



State Implementation Plan Revision

Including Washington State Department of Natural Resource's 2022 Smoke Management Plan

by

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for the

Air Quality Program

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Publication No. 22-02-017

August 2022

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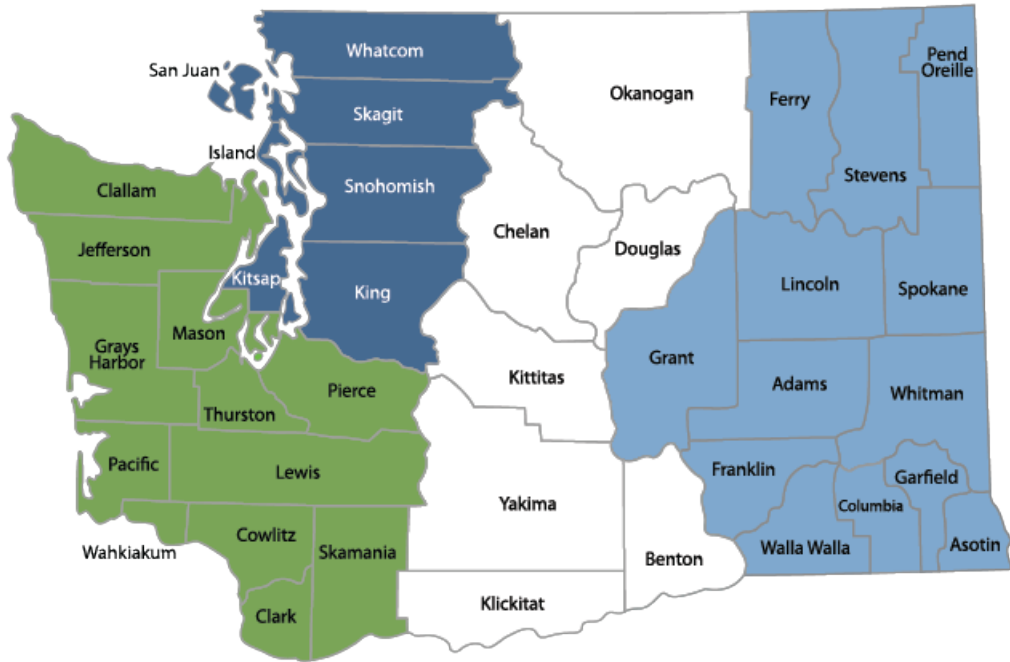
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Map of Counties Served



Southwest Region 360-407-6300	Northwest Region 425-649-7000	Central Region 509-575-2490	Eastern Region 509-329-3400
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Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	15700 Dayton Avenue N Shoreline, WA 98133	425-649-7000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Washington State Implementation Plan Revision

Including Washington's Department of Natural Resources

2022 Smoke Management Plan

Air Quality Program
Washington State Department of Ecology
Headquarters
Olympia, WA

August, 2022 | Final Submittal



DEPARTMENT OF
ECOLOGY
State of Washington

Table of Contents

State Implementation Plan Revision
Contact Information	i
ADA Accessibility	i
Accesibilidad ADA.....	i
Department of Ecology’s Regional Offices.....	ii
Map of Counties Served.....	ii
Washington State Implementation Plan Revision	iii
Table of Contents	iv
Tables	vi
Tables	vi
Acknowledgements	vii
Acronyms and Abbreviations	viii
Differences Between the Public Comment and Final Versions.....	x
Executive Summary	1
Introduction	3
DNR SIP Revision Documents	5
About the 2022 SMP	5
Differences Between the 1998 and 2022 SMPs.....	10
Demonstration of Noninterference	12
Ecology Responsibilities under the SMP.....	18
Washington’s Former Air Quality Advisory.....	18
Ecology’s Request.....	20
Public Involvement.....	21
Appendix Table of Contents	22

Appendix A. Chapter 70.94 RCW to 70A.15 Crosswalk A-1

Appendix B. Department of Natural Resources Submittal to Ecology B-1

 Appendix B1: DNR SIP Submittal Cover Letter to Ecology

 Appendix B2: 2022 Smoke Management Plan 5-11-2022

 Appendix B3: 2022 Smoke Management Plan Demonstration

Appendix C: Criteria for Determining the Completeness of Plan Submissions C-1

 Appendix C.1: Requirements for preparation, adoption, and submittal of implementation plans, 40 CFR Appendix V to Part 51.

 Appendix C.2: Letter from Dixie Lee Ray, Governor to Donald P. Dubois, Regional Administrator, dated March 20, 1980.

Appendix D: Ecology Public Comment Documents..... D-1

Appendix E. Ecology SIP Adoption Order and Submittal Letter E-1

Appendix F. Comments and Responses.....F-1

Tables

Tables

Table 1. Sections of the 2022 SMP	5
Table 2. Outline for DNR Demonstration.....	13

Acknowledgements

The author of this report would like to thank the following people for their contribution and assistance on this project:

Department of Ecology:

- Anya Caudill, Environmental Planner
- David Grant, Smoke Planner
- Eman Jabali, Administrative Assistant
- Margaret Plummer, Administrative Assistant
- Colleen Stinson, Environmental Planner

Department of Natural Resources:

- Jonathan Guzzo, Environmental Planner
- Vaughn Cork, Fuels Analyst

The following managers provided review and oversight:

- Martha Hankins, Ecology, Policy and Planning Section Manager
- Karen Zirkle, Department of Natural Resources, Wildland Fire Management Division, Assistant Division Manager for Logistics
- Jason Alberich, Ecology, Rules and Planning Unit Supervisor

