to 7.6 dB.

Once built the terminal will operate continuously day and night, 7 days a week, generating noise from compressors, combustion and steam turbines, and generators as well as idling tankers and ground flares. Current noise levels from vehicle traffic, recreational vehicle use, boat traffic, ocean surf, and aircraft are significant, 53-65 dBA at NSAs, measured in May 2017. These areas are residential, camping and recreational. Although it is stated in Resource Report 9, that the terminal

¹⁸⁷ (Oregon Administrative Rules)

¹⁸⁸ (Washington Administrative Code)

¹⁸⁹ (Jordan Cove LNG, 2017)

will increase noise levels minimally (0-2.9 dBA), this increase is significant, additive and unremitting, with night time noise levels above recommended levels.

Additional noise sources that were not considered in the Resource Report are dredging and channel maintenance in Coos Bay and potential extension of a runway at the Southwest Oregon Regional Airport, with a significant increase in air traffic noise.

According to Margaret Corvi, Director of the Department of Natural Resources of the Confederated Tribes of Coos, Lower Umpqua, and Siuslaw, pile driving noise and noise from both the construction and operation of the terminal will make tribal cultural practices, such as fishing and harvesting shellfish, unattractive and decrease access to food and economic resources.¹⁹⁰ Pile driving in particular would create levels of intermittent noise significant enough to have behavioral effects on fish and marine mammals, further degrading fishing and harvesting of shellfish. It would also decrease recreational activity for both local residents and visitors to the area, with negative impacts on the local economy.

Pacific Connector Gas Pipeline and Compressor Stations

Construction and operation of the compressor station and pipeline would generate significant noise, all of which is exempted from the Oregon state noise regulations. Environmental health researchers at the University of Maryland's School of Public Health studied noise generated by a compressor station, finding that residents living near a compressor station are potentially exposed to noise levels that are higher than the recommended U.S. EPA levels of 55 dBA (outdoor/daytime) and 45 dBA (indoor/night time). They emphasize that environmental exposures from these stations, including noise, are a significant public health concern and a source of stress for nearby residents in communities like Doddridge County, West Virginia, where researchers conducted this study.¹⁹¹

The Klamath Compressor Station (KCS) would be located in a rural area with sixteen residences within a one-mile radius and will require twelve to eighteen months to build. Average combined construction noise levels at 1500 feet would be 60 dBA, well above recommended noise levels both during the day and especially at night.

KCS would operate 24 hours per day, 7 days per week, generating continuous noise levels that exceed Oregon regulations, which prohibit raising the noise level more than 10 dBA. This

¹⁹⁰ (Corvi, 2018)

¹⁹¹ (Boyle M. e., 2017)

<https://www.tandfonline.com/doi/abs/10.1080/15459624.2017.1316386?journalCode=uoh20>

would occur despite acoustical mitigation measures. Blowdowns (venting of gas) would also occur, both scheduled and emergency, generating high levels of startling intermittent noise. Two metering stations would also be located very near the KCS and generate additional noise.

Construction of the 229-mile pipeline includes Horizontal Directional Drilling (HDD) at six river crossings. Existing noise levels at five of six of these crossings are greater than 55 dBA. HDD will only add to noise levels above those recommended by the EPA. Construction of the pipeline will also include blasting which will generate very high intermittent levels of noise.

The operation of high-pressure gas transmission systems also creates continuous low and extra-low frequency soundwaves in the communities they transverse. These noises are known as “flutter” and “hum.” Low frequency noise (LFN) and vibrations are believed to cause cranial distress, ringing ears, mood swings, throat and digestive problems and psychiatric disturbances. Residential exposure to LFN may increase the adverse effects of higher frequency noise, because most walls in buildings do not attenuate LFN.

Kalama and Port Westward Methanol Refineries

Northwest Innovation Works proposes building twin methane to methanol refineries at the Port of Kalama and Port Westward along the Columbia River over a three-year period. A three-mile pipeline is also proposed for the Kalama methanol refinery. The refinery itself would be located near residential areas in both Washington and Oregon and recreational facilities (Camp Kalama). Little specific information is available for the plant at Port Westward.

Construction of the Kalama manufacturing facility and marine terminal would generate noise from typical construction activities and would be limited to daytime hours. (All information and data about noise sources, levels and duration is derived from Kalama methanol refinery FEIS.)¹⁹² It would involve pile driving, which generates much more annoying impulsive noise. Average levels overall, however, are predicted to be < 60dBA at NSAs.

Operation of the Kalama refinery would generate noise 24 hours per day, seven days per week. At the various NSAs, noise levels from operations would all be < 50 dBA and increase the existing noise levels by < 10 dBA (range 0-12). According to the FEIS, existing noise levels are 40-72 dBA. The added noise from the refinery would increase current levels by >10 dBA at only one NSA. Despite generally meeting current legal standards, the night time noise levels exceed

¹⁹² (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

recommended levels. Levels of noise, however, are legally permitted to exceed 70 dBA at the borders of the project in the industrial area.

Although in compliance with regulatory standards, construction of the Kalama refinery would generate high levels of impulsive noise, especially from pile driving. Operation of the refinery would generate significant noise levels adding to noise levels in the area, which already exceed EPA and WHO noise levels recommended at night.

Construction of the Kalama Lateral Pipeline (KLP) would generate levels of noise above current legal standards and very close to residences in Kalama, both intermittent from blasting into rock and continuous from horizontal directional drilling under I-5 and the BNSF railway.

Longview Anhydrous Ammonia Plant

Pacific Coast Fertilizer plans to build the plant over a three-year period in the Mint Farm Industrial Park, Longview Washington, in 61 acres in an area zoned for heavy industrial use. However, it is located only several thousand feet from residential neighborhoods in Cowlitz County. 42% of Longview's youth live within 1.5 miles of the proposed facility.¹⁹³

Although analysis of noise levels has not been done as yet (a full EIS is planned), operation of the facility would be continuous 24 hours per day, 7 days per week, and include loading 100-200 trucks per week.

Puget Sound LNG

This complex project is already generating noise from the construction of the terminal (without permits) on the Blair-Hylebos Peninsula in the Port of Tacoma very near the heart of the city of Tacoma.

The Puyallup Indian Tribe marina is 1,000 feet away and the nearest home is just over 2,000 feet away. (All information and data about noise sources, levels and duration is derived from the Final Environmental Impact Statement.)¹⁹⁴ The FEIS states that the existing noise environment is high and consistent with an industrial marine port. Noise levels are high both from construction work, 80-90 dBA at 50 feet away and pile driving, 100 dBA at 50 feet. The noise pollution is particularly harmful to the endangered Southern Resident killer whales.

¹⁹³ (Zimmer-Stucky, Protect Longview's Kids, Neighborhoods from Anhydrous Ammonia, 2018)

¹⁹⁴ (Final Environmental Impact Statement: PSE LNG, 2016)

No measurements are reported in the FEIS of noise levels in noise sensitive areas. The FEIS also does not quantitate noise levels for the associated construction projects: Golden Given Limit Station, updating the Frederickson Limit Station, and building two new distribution pipeline segments.

Operation of the LNG Facility and the Tote Marine Fueling system will include day and night mooring and loading of bunkering barges and the operation of pumps, compressors, vaporizers, fans, and blowers. Noise levels are not reported in the FEIS. Noise effects of the operation of Golden Given Limit Station are not reported in the FEIS, as the pipelines are expected not to generate noise because they would be underground and under functional roadways.

NATURAL AND HUMAN-CAUSED DISASTERS

Fracked gas infrastructure is extremely vulnerable to natural and human-caused disasters. Earthquakes, floods, and other events create serious risks of explosions, fires, vapor clouds, and leaks that can release toxic pollutants into air and water and harm workers and communities in the vicinity of infrastructure used to transport, process, store, and export fracked gas.¹⁹⁵

Local, state, and federal regulations create important requirements for energy companies to anticipate and prevent accidents and incidents in which workers, the environment, and other people could be harmed. As the fracked gas industry changes and adopts new technologies, however, researchers point to a lack of understanding and oversight by regulatory bodies to ensure safety.¹⁹⁶

Proposed fracked gas projects in the Pacific Northwest must be evaluated with regard to the additional risk associated with susceptibility to earthquake, tsunami, and wildfire. These projects pose significant health risks for employees, emergency responders, and nearby residents, including burns, physical injury, toxic exposure, and death.

Natural Disasters: Earthquake and Tsunami

The Pacific Northwest is vulnerable to earthquakes due to its position on the Cascadia Subduction Zone.¹⁹⁷ Experts estimate a 42% likelihood of an earthquake up to a magnitude of 9.0 in the zone within the next 50 years, an area that encompasses every proposed gas infrastructure project

¹⁹⁵ (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

¹⁹⁶ (Powell T. a., 2016)

¹⁹⁷ (Pacific Northwest Seismic Network)

in Oregon and Washington.¹⁹⁸ An earthquake of that magnitude would devastate the Northwest; the most severe impacts, including soil liquefaction, landslides, and tsunamis, would fall on coastal areas.¹⁹⁹ In case of a tsunami, the immense force of the initial surge would carry marine vessels, other objects and debris inland, smashing coastal buildings and structures.²⁰⁰ Weeks of inundation that could follow would compound the damage.

The volatility and potential for combustion at fracked gas processing and storage facilities makes these sites particularly vulnerable. As examples:

- Soil liquefaction has caused significant damage at other industrial port facilities in the U.S., Mexico, and other countries.²⁰¹
- The LNG/LPG (liquefied petroleum gas) storage plant in Chiba, Tokyo Bay was cracked by the 2011 Tohoku-Fukushima earthquake, producing a fireball and blaze that took 11 days to extinguish.²⁰²
- In February 2018, an earthquake shut down an LNG project in Papua New Guinea, damaging equipment and foundation supports and forcing evacuation of hundreds of workers.²⁰³

The risks of earthquake on pipelines in wildfire prone forested areas are not just destruction of infrastructure but unmanageable wildfires in remote areas resulting from the release of gas. The destruction of communities with injuries and loss of life from a magnitude 9.0 earthquake could be compounded by catastrophic fires.

Natural Disasters: Flooding and Sea-Level Rise

Many industrial ports that house fracked gas facilities will experience effects of sea-level rise due to climate change within 50 to 100 years. Estimates quantifying sea-level rises vary; however, scientists and researchers understand that these impacts will likely cause industries which operate near coastlines to adjust their infrastructure and could hinder operations significantly.²⁰⁴

Sea-level rise will impact the coasts of Oregon and Washington and their industrial port areas. A 2018 report from the University of Washington's Climate Impacts Group projects relative

¹⁹⁸ (Goldfinger, 2012)

¹⁹⁹ (Harvey, 2017)

²⁰⁰ (Venturato, 2007)

²⁰¹ (Werner, 1998)

²⁰² (French Ministry of Ecology, Sustainable Development and energy , 2011)

²⁰³ (Reuters, 2018)

²⁰⁴ (Christodoulou, 2018)

sea-level rise to reach from 1.5 to 3.3 ft in Tacoma by 2100.²⁰⁵ Their report acknowledged that earthquakes can significantly alter sea-level and cause changes in land elevation, leading to further encroachment of water and flooding issues.

In 2017, Hurricane Harvey and ensuing flooding negatively impacted oil refineries and gas storage terminals. According to a Reuters article, 27 million cubic feet of fracked gas was released due to flooding. An environmental group found that 31 additional spills at oil and gas wells, pipelines and storage tanks occurred. Because energy companies are not legally required to report wastewater spills, it is likely that the true costs of toxic spills and leakage of oil and gas were not fully accounted for.²⁰⁶

Human-caused disasters: Accidents

Fracked gas accidents are neither trivial nor rare. The majority of fires and explosions are associated with pipeline failure. Pipelines are subject to various types of internal corrosion, including “sweet corrosion,” related to CO₂, or “sour corrosion,” due to hydrogen sulfide, both of which are usually present in fracked gas and constitute the major cause of pipeline and storage tank leaks.²⁰⁷

The U.S. Department of Transportation’s Pipeline and Hazardous Materials Safety Administration recorded 858 serious incidents involving pipelines from 1996 to 2016, with 347 fatalities and 1,346 injuries.²⁰⁸ Absent meaningful regulation, the extent of pipeline leakages with explosive potential remains unknown.²⁰⁹

- In January 2019, a gas pipeline ruptured in rural Nobel County, Ohio. The 120 ft fireball destroyed one home, injuring a 12-year old boy. In the year prior, the Texas Eastern Transmission Pipeline exploded in the same county. In April 2016 that same pipeline had exploded in Salem Township, Pennsylvania, producing a 50- by 12-foot crater and a fireball that “obliterated a home, melted a road and sent a 26-year old man to the hospital with third-degree burns over 75% of his body.”²¹⁰
- On First Nation lands near Prince George, British Columbia, a 36-inch gas pipeline ruptured in October, 2018, causing a massive fire. No one was hurt, but 100 members of the Lheidli

²⁰⁵ (Miller I. e., 2018)

²⁰⁶ (Flitter E. , 2017)

²⁰⁷ (Popoola, 2013)

²⁰⁸ (US Department of Transportation: Pipeline and Hazardous Materials Safety Administration, n.d.)

²⁰⁹ (Glick, 2018)

²¹⁰ (Nobel, 2019)

T'enneh First Nation were forced from their homes and the gas supply to one million customers was threatened.²¹¹ The cause of the rupture is, as of this writing, undetermined.

- On August 9, 2018, in Midland, Texas, odorless gas leaking from a dime-sized hole in a nearby pipeline spontaneously ignited, killing a three-year old girl and seriously injuring her sister and parent.²¹²
- In 2017, a deadly explosion in Firestone, Colorado from odorless gas leaking from an out-of-use pipeline which was not fully shut off killed two people in their homes and hospitalized two more.²¹³
- In Seattle in 2016, a fracked gas line exploded injuring nine firefighters and destroying multiple businesses. When the line was shut off in 2004, it was not properly capped and gas had been flowing through it for a dozen years.²¹⁴ The explosion resulted in a \$1.5 million fine against Puget Sound Energy (PSE) for 17 violations.
- In 2012 a fracked gas pipeline ruptured and burned in Sissonville, West Virginia destroying three houses and damaging several others. According to the investigation, the surface of the pipe was heavily corroded at the point of rupture.²¹⁵
- Also in 2012 a pipeline at a compressor station near Wellington, Utah was scored by a backhoe and later burst, causing fire and explosion that destroyed the facility and injured two workers on site.²¹⁶

The most common cause of pipeline failure is internal corrosion, related to “sour corrosion” from hydrogen sulfide or “sweet corrosion” related to carbon dioxide, both of which are common contaminants of fracked gas.²¹⁷

Landslides have recently been identified as an additional cause of pipeline failure, especially when pipelines are constructed in steep and rocky terrain.²¹⁸ The advisory issued by the Pipeline and Hazardous Materials Safety Administration cited seven significant accidents related to landslides, most of which resulted in toxic releases. They included:

²¹¹ (Shore, 2018)

²¹² (Soraghan M. a., 2018)

²¹³ (Finley, 2017)

²¹⁴ (Lacitis, 2017)

²¹⁵ (National Transportation Safety Board, 2014)

²¹⁶ (Mills, 2012)

²¹⁷ (Popoola, 2013)

²¹⁸ (Pipeline and Hazardous Materials Safety Administration, 2019)

- A January 29, 2019 rupture in West Virginia following a landslide that displaced a pipeline by 10 feet.
- A 2016 spill in North Dakota caused by a landslide.
- A 2016 explosion of a gas pipeline in Montecito, California related to local floods and landslides.

Compressor stations also have explosive potential.

