



ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R10-OAR-2024-0541; FRL-12449-01-R10]

Air Plan Approval; Washington; Regional Haze State Implementation Plan for the Second Implementation Period

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The Environmental Protection Agency (EPA) is proposing to approve the regional haze State Implementation Plan (SIP) revision submitted by Washington on January 28, 2022, to address applicable requirements under the Clean Air Act (CAA) and the EPA's Regional Haze Rule (RHR) for the regional haze program's second implementation period. The EPA is proposing this action pursuant to the CAA.

DATES: Written comments must be received on or before **[INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R10-OAR-2024-0541 at www.regulations.gov. For comments submitted at Regulations.gov, follow the online instructions for submitting comments. Once submitted, comments may not be edited or removed from regulations.gov. For either manner of submission, the EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be confidential business information or other information the disclosure of which is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. The EPA will generally not consider comments or comment contents located outside of the primary submission (*i.e.*, on the web, cloud, or other file sharing system). For additional submission methods, please contact the person identified in the **FOR FURTHER**

INFORMATION CONTACT section. For the full EPA public comment policy, information about confidential business information or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>.

FOR FURTHER INFORMATION CONTACT: Jeff Hunt, EPA Region 10, 1200 Sixth Avenue, Suite 155, Seattle, WA 98101, at (206) 553-0256 or hunt.jeff@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document, the use of “we” and “our” means the EPA.

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I. What Action is the EPA Proposing?

The EPA is proposing to approve the regional haze SIP revision submitted by the Washington Department of Ecology (Ecology) on January 28, 2022, under the CAA and the EPA's Regional Haze Rule for the program's second implementation period. Washington’s SIP submission addresses the requirement that States must periodically revise their long-term strategies for making reasonable progress towards the national goal of preventing any future, and remedying any existing, anthropogenic impairment of visibility, including regional haze, in mandatory Class I Federal areas. The SIP submission also addresses other applicable requirements for the second implementation period of the regional haze program. The EPA is taking this action pursuant to CAA sections 110 and 169A.

II. Background and Requirements for Regional Haze Plans

A detailed history and background of the regional haze program is provided in multiple

prior EPA proposal actions.¹ For additional background on the 2017 Regional Haze Rule (RHR) revisions, please refer to Section III of this publication. Overview of Visibility Protection Statutory Authority, Regulation, and Implementation of “Protection of Visibility: Amendments to Requirements for State Plans” of the 2017 RHR.² The following is an abbreviated history and background of the regional haze program and 2017 RHR as it applies to the current action.

A. Regional Haze

In the 1977 CAA Amendments, Congress created a program for protecting visibility in the nation’s mandatory Class I Federal areas, which include certain national parks and wilderness areas. CAA 169A. The CAA establishes as a national goal the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution.” CAA 169A(a)(1).

In CAA section 169A(a)(1), Congress established the national goal of preventing any future and remedying any existing impairment of visibility in mandatory Class I Federal areas that results from manmade (anthropogenic) air pollution. The core component of a regional haze SIP submission for the second planning period is a strategy that addresses regional haze in each Class I area within the State’s borders and each Class I area outside the State that may be affected by emissions originating from within the State, CAA section 169A(b)(2)(B), 40 CFR 51.308(f)(2), and makes “reasonable progress” toward the national goal based on consideration of the four statutory factors in CAA section 169A(g)(1)—the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected sources.³

Regional haze is visibility impairment that is produced by a multitude of anthropogenic sources and activities which are located across a broad geographic area and that emit pollutants

¹ See 90 FR 13516 (March 24, 2025).

² See 82 FR 3078 (January 10, 2017, located at <https://www.federalregister.gov/documents/2017/01/10/2017-00268/protection-of-visibility-amendments-to-requirements-for-State-plans#h-16>).

³ CAA section 169A(g)(1); 40 CFR 51.308(f)(2)(i).

that impair visibility. Visibility impairing pollutants include fine and coarse particulate matter (PM) (*e.g.*, sulfates, nitrates, organic carbon, elemental carbon, and soil dust) and their precursors (*e.g.*, sulfur dioxide (SO₂), nitrogen oxides (NO_x), and, in some cases, volatile organic compounds (VOC) and ammonia (NH₃)). Fine particle precursors react in the atmosphere to form fine particulate matter (PM_{2.5}), which impairs visibility by scattering and absorbing light. Visibility impairment reduces the perception of clarity and color, as well as visible distance.⁴

To address regional haze visibility impairment, the 1999 RHR established an iterative planning process that requires both States in which Class I areas are located and states “the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility” in a Class I area to periodically submit SIP revisions to address such impairment. CAA 169A(b)(2); see also 40 CFR 51.308(b), (f) (establishing submission dates for iterative regional haze SIP revisions); (64 FR 35714, July 1, 1999, at page 35768).

On January 10, 2017, the EPA promulgated revisions to the RHR, (82 FR 3078, January 10, 2017), that apply for the second and subsequent implementation periods. The reasonable progress requirements as revised in the 2017 rulemaking (referred to here as the 2017 RHR Revisions) are codified at 40 CFR 51.308(f).

B. The Western Regional Air Partnership

The Western Regional Air Partnership (WRAP)⁵ is one of five regional air quality planning organizations across the United States.⁶ The WRAP functions as a voluntary partnership of State, Tribal, Federal, and Local air agencies whose purpose is to understand

⁴ There are several ways to measure the amount of visibility impairment, *i.e.*, haze. One such measurement is the deciview, which is the principal metric used by the RHR. Under many circumstances, a change in one deciview will be perceived by the human eye to be the same on both clear and hazy days. The deciview is unitless. It is proportional to the logarithm of the atmospheric extinction of light, which is the perceived dimming of light due to its being scattered and absorbed as it passes through the atmosphere. Atmospheric light extinction (b^{ext}) is a metric used for expressing visibility and is measured in inverse megameters (Mm⁻¹). The formula for the deciview is $10 \ln(b^{ext})/10 \text{ Mm}^{-1}$. 40 CFR 51.301.

⁵ The WRAP website may be found at <https://www.wrapair2.org>.

⁶ See <https://www.epa.gov/visibility/visibility-regional-planning-organizations> for information about the regional planning organizations, or RPOs, for visibility.

current and evolving air quality issues in the west. There are 15 member States, including Washington, and 28 Tribal and 30 Local air agency members.⁷ Federal partners include the EPA, National Park Service, U.S. Fish and Wildlife Service, Forest Service, and Bureau of Land Management.