Acronyms and Abbreviations

AAR.....	After Action Review
AIRPACT-4	Air Indicator Report for Public Awareness and Community Tracking
AQI.....	Air Quality Index
BLM	Bureau of Land Management
CAA.....	Federal Clean Air Act
CO.....	Carbon Monoxide
DNR	Washington State Department of Natural Resources
DV	Design Value
Ecology	Washington State Department of Ecology
EER	Exceptional Events Rule
EPA	U.S. Environmental Protection Agency
FLM.....	Federal Land Manager
FEM	Federal Equivalent Method
FRM	Federal Reference Method
GACC	Geographic Area Coordinating Centers
IMPROVE.....	Interagency Monitoring of Protected Visual Environments
LCAA	Local Clean Air Agency
MID.....	Most Impaired Days
NAAQS.....	National Ambient Air Quality Standard
NATTS.....	National Air Toxics Trend Station
NEPA.....	National Environmental Policy Act
NFDRS.....	National Fire Danger Rating System
NICC.....	National Interagency Coordinating Center
NIFC.....	National Interagency Fire Center
NO	Nitrogen Monoxide
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
NPS	National Park Service
NWS.....	National Weather Service
O ₃	Ozone
Pb	Lead
PL.....	Preparedness Level
PM _{2.5}	Fine Particles or Particulate Matter; with an aerodynamic diameter of 2.5 microns or less
PM ₁₀	Coarse Particle Matter or Particulate Matter; with an aerodynamic diameter of 10 microns or less
RAVI.....	Reasonably Attributable Visibility Impairment
RAWS.....	Remote Automated Weather Stations
RCW.....	Revised Code of Washington
RH.....	Regional Haze
RHR.....	Regional Haze Rule
SIP.....	State Implementation Plan

SMPSmoke Management Plan
SO₂.....Sulfur Dioxide
UGAUrban Growth Area
USFSU.S. Forest Service
USFWS.....U.S. Fish and Wildlife Service
WAC.....Washington Administrative Code
WAQA.....Washington Air Quality Advisory
WCAAWashington Clean Air Act
WRAPWestern Regional Air Partnership
WUIWildland Urban Interface

Differences Between the Public Comment and Final Versions

- Added DNR Submission letter dated May 11, 2022 as Appendix B.1, omitted in error
- Correction for links to SEPA documents in DNR Appendix B.3, Appendix 5, DNR Public Involvement Documents, page 5-2, added text to note correction:

Please note the links to SEPA documents in the footnote do not work. See Ecology SEPA Register 19-07601 at <https://apps.ecology.wa.gov/separ/Main/SEPA/Record.aspx?SEPANumber=201904045> and SEPA action 19-110701 at <https://apps.ecology.wa.gov/separ/Main/SEPA/Record.aspx?SEPANumber=201906409>.

- Added Appendix D. for Public Notice Documents for Ecology’s SIP comment period
- Added Appendix F. for Comments and Response to Comments
- Slight modifications to Executive Summary, Ecology’s Request and Public Involvement sections to reflect post comment period language.
 - Executive Summary section: From May 25th through June 30, we sought public review and comments on whether or not the 2022 SMP should replace the 1998 version in the SIP. See Appendix F. Comments and Responses for details. After review and responding to comments, Ecology’s Director, as the Governor’s Designee, determined to submit this revision to EPA.
 - Added to end of section: Ecology recommends adopting the SMP into the SIP. See the Adoption Order signed by our Director. This 2022 version will replace the 1998 version in the SIP.”
 - Ecology’s Request section: Ecology requests that EPA replace the 1998 SMP in Washington’s SIP with the 2022 version. Following the public review and comment, Ecology’s Director recommends adoption of this submittal into the SIP. The Adoption Order is included in Appendix E.
 - Public Involvement section: Appendix D contains evidence of Ecology’s efforts to promote the public comment period. After completing the public review, Ecology documented comments and provided responses to comments (Appendix F.) and decided to submit the revision request to EPA.
- Various clerical corrections for spelling, formatting and grammar

Executive Summary

The Washington State Departments of Ecology (Ecology) and Natural Resources (DNR) propose a revision to the Washington State Implementation Plan (SIP). The SIP provides federally required oversight of state and local rules, plans, and programs that control or impact:

- Six common air pollutants: particulate matter, ozone, sulfur and nitrogen oxides, lead, and carbon monoxide.
- Attainment of the National Ambient Air Quality Standards (NAAQS).
- Visibility protection and regional haze in national parks and wilderness areas.

The Washington State Legislature directed the DNR to update the Smoke Management Plan (SMP) following significant wildfire impacts to the state. DNR completed updates to the statewide SMP for silvicultural (forestland) burning in 2022.

Smoke emissions from prescribed silvicultural burning used as a forest management tool can impair air quality and contribute to particulate matter and ozone levels, which can adversely affect health and visibility. Thus, DNR submitted the updated SMP to Ecology to review, adopt, and transmit to the United States Environmental Protection Agency (EPA) for federal review, approval, and inclusion in the SIP.

From May 25 through June 30, we sought public review and comments on whether or not the 2022 SMP should replace the 1998 version in the SIP – See Appendix F (Comments and Responses) for details. After review and responding to comments, Ecology’s Director, as the Governor’s Designee, determined to submit this revision to EPA. No changes were made to the 2022 SMP. EPA provides the final SIP approval. Once approved by EPA, citizens and EPA may enforce the updated SMP in federal court.

DNR provided an analysis that demonstrates the following changes will not interfere with the state’s air quality goals:

1. Aligning assessment threshold in Large Burn Approval Criterion #1 with state law.
2. Removing the prohibition against summer weekend burning.
3. Notifying burners of permission to ignite their units by 4:30 PM the day prior to ignition.
4. Allowing burning on forestlands under DNR jurisdiction in Urban Growth Areas (UGA), with additional precautions.

DNR further strengthened the SMP by directing burn experts to manage impacts and take preventative or mitigating actions at a lower level than the NAAQS exceedance levels for fine particulate, 2.5 microns or less (PM_{2.5}) of 35 micrograms per cubic meter (µg/m³) averaged over 24 hours.

DNR will use a PM_{2.5} level of 20.5 µg/m³ as an action level to evaluate burns for potential ignition approval and as they monitor how these burns progress. This will provide a margin for error to prevent exceedances of the NAAQS. DNR has made it their goal to stay below this PM_{2.5}

concentration level when making burn decisions, and to take action when the data show it is likely that concentrations will exceed this level, when managing smoke around the state.

Ecology recommends adopting the SMP into the SIP. See the Adoption Order signed by our Director. This 2022 version will replace the 1998 version in the SIP.

Introduction

The purpose for this revision is to replace the 1998 SMP in the Washington State Implementation Plan (SIP) with the updated 2022 Smoke Management Plan (SMP). Washington State Department of Natural Resources (DNR) submitted the updated SMP and supporting documents to Ecology in May 2022 for consideration and requested Ecology submit the documents to EPA. After soliciting public comments, Ecology will decide whether to recommend a SIP revision to EPA.

In Washington State, several agencies share outdoor burning oversight and authority. Specific jurisdiction depends on the type of burning conducted. DNR has authority and responsibility to regulate silvicultural burning. Ecology and [local clean air agency partners](#)¹ (local clean air agencies (LCAAs), and tribes) oversee most other types of [outdoor burning](#)²: land clearing, residential yard waste, recreational, some fire training, and [commercial agricultural](#)³.