- On January 30, 2019 in rural Armada Township, MI, an equipment malfunction at a fracked gas compressor station caused a dramatic fire and an explosion that was felt miles away.²¹⁹
- When a compressor station north of Watford City, ND, exploded in December 2015, drywall cracked and knocked pictures off the walls of homes about a mile away. Locals described it as “like a truck had hit the house going 75 mph” or like someone “had picked up the house and dropped it.”²²⁰

Accidents and spills at LNG facilities are less common and the dynamics and hazards are poorly understood. A comprehensive review of research into the LNG production chain examined vapor production, vapor dispersion, and mechanisms of combustion, noting the “intrinsic process safety issues” of LNG. The authors described various threats to human safety, including pool fires, jet fires, and vapor cloud explosions.²²¹

A Congressional Research Service (CRS) study in 2008, when the United States was a net importer of LNG, stated that LNG infrastructure is “inherently hazardous” citing thirteen serious accidents at onshore LNG terminals.²²² According to another CRS report in 2009, certain LNG hazards are not “understood well enough to support a terminal siting approval.” Potential risks included pool fires and flammable vapor clouds. The analysis pointed out the need for additional LNG safety research,²²³ a need which was again noted as recently as 2014.²²⁴

- Less than five years ago, an explosion at the Williams Company Inc LNG facility in Plymouth, Washington injured workers and brought attention to the imprudence of siting massive gas tanks near population centers. The explosion, felt up to six miles away, sprayed shrapnel 300 yards, punctured one of the large LNG storage tanks, caused gas leaks for over

²¹⁹ (Hicks, 2019)

²²⁰ (Robinson, 2016)

²²¹ (Ikealumba, 2014)

²²² (Parfomak, 2008)

²²³ (Congressional Research Service, 2009)

²²⁴ (Ikealumba, 2014)

24 hours and required the evacuation of residents living within two miles.²²⁵ Shrapnel injured four employees and a fifth worker was hospitalized for burns. Fumes from the facility sickened local residents and emergency responders. At the time, the authorities worried that “a second blast could create a 0.75 mile ‘lethal zone’ around the plant.”²²⁶

- In 2018 LNG leaked into a space between the inner and outer walls of a storage tank at the Sabine Pass LNG export facility in Cameron Parish, Louisiana, creating cracks in the carbon steel outer tank wall that allowed gas to escape.²²⁷ Because of the potential for a catastrophic accident, threatening 500 workers and contractors at the facility, as well as nearby communities, the federal Pipeline and Hazardous Materials Safety Administration ordered the shut-down of the two tanks.

Although explosions involving methanol, a product of methane, are rare, they also occur.²²⁸

- In 2006 in Daytona Beach, FL, two employees were killed in an explosion while attempting to remove a steel canopy above a methanol storage tank.
- In 2012, a methanol ship in Malaysia exploded, presumably after it was struck by lightning.
- Again in 2012, an explosion and fire occurred while workers unloaded methanol from a train in Garland, Texas.
- An explosion in a Chinese chemical plant was triggered in 2015 when a welder ignited methanol.

Human-caused Disasters: Acts of Terrorism

The possibility of terrorist attacks against fracked gas infrastructure, especially LNG facilities, have been noted for well over a decade. In 2003, as part of a larger investigation of potential terrorist targets in wake of the 9/11 attacks, the Congressional Research Service provided a background report to the U.S. Congress on the security of LNG terminals in the United States. The CRS identified LNG tanker ships and storage infrastructure as “vulnerable to terrorism,” noting that tankers could be turned as weapons against coastal cities and that inland LNG facilities are typically located near large population centers. The CRS further noted that the public cost of security for LNG

²²⁵ (Powell T. , 2016)

²²⁶ (Schneyer, 2014)

²²⁷ (Schleifstein, 2018)

²²⁸ (Luck, 2016)

shipments, via Coast Guard escorts of tankers through coastal shipping channels, was considerable (\$40,000-\$80,000 per tanker).²²⁹ The cost, nearly two decades later, would be much higher.

The 2008 CRS study cited above identified security of tankers, terminals, and inland storage plants as issues of concern. Serious risks include pool fires with intense heat, which can occur when LNG spills near an ignition source; flammable vapor clouds that can drift until reaching an ignition source; and a rapid phase transition that can generate a flameless explosion.²³⁰ The possibility of terrorist attacks involving LNG facilities was noted again by the CRS in 2009.²³¹

Acts of terrorism that target fracked gas infrastructure, though unlikely, continue to be of concern. In a 2017 discussion of the threats of maritime terrorism, recent scenarios of an attack included the hijacking of an LNG carrier and then “exploding it as a floating bomb or utilizing it as an impact weapon against port facilities.”²³²

Jordan Cove LNG

In November 2017, the Oregon Department of Geology and Mineral Industries (DOGAMI) detailed their concerns about Jordan Cove LNG and the Pacific Connector Gas Pipeline. Because the projects would be located in a high seismic hazard area and the tsunami inundation zone, DOGAMI listed concerns about duration of shaking, soil settlement and liquefaction, landslides, tsunami scour, and tsunami debris, all of which could cause infrastructure to fail and present significant safety hazards. An additional DOGAMI concern is the potential for LNG tankers to become “ballistics in the Bay” in the event of a large earthquake and tsunami.²³³

DOGAMI maps indicate that the Jordan Cove LNG terminal would be located in a place at risk for inundation by a local tsunami and that the docking area for LNG tankers would be in an area subject to both distant tsunamis and at maximum risk in the event of a local tsunami.^{234 235} In addition, road access to the spit where the LNG terminal would be located is just above sea level. Subsidence from a great earthquake could destroy vehicle access to Jordan Cove, preventing escape from a subsequent tsunami and preventing access by emergency responders. Goldfinger and

²²⁹ (Congressional Research Service, 2003)

²³⁰ (Parfomak, 2008)

²³¹ (Congressional Research Service, 2009)

²³² (Meng Wee, 2017)

²³³ (Avy, 2017)

²³⁴ (Oregon Department of Geology, n.d.)

²³⁵ (Miller C., 2013; Havens, 2019)

coauthors have concluded that the chance of a magnitude >8 earthquake in the Coos Bay area off southern Oregon in the next 50 years is 40%.²³⁶

In January 2015, Jerry Havens, professor of chemical engineering at University of Arkansas and James Venart, emeritus professor of mechanical engineering at University of New Brunswick, both experts in LNG hazards, fire science, and catastrophic explosions, commented to the Federal Energy Regulatory Commission that the proposed Jordan Cove LNG terminal exposes the public to risk of fire and explosion. The mix of refrigerants used to chill the gas and the heavy hydrocarbon impurities in pipeline gas that are stripped out and stored on-site pose a threat of catastrophic accidents involving unconfined hydrocarbon vapor cloud explosions (UVCE).²³⁷

In response to the March 2019 DEIS Dr. Havens reiterated his concern about UVCEs, noting: “If the magnitude of the possible overpressures [is] estimated using actual data (experience) available for UVCEs (rather than predicted with the FLACS theoretical model), the UVCE hazard would be clearly indicated as a serious major hazard at the [Jordan Cove facility]. *UVCEs at numerous similar heavy hydrocarbon handling/storage facilities have resulted in destruction of the facilities as well as injuries and deaths beyond the plant boundaries* [Emphasis in original].²³⁸

Of additional concern is the proximity of the proposed shipping channel and LNG facility to residential and industrial areas, which puts the safety of many people at risk. According to the March 2019 DEIS, consideration must be given to “Zones of Concern”. It states, “As LNG marine vessels proceed along the intended transit route, the estimated zones of concern would extend over resources such as residential and industrial areas, military installations, and also non-residential areas accessible to the public such as parks.”²³⁹

As mapped in the March 2019 DEIS, Hazard Zone 1 mostly overlies water and encompasses coastal areas in Charleston and Coos Bay with potential impacts to commercial vessels, recreational vessels, fishing vessels, Cape Arago Dock, North Bay Marine Industrial Park, and Roseburg Forest Products Facility.

Hazard Zone 2 covers a broader swath of coastal areas along Charleston, Coos Bay, Barview, and North Bend with potential impacts to multiple residential buildings, commercial buildings, industrial buildings, numerous RV parks, numerous recreational areas and boat launch ramps,

²³⁶ (Goldfinger, 2012)

²³⁷ (Mandel, 2016)

²³⁸ (Havens, 2019)

²³⁹ (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

Marine Research Center, Charleston Marina, South Slough Bridge, Coast Guard Sector Charleston, Charleston Fire District Stations 1 and 3, Madison Elementary School, Sunset Middle School, Coos Bay Fire Department Station 2, and the Southwestern Oregon Regional Airport.

Hazard Zone 3 includes larger portions of Charleston, Coos Bay, Barview, and North Bend and includes Coast Guard Group North Bend, Railroad Bridge, Oregon Dunes Recreational Park, Southwestern Oregon Community College. Clearly, thousands of residents are at varying risks for burns, injury, and death in the event of an accident or intentional act with rupture of an LNG ship and/or related Jordan Cove storage facility and a large release of gas.

The close proximity of the Southwest Oregon Regional Airport to the LNG facility presents additional hazards. The airport serves Coos Bay and North Bend with commercial flights out of Denver and San Francisco. Daily operations include general aviation, air freight, and Coast Guard activities. The flight approach is usually over the bay and the north spit. In May 7, 2019 The Federal Aviation Administration (FAA) issued 13 Notices of Presumed Hazard for this project. According to the March 2019 DEIS, “Permanent and temporary structures at the LNG terminal as well as LNG carrier operations in the Federal Navigation Channel would exceed FAA obstruction standards and there is a potential significant impact to the safe air operations of the Southwest Oregon Regional Airport if a resolution cannot be settled between Jordan Cove and FAA.”²⁴⁰

If the resolution, which is being negotiated out of public view, does not mandate reductions in the heights of storage tanks, cranes, vessel stacks, and other structures to conform with the maximum allowed under FAA regulations, the only options would be to re-route air traffic over populated areas (a solution that is considered too risky by the Southern Oregon Regional Airport, according to the DEIS), or the addition of lights and markings on the obstructing structures, which leaves the actual hazards in place.

Though the potential for accidental collision of an aircraft into a storage tank at the facility is small, the consequences would be catastrophic. The DEIS notes that the storage tanks are not designed to withstand such an impact without perforation, which would result in fire and explosion.²⁴¹

²⁴⁰ (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

²⁴¹ (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

Pacific Connector Gas Pipeline

Remote and populated areas of Oregon could be impacted by earthquakes with significant damage to the pipeline and release of flammable and explosive methane gas and volatile organic compounds (VOC) to the air. The proposed pipeline would be located directly under the North Bend McCullough Bridge, the main artery and highway (Hwy 101) entering the town of North Bend. An earthquake and subsequent liquefaction could rupture that pipeline, releasing these pollutants. Any ignition source could precipitate fires.

Aside from earthquake and corrosion, naturally occurring wildfires themselves may result in pipeline damage or rupture, for example, by falling timber.

Massive and difficult to control wildfires related to pipeline failures would severely impact the dry, rugged lands and the people who live there. Fires can cause erosion, landslides, and debris flows affecting rivers and streams. Wildfires often burn out of control and damage small, large, and contiguous watersheds that support multiple beneficial uses of water. Remote areas may not be easily accessible to emergency response.

Over half the pipeline route crosses lands that are mapped by the U.S. Forest Service as having moderate to very high wildfire risk.²⁴² Firefighters United for Safety, Ethics and Ecology, (FUSEE), who oppose the project, further note that clear-cuts around the pipeline would fill in with grasses, shrubs and weeds, which ignite more easily than forest. Greater exposure to sun and wind would increase fire intensity and rate of spread, making the pipeline route into a quick-burning fuse that would allow fire to race through forested areas.

The PCGP would also be constructed in terrain subject to landslides and the construction of the pipeline itself would increase the risk of landslides, which are themselves a cause of pipeline failure.

Kalama Methanol Refinery

The Kalama methanol plant would process large quantities of fracked gas into liquid methanol. The highly flammable methanol will be stored on site in eight tanks, each capable of holding more than 8 million gallons of methanol.²⁴³

²⁴² (Firefighters United for Safety, Ethics and Ecology, 2019)

²⁴³ (Luck, 2016)

- Methanol has a very low flash point, 73 degrees F, which is the lowest temperature at which its vapors will ignite. This means that even at ambient storage temperatures, let alone hot weather or hot facility environments, a lot of vapor is produced, creating a high risk of fires or explosions. The combination of two volatile substances at the proposed plant, methane plus methanol, compounds the risk of explosions and fires.
- According to the Final Environmental Impact Statement (FEIS), sand and silt below groundwater levels at the site are susceptible to liquefaction. The FEIS estimates that liquefaction could occur as deep as 100 feet underground, which could cause soils underlying the refinery, dock and tank farm to spread and severely damage key infrastructure.²⁴⁴
- The Draft Supplemental Environmental Impact Study (DSEIS) for the Kalama project identifies seismic protections as part of construction plans; however, it states that a “ground improvement plan” will be designed as the project is being built, leaving questions about what such a plan would include and how it might protect workers and the surrounding community from consequences of a severe seismic event.²⁴⁵
- In an independent worst-case scenario analysis requested by Columbia Riverkeeper, a plane crash, terrorist attack, or a Cascadia Subduction Zone magnitude 9.0 earthquake, could rupture multiple tanks and if sparked, could possibly lead to an explosion in the remaining intact tank.²⁴⁶ If catastrophic tank failure were to occur, leaking methanol could catch fire, and the vapor, if trapped, could cause an explosion that could shatter glass as far away as Longview and Rainier, destroy buildings within a six-mile radius and cause serious injuries in Kalama.
- The facility proposed by Northwest Innovation Works is far larger than what is currently in operation anywhere in the world. Given the lack of experience with this technology and the fact that it is sited in an area at risk for both earthquakes and tsunamis, it seems prudent to consider the catastrophic, albeit unlikely, risk scenarios.

²⁴⁴ (Final Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, September 2016)

²⁴⁵ (Draft Supplemental Environmental Impact Statement: Kalama Manufacturing and Marine Export Facility, 2018)

²⁴⁶ (Luck, 2016)

Puget Sound LNG

The proposed LNG plant in the Port of Tacoma will produce, store, and bunker marine vessels with LNG. The facility presents risks for fires and unconfined hydrocarbon vapor cloud explosions. Located within an urban population center, Puget Sound LNG presents grave dangers.

The plant has two close neighbors. The Port of Tacoma lies to its south and employs 10,000 people and has a resident population of 1,300.²⁴⁷ Just north is the residential neighborhood of Northeast Tacoma, with a population of 17,000.²⁴⁸ Many people live, work, and travel less than half a mile away from the plant. Also located less than 2 miles away is the Northwest Detention Center operated by U.S. Immigration and Customs Enforcement (ICE). ICE has an evacuation plan, but the plans are considered “sensitive” and have not been released even to the Tacoma Fire Department.²⁴⁹ In the event of a sudden and major disaster, like an earthquake, tsunami, and/or LNG explosion, the safe evacuation of inmates would be difficult if not impossible.

Tacoma citizens and the Tacoma News-Tribune have repeatedly requested access to safety modelling information from Puget Sound Energy (PSE), the local energy utility which promotes the LNG project. PSE refused until ordered twice by Pierce County Superior Court and sued to prevent its release.²⁵⁰ According to the FEIS in a section entitled: Thermal Radiation & Vapor Dispersion Safety Modeling, “The risks of fire and explosions have been modelled, but they are covered by a non-disclosure agreement and for security reasons are considered critical energy infrastructure and are not to be released to the public.”²⁵¹

Critics have identified multiple issues:

- A report modeling three tsunami scenarios prepared by the Washington State Department of Natural Resources found that a magnitude 7.3 earthquake could lead to a tsunami with waves enveloping the Port and reaching five kilometers into the City of Tacoma.²⁵²
- PSE points to the multilayered steel and concrete materials used to build the 149-foot, 8-million-gallon storage tank. However, local environmental researchers and advocates

²⁴⁷ (Puget Sound Regional Council, 2013)

²⁴⁸ (Northeast Tacoma, Tacoma WA Demographics, n.d.)

²⁴⁹ (Henterly, 2015)

²⁵⁰ (Martin, 2018)

²⁵¹ (Final Environmental Impact Statement: PSE LNG, 2016)

²⁵² (Venturato, 2007)

identified that a “tank-breach” scenario was not run in modeling of potential project incidents and spills, citing leaks from a similar LNG facility in Louisiana.²⁵³

- The siting study calculated that a tank fire in which the roof was destroyed could have a flame more than 200 feet high.²⁵⁴ Such a fire is impossible to extinguish, and how long such a fire could burn is unknown. The only recourse would be to evacuate the area.
- A report prepared for the City of Tacoma by Cascadia Consulting and University of Washington researchers projecting climate change impacts in Tacoma found that the industrial Tideflats area, where the Puget Sound LNG facility is located, is vulnerable to sea-level rise. It names the Port of Tacoma as vulnerable to high risk of flooding due to climate impacts and rising sea-levels. Consequently, the risk of accidental gas releases due to flooding and storm surges must be considered.
- The report additionally identified the Tideflats area as vulnerable to landslides, which poses additional risks to the LNG facility.²⁵⁵
- Ecology and Environment Inc, Global Environmental Specialists and Braemer Engineering, the firms that prepared the FEIS, recommended additional mitigation measures to "protect worker and public health and safety."²⁵⁶ Why workers and citizens would be at risk is not specified nor are the mitigation measures.
- An environmental consultant retained by the Puyallup Indian Tribe, Dr. Ron Sahu, found a number of inadequacies in the Puget Sound LNG siting study:²⁵⁷
 - The Report assumes spills or leaks will be contained in a 10-minute time frame. A 10-minute leak duration is unsupported by PSE documentation. Previous experience with an LNG facility explosion in Washington State shows that leaks can persist more than 24 hours.²⁵⁸
 - Leaks were assumed to occur only from pipelines two inches or larger.
 - The report ignored failures of refrigerant storage vessels and risks from handling refrigerants. Refrigerants are among the more volatile substances that would be stored in the facility.