Based on emissions and monitoring data supplied by its membership, the WRAP produced technical tools to support modeling of visibility impacts at Class I areas across the west.⁸ The WRAP Technical Support System for the second implementation period or “TSSV2” consolidated air quality monitoring data, meteorological and receptor modeling data analyses, emissions inventories and projections, and gridded air quality/visibility regional modeling results. The TSSV2 is accessible by members and allows for the creation of maps, figures, and tables to export and use in developing regional haze plans and maintains the original source data for verification and further analysis.⁹

C. Washington’s Regional Haze Plan for the Second Implementation Period

On January 28, 2022, Ecology submitted a revision to the Washington SIP to address regional haze for the second planning period. Ecology made this SIP submission to satisfy the requirements of the CAA’s regional haze program pursuant to CAA sections 169A and 169B and 40 Code of Federal Regulations (CFR) 51.308.

III. Requirements for Regional Haze Plans for the Second Implementation Period

Under the CAA and EPA’s regulations, all 50 States, the District of Columbia, and the U.S. Virgin Islands are required to submit regional haze SIPs satisfying the applicable requirements for the second implementation period of the regional haze program by July 31, 2021. Each State’s SIP must contain a long-term strategy for making reasonable progress toward meeting the national goal of remedying any existing and preventing any future anthropogenic visibility impairment in Class I areas. CAA 169A(b)(2)(B). To this end, 40 CFR 51.308(f) lays

⁷ The WRAP membership list may be found at <https://www.wrapair2.org/membership.aspx>.

⁸ Technical information may be found at <https://www.wrapair2.org/RHPWG.aspx/>.

⁹ The WRAP TSS for the second implementation period may be found at <https://views.cira.colostate.edu/tssv2/>.

out the process by which States determine what constitutes their long-term strategies, with the order of the requirements in 40 CFR 51.308(f)(1) through (3) generally mirroring the order of the steps in the reasonable progress analysis¹⁰ and (f)(4) through (6) containing additional, related requirements.

Broadly speaking, a State first must identify the Class I areas within the State and determine the Class I areas outside the State in which visibility may be affected by emissions from the State. These are the Class I areas that must be addressed in the State's long-term strategy. See 40 CFR 51.308(f), (f)(2). For each Class I area within its borders, a State must then calculate the baseline (five-year average period of 2000-2004), current, and natural visibility conditions (*i.e.*, visibility conditions without anthropogenic visibility impairment) for that area, as well as the visibility improvement made to date and the "uniform rate of progress" (URP).

The URP is the linear rate of progress needed to attain natural visibility conditions, assuming a starting point of baseline visibility conditions in 2004 and ending with natural conditions in 2064. This linear interpolation is used as a tracking metric to help States assess the amount of progress they are making towards the national visibility goal over time in each Class I area. See 40 CFR 51.308(f)(1). Each State having a Class I area and/or emissions that may affect visibility in a Class I area must then develop a long-term strategy that includes the enforceable emission limitations, compliance schedules, and other measures that are necessary to make reasonable progress in such areas. A reasonable progress determination is based on applying the four factors in CAA section 169A(g)(1) to sources of visibility impairing pollutants that the State has selected to assess for controls for the second implementation period. Additionally, as further explained below, the RHR at 40 CFR 51.3108(f)(2)(iv) separately provides five "additional factors"¹¹ that States must consider in developing their long-term strategies. See 40 CFR

¹⁰ The EPA explained in the 2017 RHR Revisions that we were adopting new regulatory language in 40 CFR 51.308(f) that, unlike the structure in 51.308(d), "tracked the actual planning sequence." (82 FR 3091, January 10, 2017).

¹¹ The five "additional factors" for consideration in section 51.308(f)(2)(iv) are distinct from the four factors listed in CAA section 169A(g)(1) and 40 CFR 51.308(f)(2)(i) that States must consider and apply to sources in determining reasonable progress.

51.308(f)(2).

A State evaluates potential emission reduction measures for those selected sources and determines which are necessary to make reasonable progress. Those measures are then incorporated into the State's long-term strategy. After a State has developed its long-term strategy, it then establishes reasonable progress goals (RPGs) for each Class I area within its borders by modeling the visibility impacts of all reasonable progress controls at the end of the second implementation period, *i.e.*, in 2028, as well as the impacts of other requirements of the CAA. The RPGs include reasonable progress controls not only for sources in the State in which the Class I area is located, but also for sources in other States that contribute to visibility impairment in that area. The RPGs are then compared to the baseline visibility conditions and the URP to ensure that progress is being made towards the statutory goal of preventing any future and remedying any existing anthropogenic visibility impairment in Class I areas. 40 CFR 51.308(f)(2) and (3). There are additional requirements in the rule, including (Federal Land Manager) FLM consultation, that apply to all visibility protection SIPs and SIP revisions. *See e.g.*, 40 CFR 51.308(i).

In addition to satisfying the requirements at 40 CFR 51.308(f) related to reasonable progress, the regional haze SIP revisions for the second implementation period must address the requirements in 40 CFR 51.308(g)(1) through (5) pertaining to periodic reports describing progress towards the RPGs, 40 CFR 51.308(f)(5), as well as requirements for FLM consultation that apply to all visibility protection SIPs and SIP revisions. *See e.g.*, 40 CFR 51.308(i).

A State must submit its regional haze SIP and subsequent SIP revisions to the EPA according to the requirements applicable to all SIP revisions under the CAA and the EPA's regulations. *See* CAA section 169A(b)(2); CAA section 110(a). Upon approval by the EPA, a SIP is enforceable by the Agency and the public under the CAA. If the EPA finds that a State fails to make a required SIP revision, or if the EPA finds that a State's SIP is incomplete or if it disapproves the SIP, the Agency must promulgate a Federal implementation plan (FIP) that

satisfies the applicable requirements. CAA section 110(c)(1).

A. Identification of Class I Areas

The first step in developing a regional haze SIP is for a State to determine which Class I areas, in addition to those within its borders, “may be affected” by emissions from within the State. In the 1999 RHR, the EPA determined that all States contribute to visibility impairment in at least one Class I area, 64 FR 35714, July 1, 1999, at pages 35720-22, and explained that the statute and regulations lay out an “extremely low triggering threshold” for determining “whether States should be required to engage in air quality planning and analysis as a prerequisite to determining the need for control of emissions from sources within their State.” *Id.* at 35721.