DNR plans to increase the pace and scale of prescribed burning to reduce fuel loads, improve forest health and prevent catastrophic wildfire with minimal air quality impacts from smoke. DNR, state agencies, federal land managers, and private burners all perform silvicultural burning under the SMP.

Ecology's Director is the Governor's representative for SIP matters. Silvicultural burning in Washington State is under the jurisdiction of DNR. (Washington is one of the few states in the nation with these responsibilities divided between two agencies.)

All SIP revisions must meet federal regulations at 40 CFR. 51.102, Appendix V, Criteria for Determining the Completeness of Plan Submissions. When the state changes regulations or plans that are part of the SIP, the state must provide evidence to EPA on how the changes continue to meet federal Clean Air Act (CAA) Section 110 (I) requirements (Demonstration of Noninterference or Demonstration). The Demonstration shows how the changes proposed will not interfere with attainment of the National Ambient Air Quality Standards (NAAQS) or visibility protection and regional haze in national parks and wilderness areas. Appendix C of this document lays out the requirements and notes how the state has fulfilled them.

Legislation in 2019 brought changes to the ability to burn in the state's Urban Growth Areas (UGAs). Burning is only allowed for silvicultural burning inside areas where DNR has fire suppression jurisdiction. See the section Recent Legislation Regarding Silvicultural Burning in the Demonstration and Urban Growth Area (UGA) Burns and APPENDIX 1: Burn Submittal and Approval Procedures for Burns 100 Tons or Greater and Any Burn in an Urban Growth Area, in the 2022 SMP.

DNR requires permits for all silvicultural burning inside UGAs. DNR has included some additional protections and mitigations, approved and promulgated by the Washington State

¹ < <https://ecology.wa.gov/About-us/Accountability-transparency/Partnerships-committees/Clean-air-agencies> >

² < <https://ecology.wa.gov/Air-Climate/Air-quality/Smoke-fire/Outdoor-residential-burning> >

³ < <https://ecology.wa.gov/Air-Climate/Air-quality/Smoke-fire/Agricultural-burning> >

Forester and included in the 2022 SMP. The 2022 SMP requires coordination with Ecology and local clean air agencies who have jurisdiction. Outdoor Burning regulations⁴ continue to prohibit other types of burning in UGAs. The submittal documents discuss the regulatory changes.

⁴ Chapter 173-425 WAC, Outdoor Burning

DNR SIP Revision Documents

DNR submitted the following documents to Ecology to support removing the 1998 SMP and replacing it with the 2022 SMP in the SIP. These documents are in Appendix B.

- A cover letter requesting Ecology adopt and submit the SMP to EPA for review and approval to include into the SIP.
- DNR's 2022 Smoke Management Plan and Appendices.
- 2022 Smoke Management Plan Demonstration of Noninterference (Demonstration) and Appendices.

The purpose of the Demonstration documents provided by DNR, developed in collaboration with Ecology, is to show the analysis of impacts of the changes in the 2022 SMP and that the changes comply with CAA requirements. The Demonstration specifically covers the key provisions changed in the SMP. It details the state and federal standards to which agencies and burners must adhere, and describes the technical analyses conducted to demonstrate that these changes would not interfere with air quality standards or regional haze goals.

About the 2022 SMP

Two of the primary goals of the SMP, with regard to air quality, are to protect public health and promote the enjoyment of the natural attractions of the state.

The 2016 legislature directed DNR to update the 1998 SMP. The SMP contains provisions, requirements, procedures and restrictions to minimize impacts from silvicultural burning, to protect both NAAQS for criteria pollutants⁵ and regional haze goals. The 2022 SMP is included in Appendix B. The table below outlines the 2022 SMP sections.

Table 1. Sections of the 2022 SMP

Section	Page no.
Introduction	1
Purpose	2
Goals	2
Scope	2
Participation	3
Responsibilities	4
Reporting	6
General Burning Requirements	7
Burn Approval Process	7
Small Burns	7
Large Burns and all burns in Urban Growth Areas	7
Approval Process for Multiple Day Burns	12

⁵ The criteria pollutants are Particulate matter, both PM₁₀ and PM_{2.5}, Carbon Monoxide, Ozone, Nitrogen Oxides, Sulfur Oxides. <<https://www.epa.gov/criteria-air-pollutants>>

Section	Page no.
Exceptions to Provisions of the Smoke Management Plan	14
Complaint Tracking	15
Visibility Protection	16
Mandatory Emissions Reduction	17
Emissions Baseline	17
Emissions Reporting and Tracking	18
Gross Fuel Loading Estimates	18
Mandatory Emissions Allocation System	18
Emission Reduction Techniques	20
Alternatives to Burning	20
Exceptional Events Demonstration	21
Plan Review, Approval, and Updating	24
Glossary	26
APPENDIX 1: Burn Submittal and Approval Procedures for Burns 100 Tons or Greater	30
APPENDIX 2: Data Reporting Procedures	31
APPENDIX 3: Burning Permit Issuance, State and Private Lands	32
APPENDIX 4: Smoke Intrusion Reporting and Complaint Processing Procedures	38
APPENDIX 5: Burning Permit Phone System, Procedures and Responsibilities	40-43
APPENDIX 6: National Ambient Air Quality Standards	45
APPENDIX 7: Laws, Rules, and Authorities	46
APPENDIX 8: Alternative Debris Disposal Techniques	68
APPENDIX 9: Procedure for Exempting Eastside Forest Health Burns from the Requirement for Emission Reduction	77
APPENDIX 10: Criteria for Defining Low Risk Areas	80
APPENDIX 11: Pre-Burn Season Outreach Plan	82
APPENDIX 12: Class I Federal Areas	84

The Burn Approval Process is under General Burning Requirements Section in the 2022 SMP. The Approval Criteria for Large Burns and All Burns within UGAs describes the process that DNR uses to issue daily burn decisions for burners.

The SMP approval process includes provisions for DNR smoke experts to consider the eight approval criteria shown below for allowing burning for burns over 100 tons (300 tons in Low Risk Areas) or any burn in a UGA. These criteria are in state⁶ and federal law and included in the 2022 SMP⁷. The eight criteria form the basis for the burn approval decision and are as follows:

⁶ In 2020, the state Code Reviser renumbered the Clean Air Act numbering from 70.94 to 70A.15; a crosswalk is provided for convenience as **Appendix A**.