²⁵³ (Hay, n.d.)

²⁵⁴ (Nunnally, 2016)

²⁵⁵ (Parvey, 2016)

²⁵⁶ (Final Environmental Impact Statement: PSE LNG, 2016)

²⁵⁷ (Sahu, 2018)

²⁵⁸ (Powell T. , Williams Companies Failed To Protect Employees in Plymouth LNG Explosion, 2016)

- The report failed to assess the possibility of a vapor cloud explosion. In 2016, longtime LNG and fracked gas industry researchers were quoted in a trade publication discussing risks from explosions and vapor clouds as understudied: “We believe these additional hazards have been discounted without sufficient scientific justification in spite of multiple international reports during the last decade of catastrophic accidents involving unconfined hydrocarbon vapor cloud explosions.”²⁵⁹
- Regarding the report’s analysis on the size of vapor barriers, Dr. Sahu noted that, “The analysis assumes that a chain link fence will provide an effective vapor barrier.”
- In their interview with E&E news, engineering professors Jerry Havens and James Venart expressed dismay at the lack of regulations and safety standards concerning vapor releases and the potential for combustion in proposed LNG facilities.²⁶⁰

Even when designed and operated safely, gas releases may occur as a part of normal LNG bunkering operations, making each operation a potential fire hazard. These gas releases present a particular danger when facilities are sited at busy ports. An analysis by Sightline Institute revealed that the Puget Sound LNG “facility would be flanked by two oil facilities on a busy industrial peninsula that is difficult to evacuate in an emergency and in close proximity to several marinas, unrelated ship traffic, and other port businesses and employees.”²⁶¹ This is in direct conflict with the recommended best practices that LNG operations be located in the most protected and secure location in the port; preferably in a remote area of the port that is not frequented by other port users.²⁶²

Given that the project site is only 30 acres (1/20 of a square mile), it is unreasonable to assume that leaks and explosions can be contained within the site. It almost certainly poses a threat beyond the site boundaries.

²⁵⁹ (Mandel, 2016)

²⁶⁰ (Sahu, 2018)

²⁶¹ (Powell T. a., 2016)

²⁶² (Society of International Gas Tanker and Terminal Operators, 2003)

OCCUPATIONAL HEALTH AND SAFETY

When fossil fuel export projects are proposed, supporters emphasize economic opportunities, particularly job creation. What is left out of the discussion is how dangerous and unhealthy these jobs can be. Workers in the fossil fuel industry are exposed to myriad health risks and are killed on the job at rates four to seven times higher than other industries.²⁶³

The many detrimental health impacts of oil and gas field work are well studied and documented, including benzene exposure;²⁶⁴ silicosis;²⁶⁵ endocrine disruption;²⁶⁶ radiation and noise exposure;²⁶⁷ exposure to hydrogen sulfide;²⁶⁸ and increased overall mortality rates, especially due to work-related motor vehicle accidents.²⁶⁹

With remarkable disregard for public health, the oil and gas industry, specifically, is exempt from disclosing the chemicals they use and from most federal statutes protecting worker, resident and environmental health, including, but not limited to, the Clean Water Act, Clean Air Act, Compensation and Liability act and the Toxic Release Inventory.²⁷⁰ Despite high mortality rates from fire and explosion, the oil and gas industry is also exempt from OSHA regulations called process safety management (PSM), which regulate industries to prevent workplace explosions.²⁷¹

Diesel emissions expose large numbers of fossil fuel workers to known respiratory hazards. The US Department of Transportation (DOT), responsible for the health and safety of interstate truck and bus drivers, has neither a standard for diesel emissions nor other health standards with explicit exposure limits.²⁷² Nor does OSHA have any standard specifically for exposure to diesel exhaust.²⁷³ Only a small proportion of the thousands of chemicals present in the gas and particulate matter of diesel emissions is covered by OSHA standards, and most of these standards require only that specified limits not be exceeded over an 8-hour work shift. Components in the gas phase rarely

²⁶³ (AFL-CIO, 2018)

²⁶⁴ (Lombardi, 2014)

²⁶⁵ (Esswein E. e., 2014)

²⁶⁶ (Bang, 2015)

²⁶⁷ (O'Neill, 2014)

²⁶⁸ (Witter, 2014)

²⁶⁹ (Cribb, 2017)

²⁷⁰ (AFL-CIO, 2018)

²⁷¹ (Olsen, 2014)

²⁷² (Colborn, 2011)

²⁷³ (Soraghan M. , 2015)

²⁷⁴ (American Public Health Association, 2014)

²⁷⁵ (U.S. Department of Labor: Occupational Safety and Health Administration, n.d.)

exceed their limits. Their greatest potential threat comes from their adsorption onto diesel engine particulates, bringing them deep into the lungs. This exposure is unlimited and unregulated. Similarly, for environmental contaminants, components taken separately rarely exceed their limits, but their threat is increased when combined with simultaneous exposure to other contaminants.

The oil and gas industry is currently exempt from much of OSHA's noise standards as well, despite numerous health risks to workers from noise levels resulting from drilling, heavy equipment, diesel engines, and pipe-fitting operations.²⁷⁶

Fire and Explosions

According to numbers compiled by Energywire, the oil and gas industry employs less than 1% of the U.S. workforce but is responsible for nearly 10% of occupational deaths from fire.²⁷⁷ Between 2009 and 2013, the sector had the highest rate of mortality from fire and explosions of any private industry, and the second highest of all occupations, behind only firefighting.²⁷⁸

- In Seattle in 2016, a gas line exploded injuring nine firefighters and destroying multiple businesses. The line was supposed to have been shut off in 2004, but the contractors hired by Puget Sound Energy failed to properly cut and cap the line and gas had been flowing through it for 12 years.²⁷⁹
- On August 1, 2018 outside Midland, Texas, two pipelines began leaking at their intersection. Five workers from the pipeline companies, Kinder Morgan and Navitas Midstream, and two local firefighters responded to the leak by attempting to shut off the flow. A fire ignited and a series of explosions followed. All seven workers were hospitalized and one later died of his injuries. No report has yet determined the cause of the explosion.²⁸⁰ One week later a different pipeline exploded, killing a three-year old child in her home.
- The Williams Company's LNG storage facility in Plymouth, Washington is the largest in the Pacific Northwest, with two fourteen-million-gallon storage tanks. (See section "Natural and Human Caused Disasters" above for more) At eight a.m. on March 31, 2014, fracked gas inside the LNG processing station ignited, creating a series of rolling

²⁷⁶ (Witter, 2014)

²⁷⁷ (Soraghan M., 2015)

²⁷⁸ (Soraghan M., 2015)

²⁷⁹ (Lacitis, 2017)

²⁸⁰ (San Angelo Standard-Times, 2018)

explosions that fragmented equipment, sent 250 pounds of metal flying up to 900 feet away, and lit the facility on fire. Four employees were injured from the shrapnel, and one was burned. Before the explosion, plant operators had temporarily dismantled the site's safety monitors, so the plant continued to operate and leak fracked gas through the emergency. Company officials requested that employees repeatedly reenter the facility to manually shutdown dangerous equipment. Though more than a hundred emergency responders arrived on-site, they were unable to enter the facility for eight hours until the wind changed enough to drive out the flammable fracked gas. The extreme cold of LNG also made plugging the leaks time intensive: holes would freeze over until ambient temperature melted enough to begin leaking again. Despite the five injured employees, the company recorded only one injury in the official report months later because federal regulations only mandate that oil and gas producers report injuries leading to death or overnight hospital stays.²⁸¹

Deadly Gases and Airborne Hazards

The production, transport and storage of fracked gas exposes workers and adjacent communities to numerous toxic air pollutants during each stage of its life cycle: drilling, well completion and fracking; transport by rail, pipeline or ship; liquefaction, refining, processing, and storage. Airborne toxins pose more serious risks for workers, as likelihood and severity of exposure increases significantly with proximity to operations, as well as during particular stages of production.²⁸²

Common hazardous air pollutants emitted during fracked gas production, processing, and transport include, among others: volatile organic compounds (VOC) like benzene, toluene, ethylbenzene, and xylene; formaldehyde; hydrogen sulfide; carbon monoxide; sulfur oxide; diesel particulates; ozone; and radon gas.^{283 284}

²⁸¹ (Powell T., 2016)

²⁸² (McKenzie, Human health risk assessment of air emissions from development of unconventional natural gas resources, 2012)

²⁸³ (Shonkoff S. e., 2014)

²⁸⁴ (McKenzie, Human health risk assessment of air emissions from development of unconventional natural gas resources, 2012)

Researchers in Colorado found, during the extraction process alone (fracking), companies used 944 different products, which together contained 632 different chemicals. Of these chemicals:²⁸⁵

- More than 75% affect skin, eyes, and other sensory organs, as well as respiratory and gastrointestinal systems
- 40-50% affect the brain and nervous systems
- 37% affect the endocrine system
- 25% cause cancer and mutations

Still largely unstudied on their own, these chemicals can also combine and potentially form new reactants when exposed to air, high temperatures, and other variables of the extraction process.²⁸⁶

Hydrogen Sulfide

- Hydrogen sulfide, or “sour gas”, is one of the most common and dangerous byproducts of oil and gas production, causing acute and chronic breathing issues, neurological defects, and death. It can also corrode metal, making storage dangerous. In high concentrations the gas deadens a person’s sense of smell, making it undetectable.^{287 288}
- A study in the Alberta tar sands found that of workers interviewed, 35% experienced high exposure levels, and 10% had at some point been “knocked down” (lost consciousness) by the gas.²⁸⁹
- Hydrogen sulfide is regulated in many states producing oil and gas, but according to Energy Wire’s reporting, in the years 2013 and 2014 alone, five workers died from exposure in the fracking fields. In 1975, the gas was responsible for the deaths of nine in Denver City, Texas.²⁹⁰

²⁸⁵ (Colborn, 2011)

²⁸⁶ (Kaden, 2015)

²⁸⁷ (Kaden, 2015)

²⁸⁸ (Lee, 2014)

²⁸⁹ (Hessel, 1997)

²⁹⁰ (Lee, 2014)

Volatile Organic Compounds

- Between 2010 and 2015 at least nine workers died from close proximity to hydrocarbon vapors, also known as volatile organic compounds (VOC), trapped in fracked gas storage containers.²⁹¹
- All petroleum contains potentially lethal levels of VOCs. But according to a study by the National Institute for Occupational Safety and Health (NIOSH), VOC exposure in fracked gas is more unpredictable and often more dangerously concentrated than in conventional oil and gas production.²⁹² Exposure to these trapped gases can lead to sudden loss of consciousness and death.²⁹³
- An investigation by Energywire found that one of the ways workers are taught to avoid these sudden exposures is by “testing the wind” before they open the hatch.²⁹⁴
- Workers face these risks during all routine container tests—at the fracking site, during transport, and at processing facilities.²⁹⁵

Silicosis

- Exposure to silica dust is a well-known hazard in mining, construction, sandblasting, and other industries. It is a known lung carcinogen.
- In hydraulic fracturing, intensive blasting of sand and the general lack of regulation creates conditions where silica exposure can become extremely hazardous.
- A study by NIOSH of eleven fracking sites in five states found that full-shift silica exposure exceeded the threshold for safe levels, sometimes by ten times or more. Wearing a respirator was ineffective in preventing significant exposure.²⁹⁶
- The huge amount of sand required by hydraulic fracking has led to a surge of intensive sand mining in parts of Minnesota and Wisconsin. This has in turn led to higher health risk for miners, and likely their communities as well due to the ambient silica dust released during the extraction process.²⁹⁷

²⁹¹ (Harrison, 2016) <https://www.cdc.gov/mmwr/volumes/65/wr/mm6501a2.htm>

²⁹² (Esswein E. e., 2014)

²⁹³ (NIOSH-OSHA, 2018)

²⁹⁴ (Soraghan M. , SAFETY: Poisoned by the Shale? Investigations Leave Questions in Oil Tank Deaths, 2014)

²⁹⁵ (Harrison, 2016)

²⁹⁶ (Esswein, Occupational Exposures to Respirable Crystalline Silica During Hydraulic Fracturing, 2013)

²⁹⁷ (Korfmacher, 2013) <https://doi.org/10.2190/NS.23.1.c>

- Recently, the American Thoracic Society called for greater recognition of the harm of silicosis, citing its prevalence, seriousness and yet underrepresentation in occupational health cases.²⁹⁸
- Silicosis risks will occur during construction of fracked gas pipelines, processing, and storage facilities.
- A report by researchers in Quebec found that, while all major construction projects expose workers to silica, pipeline laborers had some of the highest risks of silicosis exposure due to their frequent use of jackhammers, masonry saws, and other dust producing heavy machinery.²⁹⁹

Diesel Engine Exhaust

- Workers encounter diesel engine exhaust (DEE) from heavy machinery throughout gas production and transport. Diesel exhaust components include carbon monoxide, nitric oxide, nitrogen dioxide, sulfur oxides, and polycyclic aromatic hydrocarbons, as well as fine particulate matter.
- When NIOSH conducted a full shift study of diesel exhaust exposure at multiple fracking sites, they found the mean exposure over time (17 $\mu\text{g}/\text{m}^3$, ranging from 0.1–68 $\mu\text{g}/\text{m}^3$) near to the state of California's maximum safe exposure level (20 $\mu\text{g}/\text{m}^3$). 10% of their measurements exceeded this limit.³⁰⁰
- DEE is a recognized carcinogen and cause of lung cancer.³⁰¹ U.K. researchers have estimated DEE to be the third largest contributor to occupationally induced lung cancer (after asbestos and silica) and estimate DEE is responsible for up to 6% of all lung cancer deaths.³⁰²
- Diesel fumes not only impact workers at close proximity, but create regionally hazardous air quality.

²⁹⁸ (Deslauriers, 2016)

²⁹⁹ (Beaudry, 2013)

³⁰⁰ (Esswein E. e., Measurement of Area and Personal Breathing Zone Concentrations of Diesel Particulate Matter (DPM) during Oli and Gas Extraction Operations, Including Hydraulic Fracturing, 2018)

³⁰¹ (Benbrahim-Tallaa, 2012)

³⁰² (Vermeulen, 2013)

Radiation

- Radon is a component of fracked gas, but its concentration levels can far exceed safe levels as a result of the extraction process. These concentrations can then travel with the gas and dissolve into the mixed fluids, or “slurry”, produced during the disposal of fracking wastes.³⁰³
- Radon will remain in the gas and disposal slurry until the radioactive isotopes fully decay, creating a long-term exposure risk for both workers and downstream consumers.³⁰⁴
- Radon is second only to tobacco as a cause of lung cancer.³⁰⁵

Noise

- These risks are higher with fracking than conventional gas production due to the greater scale and length of time when workers are exposed to noise during horizontal drilling and other unconventional extraction methods.³⁰⁶

Jordan Cove LNG

The majority of jobs offered by the Jordan Cove project will come during the short-term construction of the facility (which is true of each of the proposed fracked gas projects). In its Resource Report 1, the parent company Pembina estimates an average of 1,023 construction employees per month over a five-year construction period. Work would include pile driving and dredging of the bay, road and infrastructure construction, and building the processing facility itself.³⁰⁷

While not a definitive accounting of all occupational risks, Jordan Cove exemplifies the specific risks to workers’ health posed by projects of this scale:

- Acute and continuous exposure to diesel fumes, VOCs, and other toxic emissions from heavy construction machinery, high levels of bus and truck traffic, and the presence of two large diesel-fired generators as well as two black diesel backup generators.