A State must determine which Class I areas must be addressed by its SIP by evaluating the total emissions of visibility impairing pollutants from all sources within the State. The determination of which Class I areas may be affected by a State’s emissions is subject to the requirement in 40 CFR 51.308(f)(2)(iii) to “document the technical basis, including modeling, monitoring, cost, engineering, and emissions information, on which the State is relying to determine the emission reduction measures that are necessary to make reasonable progress in each mandatory Class I Federal area it affects.”

B. Calculation of Baseline, Current, and Natural Visibility Conditions; Progress to Date; and Uniform Rate of Progress

As part of assessing whether a SIP submission for the second implementation period is providing for reasonable progress towards the national visibility goal, the RHR contains requirements in 40 CFR 51.308(f)(1) related to tracking visibility improvement over time. The requirements of this section apply only to States having Class I areas within their borders; the required calculations must be made for each such Class I area. The EPA’s 2018 Visibility Tracking Guidance provides recommendations to assist States in satisfying their obligations under 40 CFR 51.308(f)(1); specifically, in developing information on baseline, current, and natural visibility conditions, and in making optional adjustments to the URP to account for the

impacts of international anthropogenic emissions and prescribed fires. See 82 FR 3078, January 10, 2017, at pages 3103-05.

The RHR requires tracking of visibility conditions on two sets of days: the clearest and the most impaired days. Visibility conditions for both sets of days are expressed as the average deciview index for the relevant five-year period (the period representing baseline or current visibility conditions). The RHR provides that the relevant sets of days for visibility tracking purposes are the 20% clearest (the 20% of monitored days in a calendar year with the lowest values of the deciview index) and 20% most impaired days (the 20% of monitored days in a calendar year with the highest amounts of anthropogenic visibility impairment). 40 CFR 51.301. A State must calculate visibility conditions for both the 20% clearest and 20% most impaired days for the baseline period of 2000-2004 and the most recent five-year period for which visibility monitoring data are available (representing current visibility conditions). 40 CFR 51.308(f)(1)(i), (iii). States must also calculate natural visibility conditions for the clearest and most impaired days, by estimating the conditions that would exist on those two sets of days absent anthropogenic visibility impairment. 40 CFR 51.308(f)(1)(ii). Using all these data, States must then calculate, for each Class I area, the amount of progress made since the baseline period (2000-2004) and how much improvement is left to achieve to reach natural visibility conditions. Using the data for the set of most impaired days only, States must plot a line between visibility conditions in the baseline period and natural visibility conditions for each Class I area to determine the URP—the amount of visibility improvement, measured in deciviews, that would need to be achieved during each implementation period to achieve natural visibility conditions by the end of 2064. The URP is used in later steps of the reasonable progress analysis for informational purposes and to provide a non-enforceable benchmark against which to assess a Class I area's rate of visibility improvement. Additionally, in the 2017 RHR Revisions, the EPA provided States the option of proposing to adjust the endpoint of the URP to account for impacts of anthropogenic sources outside the United States and/or impacts of certain types of wildland

prescribed fires. These adjustments, which must be approved by the EPA, are intended to avoid any perception that States should compensate for impacts from international anthropogenic sources and to give States the flexibility to determine that limiting the use of wildland-prescribed fire is not necessary for reasonable progress. 82 FR 3078, January 10, 2017, at page 3107, footnote 116.

The EPA's 2018 Visibility Tracking Guidance can be used to help satisfy the 40 CFR 51.308(f)(1) requirements, including in developing information on baseline, current, and natural visibility conditions, and in making optional adjustments to the URP. In addition, the 2020 Data Completeness Memo provides recommendations on the data completeness language referenced in 40 CFR 51.308(f)(1)(i) and provides updated natural conditions estimates for each Class I area.

C. Long-Term Strategy for Regional Haze

The core component of a regional haze SIP submission is a long-term strategy that addresses regional haze in each Class I area within a State's borders and each Class I area outside the State that may be affected by emissions from the State. The long-term strategy "must include the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress, as determined pursuant to (f)(2)(i) through (iv)." 40 CFR 51.308(f)(2). The amount of progress that is "reasonable progress" is based on applying the four statutory factors in CAA section 169A(g)(1) in an evaluation of potential control options for sources of visibility impairing pollutants, which is referred to as a "four-factor" analysis. The outcome of that analysis is the emission reduction measures that a particular source or group of sources needs to implement to make reasonable progress towards the national visibility goal. See 40 CFR 51.308(f)(2)(i). Emission reduction measures that are necessary to make reasonable progress may be either new, additional control measures for a source, or they may be the existing emission reduction measures that a source is already implementing. See 82 FR 3078, 3092-93. Such measures must be represented by "enforceable emissions limitations, compliance

schedules, and other measures” (i.e., any additional compliance tools) in a State’s long-term strategy in its SIP. 40 CFR 51.308(f)(2).

The regulation at 40 CFR 51.308(f)(2)(i) provides the requirements for the four-factor analysis. The first step of this analysis entails selecting the sources to be evaluated for emission reduction measures; to this end, the RHR requires States to consider “major and minor stationary sources or groups of sources, mobile sources, and area sources” of visibility impairing pollutants for potential four-factor control analysis. 40 CFR 51.308(f)(2)(i). A threshold question at this step is which visibility impairing pollutants will be analyzed.

While States have discretion to choose any source selection methodology that is reasonable, whatever choices they make should be reasonably explained. To this end, 40 CFR 51.308(f)(2)(i) requires that a State’s SIP submission include “a description of the criteria it used to determine which sources or groups of sources it evaluated.” The technical basis for source selection, which may include methods for quantifying potential visibility impacts such as emissions divided by distance metrics, trajectory analyses, residence time analyses, and/or photochemical modeling, must also be appropriately documented, as required by 40 CFR 51.308(f)(2)(iii).

Once a State has selected the set of sources, the next step is to determine the emissions reduction measures for those sources that are necessary to make reasonable progress for the second implementation period.¹² This is accomplished by considering the four factors—“the costs of compliance, the time necessary for compliance, and the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements.” CAA section 169A(g)(1). The EPA has explained that the four-factor analysis is an assessment of potential emission reduction measures (i.e., control options)

¹² The CAA provides that, “[i]n determining reasonable progress there shall be taken into consideration” the four statutory factors. CAA section 169A(g)(1). However, in addition to four-factor analyses for selected sources, groups of sources, or source categories, a State may also consider additional emission reduction measures for inclusion in its long-term strategy, e.g., from other newly adopted, on-the-books, or on-the-way rules and measures for sources not selected for four-factor analysis for the second implementation period.

for sources: “use of the terms ‘compliance’ and ‘subject to such requirements’ in section 169A(g)(1) strongly indicates that Congress intended the relevant determination to be the requirements with which sources would have to comply to satisfy the CAA’s reasonable progress mandate.” 82 FR 3091 (January 10, 2017). Thus, for each source it has selected for four-factor analysis,¹³ a State must consider a “meaningful set” of technically feasible control options for reducing emissions of visibility impairing pollutants. *Id.* at 3088.