⁷ 2022 Smoke Management Plan, May 11, 2022, page 9

Approval Criteria for Large Burns and All Burns within UGAs

Approval to ignite will be denied if:

1. There is a likelihood of an exceedance of state air quality standards in the ambient air up to 2,000 feet above ground level over areas designated by Ecology (designated areas) (RCW 70A.15.5140).

Approach: Smoke will not significantly disperse within approximately eight hours of ignition, and be fully dispersed by 12:00 PM the next afternoon unless the burn meets the criteria and requirements of a multiple day burn. This does not include residual smoke in the immediate burn area itself.

2. Burning will not protect the public welfare, preserve visibility, protect scenic, aesthetic, historic, and cultural values, and prevent air pollution problems that interfere with the enjoyment of life, property, or cultural attractions. (RCW 70A.15.1005).
3. Burning will not comply with the federal Clean Air Act regarding visibility protection of federal Class I Areas. (42 USC 7470)
4. Ignition will violate any other state or federal air quality regulations, laws, or rules (RCW 70A.15.5140, 76.04.205 and 70A.15.5020).
5. Burning will occur in areas of the state where federal or state ambient air quality standards are exceeded for any criteria pollutant (RCW 70A.15.5020).

Exception: This does not apply to silvicultural burning used to improve or maintain fire dependent ecosystems for rare plants or animals within state, federal, and private natural area preserves, natural resource conservation areas, parks, and other wildlife areas (RCW 70A.15.5020).

6. Burning will cause mandatory emission reduction levels to be exceeded (RCW 70A.15.5020).

Exception: Emissions from silvicultural burning in eastern Washington that is conducted for the purpose of restoring forest health or preventing the additional deterioration of forest health are exempt from the reduction when certain conditions are met.

7. Burning will knowingly violate another state's published air quality standards (42 USC 7470).
8. There is a declared stage of impaired air quality (RCW 70A.15.5140), or air quality conditions are deteriorating and are expected to continue to deteriorate such that an air quality episode is likely to be called in the next 24-hours.

The SMP Approval Criteria is in place to protect the NAAQS. Monitored values of Particulate Matter, 2.5 microns or less (PM_{2.5}) above 35 µg/m³ averaged over 24-hours exceeds the NAAQS.

The SMP describes procedures and thresholds, and directs DNR smoke experts and all burners (i.e. federal, state, and private) to manage impacts and take action at a lower level than the NAAQS exceedance levels. These considerations — promoting alternatives to burning, as well as other actions and operational procedures, such as coordinating with other burners, using best burn practices and emission reduction techniques — provide a margin of safety for all areas of the state potentially impacted by silvicultural smoke

Washington Air Quality Advisory

The Washington Air Quality Advisory⁸ (WAQA) communication tool is similar to EPA's national information tool, the Air Quality Index (AQI). Both use color-coded categories to show when air quality ranges from good to hazardous; WAQA is based on lower levels of fine particle pollution than the federal AQI. See Figure 1 below. As of April 2022, Ecology and Department of Health (DOH) are transitioning back to using the national AQI to communicate general air quality status to avoid confusion between the indexes, but will continue to use the WAQA thresholds for communications where appropriate.

Color - Category	Index Value	WAQA	AQI
		Concentration of fine particles (PM _{2.5}) (µg/m ³)	
● Green - Good	0-50	0-12.0	0-12.0
● Yellow - Moderate	51-100	12.1-20.4	12.1-35.4
● Orange - Unhealthy for Sensitive Groups	101-150	20.5-35.4	35.5-55.4
● Red - Unhealthy	151-200	35.5-80.4	55.5-150.4
● Purple - Very Unhealthy	201-300	80.5-150.4	150.5-250.4
● Dark red - Hazardous	301-500	more than 150.4	250.5-500

Figure 1 24-hour PM_{2.5} concentrations for WAQA and AQI categories

WAQA denotes 20.5 µg/m³ level as the concentration at which Ecology considers particulate matter levels 'Unhealthy for Sensitive Groups.' Children, elders, and persons with respiratory diseases, such as asthma are sensitive groups.

DNR has made it their goal to stay below this PM_{2.5} concentration level when making burn decisions and to take action when the data show it is likely that concentrations will exceed this level when managing smoke around the state.

DNR smoke experts and all burners take action, as described in the Intrusion section of the 2022 SMP, to mitigate smoke impacts. The Demonstration also describes the action level.

“Smoke concentrations are considered unacceptable for the purposes of the SMP, and therefore an intrusion, when a 3-hour rolling average concentration reaches 20.5 µg/m³.”

⁸ Ecology website, accessed 4/26/2022, [Washington Air Quality Advisory - Washington State Department of Ecology](https://ecology.wa.gov/Research-Data/Monitoring-assessment/Washington-Air-Quality-Advisory), <https://ecology.wa.gov/Research-Data/Monitoring-assessment/Washington-Air-Quality-Advisory>

This is the concentration the WAQA considers as unhealthy for sensitive groups⁹. WAQA is similar to EPA's Air Quality Index (AQI) but shows health effect warnings at lower PM_{2.5} levels than the AQI does.

If a burn affects air quality at a level defined in the SMP as unacceptable (even following steps taken to avoid it) then DNR will take action. DNR starts this action when a monitor records a 3-hr rolling average (currently established using AirNow) with an air quality reading of 20.5 µg/m³ to ensure they take action well before an exceedance of the NAAQS. When evaluating whether to take action in an area without monitor data, DNR will consider other information for the intrusion process outlined in Appendix 4 of the SMP.”¹⁰

This procedure is designed to mitigate the impacts of smoke already produced by burning operations, and to prevent, to the extent possible, the production of more smoke. Taking action at this level also provides a buffer against exceedances of the NAAQS.

DNR will use data from all types of monitoring sites and sensors available to inform smoke management decisions, such as daily burn authorizations, and smoke management.

⁹ Sensitive groups include people with heart or lung disease, asthma, diabetes, infants, children, adults older than 65, pregnant women, or people who have had a stroke.

¹⁰ Demonstration, pg. 63.

Differences Between the 1998 and 2022 SMPs

The 2022 SMP is a substantive revision from the 1998 version. The updated plan revises burn decision approval criteria language, burn approval decision timing, lifts the restriction on summer weekend burning and provides provisions for burning on forestland in UGAs. The 2022 version also includes a new complaint response section and several other clarifying changes.