³⁰³ (Steinhäusler, 2004)

³⁰⁴ (Kaden, 2015)

³⁰⁵ (Al-Zoughool, 2008)

³⁰⁶ (Kaden, 2015)

³⁰⁷ (Jordan Cove Energy Project L.P., 2017)

- Nighttime use of vehicles and heavy equipment: dredging and pile driving of the bay is expected to occur 24 hours per day over two years. Many of the workers would be temporary and come from out of county, likely commuting long distances and leading to higher risk of over-exhaustion and vehicular death.
- High noise exposure would occur from ongoing and wide use of heavy machinery.
- Silica exposure from high levels of dust produced in concrete work, dredging, and masonry.

When completed, the facility would require 180 permanent positions.³⁰⁸ Employees at the terminal will similarly experience constant high noise level exposure and possible over-exhaustion from nighttime operations. They are also at risk of acute and deadly exposure to VOCs, benzene, and methane during routine testing and maintenance of the gas storage tanks.

The greatest risk for workers at Jordan Cove comes from potential fires and explosion from unknown or unrepaired leakages, exemplified by the explosion at the William's Company LNG storage facility in Plymouth, Washington. These risks are augmented by the possibility of earthquake and tsunamis.

Pembina has promised to build what they call the Southwest Oregon Regional Safety Center (SORSC) near the terminal, including a "security center" and an "emergency operations center". They have also promised to build a fire station nearby in a separate facility, staffed with industrial firefighters.

However, as the explosion in Plymouth demonstrated, significant safety issues were not necessarily mitigated by the presence of firefighters; in fact, the firefighters and trained LNG employees who responded to the situation in Plymouth could not immediately act due to continued leakage of explosive fumes. The root problem of the above case was not a lack of firefighters or emergency crews, but the degradation of storage equipment, employee error, proximity of flammables, and scale of the facility.

Pacific Connector Gas Pipeline

Pipeline construction workers will experience many of the same risks as those at Jordan Cove: high diesel fume exposure, long and irregular hours including nighttime work and commuting, continual noise pollution, and high risk of silica dust exposure from digging equipment.

³⁰⁸ (Draft Environmental Impact Statement for the Jordan Cove Energy Project, 2019)

Pipeline monitors, likewise, face what can be lethal exposure to methane, VOCs, and other noxious gasses potentially released during maintenance at compressor stations, as well as during any leak repair.

Because the PCGP will transport fracked gas in unprocessed, pressurized form there would be continuous risk of leaks and explosions. If a pipeline failure occurs, Pacific Connector employees and local emergency responders would be responsible for resolving the problem at their own risk. Pacific Connector Gas Pipeline LP writes in their “Resource Report No. 11, Reliability and Safety” that they would plan for this by sharing information with existing safety organizations. They do not, however, plan to provide emergency training in the case of gas leakage, or pay for more emergency equipment, suggesting the burden of risk will fall on local emergency responders and local jurisdictions.

In addition, in many places along the pipeline, the company has only promised to patrol and check for leaks once per year.³⁰⁹

Climate change has already dramatically increased the number and severity of wildfires in Oregon. According to Firefighters United for Safety, Ethics and Ecology (FUSEE), over half the 229-mile long pipeline would cross through lands already designated by the U.S. Forest Service as having moderated to very high wildfire risk.³¹⁰ The result will be a pipeline that functions like a quick-burning fuse, causing, in case of a spill and ignition, major wildfires in the surrounding area. Firefighters responding to the disaster would face a dangerous double-risk: the need to suppress the pipeline explosion as well as suppressing the fires that would threaten surrounding communities and themselves.

Kalama Methanol Refinery

The proposed Kalama methanol refinery would be the largest in the world, producing 3.6 million metric tons of methanol a year and consuming nearly three times as much fracked gas as Portland and Seattle combined.³¹¹ According to the Northwest Innovation Works Safety Report, the site would convert crude fracked gas to methanol and water using heat and metallic compounds to break down the gas, releasing numerous toxic waste materials, such as hydrogen sulfide.³¹²

³⁰⁹ (Jordan Cove LNG, 2017)

³¹⁰ (Firefighters United for Safety, Ethics and Ecology, 2019)

³¹¹ (DePlace E. &, 2018)

³¹² (AcuTech, 2016)

In 2014, the Chemical Safety and Hazard Investigation Board (CSB), an independent federal investigative agency, compiled a report on the hazards of methanol, finding that workers' health and safety risks include:³¹³

- Handling of catalyst material. In unprocessed form fracked gas is largely composed of methane, but conversion to the intermediary synthetic gas introduces a high percentage of carbon monoxide, a known asphyxiate. The hazards of other catalyst materials are less well known. In their Safety Report, the company acknowledges, "some of these compounds may be toxic if inhaled and some may have potential to self-heat and combust when exposed to the atmosphere under certain circumstances." Removal would depend on workers navigating a complex process of purging gasses, preventing dust kick-up, and moving through confined spaces.³¹⁴
- Acute exposure to methanol. Methanol is a known poison and can easily enter through the skin and eyes, or from ingesting contaminated food or water. High doses can cause blindness or death and a range of impacts on the central nervous system, including headaches, dizziness, lethargy, seizures, and coma.
- Chronic exposure to methanol. Repeated or chronic exposure to low levels of methanol may cause birth defects, produce inflammation of the eye (conjunctivitis), recurrent headaches, giddiness, insomnia, stomach disturbances, and visual failure. The most noted health consequences of longer-term exposure to lower levels of methanol are a broad range of effects on the eye. Inflammatory changes and irritation of the skin (dermatitis), occurs with chronic or repeated exposure to methanol.³¹⁵
- General handling of methanol. Methanol is flammable, burns easily, and has a higher density than air, so that it pools and collects near the ground following a spill. This tendency makes cleanup difficult, as the gas does not dissipate without good ventilation.
- Fire and Explosion. Methanol is widely used in a number of settings: commercial, industrial, institutional, and at home. A report compiled of known methanol incidents in thirteen countries over a fifteen-year period found that industrial workplace accidents comprised the highest percentage (31%, n=28), with fire and explosions accounting for 90% of those incidents, with 23 workers injured and 6 killed. The only higher mortality

³¹³ (Medina, 2014)

³¹⁴ (AcuTech Consulting Group, 2016)

³¹⁵ (National Institute for Occupational Safety and Health, n.d.)

rate was in transportation, with 57 fatalities in 26 incidents. One third of all incidents documented in the report had no known cause.³¹⁶

Longview Anhydrous Ammonia Plant

Pacific Coast Fertilizer's proposed plant in Longview would employ about 100 people in the processing of fracked gas to anhydrous ammonia for nitrogen fertilizer. The Centers for Disease Control and Prevention (CDC) report that anhydrous ammonia can be extremely hazardous to work with, expanding rapidly into the air upon release.³¹⁷ Exposure to anhydrous ammonia can cause severe eye, nose and throat irritation, breathing difficulty, wheezing, chest pain, pulmonary edema (fluid build-up in the lungs), burns, blisters, and frostbite. According to the CDC and National Institute of Occupational Safety and Health, exposure is fatal at concentrations as low as 300 parts per million.

Accidents occur frequently from storage and transport of the substance. A report in 2013 found that over a fifteen-year period almost 1,000 accidents occurred at 678 facilities, with over a fifth of these facilities having multiple accidents. These resulted in 19 deaths and 1,651 injuries.³¹⁸

Puget Sound LNG

Puget Sound Energy's proposed facility in Tacoma would be an LNG terminal for refueling ships. Called "bunkering," this new and unregulated process depends on a number of "best case scenarios" to ensure the LNG doesn't spill or volatilize, damaging physical structures and injuring workers.³¹⁹

A 2015 report from the American Bureau of Shipping outlines the numerous unique hazards of the fueling system, including risk of "serious injury to personnel in the immediate area if they come in contact with cryogenic liquid" and "brittle fracture damage to steel structures exposed to cryogenic temperatures". Like all LNG terminals, gas may also release throughout the storage and transfer process, creating an ambient fire-hazard at the facility and acute risk of methane asphyxiation for workers.³²⁰ If built as proposed and without regulation, worker protection from

³¹⁶ (Medina, 2014)

³¹⁷ (Centers for Disease Control and Prevention)

³¹⁸ (DePlace E. &, 2017)

³¹⁹ (Powell T. a., 2016)

³²⁰ (American Bureau of Shipping, 2015)

these hazards would be almost entirely at the mercy of the safety plan of Puget Sound Energy and their business partners.

TEMPORARY LABOR CAMPS

Construction of oil and gas infrastructure, including processing plants, export terminals, extraction sites and pipelines, requires a large influx of labor with frequently unforeseen impacts on local communities. The influx of labor necessitates temporary housing and makes demands on local communities to provide for and adjust to the sudden increase in population and need for services. Frequent reports in the past ten years have documented burdens on local infrastructure, public services and public health and increasingly on nearby tribal communities through increases in crime, drug use, assaults, kidnapping, sex trafficking, and sexually transmitted infections (STI).

- In Williams County, North Dakota, in the Bakken Shale, increases in crime have corresponded with the flow of oil. The infusion of cash has reportedly attracted career criminals who deal in drugs, violence, and human sex trafficking. In 2014 the *Williston Herald* portrayed the rapid rise of “violent crimes that result in the immediate loss of an individual’s property, health or safety, such as murder, larceny and rape.” With fewer than 100 law enforcement personnel, crime in Williams County “has risen in kind with the county’s population, but funding, staffing and support training for law enforcement has not.”³²¹
- According to the North Dakota Health Department, the number of HIV and AIDS cases in North Dakota more than doubled between 2012 and 2014, and cases were shifting to the state’s western oil fields, where 35-40 percent of all new cases occurred. Previously, only 10 percent of cases were in that region.³²² This trend followed on the heels of an upsurge in sexually transmitted chlamydia cases in the same region. The North Dakota state director of disease control, Kirby Kruger, attributed the uptick in HIV cases to the drilling and fracking industry and attempted to spread HIV prevention messages at the

³²¹ (Bell, 2014) Retrieved from http://www.willistonherald.com/news/modernized-slavery/article_84e257d8-3615-11e4-a4f8-001a4bcf887a.html

³²² (Associated Press, 2014) Retrieved from http://billingsgazette.com/news/state-and-regional/montana/north-dakota-hiv-aids-rate-rises-with-population-growth/article_a939fed6-f737-5cfb-957f-ab800673f4d7.html

“man camps” that house young male workers in the oil industry.³²³ Human sex trafficking accompanied the fracking boom, but a shortage of medical professionals hampered response to the public health crisis, according to Kruger, who noted that it was difficult to hire nurses and medical staff who could live in the area on a public health wage.

- In 2017 the Southwest Pennsylvania Environmental Health Project established a voluntary public health registry to track and analyze impacts of shale gas development on people living near gas production facilities. According to a spokesperson, “The vast majority of independent science is looking at [shale gas development] and saying something’s not good there. We need to know more ... The findings of this registry will allow the health care community to be more informed about what problems people are experiencing when they walk into their offices.”³²⁴
- Sexually transmitted infections (STI) can increase through sexual mixing patterns associated with labor migration. A longitudinal, ecologic study was conducted from 2000–2016 in a prolific shale gas region situated in Ohio. Reported cases of chlamydia, gonorrhea and syphilis by county and year were obtained from the Ohio Department of Health. All 88 counties were classified as none, low, and high shale gas activity in each year, using data from the Ohio Department of Natural Resources. Compared to counties with no shale gas activity, counties with high activity had 21% increased rates of chlamydia and 19% increased rates of gonorrhea.³²⁵

One of the underreported effects of the fracking boom is the strain on the area’s healthcare system. Motor vehicle accidents and deaths, for example, are many times higher for oil and gas workers than workers in other industries, leading to over-burdened hospitals and emergency response services. One study found oil and gas workers died from work-related motor vehicle accidents 8.5 times more frequently than other wage and salary workers.³²⁶

The Methodist Healthcare Ministries executive report of the South Texas Community Needs Assessment describes the consequences of the fracking boom on healthcare in rural Texas counties near the Eagle field shale (EFS) area. Results include:

³²³ (Heitz D. , 2014)

³²⁴ (Hohey, 2017)

³²⁵ (Deziel N.C., 2018) <https://doi.org/10.1371/journal.pone.0194203>

³²⁶ (Retzer, 2013)

- Increased STIs (rates of chlamydia in part of the EFS area is 365 per 100,000 people—compared to a national average of 84 per 100,000).
- Increases in the number of uninsured patients, as much work in the oilfield is done by subcontractors who do not have health insurance. Additionally, workers in the industries that have grown to provide services to oil field workers are generally uninsured. At a single site in the study, the percentage of uninsured patients grew from 60 percent in 2011 to 74 percent in 2013. Across the study, self-pay, and charity cases increased 11%.
- Increases in heat exhaustion, dehydration, sleep deprivation, exposure to oil and gas spills, and accidents.
- Increase in traffic accidents. In one county, accidents increased 412% between 2009-2011. The impact on hospitals has also been described in the Bakken oil field region of North Dakota.
- Trauma services have increased in some rural areas by over 1000%. Half these trauma visits are attributed to oil field injuries, though many are drug overdose related.
- In North Dakota between 2012-2014 HIV/AIDS cases doubled. 35% occurred in the western oil fields, the site of large “man camps” which had already seen a significant increase in chlamydia cases.

Native Americans

Reports are emerging of disproportionately severe trauma to tribal communities near temporary labor camps. In January 2014, James Anaya, the United Nations special rapporteur, opened the meeting of the UN’s Permanent Forum stating: “It has become evident ... that extractive industries many times have different and often disproportionately adverse effects on indigenous peoples, and particularly on the health conditions of women.” He detailed the effects on Native American women and girls, including increased rates of STIs and HIV/AIDS, physical assault, and sexual harassment and violence. He additionally noted that “contamination of indigenous lands and natural resources resulting from extractive activities has significant implications for reproductive health, having contributed in many cases to birth defects, delayed child development and disease among community members.” In addition, he noted, the full range of health effects are yet to be

determined, igniting fears among Native Americans about the unknown intergenerational effects that the contamination will have on their communities.³²⁷

A 2016 opinion piece in the *Boston Globe* exposed the risks Native American women faced due to the Dakota Access Pipeline: “It also endangers women and girls. That’s because, in this country as around the world, extractive industries create so-called ‘man camps,’ places where male workers often work twelve-hour days, are socially isolated for weeks or months at a time, and live in trailers in parks that extend for miles. Many men retain their humanity, but as advocacy organizations like First Nations Women’s Alliance have noted, these man camps become centers for drugs, violence, and the sex trafficking of women and girls. They also become launching pads for serial sexual predators who endanger females for miles around.”³²⁸

In 2014 the U.S. Justice Department Office on Violence Against Women awarded three million dollars to five rural and tribal communities to prosecute crimes of violence against women and provide services to victims of sexual assault, domestic violence, and stalking in the Bakken Region of North Dakota and Montana.³²⁹ Rationale documented by tribal leaders, law enforcement, and the FBI included, “rapid development of trailer parks and modular housing developments often referred to as ‘man camps’; abrupt increase in cost of living, especially housing; rapid influx of people, including transients, in a previously rural and stable community; constant fear and perception of danger; and a lost way of life. Local and tribal officials and service providers reported that these changes have been accompanied by a rise in crime, including domestic and sexual violence.”³³⁰

To address the community health and safety harms linked to temporary labor camps of extractive industries, the British Columbia Ministry of Aboriginal Relations and Reconciliation funded a research project in 2017, carried out in consultation with First Nations. The project noted that “increased domestic violence, sexual assault, substance abuse, and an increased incidence of sexually transmitted infections (STIs) and HIV/AIDS due to rape, prostitution, and sex trafficking are some of the recorded negative impacts of resource extraction projects, specifically as a result of

³²⁷ (Rickert, 2014). <http://nativenewsonline.net/currents/un-special-rapporteur-oil-gas-mining-operations-brings-increased-sexual-violence/>

³²⁸ (Nagle, 2016)

³²⁹ (U.S. Department of Justice, 2014) Retrieved from <http://www.justice.gov/opa/pr/associate-attorney-general-west-announces-3-million-grants-address-violence-against-women>

³³⁰ (U.S. Department of Justice, 2014) Retrieved from <http://www.justice.gov/sites/defaultfiles/ovw/legacy/2014/04/25/fy2014-initiative-for-the-bakken-region-enhanced-services-for-victims.pdf>

the presence of industrial camps and transient work forces.” The objectives of the project were to stimulate dialogue and to develop detailed protective steps for Nations, government, and industry in advance of the initiation of planned extraction projects in the region, in order to prevent violence against women and other life changing negative effects linked to the industrial camps.³³¹

Jordan Cove LNG and Pacific Connector Gas Pipeline

Jordan Cove LNG has applied for a permit for a 2100-person temporary labor camp to be built on the north sand spit in Coos Bay during construction of the fracked gas processing plant. Access would be limited to one way in and out. Access for emergency responders and escape for visitors and personnel in case of emergencies would be inadequate and present a serious danger.