The EPA has also explained that, in addition to the four statutory factors, States have flexibility under the CAA and RHR to reasonably consider visibility benefits as an additional factor alongside the four statutory factors. Ultimately, while States have discretion to reasonably weigh the factors and to determine what level of control is needed, 40 CFR 51.308(f)(2)(i) provides that a State “must include in its implementation plan a description of . . . how the four factors were taken into consideration in selecting the measure for inclusion in its long-term strategy.”

As explained above, 40 CFR 51.308(f)(2)(i) requires States to determine the emission reduction measures for sources that are necessary to make reasonable progress by considering the four factors. Pursuant to 40 CFR 51.308(f)(2), measures that are necessary to make reasonable progress towards the national visibility goal must be included in a State’s long-term strategy and in its SIP. If the outcome of a four-factor analysis is that an emissions reduction measure is necessary to make reasonable progress towards remedying existing or preventing future anthropogenic visibility impairment, that measure must be included in the SIP.

The characterization of information on each of the factors is also subject to the documentation requirement in 40 CFR 51.308(f)(2)(iii). The reasonable progress analysis is a technically complex exercise, and also a flexible one, that provides States with bounded

¹³ “Each source” or “particular source” is used here as shorthand. While a source-specific analysis is one way of applying the four factors, neither the statute nor the RHR requires States to evaluate individual sources. Rather, States have “the flexibility to conduct four-factor analyses for specific sources, groups of sources or even entire source categories, depending on State policy preferences and the specific circumstances of each State.” 82 FR 3088 (January 10, 2017).

discretion to design and implement approaches appropriate to their circumstances. Given this flexibility, 40 CFR 51.308(f)(2)(iii) plays an important function in requiring a State to document the technical basis for its decision making so that the public and the EPA can comprehend and evaluate the information and analysis the State relied upon to determine what emission reduction measures must be in place to make reasonable progress. The technical documentation must include the modeling, monitoring, cost, engineering, and emissions information on which the State relied to determine the measures necessary to make reasonable progress. Additionally, the RHR at 40 CFR 51.308(f)(2)(iv) separately provides five “additional factors”¹⁴ that States must consider in developing their long-term strategies: (1) emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment; (2) measures to reduce the impacts of construction activities; (3) source retirement and replacement schedules; (4) basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs; and (5) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the long-term strategy.

Because the air pollution that causes regional haze crosses State boundaries, 40 CFR 51.308(f)(2)(ii) requires a State to consult with other States that also have emissions that are reasonably anticipated to contribute to visibility impairment in a given Class I area. If a State, pursuant to consultation, agrees that certain measures (e.g., a certain emission limitation) are necessary to make reasonable progress at a Class I area, it must include those measures in its SIP. 40 CFR 51.308(f)(2)(ii)(A). Additionally, the RHR requires that States that contribute to visibility impairment at the same Class I area consider the emission reduction measures the other contributing States have identified as being necessary to make reasonable progress for their own sources. 40 CFR 51.308(f)(2)(ii)(B). If a State has been asked to consider or adopt certain

¹⁴ The five “additional factors” for consideration in 40 CFR 51.308(f)(2)(iv) are distinct from the four factors listed in CAA section 169A(g)(1) and 40 CFR 51.308(f)(2)(i) that States must consider and apply to sources in determining reasonable progress.

emission reduction measures, but ultimately determines those measures are not necessary to make reasonable progress, that State must document in its SIP the actions taken to resolve the disagreement. 40 CFR 51.308(f)(2)(ii)(C). Under all circumstances, a State must document in its SIP submission all substantive consultations with other contributing States. 40 CFR 51.308(f)(2)(ii)(C).

In this proposed action, the EPA notes that it is the Agency's policy, as announced in the EPA's recent approval of the West Virginia Regional Haze SIP,¹⁵ that where the State has considered the four statutory factors, and visibility conditions for a Class I area impacted by a State are projected to be below the URP in 2028, the State has presumptively demonstrated reasonable progress for the second implementation period for that area. The EPA acknowledges that this proposed action reflects a change in policy as to how the URP should be used in the evaluation of regional haze second planning period SIPs. However, the EPA finds that this policy aligns with the purpose of the statute and RHR, which is achieving "reasonable" progress, not maximal progress, toward Congress' natural visibility goal.

D. Reasonable Progress Goals

Reasonable progress goals "measure the progress that is projected to be achieved by the control measures States have determined are necessary to make reasonable progress based on a four-factor analysis." 82 FR 3091(January 10, 2017). For the second implementation period, the RPGs are set for 2028. Reasonable progress goals are not enforceable targets, 40 CFR 51.308(f)(3)(iii). While States are not legally obligated to achieve the visibility conditions described in their RPGs, 40 CFR 51.308(f)(3)(i) requires that "[t]he long-term strategy and the reasonable progress goals must provide for an improvement in visibility for the most impaired days since the baseline period and ensure no degradation in visibility for the clearest days since the baseline period."

¹⁵ See proposed rule (90 FR 16478, April 18, 2025, at page 16483) and final rule (90 FR 29737, July 7, 2025, at pages 29738-39).

RPGs may also serve as a metric for assessing the amount of progress a State is making towards the national visibility goal. To support this approach, the RHR requires States with Class I areas to compare the 2028 RPG for the most impaired days to the corresponding point on the URP line (representing visibility conditions in 2028 if visibility were to improve at a linear rate from conditions in the baseline period of 2000-2004 to natural visibility conditions in 2064). If the most impaired days RPG in 2028 is above the URP (i.e., if visibility conditions are improving more slowly than the rate described by the URP), each State that contributes to visibility impairment in the Class I area must demonstrate, based on the four-factor analysis required under 40 CFR 51.308(f)(2)(i), that no additional emission reduction measures would be reasonable to include in its long-term strategy. 40 CFR 51.308(f)(3)(ii). To this end, 40 CFR 51.308(f)(3)(ii) requires that each State contributing to visibility impairment in a Class I area that is projected to improve more slowly than the URP provide “a robust demonstration, including documenting the criteria used to determine which sources or groups [of] sources were evaluated and how the four factors required by paragraph (f)(2)(i) were taken into consideration in selecting the measures for inclusion in its long-term strategy.”