A strikeout comparison and section-by-section crosswalk on the differences between the two plans are part of the Demonstration as Appendix B2 of this document. The Demonstration's Appendix 3 compares the 1998 and 2022 SMP Large Burn Approval Criteria. Appendix 4 compares the 1998 and 2022 SMP Visibility Protection sections.

Description of the main changes

DNR made three major changes from the 1998 SMP, as well as other clarifying changes. The fourth main change relates to legislation passed in 2019. The major changes are:

1. Aligning assessment threshold in Large Burn Approval Criterion #1 with state law. (i.e., Modifies wording to match state law to line up with DNR's authority to deny forest burning if air pollution will be more than allowed by federal air quality standards).¹¹
2. Removing the prohibition against summer weekend burning.
3. Notifying burners of permission to ignite their units by 4:30 PM the day prior to ignition.
4. Allowing burning in Urban Growth Areas (UGAs) under DNR's jurisdiction on forestlands under certain circumstances with additional protections.

These changes are described briefly in the Demonstration's Introduction section. If a technical analysis accompanied the change, more discussion appears later in the document.

DNR is submitting the 2022 SMP with the summer weekend burning restriction removed and with a change to decision-making timing approval. DNR provided technical analyses for these two changes (Removing Summer Weekend Burning Restriction and Changing Approval Timing to the Day Prior to Ignition) that shows that the changes, along with SMP procedures, silvicultural best practices, and other criteria for approving and managing silvicultural burning, will protect air quality and visibility.

The Burn Approval Process is under the General Burning Requirements section in the 2022 SMP. The Large Burn criteria in this section describes the process that DNR uses to issue daily burn decisions for burners in the state that conduct burns over 100 tons of silvicultural residue (or 300 tons in low risk areas) and in UGAs.

The Demonstration of Noninterference section below briefly describes the changes. For more detail, see the Burn Decision Approval – Criteria and Process section in the Demonstration.

¹¹ State law says this authority applies if DNR reasonably expects an "exceedance of State air quality standards" as the approval threshold, rather than "intrusion," as listed in the 1998 SMP.

DNR had completed a multi-year update of the 1998 SMP before the 2019 and 2021 Washington State Legislature amended laws pertaining to silvicultural burning in UGAs.

This legislation (2SHB 1784, Chapter 305, Laws of 2019) provided for burning in UGAs under specific circumstances, where previously silvicultural burning was prohibited. The legislation changed provisions in state law at RCW 70A.15.5120 and necessitated further updates to the SMP. DNR completed associated rulemaking for “General rules—Minimum requirements for all burning,” at (WAC 332-24-205, 3(c)) so the rule comports with the law.

For more information about burning inside UGAs, see the section in the Demonstration titled, “Recent Legislation Regarding Silvicultural Burning.” In the 2022 SMP, see the section titled “Urban Growth Area (UGA) Burns” and “APPENDIX 1: Burn Submittal and Approval Procedures for Burns 100 Tons or Greater.”

DNR also added information to the 2022 SMP on how they will grant and implement this type of burn approval. For a summary of these requirements in the 2022 SMP, see the General Burning Requirements section, under UGA Burns.

Some burners use DNR’s burn portal to apply for permits, and the portal flags burn requests inside UGAs. The Demonstration describes the special requirements to implement burning in a UGA in the UGA section under Legislative changes regarding silvicultural burning.¹²

Regardless of size, burns within a UGA require a site-specific DNR Smoke Management decision, a documented test fire, and a spot weather forecast. DNR will notify the air agency with jurisdiction and provide the opportunity to consult on conditioning the permit. DNR may coordinate with the clean air agency with jurisdiction, or Ecology, in areas with many other types of burning or where DNR needs further expertise and monitoring. The burner must contact the local air jurisdiction and provide their contact information prior to igniting.

DNR does not anticipate a high volume of burn requests in UGAs as the result of this change.

Enforcement: DNR is responsible for the overall enforcement and administration of the SMP on lands where DNR has fire protection authority.

“Failure to follow the "call-in" instructions or "large burn" approval process will be a violation of the conditions of an approved permit and be subject to enforcement action.¹³

DNR outlines their enforcement strategies in the Enforcement section of the 2022 SMP. The 2021 Washington State Legislature added civil enforcement authority to RCW 70A.15.3160 Civil penalties—Excusable excess emissions. [Substitute House Bill 1423](#)¹⁴, which conferred civil enforcement authority on DNR, amends RCW 76.04.205 to read, in part:

¹² Demonstration, UGA Legislative changes regarding silvicultural burn section, page 62.

¹³ Department of Natural Resources, 2022 Silvicultural Smoke Management Plan, Appendix 3: Burning Permit Issuance, State and Private Lands, page 33-24.

¹⁴ < <https://lawfilesexternal.wa.gov/biennium/2021-22/Pdf/Bills/Session%20Laws/House/1423-S.SL.pdf?q=20220306133857> >

“... The rule will establish: (a) A framework for resolving conflicts that may arise related to this section, including the issuance of civil penalties pursuant to RCW 70A.15.3160 for violations of this section; and (b) the method by which penalties issued pursuant to RCW 70A.15.3160 for violations of this section will be calculated.”¹⁵

The legislature explicitly required rule making in HB [SHB] 1423, which amends the RCW formerly known as 76.04.205, (now 70A.15.3160). Rule making, per legislative direction, will result in a framework for resolving conflicts related to violations of RCW 76.04.205, and will define how fines are calculated when a violation occurs. DNR filed a request to modify WAC 332-24-217, Burning permit requirements—Penalty, on 6/30/2021 with the Washington State Code Reviser (WSR 21-13-018¹⁶). This DNR rulemaking defines the enforcement policy matrix and how fines are calculated for violations of WAC 332-24-217.

DNR worked closely with the EPA and Ecology on the inclusion of the Silvicultural Smoke Management Plan in the State Implementation Plan. DNR will also consult with EPA throughout the rulemaking process. Coordination with Ecology, LCAAs, and tribes is essential to the protection of Washington airsheds and to this rulemaking. This rulemaking is currently at DNR awaiting completion before offering comment period for changes to this rule.

The 2022 SMP provides a graduated approach to enforcement that starts with education and leverages communication to ensure permitted entities comply with requirements. The Demonstration’s Enforcement section provides further detail.¹⁷

Complaints: The 2022 SMP includes a new expanded, enhanced Complaint Tracking section.¹⁸ More details appear in APPENDIX 4: Smoke Intrusion Reporting and Complaint Processing Procedures.