Proposed temporary housing would be serviced by new utilities including water supply and waste disposal. Will proposed utilities be adequate to handle a large influx of workers? If not, there is potential for negative impacts on the waters of Coos Bay, the estuary, and the ocean shore with the potential for contamination of soils and water as well as significant stress on the public water system by significantly increased usage. The large influx of labor will likely also place increased stress on the police, fire, and health resources of Coos Bay, North Bend, and surrounding communities.

Many temporary labor camps may be needed to build the proposed Pacific Connector Pipeline, especially in rural areas in and near tribal lands, raising concerns of increased risks to rural communities of communicable diseases, crime, drug use, assaults, and homicides. Local communities do not have the resources or the ability to protect their community members, and public health resources are insufficient to respond to the projected adverse health impacts.

HEALTH EFFECTS OF HYDRAULIC FRACTURING

Hydraulic fracturing (fracking) for gas is a remarkably dirty and dangerous industry with sometimes devastating effects on neighboring communities. The majority of the gas piped into Oregon and Washington is fracked gas, which has been extracted at substantial cost to the communities that surround fracking sites. West Coast fracked gas infrastructure would help perpetuate the development of fracking for gas that harms communities nationwide and in Canada.

³³¹ (Gibson, 2017) Retrieved from http://www.thefirelightgroup.com/thoushallnotpass/wp-content/uploads/2016/03/Firelight-work-camps-Feb-8-2017_FINAL.pdf

Health effects of fracking operations include air and water pollution, human-caused disasters, and threats to occupational health and safety. The deleterious effects of temporary labor camps associated with construction of fracked gas facilities are discussed above.

Air Pollution

Fracking for gas is associated with health-threatening levels of air pollution. Numerous studies have documented high levels of air pollutants that cause cancer as well as pulmonary and neurological diseases. Distant effects of fracking related emissions are seen as well, particularly via ground level ozone and smog.

Air pollutants include volatile organic compounds, ozone, particulate matter, nitrogen oxides, carbon monoxide, formaldehyde, benzene, and polycyclic aromatic hydrocarbons (see section [Air Pollution](#) above for further description of toxics).

Air samples gathered near fracking sites in Arkansas, Colorado, Pennsylvania, Ohio, and Wyoming were found to contain eight highly toxic chemicals. The most common airborne chemicals detected included two known human carcinogens (benzene and formaldehyde) and two potent neurotoxicants (hexane and hydrogen sulfide). In 29 out of 76 samples, concentrations far exceeded federal health and safety standards, sometimes by several orders of magnitude. Further, high levels of pollutants were detected at distances exceeding legal setback distances from wellheads to homes. Highly elevated levels of formaldehyde, for example, were found up to a half-mile from a wellhead. In Arkansas, seven air samples contained formaldehyde at levels up to 60 times the level known to raise the risk for cancer.³³²

Whole air samples collected throughout the Barnett Shale basin in Texas contained benzene, hexane, and toluene at levels two to fifty times greater than the local background and similar to those seen in other intensely drilled shale basins in Colorado and Utah.³³³

Between 2009 and 2014, ethane emissions in the Northern Hemisphere increased by about 400,000 tons annually, the bulk of it from North American oil and gas activity, according to research by an international team led by the University of Colorado Boulder. Ethane contributes to the creation of ground-level ozone pollution (smog), a known human health hazard.³³⁴

³³² (Macey, 2014) doi: 10.1186/1476-069X-13-82

³³³ (Marrero, 2016) doi: 10.1021/acs.est.6b02827

³³⁴ (Helmig, 2016) doi: 10.1038/ngeo2721

Approximately two percent of total global ethane emissions (250,000 tons of ethane/year) originate from the Bakken shale oil and gas field. These emissions directly impact air quality across North America by contributing to the formation of ground level ozone and smog. Surface-level ozone is linked to respiratory problems, eye irritation, and crop damage. Additionally, as a greenhouse gas, ethane is the third-largest contributor to human-caused climate change. Up until 2009 global ethane levels were decreasing, but have risen following the shale gas boom.³³⁵

Aerial infrared camera surveys “of more than 8,000 oil and gas wells in seven U.S. regions found that well pads emit considerably more methane and volatile organic compounds (VOC) than captured by earlier inventories. Moreover, these emissions were widely and unpredictably variable from site to site and from well to well. Over 90 percent of total airborne emissions from well pads originated with vents and hatches on aboveground storage tanks.”³³⁶

In response to health concerns by local residents, a research team from University of Cincinnati and Oregon State University found high levels of air pollution in heavily drilled areas of rural Carroll County, Ohio. Air monitors showed 32 different hydrocarbon-based air pollutants, including the carcinogens naphthalene and benzo[a]pyrene.³³⁷

Researchers found that drilling and fracking in Utah’s Uintah Basin emit prodigious amounts of volatile organic air pollutants, including benzene, toluene and methane, all of which are precursors for ground-level ozone (smog). Multiple pieces of equipment on and off the well pad, including condensate tanks, compressors, dehydrators, and pumps served as the sources of these emissions. This research shows that drilling and fracking activities are the cause of the extraordinarily high levels of winter smog in the remote Uintah basin—which regularly exceed air quality standards and are similar to that of downtown Los Angeles.³³⁸

Residential areas in intensely drilled northeastern Colorado have high levels of fracking-related air pollutants, including benzene and ozone.³³⁹ A Colorado School of Public Health study based on three years of monitoring at Colorado fracking sites found a number of toxic petroleum

³³⁵ (Kort, 2016) doi: 10.1002/2016GL068703

³³⁶ (Lyon, 2016) doi: 10.1021/acs.est.6b00705

³³⁷ (Oregon State University: Environmental Health Sciences Center, 2014) <http://ehsc.oregonstate.edu/air/62PAH>

³³⁸ (Warneke, 2014) doi: 10.5194/acp-14-10977-2014

³³⁹ (Thompson C. R., 2014) doi: 10.12952/journal.elementa.000035

hydrocarbon air pollutants near gas wells including benzene, ethylbenzene, toluene, and xylene. These air toxics are linked to neurological and respiratory diseases and cancer.³⁴⁰

Measured levels of air pollution associated with fracking are already alarming. Research suggests additionally that emissions and associated health risks have been grossly understated due to the extensive scope of fracking and the variable nature of fracking-caused emissions. Researchers with the Southwest Pennsylvania Environmental Health Project showed that methods do not adequately measure the intensity, frequency, or durations of community exposure to the toxic chemicals routinely released from drilling and fracking activities. They found that exposures may be underestimated by an order of magnitude, as mixtures of chemicals, local weather conditions, and vulnerable populations are not taken into account.³⁴¹

Water Pollution

Contamination of water with toxic fracking fluids is widespread and well-documented in dozens and dozens of scientific studies. Contamination has affected rivers and streams, surface and groundwater, and many sources of drinking water. Hydraulic fracturing is exempt from key provisions of the Safe Drinking Water Act and fracking chemicals are protected from public scrutiny as trade secrets.³⁴² Known toxins can be legally injected into the ground near aquifers or directly into the aquifers themselves. Most states that host fracking operations do not require routine monitoring of groundwater aquifers near drilling and fracking operations.

The EPA's six-year, \$29 million study on fracking and water resources documented in detail the widespread deleterious impacts on drinking water at each stage of the fracking process.³⁴³ Contamination has resulted from spills of fracking fluid and fracking wastewater; discharge of fracking waste into rivers and streams; and underground migration of fracking chemicals, including gas, into drinking water wells. Depletion of aquifers caused by water withdrawals has also created water shortages.

According to an important compendium on fracking risks compiled by Physicians for Social Responsibility and Concerned Health Professionals of New York: "Repudiating industry claims of risk-free fracking, studies from across the United States present irrefutable evidence that

³⁴⁰ (McKenzie L. M., 2012) doi: 10.1016/j.scitotenv.2012.02.018

³⁴¹ (Brown, 2014) doi: 10.1515/reveh-2014-0002

³⁴² (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

³⁴³ (U.S. Environmental Protection Agency, 2016)

groundwater contamination occurs as a result of fracking activities and is more likely to occur close to well pads. In Pennsylvania alone, the state has determined that more than 300 private drinking water wells have been contaminated or otherwise impacted as the result of drilling and fracking operations over an eight-year period.”³⁴⁴ The U.S. Agency for Toxic Substances and Disease Registry (ATSDR), determined that the chemical contamination of some private water wells in Dimock, Pennsylvania rendered the water unsuitable for drinking.³⁴⁵

More than 1000 chemicals have been confirmed as ingredients in fracking fluid, including dozens of known reproductive and developmental toxins. In addition, fluids contain heavy metals, radioactive elements, brine, and volatile organic compounds (VOC), which pose additional threats to surface and groundwater.

A 2017 study cited in the compendium found that “spills of fracking fluids and fracking wastewater are common, documenting 6,678 significant spills over a period of nine years in four states alone. In these states, between two and sixteen percent of wells report spills each year. About five percent of all fracking waste is lost to spills, often during transport.”³⁴⁶ In some watersheds, widespread downstream contamination has occurred with radioactive elements, heavy metals, endocrine disruptors, and toxic disinfection byproducts, which alter the ecology and chemistry of water flows, with adverse effects on aquatic biodiversity and populations of sensitive fish species, such as brook trout.

Researchers in Texas found 19 different fracking-related contaminants—including cancer-causing benzene—in hundreds of drinking water samples collected from the aquifer overlying the heavily drilled Barnett Shale.³⁴⁷ In Pennsylvania, a solvent used in fracking fluid was found in drinking water wells near fracking operations. The solvent is known to cause well casing problems.³⁴⁸ In California, state regulators admitted that they had mistakenly allowed oil companies to inject drilling wastewater into aquifers containing clean, potable water.³⁴⁹ A 2017 study found that fracking wastewater discharged into rivers and streams through treatment plants created dozens of

³⁴⁴ (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

³⁴⁵ (Agency for Toxic Substances and Disease Registry: CDC, 2016)

³⁴⁶ (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

³⁴⁷ (Hildenbrand, 2015) doi: 10.1021/acs.est.5b01526

³⁴⁸ (Llewellyn, 2015) doi: 10.1073/pnas.1420279112/-/DC Supplemental

³⁴⁹ (Long, 2015)

brominated and iodinated disinfection byproducts that are particularly toxic and “raise concerns regarding human health.”³⁵⁰

The Pennsylvania Department of Environmental Protection determined that fracking wastewater that had leaked from a storage pit contaminated groundwater and rendered a natural spring used for drinking water in Greene County undrinkable.³⁵¹ In Arkansas, researchers found that water withdrawals for fracking operations can deplete streams, threaten drinking water supplies, damage aquatic life and impact recreation.^{352 353}

Using geochemical and isotopic tracers to identify the unique chemical fingerprint of Bakken region brines (the naturally occurring salty water that lies underground and is brought to the surface through fracking), a Duke University study found that accidental spills of fracking wastewater have contaminated surface water and soils throughout North Dakota where more than 9,700 wells have been drilled in the past decade.³⁵⁴ Contaminants included salts as well as lead, selenium and vanadium. In the polluted streams, levels of contaminants often exceeded federal drinking water guidelines. Soils at spill sites showed elevated levels of radium. The study concluded that “inorganic contamination associated with brine spills in North Dakota is remarkably persistent, with elevated levels of contaminants observed in spill sites up to four years following the spill events.” In a comment about this study, lead author and Duke University geochemist Avner Vengosh said, “Until now, research in many regions of the nation has shown that contamination from fracking has been fairly sporadic and inconsistent. In North Dakota, however, we find it is widespread and persistent, with clear evidence of direct water contamination from fracking.”³⁵⁵

After residents complained about its foul taste, a 2016 study by Stanford University scientists determined that fracking fluids had contaminated the drinking water in the town of Pavillion, Wyoming.³⁵⁶ Contaminants included the carcinogen benzene and neurotoxic toluene. In the Pavillion area, operators sometimes fracked directly into underground sources of water.³⁵⁷

³⁵⁰ (Liberatore, 2017) doi: 10.1021/acs.estlett.7b00468

³⁵¹ (Niedbala, 2018) https://observer-reporter.com/news/localnews/w-va-company-fined-million-for-violations-at-well-sites/article_cc1ce344-faec-11e7-84ca-076df3832f29.html

³⁵² (Entrekin, 2018) doi: 10.1021/acs.est.7b03304

³⁵³ (American Chemical Society, 2018) <https://www.sciencedaily.com/releases/2018/01/180131095656.htm>

³⁵⁴ (Lauer, 2016) doi: 10.1021/acs.est.5b06349

³⁵⁵ (Nicholas School of the Environment, Duke University, 2016)

³⁵⁶ (DiGiulio, 2016) doi: 10.1021/acs.est.5b04970

³⁵⁷ (DiGiulio, 2016)

In an interview about the research, lead author DiGiulio said that his findings raise concerns about similar water pollution in other heavily fracked regions. “Pavillion isn’t geologically unique in the West, and I’m concerned about the Rocky Mountain region of the U.S. The impact on [underground drinking water sources] could be fairly extensive. Pavillion is like a canary in a coal mine and we need to look at other fields.”³⁵⁸ Co-author Jackson noted, “There are no rules that would stop a company from doing this anywhere else.”³⁵⁹

Other potential health impacts of water contamination from fracking include pre-term birth, pregnancy complications and childhood cancer. West Virginia researchers found endocrine-disrupting chemicals in surface waters near wastewater disposal sites.^{360 361} These types of chemicals can hurt the developing fetus even when present at very low concentrations. A Johns Hopkins study looked at records of 9,384 women with newborns who lived near fracking sites and found a 40% increased chance of having a premature baby and a 30% risk of having the pregnancy be classified as “high-risk”.³⁶² Premature babies accounted for 35% of infant deaths and prematurity is a known cause of life-long disabilities.