E. Monitoring Strategy and Other State Implementation Plan Requirements

Section 51.308(f)(6) requires States to have certain strategies and elements in place for assessing and reporting on visibility. Individual requirements under this section apply either to States with Class I areas within their borders, States with no Class I areas but that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area, or both. Compliance with the monitoring strategy requirement may be met through a State’s participation in the Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring network, which is used to measure visibility impairment caused by air pollution at the 156 Class I areas covered by the visibility program. 40 CFR 51.308(f)(6), (f)(6)(i) and (iv).

All States’ SIPs must provide for procedures by which monitoring data and other information are used to determine the contribution of emissions from within the State to regional

haze visibility impairment in affected Class I areas, as well as a Statewide inventory documenting such emissions. 40 CFR 51.308(f)(6)(ii), (iii) and (v). All States' SIPs must also provide for any other elements, including reporting, recordkeeping, and other measures, that are necessary for States to assess and report on visibility. 40 CFR 51.308(f)(6)(vi).

F. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals

Section 51.308(f)(5) requires a State's regional haze SIP revision to address the requirements of paragraphs 40 CFR 51.308(g)(1) through (5) so that the plan revision due in 2021 will serve also as a progress report addressing the period since submission of the progress report for the first implementation period. The regional haze progress report requirement is designed to inform the public and the EPA about a State's implementation of its existing long-term strategy and whether such implementation is in fact resulting in the expected visibility improvement. *See* 81 FR 26942, 26950 (May 4, 2016), (82 FR 3119, January 10, 2017). To this end, every State's SIP revision for the second implementation period is required to assess changes in visibility conditions and describe the status of implementation of all measures included in the State's long-term strategy, including Best Available Retrofit Technology (BART) and reasonable progress emission reduction measures from the first implementation period, and the resulting emissions reductions. 40 CFR 51.308(g)(1) and (2).

G. Requirements for State and Federal Land Manager Coordination

CAA section 169A(d) requires that before a State holds a public hearing on a proposed regional haze SIP revision, it must consult with the appropriate FLM or FLMs; pursuant to that consultation, the State must include a summary of the FLMs' conclusions and recommendations in the notice to the public. Consistent with this statutory requirement, the RHR also requires that States "provide the [FLM] with an opportunity for consultation, in person and at a point early enough in the State's policy analyses of its long-term strategy emission reduction obligation so that information and recommendations provided by the [FLM] can meaningfully inform the

State's decisions on the long-term strategy." 40 CFR 51.308(i)(2). For the EPA to evaluate whether FLM consultation meeting the requirements of the RHR has occurred, the SIP submission should include documentation of the timing and content of such consultation. The SIP revision submitted to the EPA must also describe how the State addressed any comments provided by the FLMs. 40 CFR 51.308(i)(3). Finally, a SIP revision must provide procedures for continuing consultation between the State and FLMs regarding the State's visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas. 40 CFR 51.308(i)(4).

IV. The EPA's Evaluation of the Washington Regional Haze Plan for the Second Implementation Period

A. Background on the Washington First Implementation Period Plan

Washington submitted its regional haze SIP for the first implementation period (2008 through 2018) on December 22, 2010, and submitted a supplemental SIP submission on December 29, 2011. The Clean Air Act and 40 CFR 51.308(d) and (e) required that the initial round of regional haze plans include, among other things, a long-term strategy for making reasonable progress and best available retrofit technology requirements for certain older stationary sources, where applicable. The EPA partially approved and partially disapproved Washington's first implementation period SIP submission on June 11, 2014 (79 FR 33438), issuing FIPs codified at 40 CFR 52.2500 *Best available retrofit technology (BART) requirements for the Intalco Aluminum Corporation (Intalco Works) primary aluminum plant - Better than BART Alternative*, 40 CFR 52.2501 *Best available retrofit technology requirement for the Tesoro Refining and Marketing Company oil refinery - Better than BART Alternative*, and 40 CFR 52.2502 *Best available retrofit technology requirements for the Alcoa Inc. - Wenatchee Works primary aluminum smelter* to remedy the disapproved elements.

Subsequently, on November 6, 2017, Washington submitted a five-year progress report,

and the EPA approved the progress report on July 31, 2018 (83 FR 36752). In the action to approve the progress report, the EPA determined that the Washington regional haze plan for the first implementation period was adequate and required no substantive revision.

B. The Washington Second Implementation Period Plan and the EPA's Evaluation

On January 28, 2022, Washington submitted its regional haze plan for the second implementation period (2018 through 2028).¹⁶ Washington made its January 28, 2022, submission available for public comment on October 19, 2021 through November 23, 2021¹⁷ and held a public hearing on November 18, 2021.¹⁸ The State received and responded to public comments and included the comments and comment responses in the SIP submission.¹⁹

The following sections of this document describe the Washington submission, including but not limited to air quality modeling conducted, source selection and control measure analysis, assessment of progress made since the first implementation period in reducing emissions of visibility impairing pollutants, and the visibility improvement progress at Class I areas in Washington and other States impacted by Washington sources. This document also contains the EPA's evaluation of the Washington submission against the requirements of the Clean Air Act and Regional Haze Rule for the second implementation period of the regional haze program.

C. Identification of Class I Areas

Section 169A(b)(2) of the CAA requires each State in which any Class I area is located or "the emissions from which may reasonably be anticipated to cause or contribute to any impairment of visibility" in a Class I area to have a plan for making reasonable progress toward the national visibility goal. The RHR implements this statutory requirement at 40 CFR 51.308(f), which provides that each State's plan "must address regional haze in each mandatory Class I Federal area located within the State and in each mandatory Class I Federal area located outside

¹⁶ Clean Air Act sections 169A and 40 CFR 51.308(f).

¹⁷ Appendix X of Washington's January 28, 2022, submission.

¹⁸ Appendix Y of Washington's January 28, 2022, submission.

¹⁹ Appendix W of Washington's January 28, 2022, submission.

the State that may be affected by emissions from within the State,” and (f)(2), which requires each State’s plan to include a long-term strategy that addresses regional haze in such Class I areas.

The EPA concluded in the 1999 RHR that “all [s]tates contain sources whose emissions are reasonably anticipated to contribute to regional haze in a Class I area,” 64 FR 35714, July 1, 1999, at page 35721, and this determination was not changed in the 2017 RHR. Critically, the statute and regulation both require that the cause-or-contribute assessment consider all emissions of visibility impairing pollutants from a State, as opposed to emissions of a particular pollutant or emissions from a certain set of sources.