When DNR receives a smoke complaint, DNR staff will obtain as much information as possible and ensure follow-up with the complainant.

The burners and the public can also call the DNR Wildfire Division at 360-902-1300, Fax 360-902-1757, or email wd@dnr.wa.gov with questions.

Demonstration of Noninterference

The Demonstration document provides analysis that the updated SMP continues to meet CAA requirements and silvicultural operations will not interfere with compliance of the NAAQS or regional haze goals.

The Demonstration includes a special focus on the three substantive changes, mentioned in the previous section. The Demonstration is included in the DNR SIP Submittal Packet, as Appendix B3. The outline for the Demonstration is as follows:

¹⁵ Department of Natural Resources, 2022 Silvicultural Smoke Management Plan, page 6.

¹⁶ Washington State Code Reviser, June 30, 2021, < <https://lawfilesexternal.wa.gov/law/wsr/2021/13/21-13-018.htm>>

¹⁷ Demonstration, page 83.

¹⁸ Department of Natural Resources, 2022 Silvicultural Smoke Management Plan, page 16.

Table 2. Outline for DNR Demonstration

2022 Smoke Management Plan Demonstration	Page
Table of Contents	i
List of Figures and Tables	v
Acronyms and Abbreviations	vi
Acknowledgements	viii
Executive Summary	1
Introduction	1
Silvicultural and Prescribed Burning	4
National Ambient Air Quality Standards (NAAQS)	9
Visibility Protection and Regional Haze	37
Monitors and Sensors	40
Burn Decision Approval – Criteria and Process	43
Looking Forward: Protecting Air Quality into the Future	55
Recent Legislation Regarding Silvicultural Burning	62
Best Burn Practices, Tools	72
Alternative to Burning and Emissions Reduction Techniques	74
Intrusions	78
Enforcement	84
Complaints	86
Conclusion	87
Appendices	
Appendix 1. Technical Analysis Protocols & Results – Day Before Approval	1-1
Appendix 2. Technical Analysis Protocol – Summer Weekend Burning	2-1
Appendix 3. 1998 and 2022 SMP Large Burn Approval Criteria Comparison	3-1
Appendix 4. Comparison between 1998 and 2022 SMP Visibility Protection sections	4-1
Appendix 5. DNR Public Involvement Documents	5-1
Appendix 6. Laws and Rules Crosswalk	6-1
Appendix 7. Washington Clean Air Act Crosswalk	7-1
Appendix 8. 1998 and 2022 SMP Crosswalk	8-1
Appendix 9. Laws and Rule Strikethrough	9-1
Appendix 10. Washington Smoke Information - 2018	10-1
Appendix 11. Washington Smoke Information - 2019	11-1
Appendix 12. Washington Smoke Information - 2020	12-1
Appendix 13. EPA Letter approving Ecology’s 2021 Annual Network Report	13-1

Justification for the changes

The Burn Decision Approval – Criteria and Process section of the Demonstration, covers the procedures and process DNR uses for making Go/No-Go (burn approval) decisions.

The first change aligns the SMP text with language in state law (RCW 70A.15.5140), by changing the wording in the 2022 SMP from ‘intrusion’ to ‘exceedance.’ Since the definition of an intrusion differs from an exceedance of the NAAQS, DNR explains how, operationally, they plan to keep smoke levels below the NAAQS. This explanation is in Aligning Assessment Threshold in Large Burn Approval Criterion #1 with state law. A comparison between the language of the 1998 and the 2022 SMP is presented in Appendix 3. 1998 and 2022 SMP Large Burn Approval Criteria Comparison. From the Demonstration document:

“...While the wording change between the 1998 and the 2022 SMPs appears confusing, the operational decision making for large burn decisions is consistent and unchanged. The approach is consistent: DNR will approve or deny permission to ignite based on whether smoke will sufficiently disperse. The wording change clarifies authority for a denial.”¹⁹

The Demonstration also includes technical analyses which demonstrate that two of the changes will not interfere (i.e., non-interference) with air quality standards or regional haze goals. The two changes with accompanying technical analyses are:

- Removing the prohibition against summer weekend burning.
- Notifying burners of permission to ignite their units by 4:30 PM the day prior to ignition.

The second change is described in the Demonstration, under Removing the Prohibition Against Summer Weekend Burning. DNR provided a technical analysis that demonstrates that allowing summer weekend burning, when meeting other SMP conditions, will not interfere with compliance of any NAAQS or regional haze goals in the state. Because of the other protections inherent in the burning approval criteria, this change will not adversely affect air quality. Another section of the Demonstration, Protecting Visibility When Making Go/No-Go Decisions, explains this.

Likewise, for the third change, DNR provided a technical analysis to show how making the burn decision the day before the date of ignition, as opposed to the current morning-of-ignition decision timing, still allows DNR to make quality burn decisions. The analysis assessed possible degradation of results (between those obtained the day before planned ignition and those obtained the day of planned ignition) for one of the models commonly used in decision-making. Trained DNR smoke experts, aided by smoke modeling applications, spot weather forecasts, patterns of human settlement, and local knowledge of smoke dispersal patterns, decide whether to allow burns to proceed by 4:30 PM on the day before burning is to commence. See the Demonstration, Appendix 1. Technical Analysis Protocols & Results – Day Before Approval for a discussion of the impacts of these changes.

¹⁹ Demonstration, page 54

Discussion of these criteria, especially the procedure for approving burning and for smoke management during burn activities to prevent or respond to intrusions that requires action, is in the Demonstration under, Burn Decision Approval – Criteria and Process.

Lastly, the legislative change to state law [RCW 70A.15.5120\(2\)](#) in 2019 gave DNR the authority to issue permits on forestlands under their fire protection authority to allow silvicultural burning in UGAs. In the Demonstration, DNR shows that with the existing and added protections, the NAAQS will be protected. For more details, see the section on Recent Legislation Regarding Silvicultural Burning. DNR also conducted rulemaking to change WAC 332-24-205 to align the state rules with the changes to the state law. The 2022 SMP includes the new procedure and explains the additional protections required for burning on forestland in UGAs.