A Yale team identified 55 known or possible carcinogens that may be released into air and water from fracking operations. Of these, 20 are linked to leukemia or lymphoma.³⁶³ A 2017 Colorado study found higher rates of leukemia among both children and young adults living in areas dense with gas and oil wells.³⁶⁴

Each frack uses about 25,000 gallons of chemicals, including known human carcinogens, neurotoxins, and endocrine disrupting chemicals which contaminate water and soil. Table 9 is a partial list of commonly used chemicals and their health effects.³⁶⁵

³⁵⁸ (Banerjee, 2016) <https://insideclimatenews.org/news/29032016/fracking-study-pavillion-wyoming-drinking-water-contamination-epa>

³⁵⁹ (Jordan, 2016) <http://news.stanford.edu/2016/03/29/pavillion-fracking-water-032916/>

³⁶⁰ (Kassotis, 2016) doi: 10.1016/j.sci.tenv.2016.03.113

³⁶¹ (Bienkowski, 2016) <http://www.environmentalhealthnews.org/ehs/news/2016/april/in-w.-virginia-frack-wastewater-may-be-messing-with-hormones>

³⁶² (Casey, 2016) doi: 10.1097/EDE.0000000000000387

³⁶³ (McKenzie L. M., Childhood hematologic cancer and residential proximity to oil and gas development, 2017) doi: 10.1371/journal.pone.0170423

³⁶⁴ (Elliot, 2017) doi: 10.1016/j.scitotenv.2016.10.072

³⁶⁵ (U.S. Department of Energy)

Table 10: Hydraulic Fracturing Chemicals				
Chemical	Type of Additive	Why Used	Non-fracking Uses	Health Problems
Hydrochloric (muriatic acid)	Acid	helps dissolve rock, and make cracks	swimming pool chemical, toilet bowl cleaner	severe burns to skin, GI and respiratory tract
Polyacrylamide	Reduces friction	minimizes friction in the pipes	water treatment, soil conditioner	nervous system damage, carcinogen
Methanol	Corrosion inhibitor	prevents corrosion; winterizing agent	used as solvent and in biodiesel	wood alcohol--can cause blindness and death
Ethylene glycol	Scale inhibitor	prevents scale in pipes	anti-freeze	poisonous
Glutaraldehyde	Biocide	kills bacteria that might be corrosive to pipes	disinfecting medical equipment	commonly causes throat and lung irritation, and asthma
n,n-Dimethyl formamide	Corrosion inhibitor	prevents pipe corrosions	plastics	liver damage, high blood pressure
Isopropanol	Surfactant	increases viscosity of the fluid	rubbing alcohol, glass cleaner	contact irritation, headache, dizziness
Ammonium persulfate	Breaker	delays breakdown of polymer chains	bleaching, plastics mfg.	respiratory distress, burning on contact

Noise Pollution

A review analyzing the relevant scientific literature on the potential public health impacts of ambient noise related to unconventional (fracked) oil and gas development found that “oil and gas activities produce noise at levels that may increase the risk of adverse health outcomes, including

annoyance, sleep disturbance, and cardiovascular disease.” The review included focus on vulnerable populations, including children, the elderly, and the chronically ill.³⁶⁶

In California, noise from well stimulation was associated with both sleep disturbance and cardiovascular disease in a dose-response relationship (the louder the noise, the greater the adverse effect).³⁶⁷

In cooperation with The Colorado Oil and Gas Conservation Commission, researchers at Colorado State University performed area noise monitoring at 23 oil and gas sites throughout Northern Colorado. Current noise mitigation strategies reduced noise levels. However, the reduction was not sufficient to reduce the noise below the residential permissible noise level (55 dBA).³⁶⁸

Human-caused Disasters

The fracking process itself has been shown to increase seismicity and precipitate earthquakes in communities near drilling sites.³⁶⁹ Scientists have linked surges in gas production and injections of wastewater, a key part of the fracking process, to earthquakes with magnitudes as high as 5.8 in Ohio, Arkansas, Texas, Oklahoma, Kansas, and Colorado, states with significant fracking operations.³⁷⁰ Both the U.S. Geological Survey (USGS) and state geological agencies such as the Oklahoma Geological Survey now acknowledge that earthquakes can be caused by wastewater injection. Emerging evidence suggests that risk of earthquakes can continue to rise for years after waste injection and cannot be prevented through “proper” fracking protocols or by solely limiting the rate or volume of injected fluid.³⁷¹

³⁶⁶ (Hays, 2016) doi: 10.1016/j.scitotenv.2016.11.118 (Shonkoff S. B., 2015)

³⁶⁷ (Shonkoff S. B., 2015) <http://ccst.us/publications/2015/vol-II-chapter-6.pdf>

³⁶⁸ (Radtke C., 2017) doi: 10.1080/15459624.2017.1316386

³⁶⁹ (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

³⁷⁰ (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

³⁷¹ (Physicians for Social Responsibility and Concerned Health Professionals of New York, 2018)

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<https://www.columbiariverkeeper.org/news/2018/9/protect-longviews-kids-neighborhoods-anhydrous-ammonia>

APPENDIX I: METHANE GAS BASICS

So-called “natural” gas is a fossil fuel formed by forces acting on organic material trapped deep beneath the surface of the earth. It is widely used for household heating and cooking, to generate electricity, and as feedstock to produce various chemicals and materials.

Fracked gas is both highly flammable and explosive.³⁷² In a confined space, such as a tank or a pipeline, and when combined with oxygen, fracked gas becomes explosive. It will burn when oxygen concentrations reach five to fifteen percent. It burns extremely hot, at a temperature of 3500° F. Exposure to fracked gas in a confined space will also cause asphyxiation.³⁷³ For this reason, the odorless gas is often artificially odorized to facilitate detection.

Up to 95% of fracked gas is composed of methane, a colorless, odorless, and highly flammable gas. Methane is one of the most ubiquitous organic compounds on earth and is present in the air we breathe. Compared to oil and coal, methane burns more cleanly, emitting virtually no nitrous oxide, sulfur dioxide, particulate matter or other pollutants. For this reason, it is often cited as a clean energy source and a bridge fuel to renewable energy, a judgment that fails to take into account the GHG effects of methane.³⁷⁴

Methane is generated and released into the atmosphere through both human activity, such as the fossil fuel industry, landfills and manure management systems, and natural or biogenic processes such as animal digestion and fermentation in oxygen-poor environments like wetlands. Human caused activity accounts for 50-65% of total U.S. emissions of methane per year.³⁷⁵ The fossil fuel industry alone accounts for 39% of emissions.³⁷⁶

Gas Extraction

Natural gas is extracted through both conventional and unconventional processes. In conventional production, wells are dug into underground basins where the gas has collected in large volumes and simply flows out through the well. Unconventional production is used to extract gas that is trapped in coal beds, sand or shale in tiny pockets or fissures. In hydraulic fracturing, or fracking, large volumes of water are mixed with sand and various chemicals and injected into wells

³⁷² (U.S. Department of Transportation, 1995)

³⁷³ (U.S. Department of Transportation, 1995)

³⁷⁴ (Stockman, Burning the Gas 'Bridge-fuel' Myth, 2017)

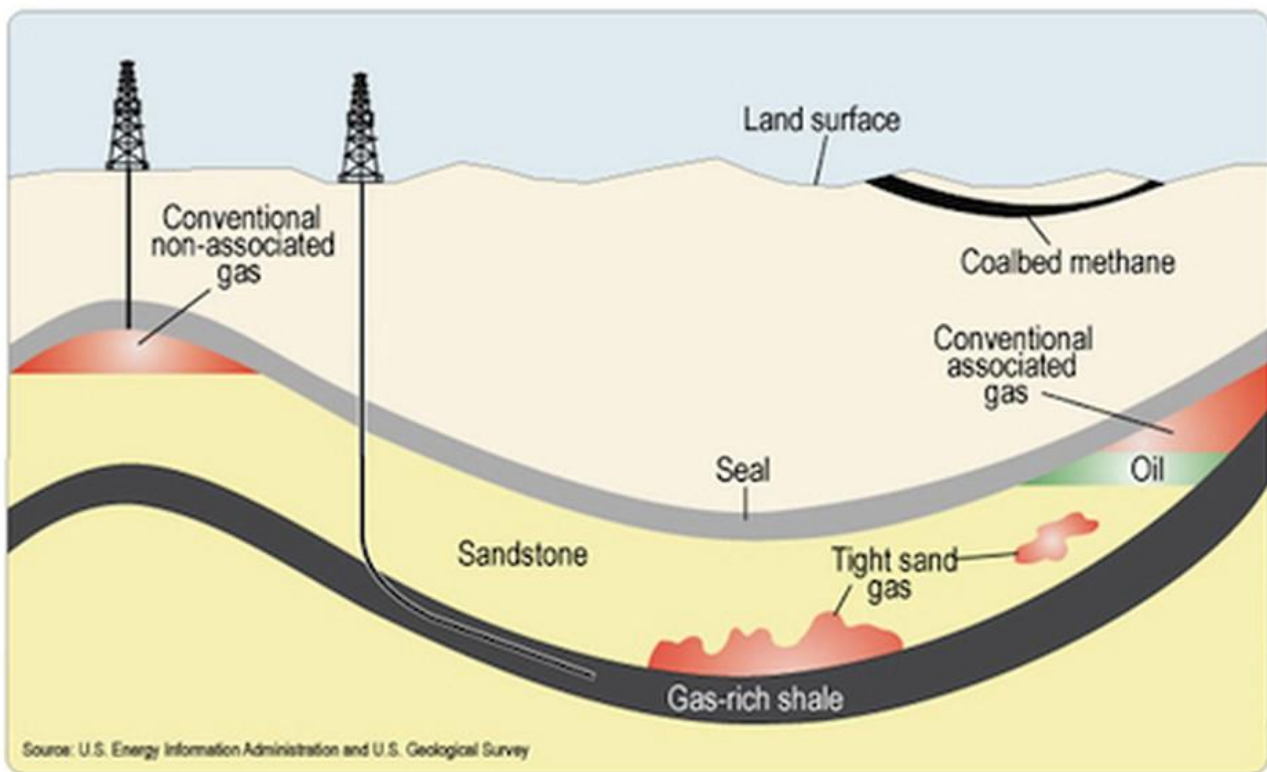
³⁷⁵ (Miller S. M., 2013)

³⁷⁶ (U. S. Environmental Protection Agency)

at high pressure to fracture or split apart the material in which the gas is embedded. This allows the gas to escape. Coal bed extraction, also an unconventional process but distinct from fracking, usually involves pumping water out of the coal bed which releases the trapped gas, but may also involve pumping chemical- and sand-laced water into the well, before pumping it back out again to release the gas.

Figure 15 illustrates some of the differences in gas extraction processes.

Figure 15
Methane Gas Deposits



Today two-thirds of gas comes from fracking, a proportion that continues to rise.³⁷⁷ Although the corporate entities behind the proposed gas infrastructure in Oregon and Washington cannot specify with any certainty, it is expected that the vast majority of the gas supplied to any new facilities in Oregon and Washington would be fracked gas from both the U.S. and Canada.

³⁷⁷ (U.S. Energy Information Administration, 2018)

Greenhouse Gas Emissions and Global Warming Potential

Methane is the second most abundant GHG³⁷⁸ after carbon dioxide (CO₂) and accounts for one-third of human-caused global GHG warming.³⁷⁹ Methane is much more effective at trapping heat than CO₂, but while CO₂ persists in the atmosphere for millennia, methane degrades into CO₂ over about twelve years.

Global warming potential (GWP) is a metric which was developed to compare the GHG effects of different gases over time compared to the same amount of CO₂. A 2018 report from the Intergovernmental Panel on Climate Change (IPCC) estimates methane's 20-year GWP value at 86 and 100-year GWP at 34.³⁸⁰ This means that a single molecule of methane traps 86 times more heat than a single molecule of CO₂ over a 20-year time period. Because of its rapid degradation compared to CO₂, its GWP is less when measured over a 100-year time frame.

When assessing the impact of a fracked gas facility on global warming it is critical to perform a lifecycle analysis. This analysis examines not just GHG emissions from the operation of the facility itself, but also the upstream extraction and pipeline transmission of the gas, the downstream export of the gas and the final use of the gas at its destination.³⁸¹

Methane emissions are both unintentional (fugitive) and intentional, such as flaring and venting. Gas companies are not legally required to report their rates of fugitive emissions, but multiple independent environmental scientists have studied the problem. The most recent peer-reviewed analysis of fugitive emissions from U.S. gas production identifies an average methane leakage rate of 2.3%.³⁸²

Liquefied Natural Gas

Natural gas can be liquefied in order to render it more compact and safer to store and transport. When cooled to -260° F the gas becomes a liquid and its volume contracts 600 times. When contained, liquefied natural gas (LNG) is neither flammable nor explosive. Structural failure of equipment, however, can result in human injury from exposure to extremely cold temperatures.³⁸³

³⁷⁸ (U. S. Environmental Protection Agency)

³⁷⁹ (Powell T. , Methane's 20- and 100-Year Climate Effect is Like 'CO₂ on Steroids', 2019)

³⁸⁰ (Intergovernmental Panel on Climate Change, 2018)

³⁸¹ (Powell T. , Studying Full Methane Life Cycle Critical to PNW Climate Policy, 2019)

³⁸² (Alvarez, 2018)

³⁸³ (U.S. Department of Transportation, 1995)

When LNG leaks or spills, it pours onto the ground like a liquid, but as soon as it warms a few degrees it re-gasifies into a vapor cloud, which slowly rises from the ground as it warms and begins to mix with oxygen. It can then explode into a fireball.

APPENDIX II: THE SOCIAL DETERMINANTS OF HEALTH

Communities in Oregon and Washington that are most susceptible to the adverse effects of climate change include communities of color, immigrants, low income persons and the houseless. These communities already bear a disproportionate burden of sickness and premature death (health outcome disparities) related to a long history of systematic socioeconomic deprivation. They very often bear the additional burden of living in unhealthy environments that are poorly prepared to withstand adverse climate events.

The most important drivers of these health outcome disparities are the social determinants of health.^{384 385} These include factors such as low education, unemployment, lack of access to health care, exposure to industrial pollutants and toxins, substandard housing, racism, poor social cohesion and political disenfranchisement. Socioeconomic status alone (defined by income and education) is a potent predictor of health outcomes.³⁸⁶

Health outcomes are determined by a complex interplay between individual and social factors. The most widely accepted model is represented in Figure 16, which is adapted from the 1991 paper for the World Health Organization on the social determinants of health by Dahlgren and Whitehead.³⁸⁷

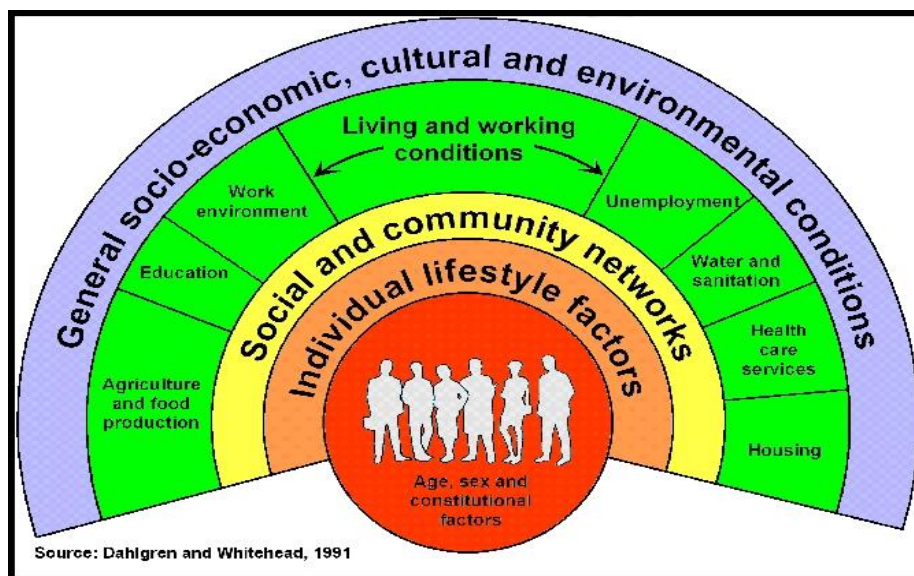
³⁸⁴ (Adler, 2002)

³⁸⁵ (Marmot, 2007)

³⁸⁶ (Adler, 2002)

³⁸⁷ Dahlgren and Whitehead, "Policies and Strategies to Promote Social Equity in Health."

Figure 16
Social Determinants of Health



Social and economic factors account for more than two-thirds of health outcomes.³⁸⁸ If disparities in social determinants were eliminated, disparities in health outcomes would be wiped out as well. In other words, differences in health cannot be explained away by differences in biological factors (age, gender or genetics) between those who are white alone, formally educated, financially secure and living in healthy environments and those who are not. Some researchers estimate that social, political and environmental conditions have a greater impact on well-being and longevity than either clinical care or individual behavior.³⁸⁹

Adverse impacts of climate change are a threat multiplier. They tend to stress most those communities already environmentally, socially and economically stressed. The Fourth National Climate Assessment (NCA4) noted that reducing greenhouse gas emissions would benefit the health of Americans not only in the long term, but also in the short run.³⁹⁰ The co-benefits of climate change mitigation are detailed in a report by Washington Physicians for Social Responsibility.³⁹¹

Communities can be characterized by their physical and social conditions and access to services. In a healthy community, housing units are in good repair, free of mold, vermin, lead paint and other toxics, and adequately heated and cooled. Litter, graffiti and vandalism are absent. The

³⁸⁸ Schroeder, "We Can Do Better: Improving the Health of American People."

³⁸⁹ Hernandez and Blazer, "The Impact of Social and Cultural Environment on Health."

³⁹⁰ (Ebi, 2018)

³⁹¹ (Vossler M., Thomas, Kitchell, Idzerda, & Cornett, 2018)

neighborhoods include common spaces, green spaces and an ample tree canopy. Bikeways, walkways and parks are safe and easy to access. The air and water are free of pollutants. Health clinics, schools, healthy food outlets and public transportation are all nearby. The neighbors know each other, trust each other and are willing to help out. Residents tend to remain in the neighborhood over a span of years. Crime rates are low and civic engagement is high. People are more likely to volunteer and more likely to vote.

A growing body of literature supports the hypothesis that living in a healthy neighborhood promotes mental and physical health and longevity and that poor conditions increase morbidity and premature mortality.³⁹² Improving neighborhood conditions has salutary effects on both mental and physical health.