Washington Class I Areas

Washington has eight designated Class I areas, including three national parks and five wilderness areas.²⁰

Olympic National Park

Olympic National Park includes a significant portion of the Olympic Peninsula in northwestern Washington. It consists of two segments: the Olympic Mountains, which form the mountainous core of the park, and a coastal strip, stretching for 90 kilometers (km) (56 miles (mi)) along the Pacific coast. Thirteen major rivers flow from the Olympic Mountains in all directions.

North Cascades National Park

North Cascades National Park is set in the rugged mountains of the Cascade Mountain Range in northcentral Washington, about 80 km (50 mi) east of Bellingham. The area was set aside to preserve dramatic mountain scenery, alpine areas, and glaciers. Mountain summits rise abruptly 1,800-2,600 meters (m) (5,900-8,530 feet (ft)) above the valley floor.

Mount Rainier National Park

²⁰ Section 169A of the Clean Air Act was established in 1977 to protect visibility in all wilderness areas over 5,000 acres and all national parks over 6,000 acres. 156 such areas were designated throughout the U.S.

Mount Rainier National Park became the nation's fifth national park in 1899. One hundred km (62 mi) southeast of Seattle, Mount Rainier is the highest of the chain of volcanoes comprising the Cascade Range. At 4,392 meters (m) (14,410 feet (ft)), Mount Rainier is the fifth tallest peak in the contiguous 48 States. The massive mountain occupies more than one-fourth of the park's area. The 27 major glaciers on its slopes form the largest mass of year-round ice in the United States outside of Alaska.

Glacier Peak Wilderness

Glacier Peak Wilderness includes more than 200 lakes, many unnamed and tremendously difficult to access, in various cirques and hidden basins. The wilderness straddles the northern Cascade Range roughly between the Suiattle River on the west and Lake Chelan on the east. Glacier Peak Wilderness is bordered to the North by North Cascades National Park.

Alpine Lakes Wilderness

When Congress passed the 1976 Alpine Lakes Wilderness Act to protect the area in its unique natural state, it created the Alpine Lakes Wilderness. The name Alpine Lakes takes its origin from the nearly 700 small mountain lakes nestled among the high rock peaks and forested valleys of the region. The Mt. Baker-Snoqualmie National Forest and the Okanogan-Wenatchee National Forest jointly administer the wilderness.

Goat Rocks Wilderness

The Goat Rocks Wilderness is a portion of the volcanic Cascade Range in southwestern Washington located between Mount Rainier and Mount Adams. The Goat Rocks are remnants of a large volcano, which has been extinct for some two million years. The cluster of rocks and peaks in this area earned the title "Goat Rocks" because of the bands of mountain goats that live there. The wilderness lies in both the Gifford Pinchot National and the Okanogan-Wenatchee National Forests.

Mount Adams Wilderness

Congress designated the Mount Adams Wilderness in 1964. The wilderness lies in the

Gifford Pinchot National Forest on the crest of the Cascade Range in southwestern Washington. Second in height only to Mount Rainier statewide, 3,742 m (12,276 ft) Mount Adams looms over at least 10 glaciers and a wilderness of forested slopes and subalpine meadows. The volcanic bulk of the mountain takes up a considerable portion of the Wilderness.

Pasayten Wilderness

The Pasayten Wilderness stretches across the crest of the Cascade Range in northern Washington. The wilderness is bordered on the north by 80 km (50 mi) of the Canadian border and on the west by the Ross Lake National Recreation Area. The Pasayten Wilderness is in both the Okanogan-Wenatchee and the Mount Baker-Snoqualmie National Forests.

Washington Visibility Monitoring Network

Haze species in Washington are measured and analyzed via the Interagency Monitoring of Protected Visual Environments (IMPROVE) network.²¹ Table 1 of this document lists the IMPROVE air quality monitors representing visibility at Washington Class I areas. Due to the remote nature of the Class I areas, some areas share a common IMPROVE station.

Table 1: Washington IMPROVE Stations and Class I Areas

| IMPROVE station | Class I Area | Site Sponsor |
|------------------------|---|------------------------|
| OLYM1 | Olympic National Park | National Parks Service |
| NOCA1 | North Cascades National Park Glacier Peak Wilderness | National Parks Service |
| SNPA1 | Alpine Lakes Wilderness | U.S. Forest Service |
| MORA1 | Mt. Rainier National Park | National Parks Service |
| WHPA1 | Goat Rocks Wilderness Mt. Adams Wilderness | U.S. Forest Service |
| PASA1 | Pasayten Wilderness | U.S. Forest Service |

Identification of Class I Areas in Other States

Ecology reviewed Particulate Matter Source Apportionment Technology (PSAT) modeling conducted by the WRAP to determine potential visibility impacts from Washington sources on Class I areas in other States.²² Chapter 6.8 *Other Mandatory Class I Areas Impacted*

²¹ IMPROVE website at <http://vista.cira.colostate.edu/Improve>.

²² Chapter 5 *Regional Haze Modeling* of Washington’s January 28, 2022, submission.

by *Washington Anthropogenic Emissions* of Washington’s submission identifies all out-of-State IMPROVE stations where Washington anthropogenic sources are expected to contribute at least 0.1% of the nitrate or sulfate light extinction, based on the WRAP modeling results. Ecology further refined the analysis to focus on significant contribution, defined as a 5% or greater contribution of light extinction from nitrates or sulfates on the most impaired days, identifying impacted Montana and Oregon Class I areas. Specifically, these areas in Montana were the Cabinet Mountains Wilderness, Glacier National Park, Bob Marshall Wilderness Area, Mission Mountain Wilderness Area, Scapegoat Wilderness Area, Anaconda-Pintler Wilderness Area, and Selway-Bitterroot Wilderness Area. In Oregon these areas were the Kalmiopsis Wilderness, Mt. Hood Wilderness, Strawberry Mountain Wilderness, Eagle Cap Wilderness, Mt. Jefferson Wilderness, Mt. Washington Wilderness, and Three Sisters Wilderness. As discussed in section IV.E of this document with respect to Washington’s long-term strategy, Ecology focused its planning efforts on improving visibility at Class I areas in Washington for three primary reasons: (1) for SO₂, those sources that significantly impact Class I areas in other States have either closed or are subject to existing SIP requirements, (2) for NO_x, the vast majority of modeled impact to out of State Class I areas is from the mobile source sector already addressed by controls in place, and (3) Washington did not receive any requests for reductions from neighboring States during State-to-State consultations.²³

Washington’s January 28, 2022, SIP revision satisfies the requirements of 40 CFR 51.308(f)(2), related to the identification of Class I areas outside of Washington that may be affected by emissions from within the State and consultation with affected States.