Compliance with NAAQS

NAAQS are federal health – or welfare based concentrations of criteria pollutants in the ambient air. In 2022, Washington is currently in attainment with all NAAQS, except in a small area (approximately 5.5 square miles) in Whatcom county that violated the 2010 1-Hour Sulfur Dioxide (SO₂) NAAQS.²⁰

Smoke emissions from silvicultural burning primarily contribute to particulate matter levels — both PM₁₀ and PM_{2.5} — and secondarily, to ozone levels. Silvicultural burning generates insignificant amounts of SO₂ since silvicultural fuel does not contain any significant amounts of sulfur. The SMP Large Burn Approval Criteria is in place to protect the NAAQS. In particular, the 24-hour PM_{2.5} intrusion threshold is set at 20.5 µg/m³ to help protect the 24-hour NAAQS for all areas of the state. This provides a margin of safety for the NAAQS.

The Demonstration NAAQS section includes levels of each NAAQS pollutant per final 2021 monitoring data. All of Washington complies with all NAAQS, except for SO₂. EPA designated a portion of Whatcom County as nonattainment in March 2021. Details of compliance with each NAAQS are in the Demonstration.

In conclusion, the 2022 SMP includes planning activities and forecasting that protects air sheds — to keep levels below the NAAQS— and requires corrective action when intrusions occur. The program has been, and will remain, protective of the NAAQS for Washington communities into the future.

Compliance with Regional Haze goals

EPA established the Visibility and Regional Haze Program to protect scenic vistas from hazy conditions that are a result of human-made activities. Regional Haze goals refer to specific quantifiable visibility improvements at the eight protected Class 1 Areas²¹ in Washington. They target achieving natural visibility in these areas by 2064.

²⁰ For more information, see Ecology’s web page [Sulfur Dioxide in Washington’s Air, accessed 4/28/2022, <https://ecology.wa.gov/Search-Results?searchtext=sulfur+dioxide&searchmode=allwords>](https://ecology.wa.gov/Search-Results?searchtext=sulfur+dioxide&searchmode=allwords)

²¹ Class I areas include national parks larger than 6,000 acres and national wilderness areas larger than 5,000 acres that were in existence in 1977.

Ecology is responsible for visibility and regional haze plan updates. Ecology’s early Visibility Protection Program included DNR’s Prescribed Burning SMP (1975). Ecology submitted the earliest versions of the SMP in 1979 and 1984.

Silvicultural burning produces smoke that can have major impacts on visibility in general and specifically in Class 1 Areas. Therefore, Washington decided to address silvicultural smoke proactively. Specifically, Ecology coordinated with the DNR to update visibility protections in the 1998 SMP.

The 1998 SMP states:

“The visibility protection section of the current SIP was created in 1985 after consultation with DNR, USFS, private landowners, DOE, and other stakeholders. Presently, visibility protection practices meet or exceed the requirements of the 1985 SIP, mainly because of voluntary agreements between large private landowners and the DNR.”²²

The 1998 SMP includes the restriction on summer weekend burning²³ in Washington for burns over 100 tons:

“Directive: Burns that will consume 100 tons or more of material will NOT be allowed under the following circumstances:

- On weekends (midnight Thursday through midnight Sunday) between June 15 and October 1 statewide.
- On Independence Day or Labor Day holidays.”²⁴

Also in this section of the 1998 plan, there are exceptions and conditions under which burning in western Washington may be allowed, on a case-by-case basis, and specific provisions for multiple day burns.

On November 5, 1999, Ecology submitted a Reasonably Attributable Visibility Impairment (RAVI) SIP —that included the 1998 SMP —that focused on silvicultural smoke management in addition to other sources that had the potential to direct plume blights into the Class 1 Areas. EPA approved it on June 11, 2003.²⁵

In 2010, Ecology developed the first RH SIP where we identified key sources of air pollution and strategies to improve visibility in Washington’s Class I areas. The 2010 RH SIP relied on the 1998 SMP, including its restriction on summer weekend burning for silvicultural burning, as one of the strategies to protect visibility in Class 1 Areas.

²² Department of Natural Resources, 1998 Smoke Management Plan, revised in 1998, pg. 8.

https://www.dnr.wa.gov/publications/rp_burn_smptoc.pdf

²³ Ibid. pg.12

²⁴ Ibid. pg.12

²⁵ Final: Federal Register Notice, 68 FR 34821, June 11, 2003. <https://www.govinfo.gov/content/pkg/FR-2003-06-11/pdf/03-14573.pdf#page=1>; proposal: Federal Register Notice, 67 FR 65077, October 23, 2002.

EPA updated the Regional Haze Rule (RHR) in 2017 to clarify requirements for submitting RH SIPs and progress reports. States must make "reasonable progress" toward meeting the visibility goals in the federal Class I areas as part of their RH SIP.

In the 2022 SMP, DNR is proposing to remove the summer weekend burning restriction. In the Demonstration, DNR's analysis shows that allowing summer weekend burning — when meeting other SMP provisions, such as following the DNR Go/No-Go criteria, complying with criteria for managing burns and other operational provisions— will not interfere with the state's Regional Haze (RH) goals. See the Appendix 4 in the Demonstration to see the Comparison between 1998 and 2022 SMP Visibility Protection section of the Demonstration.

The 2022 SMP contains provisions to continue supporting Washington's progress towards the RH goals. Best practices, promoting alternatives to burning, employing emissions reduction techniques and burning in compliance with the SMP provide the means to minimize smoke impacts. Based on this Demonstration, DNR's updated SMP will protect air quality and visibility goals in Washington State.

Ecology submitted a second RH SIP for the planning period 2018–2028 in 2021. It includes updated regulations and controls that the state is using to achieve its regional haze goals. DNR's Demonstration describes the reliance on the 2022 SMP for the next Regional Haze planning period. For information on Washington's Regional Haze program, visit [Ecology's Regional Haze website](https://ecology.wa.gov/Air-Climates/Air-quality/Air-quality-targets/Regional-haze).²⁶

²⁶ <https://ecology.wa.gov/Air-Climates/Air-quality/Air-quality-targets/Regional-haze>

Ecology Responsibilities under the SMP

DNR outlined some of Ecology's responsibilities under the SMP.

- Establishing Designated Areas (RCW 70A.15.5140).
- Adopting federal NAAQS into Washington rules and/or establishing other air quality standards.
- Notifying DNR when air quality has diminished to the point when 'impaired air' or a 'forecasted stage of air pollution episode' has been, or is likely to be, declared. (RCW 70A.15.3580).
- Maintaining the State Implementation Plan, which includes visibility protection of Class I federal areas. (See Appendix C.2.) Letter from Dixie Lee Ray, Governor to Donald P. Dubois, Regional Administrator, dated March 20, 1980)

In addition, Ecology has responsibility for the:

- Ambient Air Monitoring Network.