³⁹² (Srinivasan, O'Fallon, & Dearry, 2003)

APPENDIX III: WATERSHEDS IN OREGON AFFECTED BY PCGP

The Pacific Connector Gas Pipeline would require blasting and clearcutting a 75 to 95-foot right-of-way across steep terrain and through soils with high potential for erosion and landslides. It would remove trees and streamside vegetation along more than 485 Oregon streams and rivers. It would warm waters and introduce nutrients, increasing the risk of Harmful Algae Blooms (HAB). It would also increase the risks of human-caused fire and wildfire.

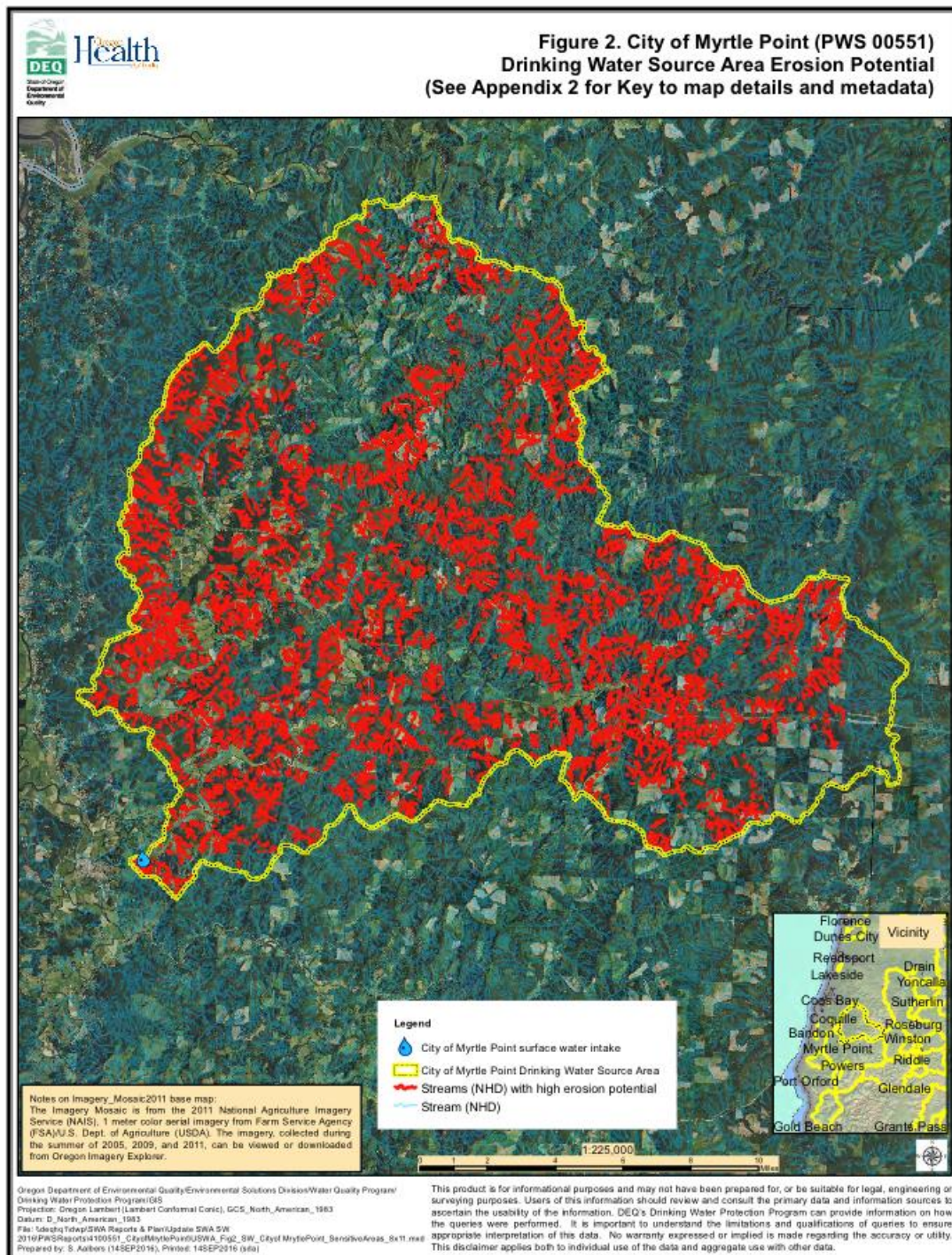
Watersheds that would be degraded by this project include, but are not limited, to those that provide water to the City of Coquille, Myrtle Point, Myrtle Creek, Medford, Eagle Point, Central Point, Jacksonville, Phoenix, Talent, Shady Cove, Anglers Cove, Tri-City JW and SA, Clarks Branch Water Association, Country View MH Estates, Lawson Acres Water Association, Glendale, Roseburg Forest Products – Dillard, Winston Dillard Water District, Tiller Elementary School, Latgawa Methodist Church Camp, Milo Academy, and Lake Creek Learning Center. Over 156,750 Oregonians rely on safe drinking water from these systems.

Many of these systems are already sensitive to contaminants of concern, including risk of erosion, turbidity, microbiological contamination, and harmful algal blooms. Many have already invested in expensive technology to clean and disinfect water.

The map below demonstrates the drinking watershed for Myrtle Point, one of the many areas in SW Oregon that is susceptible to elevated erosion potential from ground disturbance and vegetation removal and would face increased risk with construction and operation of the Pacific Connector Gas Pipeline. Steep slopes are identified for 117 miles of the proposed pipeline. 94 miles of the pipeline would be located in soils with high or severe erosion potential. Maps at this fine scale for specific watersheds are available from Oregon DEQ. Erosion leads to increased turbidity levels which can present costly challenges for human health, water treatment and water delivery.

Figure 17

City of Myrtle Point, Oregon: Drinking Water Source Area Erosion Potential



Below are excerpts from Oregon DEQ/Oregon Health Authority Source Water Assessments and/or information published by municipal water providers. Description of watersheds include sensitive areas and potential sources of contamination. In many cases they include potential pollutants from erosion and landslides, high soil permeability, stream miles in erodible soils, high soil erosion potential present, shallow landslide potential and landslide deposits. It is staggering to contemplate the damage that could be done by this massive project, the Pacific Connector Gas Project.

Medford Water Commission (PWS 4100513) provides water to Medford and provides wholesale water to cities of Eagle Point, Central Point, Jacksonville, Phoenix, Talent and the Lake Creek Learning Center

Source: Rogue River and Big Butte Springs
Jackson County
Serves 131,867 (includes those served by wholesale customers)

Oregon DEQ/Oregon Health Authority (OHA) Updated Water Source Assessment demonstrates:

A. Potential Pollutants: 8 hr time of travel in Drinking Water Source Area with 203 stream miles

- Stream miles in erodible soils: 156
- High Soil Erosion Potential: 77%
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *limited areas throughout watershed* include earth and debris slides, flows, slumps, falls and complex landslide types. (Does not include rock material landslide deposits.)

B. Potential Pollutants: Full Surface Drinking Water Source Area with 6,909 stream miles

- Stream miles in erodible soils: 5,244
- High Soil Erosion Potential: 76%
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *areas throughout watershed* include earth and debris slides, flows, slumps, falls and complex landslide types. (Does not include rock material landslide deposits.)

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Medford's Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, pH, dissolved oxygen
- OHA DWS sampling location for cyanobacteria toxin (2011-2017)
- Waters of potential concern for HAB

C. Groundwater wells: Drinking water source area 88.68 acres

City of Coquille (PWS 4100213)

Source: Coquille River

Serves 3,866 people

Potential pollutants from erosion and landslides (See Table 1: Drinking Water Source Area Land Use and Susceptibility Analysis Summary from DEQ 2016 Source Water Assessment):

- Stream miles in erodible soils: 1,488.69 (Coquille River) 4.74 (Rink Creek)
- High Soil Erosion Potential: 41.4% (Coquille River) 99.6 (Rink Creek) (% stream miles with high erosion located within 300' of stream)
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *Multiple landslide deposits are present* and points are mapped throughout the Coquille watershed; Limited landslide/deposit near Rink Creek intake

Potential Harmful Algae Blooms (HAB) risk criteria/factors identified in City of Coquille's Drinking Water Source Area by DEQ in June 2018:

- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Dissolved Oxygen, Chlorophyll-A
- Multiple Water Quality Listings (Source: OR DEQ Water Quality Assessment (DEQ/WQ - 10/31/2014) and DEQ Source Water Assessment 2016)

Myrtle Point (PWS 4100551)

Source: North Fork Coquille River

Serves 2,600 people

DEQ/OHA Source Water Assessment 2016 (excerpts):

Potential Pollutants: 8 hr time of travel in Drinking Water Source Area with 203 stream miles

- Stream miles in erodible soils: 1,011.54
- High Soil Erosion Potential: 47% (% stream miles with high erosion located within 300' of stream)
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *Multiple landslide deposits are present* and points are mapped throughout the watershed

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Myrtle Point's Drinking Water Source Area by DEQ in June 2018:

- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Dissolved Oxygen
- Sampling point for cyanobacteria toxin (2011-2017) Multiple rivers and streams are already listed as Water Quality Limited (See Water Quality Analysis 10.31.2014)

Winston Dillard Water District (PWS 4100957)

Source: South Umpqua River

Douglas County

Serves 8,000 people

DEQ Source Water Assessment 2003 (excerpts):

There are eleven other public water systems located upstream of the Winston-Dillard intake that obtain their drinking water from the South Umpqua River or its tributaries. This source water assessment addresses the geographic area providing water to Winston-Dillard's intake (Winston Dillard's portion of the drinking water protection area) between Winston-Dillard's intake and the next upstream intake for Roseburg Forest Products.

Risks for the system, according to the Water Summary Brochure: A total of 36 potential contaminant sources were identified in Winston-Dillard's drinking water protection area. Of these, 34 are located in the sensitive areas and 29 are high-to- moderate risk sources within "sensitive areas". *The sensitive areas within the Winston- Dillard drinking water protection area include areas with high soil permeability, high soil erosion potential, high runoff potential and areas within 1000' from the river/streams. The sensitive areas are those where the potential contamination sources, if present, have a greater potential to impact the water supply.*

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Winston- Dillard's Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, Chlorophyll-A, pH, Dissolved Oxygen
- OHA DWS sampling location for cyanobacteria toxin (2011-2017)

Roseburg Forest Products-Dillard (PWS 4194300)

Source: South Umpqua River

Douglas County

Serves 2,000 people

From 2003 Source Water Assessment Summary Brochure (excerpts):

RISKS FOR THE SYSTEM:

A total of 18 potential contaminant sources were identified in Roseburg Forest Products' drinking water protection area. Of these, 17 are located in the sensitive areas and 14 are high-to-moderate risk sources within "sensitive areas". *The sensitive areas within the Roseburg Forest Products drinking water protection area include, but are not limited to, areas with high soil permeability, high soil erosion potential, high runoff potential and areas within 1000' from the river/streams. The sensitive areas are those where the potential contamination sources, if present, have a greater potential to impact the water supply.*

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Roseburg Forest Products - Dillard Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, Chlorophyll-A, pH, Dissolved Oxygen

Clarks Branch Water Association (PWS 4100548)

Source: South Umpqua River

Douglas County

Serves 140 people

DEQ Water Source Assessment Summary Brochure 2003 (excerpts):

RISKS FOR THE SYSTEM:

A total of 36 potential contaminant sources were identified in Clarks Branch's drinking water protection area. Of these, 35 are located in the sensitive areas and 32 are high-to- moderate risk sources within "sensitive areas." (Maps are available from the 2003 Source Water Assessment.) *The sensitive areas within the Clarks Branch drinking water protection area include, but are not limited to, areas with high soil permeability, high soil erosion potential, high runoff potential and areas within 1000' from the river/streams. The sensitive areas are those where the potential contamination*

sources, if present, have a greater potential to impact the water supply.

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Clarks Branch Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, Chlorophyll-A, pH, dissolved oxygen
- Waters of potential concern for HAB

Tri-City JW and SA (PWS 4100549)

Source: South Umpqua River Douglas County

Serves 3,500

Number of connections: 1,500

DEQ Source Water Assessment 2003 (excerpts):

RISKS FOR SYSTEM:

A total of 40 potential contaminant sources were identified in Tri-City Water District's drinking water protection area. Of these, 37 are located in the sensitive areas and 32 are high- to moderate-risk sources within "sensitive areas". *The sensitive areas within the Tri-City Water District drinking water protection area include, but are not limited to, areas with high soil permeability, high soil erosion potential, high runoff potential and areas within 1000' from the river/streams. The sensitive areas are those where the potential contamination sources, if present, have a greater potential to impact the water supply.*

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Tri-City JW and SA Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, Chlorophyll-A, pH, dissolved oxygen
- OHA DWS sampling location for cyanobacteria toxin (2011-2017)

Hiland Water Co. Shady Cove (PWS 4101520)

Source: Rogue River

Serves 975 people

Due to the close proximity of intakes on the Rogue River, the following April 24, 2018 assessment of Anglers Cove/SCHWC addresses Hiland Water Co. Shady Cove.

Anglers Cove/SCHWC (PWS 01483)

Source: Rogue River

Jackson County

Serves 80 people

DEQ/OHA Source Water Assessment April 24, 2018 (excerpts):

Due to the close proximity of intakes on the Rogue River, this assessment addresses Anglers Cove/SCHWC and Hiland Water Co. Shady Cove.

Country View Mobile Home Estates also has an intake on the Rogue River upstream of these intakes and there are a number of public water systems downstream that also depend on Rogue River for their drinking water. For watersheds with more than one intake such as the Rogue Subbasin, all protection areas for intakes upstream of the water system's intake are included in their drinking water source area. Activities and impacts in upstream drinking water protection area also have the potential to impact downstream water users.

A. Potential Pollutants: 8 hour Time of Travel for Drinking Water Source Sub-Basin of Rogue

- Drinking Water Source Area: *219 sq. mi*
- Stream Miles in Drinking Water Source Area: *1,288*
- Stream Miles in Erodible Soils: *1,227*
- High Soil Erosion Potential Percent: *96%* (% stream mi with high erosion located w/in 300' of stream)
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *Limited areas throughout watershed* includes earth and debris slides, flows, slumps, falls and complex landslide types. (Does not include rock material landslide deposits.)

B. Full Source Water Source Area Rogue Basin upstream of intake

- Drinking Water Source Area: *6,229 sq. mi*
- Stream Miles in Drinking Water Source Area: *4,717*
- Stream Miles in Erodible Soils: *3,558*
- High Soil Erosion Potential Percent: *75%* (% stream mi with high erosion located w/in 300' of stream):
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *Limited areas throughout watershed* includes earth and debris slides, flows, slumps, falls and complex landslide types. (Does not include rock material landslide deposits.)

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Hiland Water Co. Shady Cove and Anglers Cove/SCHWC Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, pH

Country View Mobile Home Estates (PWS #4100808)

Source: Rogue River plus a well
Jackson County
Serves 132 people

Oregon Source Water Assessment Report (excerpts):

In the Country View Mobile Home Estates watershed, the results of the susceptibility “analysis” include the distribution of 22 identified *high-to-moderate risk sources within the areas of highly permeable soils, high erosional soils, high runoff potential soils, and within the 1000' setback from the streams.*

A. Potential Pollutants: 8 hr time of travel in Drinking Water Source Area

- Stream miles in Drinking Water Source Area: 1,334
- Watershed Source Area: 227.86 sq mi
- High Soil Erosion Potential: 95%
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *Limited areas throughout watershed* includes earth and debris slides, flows, slumps, falls and complex landslide types. (Does not include rock material landslide deposits).

B. Potential Pollutants: Full Surface Drinking Water Source Area

- Watershed Source Area: *1,146.6 sq mi*
- Stream miles in Drinking Water Source Area: *4,613*
- Stream miles in erodible soils: *3,156*
- High Soil Erosion Potential: 68%
- Shallow Landslide Potential: *See DEQ*
- Landslide Deposits: *Limited areas throughout watershed* includes earth and debris slides, slumps, falls, and complex landslide types. (Does not include rock material landslide deposits).
- Well Protection Area: *0.51 sq mi*

Excellent maps are available in DEQ's Updated Water Source Assessment (April 2018).