D. Calculations of Baseline, Current, and Natural Visibility Conditions; Progress to Date; and the Uniform Rate of Progress

Section 51.308(f)(1) requires States to determine the following for “each mandatory Class I Federal area located within the State”: baseline visibility conditions for the most impaired

²³ See Appendix R of Washington’s January 28, 2022, submission.

and clearest days, natural visibility conditions for the most impaired and clearest days, progress to date for the most impaired and clearest days, the differences between current visibility conditions and natural visibility conditions, and the URP. This section also provides the option for States to propose adjustments to the URP line for a Class I area to account for visibility impacts from anthropogenic sources outside the United States and/or the impacts from wildland prescribed fires that were conducted for certain, specified objectives. 40 CFR 51.308(f)(1)(vi)(B).

Tracking Visibility in Washington

The Washington submission addresses baseline, current and natural visibility conditions for each of the IMPROVE stations as required by the 2017 Regional Haze Rule and the EPA's technical guidance on tracking visibility progress. Ecology reviewed visibility data from 2000 through 2018 and determined that current visibility at all Class I areas for both the clearest and most impaired days had improved since the baseline period, satisfying the Regional Haze Rule requirement of no degradation in visibility for the clearest days since the baseline period. In addition, all areas met the 2018 URP for the most impaired days as shown in Table 2 of this document. Additionally, most areas, including Olympic National Park, North Cascades National Park, Glacier Peak Wilderness, Mount Rainier National Park, Goat Rocks Wilderness, and Mount Adams Wilderness, have already met the projected 2028 URP for the most impaired days based on 2014 through 2018 monitoring data.

In accordance with 40 CFR 51.308(f)(1)(vi), Washington used modeling performed by the WRAP to adjust the URP for certain international anthropogenic sulfate impacts on the most impaired days. As noted in Chapter 9.1 of Washington's submission, "Washington's Class 1 areas are all affected by international anthropogenic contributions that Washington cannot control. Source apportionment results (Chapter 6) show that sulfates from international anthropogenic sources are expected to impact visibility more than in-State sources at all Washington Class 1 areas. Source apportionment results also show that nitrates from

international anthropogenic sources are expected to impact visibility more than in-State sources at most Washington Class 1 areas, with the exception of Alpine Lakes Wilderness Area and Mount Rainier National Park.” Washington further explained that the methodology used by the WRAP to adjust the glidepath was consistent with methods described in the EPA’s September 2019 regional haze modeling Technical Support Document included in the docket for this action. The EPA reviewed the 2028 URP adjustments and 2064 glidepath endpoints calculated by WRAP and confirmed that the values were similar to, but slightly lower than the corresponding 2028 URP adjustments and 2064 glidepath endpoints calculated by the EPA in our 2019 regional haze modeling Technical Support Document (Table 5-2 and Appendix E, respectively). Lastly, Washington did not adjust the glidepath to account for the impacts of wildland prescribed fires.

Table 2: Haze Indices (deciviews) for Washington IMPROVE Stations on Most Impaired Days²⁴

| Monitor ID | Class I Area | Baseline 2000-2004 | 2018 URP | Current Conditions 2014 – 2018 | 2028 URP | Adjusted 2064 | Natural 2064 |
|-------------------|--|---------------------------|-----------------|---------------------------------------|-----------------|----------------------|---------------------|
| OLYM1 | Olympic National Park | 14.9 | 13.5 | 11.9 | 12.5 | 8.9 | 6.9 |
| NOCA1 | Glacier Peak Wilderness Area; North Cascades National Park | 12.6 | 11.6 | 10.0 | 10.8 | 8.2 | 6.9 |
| SNPA1 | Alpine Lakes Wilderness Area | 15.4 | 13.7 | 12.7 | 12.5 | 8.2 | 7.3 |
| MORA1 | Mount Rainier National Park | 16.5 | 14.7 | 12.7 | 13.5 | 8.9 | 7.7 |
| WHPA1 | Goat Rocks Wilderness Area; Mount Adams | 10.5 | 9.9 | 8.0 | 9.5 | 8.1 | 6.1 |

²⁴ Chapters 9.2 through 9.9 of Washington’s submission. “Adjusted 2064” represents adjustment calculated by the WRAP to account for international contribution of NO_x and SO₂.

| | | | | | | | |
|-------|--------------------------|------|-----|-----|-----|-----|-----|
| | Wilderness Area | | | | | | |
| PASA1 | Pasayten Wilderness Area | 10.4 | 9.8 | 9.5 | 9.4 | 8.0 | 6.0 |

Table 3: Haze Indices (deciviews) for Washington IMPROVE Stations on the Clearest Days²⁵

| Monitor ID | Class I Area | Baseline 2000-2004 | Current Conditions 2014 – 2018 | 2028 WRAP Projection | Natural 2064 (unadjusted) |
|-------------------|--|---------------------------|---------------------------------------|-----------------------------|----------------------------------|
| OLYM1 | Olympic National Park | 6.0 | 3.6 | 3.4 | 2.7 |
| NOCA1 | Glacier Peak Wilderness Area; North Cascades National Park | 3.4 | 2.5 | 2.4 | 1.9 |
| SNPA1 | Alpine Lakes Wilderness Area | 5.5 | 3.3 | 3.0 | 2.3 |
| MORA1 | Mount Rainier National Park | 5.5 | 3.9 | 3.7 | 2.6 |
| WHPA1 | Goat Rocks Wilderness Area; Mount Adams Wilderness Area | 1.7 | 1.0 | 0.9 | 0.8 |
| PASA1 | Pasayten Wilderness Area | 2.7 | 1.6 | 1.5 | 1.2 |

The EPA is proposing to find that Washington has submitted a regional haze plan that meets the requirements of 40 CFR 51.308(f)(1) related to the calculations of baseline, current, and natural visibility conditions; progress to date; and the uniform rate of progress for the second implementation period. We are also proposing to approve Washington’s adjustment to the uniform rate of progress as consistent with 40 CFR 51.308(f)(1)(iv).

E. Long-Term Strategy for Regional Haze

The long-term strategy “must include the enforceable emissions limitations, compliance schedules, and other measures that are necessary to make reasonable progress, as determined pursuant to (f)(2)(i) through (iv).” 40 CFR 51.308(f)(2).