Ecology develops an ambient air quality monitoring plan every year to reflect the status of the latest monitoring network. Washington provides this annual monitoring network report to the public through Ecology's website. The [2021 Annual Air Monitoring Network Plan](#)²⁷ covers monitoring data from 2020. The letter in Appendix 13 in the Demonstration documents EPA's approval of the 2021 Annual Air Monitoring Network Plan. The 2022 report that includes 2021 data will be submitted at the end of June 2022.

- Exceptional Event Demonstration submittal.

Washington's Former Air Quality Advisory

In 2006, EPA revised the 1997 24-hour PM_{2.5} NAAQS to 35 µg/m³.²⁸ During the review process, as allowed by the state law, Ecology:

- Looked at many health studies,
- Considered recommendations from EPA staff and EPA's Clean Air Scientific Advisory Committee, and
- Examined Canada's PM_{2.5} standards.

Based on this information and Ecology's responsibility for the health of Washingtonians, Ecology set a goal to maintain PM_{2.5} 24-hour concentrations in the state below 20 micrograms per cubic meter (µg/m³). Ecology defined areas expected to have 24-hour PM_{2.5} design values

²⁷ <<https://apps.ecology.wa.gov/publications/SummaryPages/2102013.html>>

²⁸ The form of the 2006 PM_{2.5} design value is the 3-year average of the annual 98th percentile 24-hour average concentrations.

exceeding this goal as areas at risk. Frequent exceedances of this goal indicate greater health concerns.

Between 2008 and April 2022, Ecology relied on a state communication tool, called the Washington Air Quality Advisory (WAQA) to warn the public about the health effects of air pollution. The WAQA was similar to the EPA’s national information tool, the Air Quality Index (AQI). Both used color-coded categories to show when air quality is good, moderate, or unhealthy. The two indices differed when air quality entered the Unhealthy for Sensitive Groups (USG) (Orange) range. The difference was based on the WAQA threshold of 20.5 $\mu\text{g}/\text{m}^3$ $\text{PM}_{2.5}$ – the level at which Washington deems $\text{PM}_{2.5}$ levels are USG. The WAQA showed the health effects of $\text{PM}_{2.5}$ at lower levels than the AQI does.

In response to public feedback, Ecology and Washington Department of Health made the decision to sunset WAQA by April 2022.

See **Figure 2.** below for comparison between WAQA and AQI advisory levels.

Category	Index Value	WAQA Concentration ($\mu\text{g}/\text{m}^3$)	AQI Concentration ($\mu\text{g}/\text{m}^3$)
Good	0-50	0 to 12.0	0 to 12.0
Moderate	51-100	12.1 to 20.4	12.1 to 35.4
Unhealthy for Sensitive Groups	101-150	20.5 to 35.4	35.5 to 55.4
Unhealthy	151-200	35.5 to 80.4	55.5 to 150.4
Very Unhealthy	201-300	80.5 to 150.4	150.5 to 250.4
Hazardous	301-400	>150.4	250.5 to 350.4
	401-500		350.5 to 500

Figure 2. 24-hour $\text{PM}_{2.5}$ concentrations for WAQA and AQI categories

With sunset of the WAQA, DNR updated the SMP to clarify that it continues to use 20.5 $\mu\text{g}/\text{m}^3$ as its action level.

In managing smoke impacts around the state, DNR will continue to:

- Use this level as their goal to stay below it when making burn decisions.
- Take action when the data shows it is likely that concentrations will exceed this level.

Ecology's Request

Ecology requests that EPA replace the 1998 SMP in Washington's SIP with the 2022 version. Following the public review and comment, Ecology's Director recommends adoption of this submittal into the SIP. The Adoption Order is included in Appendix E.

Public Involvement

DNR conducted various types of outreach at different times for the 2022 SMP during its development:

- DNR convened a task force in 2017 and 2018 and held several community meetings during development of the SMP.
- DNR completed review of the proposed UGA outdoor burning rule, including a SEPA public comment period from November 7, 2019, through November 21, 2019.
- DNR issued a Notice of Final Determination and response to comments on November 22, 2019.
- DNR held a webinar and accepted comments on the SMP in February 2021.

DNR have outlined their public comment and outreach efforts in the Demonstration, Appendix 5, DNR Public Involvement Documents.

Ecology's public involvement efforts are related to our SIP responsibilities.

In addition, Ecology invited discussions with tribal Chairs, Natural Resource Directors, liaisons and tribal representatives in neighboring states. On June 21, 2021, we sent a letter signed by the Air Program Manager, inviting discussion and delivering a commitment to notify tribal representatives when the formal comment period opens. On May 25, Ecology notified these groups that the comment period would run from May 25 to June 30 and the hearing would be held on June 28.

On May 13, 2022, Ecology Policy and Planning Section staff attended the NW EPA-Tribal Air Quality Monthly Call, where they announced the dates opening comment period and hearing dates, as well as provided key messages.

Appendix D contains evidence of Ecology's efforts to promote the public comment period. After completing the public review, Ecology documented comments and provided responses to comments (Appendix F.) and decided to submit the revision request to EPA.

Appendix Table of Contents

<u>Appendix A. Chapter 70.94 RCW to 70A.15 Crosswalk</u>	A-1
<u>Appendix B. Department of Natural Resources Submittal to Ecology</u>	B-1
<u>Appendix B1: DNR SIP Submittal Cover Letter to Ecology</u>	
<u>Appendix B2: 2022 Smoke Management Plan 5-11-2022</u>	
<u>Appendix B3: 2022 Smoke Management Plan Demonstration</u>	
<u>Appendix C: Criteria for Determining the Completeness of Plan Submissions</u>	C-1
Appendix C.1: Requirements for preparation, adoption, and submittal of implementation plans, 40 CFR Appendix V to Part 51.	
Appendix C.2: Letter from Dixie Lee Ray, Governor to Donald P. Dubois, Regional Administrator, dated March 20, 1980.	
<u>Appendix D: Ecology Public Comment Documents</u>	D-1
<u>Appendix E. Ecology SIP Adoption Order and Submittal Letter</u>	E-1
<u>Appendix F. Comments and Responses</u>	F-1