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Country View MH Estates Drinking Water Source Area by DEQ in June 2018:

- Previous HAB Advisory
- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Algae and aquatic weeds, pH, dissolved oxygen
- OHA DWS sampling location for cyanobacteria toxin (2011-2017)
- Waters of potential concern for HAB

Tiller Elementary, SD #15 (PWS 4192139)

Source: South Umpqua River

Serves: 60 people

DEQ Source Water Assessment Summary 2003 (excerpts):

RISKS FOR THE SYSTEM:

A total of eighteen potential contaminant sources were identified in Tiller Elementary's drinking water protection area. Sixteen of these are located in the sensitive areas and twelve are high-to-moderate risk sources within "sensitive areas". *The sensitive areas within the Tiller Elementary drinking water protection area include areas with high soil permeability, high soil erosion potential, high runoff potential and areas within 1000' from the river/streams. The sensitive areas are those where the potential contamination sources, if present, have a greater potential to impact the water supply.*

City of Glendale (PWS 4100323)

Source: South Umpqua Subbasin: Cow Creek (permanent), Mill Creek (emergency), Section Creek (emergency)

Douglas County

Serves 872 people

2003 Source Water Assessment (excerpts):

The drinking water for the City of Glendale is supplied by three intakes located on Cow Creek, Mill Creek and Section Creek.

RISKS FOR THE SYSTEM:

A total of 45 potential contaminant sources were identified in City of Glendale's drinking water protection area. All of these are located in the sensitive areas and 40 are high-to- moderate risk sources within "sensitive areas". *The sensitive areas within the City of Glendale drinking water protection area include areas with high soil permeability, high soil erosion potential, high runoff potential and areas within 1000' from the river/streams. The sensitive areas are those where the potential contamination sources, if present, have a greater potential to impact the water supply.*

Potential Harmful Algae Bloom (HAB) risk criteria/factors identified in Glendale's Drinking Water Source Area by DEQ in June 2018:

- DEQ Water Quality Limited Listing indicating the waterbody needs TMDL for Dissolved Oxygen

Additional Threats to Drinking Water

Applications of herbicides, including picloram, to clear and maintain a right-of-way free of vegetation on and near the pipeline route increase risks to safe drinking water.

Picloram, in particular, is quite persistent in the environment. According to the EPA:³⁹³

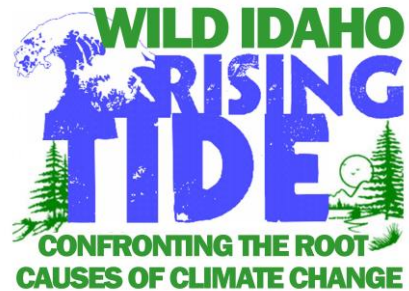
- Picloram has a high potential to contaminate surface water by runoff from use areas.
- Picloram is highly soluble in water, resistant to biotic and abiotic degradation processes, and mobile under both laboratory and field conditions. It is stable to hydrolysis and anaerobic degradation, and degrades very slowly with half-lives ranging from 167 to 513 days.
- Eventual contamination of groundwater is virtually certain in areas where picloram residues persist in the overlying soil. Once in groundwater, picloram is unlikely to degrade, even over a period of several years.

³⁹³ (U.S. Environmental Protection Agency, 1995)

Wild Idaho Rising Tide

Please consider in your deliberations the attached WIRT Comments on the Second Supplemental Environmental Impact Statement for Northwest Innovation Works' Kalama Manufacturing and Marine Export Facility.

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October 9, 2020

Rich Doenges
NWIW SSEIS
Washington Department of Ecology
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Sent via online message with an attached, PDF letter, as an organizational response

**WIRT Comments on Second Supplemental Environmental Impact Statement
for Northwest Innovation Works'
Kalama Manufacturing and Marine Export Facility**

For the official record of the draft, second, supplemental environmental impact statement (SSEIS) for Northwest Innovation Works' (NWIW) proposed Kalama Manufacturing and Marine Export Facility (project), I respectfully offer these written comments and accompanying information on behalf of Wild Idaho Rising Tide (WIRT) and its over 3,200 climate activists, members, friends, supporters, and allies, as citizens and residents of Idaho, Montana, Oregon, Washington, and other U.S. states, who own property, work, and/or reside in or near the surrounding water and air sheds that would be directly impacted by Washington Department of Ecology (Ecology) approval of a Columbia River shoreline conditional use permit for, and infrastructure construction and operation of, this largest in the world, fracked gas-to-methanol production and export terminal. We object to this project's invasion and significant impacts on affected communities, critical ecosystems, public air, water, land, climate, and monetary resources, and private and public water sources within the floodplain, on the banks, and under the Columbia River, as insufficiently identified and analyzed in the September 2, 2020 SSEIS and accompanying public notices and pertinent government documents offering limited public information, via the Washington Department of Ecology website page on the project [1].

We also oppose this NWIW project's significant, direct and indirect, cumulative, adverse impacts on climate change, endangered species, cultural resources, socioeconomic and environmental factors, and reasonable public needs including human and environmental health and safety, drinking and agricultural water, and private property values, rights, uses, enjoyment, and insurability. As further public input and information shared with Ecology, we incorporate by reference into these remarks the written and oral comments and linked articles and documents of

WIRT and all persons and organizations raising oppositional concerns about this project and its applications, documents, and processes relevant to project analyses, presented through all local, state, and federal public processes before, during, and after this extended, Ecology, public comment period on the SSEIS, concluding on October 9, 2020.

WIRT earnestly encourages and requests Ecology to: 1) Include these and all of our written objections and enclosed information in the public record for the SSEIS and related project comment periods, 2) Extend this inappropriately brief, public comment period an extra 30 to 90 days, due to the ongoing COVID-19 pandemic, 3) Hold additional, open, public hearings in the most project-impacted communities, conducted by phone and online, 4) Better assess the regional significance, scope, and precedence of this project, through a revised SSEIS and its public input processes, 5) Perform a more community-preferred, scientifically rigorous, independent, unbiased, full environmental study examining this controversial project, and 6) Reject the Kalama Manufacturing and Marine Export Facility, as an unnecessary and harmful, fossil fuel infrastructure fiasco.

Besides urging public participation in comments and testimony for this project's SSEIS, WIRT offers these formal remarks drawn from our colleagues' and our multiple years of experiences, knowledge, and direct interests in this and previous, related, project orders and reviews considered via state hearings and comment periods. This letter of objection arises from detailed suggestions, testimonies at recent hearings, and multiple remarks expressing concerns, provided by a coalition of conservation groups and project-impacted stakeholders, whose resistance to this proposal we fully support with these comments [2-5]. Together, we have identified these problems with the current SSEIS analyses and the resulting project, which do not properly evaluate oil and gas production and transportation risks.

Methanol Export Refinery Overview

The Northwest Innovation Works (NWIW) proposal to build the world's largest fracked gas-to-methanol refinery at Kalama in southwest Washington could potentially emit millions of tons of greenhouse gas pollution, draw and contaminate millions of gallons of water each day, from an aquifer connected to the Columbia River, degrade air quality with carcinogenic emissions, and impose safety hazards during anticipated earthquakes. The methanol refinery would utilize more fracked gas than all the combined, gas-fired power plants in Washington. And the NWIW facility would induce new fracked gas pipeline and railroad pipeline-on-rails expansions throughout the Northwest region.

The basic review process for this project requires completion first of an environmental impact statement (EIS), then state and local agency consideration of permits, based on the EIS. For this methanol refinery, the original, 2017 EIS omitted several significant impacts. The Sierra Club, Columbia Riverkeeper, and Center for Biological Diversity won a legal appeal forcing the Kalama methanol refinery backers to complete a supplemental environmental impact statement (SEIS) in 2018, which was also inadequate. The Washington Department of Ecology has taken responsibility for the project review process, and is currently conducting a second, draft SEIS analysis specifically studying the upstream and lifecycle climate emissions of the project. This examination aims to assess the pollution emitted before fracked gas reaches the refinery and after

methanol leaves the refinery.

As part of the information considered in its final decision about a shoreline conditional use permit for the Kalama facility, Ecology is accepting public input on the SSEIS, through a comment period extended by one week, until October 9, 2020. Besides supporting the health and safety of Kalama and nearby communities and regional resistance to new and expanded fossil fuels infrastructure, WIRT activists are concerned that construction and operation of the facility would enable rail transportation of natural gas through north Idaho trackage towns. With its draft SSEIS on the climate impacts of the refinery, NWIW attempts to deceive the state agency and public about the purposes and consequences of this dangerous, dirty energy project that increases plastics and fuels manufacturing and debris and counters state climate goals, as potentially one of Washington's biggest greenhouse gas polluters.

Broad Project Comments

1. The proposed NWIW methanol refinery would produce millions of tons of greenhouse gas pollution each year, during 40 years. Ecology's analysis demonstrates that the project would produce 4.6 million tons or more of carbon pollution each year. This level of pollution is profoundly inconsistent with achieving Washington's climate goals, protecting Washington's shorelines, and charting methods for keeping global temperature rise below two degrees Celsius.
2. The SEIS relies on a flawed, speculative analysis to argue that methanol could "displace" dirtier energy. The SSEIS speculates on how methanol may compare with future, unsure, alternate sources of pollution in overseas markets, and makes false and erroneous comparisons with other potential future sources of methanol or olefin production. Rather than engaging in this speculation, Ecology should focus on the known pollution that could come from the facility, rather than on NWIW's dubious "displacement" arguments.
3. 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 two million tons of carbon pollution each year. Combustion of the full methanol production capacity of the plant would generate five million tons of pollution each year.

Antithesis of a Low-Carbon Future

1. Ecology's analysis should specifically consider the significant pollution impacts of the proposed refinery, which are profoundly inconsistent with a low-carbon future envisioned by Washington and regional citizens and policy makers. Ecology should not distract itself with the tenuous, speculative, market-based analyses of the SSEIS, which conclude that NWIW could produce somewhat less pollution than another high-carbon, future scenarios. All of these high-carbon paths are unacceptable and inconsistent with Washington's clean energy and climate goals. NWIW's refinery would produce 4.6 million tons of greenhouse gas pollution during each of 40 years, and thus undermine Washington's greenhouse gas reduction goals.

2. Washington cannot contribute to the goal of keeping global warming “well below two degrees Celsius,” by allowing major polluters such as NWIW to move forward with fossil fuels infrastructure. A low-carbon future demands investment in lower-emitting production processes. SSEIS comparisons of the Kalama refinery with pathways to that future based on coal, oil, or gas are inadequate for assessing Northwest needs to steeply reduce global emissions.

3. Ecology should not assume that future energy needs must be met by fossil fuels. Ecology’s market analysis presents a false choice among bad options -- oil-based olefins, coal-based methanol and olefins, and gas-based methanol and olefins -- produced on a massive scale for transportation fuels or plastics. All of these fossil fuel pathways would be massive polluters. None of them will solve our climate crisis.

4. Ecology also fails to consider whether cleaner energy technologies may dramatically displace the need for production of 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.

5. Ecology is projecting far into the future, when energy technologies may change so drastically that current expectations about the pollution impacts of our energy system may no longer be correct. Despite acknowledging the potential for cleaner options to arise in the future, Ecology argues that it is “not possible” to predict how much cleaner energy production could be. Nonetheless, Ecology speculates on decades of future Chinese energy and methanol consumption throughout the SSEIS.

6. Given these uncertainties, Ecology should base its decision-making on the ensured, extensive pollution from the processes of fracking gas, producing and refining methanol, and burning or using methanol to make plastics, instead of on inappropriate, unverifiable speculation.

Uncertain NWIW Mitigation Plans

1. The SSEIS provides little detail on the actual mitigation that NWIW would accomplish as part of the “voluntary” mitigation framework for the Kalama refinery. The mitigation framework is too vague for Ecology to conclude that the project’s impacts can and will be mitigated. The SSEIS states that the impacts “can be mitigated,” but offers few details on how NWIW will accomplish its stated goal of “fully mitigating” all of the in-state pollution from the project. NWIW identifies no specific projects or measures that will address the enormous greenhouse gas pollution impacts of the proposed refinery.

2. Ecology should require mitigation of the full, significant impacts of the Kalama refinery. Although some emissions from NWIW products may occur overseas, the company should not be allowed to avoid mitigating its impacts on the Northwest.

Significant SSEIS Technical Flaws

1. The SSEIS continues to use low estimates of methane leakage, as a percentage of methane

emitted in proportion of gas delivered (SSEIS pages 40, 43). The “medium” scenario assumes that less than one percent of the delivered natural gas will escape. Recent information shows a high rate of wells leaking across British Columbia (B.C.) and Alberta. And new reports demonstrate that methane leaks are likely vastly underreported in both B.C. and Alberta. Furthermore, even the “high” estimate in the SSEIS is only 1.46 percent, far below the potential upper bound of leakage rates possible for under-studied and under-reported methane leaks in Canada. The SSEIS should be revised to include a “medium” scenario of two percent leakage, and a “high” scenario of three percent leakage, to capture a reasonable range of potential impacts from the upstream portion of the Kalama project’s emissions.

2. The SSEIS continues to rely on a narrow set of “bottom-up” estimates for its methane leakage estimates. It should instead evaluate methane leakage rates based on “top-down” observations. These more comprehensive and modern estimates of methane losses from the natural gas supply chain are much higher, two percent or higher, and are informed by techniques such as airplanes equipped with sensors that can capture the full range of operating conditions at gas extraction fields. In the absence of rigorous, top-down observations in Canadian gas fields, Ecology should not conclude that methane leakage rates are substantially lower for fracked gas production in B.C. and Alberta, particularly when reports show a high proportion of active and abandoned wells continue to methane leakage.

3. The SSEIS makes unreasonable assumptions about the potential sources of fracked gas and its impacts. NWIW is not limited to obtaining gas from a single supply basin over the lifetime of the facility, and it could receive gas supplies from Rocky Mountain states as well as Canadian sources. NWIW will use up to 320 million cubic feet of gas per day, consequently driving additional fracking and methane leakage across the continent, not just in B.C. Rather than using cherry-picked, low, methane leakage estimates based on under-reported methane emissions from British Columbia, the SSEIS study should assess methane emissions based on regions that have undergone more detailed analyses, and from which Kalama gas could also be sourced, including in the United States and Alberta. Using leakage rates from areas that have been more thoroughly studied through both top-down and bottom-up measurements would likely double the methane leakage estimates in the SSEIS for both medium and high scenarios.

WIRT activists recommend that the Washington Department of Ecology dismiss NWIW’s misleading claims in the SSEIS, and require additional impact evaluations and a more rigorous analysis through a revised SSEIS, responsive to citizen and hearing input, which more accurately accounts for the project’s upstream and downstream climate pollution. During this decisive, project review phase, we ask that Ecology consider and act in accordance with our and our colleagues’ letters of objection that substantively address the deficiencies of NWIW’s documents and processes, as we offer the counterbalance of regional insights so crucial to government and community protection of watersheds essential to lives and livelihoods. For the previously stated and other commenters’ reasons, please reject the Kalama Manufacturing and Marine Export Facility, and ultimately deny the shoreline conditional use permit for this project. Thank you for accepting our comments, intended both to improve the SSEIS and to advocate for justifiably anticipated, state of Washington rejection of this NWIW scheme to further impose risks on Washington and Northwest citizens, while reaping the benefits of oil and gas exploitation.

/s/ Helen Yost, MSEE
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[1] *Northwest Innovation Works -- Kalama Manufacturing and Marine Export Facility*,
Washington State Department of Ecology
<https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Shoreline-permits-enforcement/Northwest-Innovation-Works-Kalama>

[2] *Stand Up for Kalama, Oppose Methanol Refinery*, September 2020 Columbia Riverkeeper
<https://www.columbiariverkeeper.org/petition-methanol>

[3] *Kalama Methanol*, August 20, 2020 Power Past Fracked Gas
<https://powerpastfrackedgas.org/kalama>

[4] *Kalama Methanol “Benefits” Assume Catastrophic Climate Failure*, September 23, 2020
Sightline Institute
<https://www.sightline.org/2020/09/23/kalama-methanol-benefits-assume-catastrophic-climate-failure>

[5] *New Analysis Proves Kalama Methanol Project is a Climate Disaster*, September 3, 2020
Sightline Institute
<https://www.sightline.org/2020/09/03/new-analysis-proves-kalama-methanol-project-is-a-climate-disaster>

Cowlitz Indian Tribe

The Cowlitz Indian Tribe has reviewed the revised Port of Kalama Draft Second Supplemental Environmental Impact Statement. Attached are our comments.



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

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