The regulation at 40 CFR 51.308(f)(2)(i) provides the requirements for the four-factor

²⁵ Chapters 9.2 through 9.9 of Washington’s submission.

analysis. The first step of this analysis entails selecting the sources to be evaluated for emission reduction measures. While States have discretion to choose any source selection methodology that is reasonable, whatever choices they make should be reasonably explained. To this end, 40 CFR 51.308(f)(2)(i) requires that a State’s SIP submission include “a description of the criteria it used to determine which sources or groups of sources it evaluated.” The technical basis for source selection, which may include methods for quantifying potential visibility impacts such as emissions divided by distance metrics, trajectory analyses, residence time analyses, and/or photochemical modeling, must also be appropriately documented, as required by 40 CFR 51.308(f)(2)(iii).

Once a State has selected the set of sources, the next step is to determine the emissions reduction measures for those sources that are necessary to make reasonable progress for the second implementation period.²⁶ This is accomplished by considering the four factors— “the costs of compliance, the time necessary for compliance, and the energy and nonair quality environmental impacts of compliance, and the remaining useful life of any existing source subject to such requirements.” CAA 169A(g)(1). The EPA has explained that the four-factor analysis is an assessment of potential emission reduction measures (*i.e.*, control options) for sources; Thus, for each source it has selected for four-factor analysis,²⁷ a State must consider a “meaningful set” of technically feasible control options for reducing emissions of visibility impairing pollutants. *Id.* at 3088.

The EPA has also explained that, in addition to the four statutory factors, States have flexibility under the CAA and RHR to reasonably consider visibility benefits as an additional

²⁶ The CAA provides that, “[i]n determining reasonable progress there shall be taken into consideration” the four statutory factors. CAA 169A(g)(1). However, in addition to four-factor analyses for selected sources, groups of sources, or source categories, a State may also consider additional emission reduction measures for inclusion in its long-term strategy, *e.g.*, from other newly adopted, on-the-books, or on-the-way rules and measures for sources not selected for four-factor analysis for the second planning period.

²⁷ “Each source” or “particular source” is used here as shorthand. While a source-specific analysis is one way of applying the four factors, neither the statute nor the RHR requires States to evaluate individual sources. Rather, States have “the flexibility to conduct four-factor analyses for specific sources, groups of sources or even entire source categories, depending on State policy preferences and the specific circumstances of each State.” 82 FR 3078, January 10, 2017, at page 3088.

factor alongside the four statutory factors.²⁸ Ultimately, while States have discretion to reasonably weigh the factors and to determine what level of control is needed, 40 CFR 51.308(f)(2)(i) provides that a State “must include in its implementation plan a description of . . . how the four factors were taken into consideration in selecting the measure for inclusion in its long-term strategy.”

As explained above, 40 CFR 51.308(f)(2)(i) requires States to determine the emission reduction measures for sources that are necessary to make reasonable progress by considering the four factors. Pursuant to 40 CFR 51.308(f)(2), measures that are necessary to make reasonable progress towards the national visibility goal must be included in a State’s long-term strategy and in its SIP. If the outcome of a four-factor analysis is that an emissions reduction measure is necessary to make reasonable progress towards remedying existing or preventing future anthropogenic visibility impairment, that measure must be included in the SIP.

1. Selection of Sources for Washington’s Long-Term Strategy

In its submission, Washington conducted technical analyses to identify sources and source categories with the largest potential to contribute to visibility impairment at visibility monitoring sites in Washington and other States. Washington used a “Q/d methodology.” Specifically, Washington’s submission determined “Q/d” where “Q” is a source’s emissions and “d” is the distance from the source to the nearest Class I area. Washington calculated Q/d values for major and non-major point sources using the sum of all actual emissions of sulfur dioxide, nitrogen oxides, ammonia, and particulate matter less than 10 microns in diameter (as measured in tons per year), divided by the distance to a Class I area (measured in kilometers from the facility to the nearest boundary of the Class I area) for all Class I areas within 400 km of the source. Ecology used Washington’s 2014 point-source emissions data to calculate Q values, noting that the WRAP used 2014 as the base year for modeling because it was the most recent

²⁸ See, e.g., Responses to Comments on Protection of Visibility: Amendments to Requirements for State Plans; Proposed Rule (81 FR 26942, May 4, 2016) (December 2016), Docket Number EPA-HQ-OAR-2015-0531, U.S. Environmental Protection Agency at 186.

year of certified available data when the analysis was initiated. Washington determined that major sources contribute 90 percent of the total Q/d value from all stationary sources even though they represent only 10 percent of the total number of all stationary sources. Therefore, Washington chose a $Q/d \geq 10$ to capture major stationary sources that contribute over 80 percent of haze-causing emissions from stationary sources. Using this threshold, Washington selected 16 facilities for further analysis.

Under the Washington Clean Air Act, Revised Code of Washington (RCW) 70A.15.2230 *RACT requirements*, Ecology is generally required to evaluate emissions controls on a source category basis when there are 3 or more existing sources from the same category being considered for controls.²⁹ As shown in Table 4, in Washington there were two source categories with three or more facilities above a $Q/d=10$, refineries (4 facilities) and the pulp and paper sector (6 facilities at the time of the screening determination). Other source categories did not meet the threshold of three or more sources above $Q/d=10$ (electricity generation – 1 facility, alumina refining and aluminum production – 2 facilities, cement manufacturing – 1 facility, flat glass manufacture – 1 facility).

Consistent with this source category approach, to ensure that all facilities in the State for the refinery sector and pulp and paper sector were included in the screening, Washington added two additional sources with a $Q/d \leq 10$ to the source selection list. One facility was Packaging Corporation of America ($Q/d = 9.4$), a paperboard mill, to remain consistent with the 6 other pulp and paper facilities screened in with a $Q/d \geq 10$. Ecology also added U.S. Oil ($Q/d = 3.2$), an oil refinery, to remain consistent with the 4 other oil refineries screened in with a $Q/d \geq 10$.

Table 4: Sources Selected for Evaluation in Washington’s Long-Term Strategy

| Facility | Q/d | Nearest | Source category |
|----------|-----|---------|-----------------|
|----------|-----|---------|-----------------|

²⁹ "Reasonably available control technology" (RACT) means the lowest emission limit that a particular source or source category is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility. RACT is determined on a case-by-case basis for an individual source or source category taking into account the impact of the source upon air quality, the availability of additional controls, the emission reduction to be achieved by additional controls, the impact of additional controls on air quality, and the capital and operating costs of the additional controls. RACT requirements for a source or source category shall be adopted only after notice and opportunity for comment are afforded.

| | | Class I area | |
|--|-------|-------------------------|--|
| TransAlta Centralia Generation, LLC | 149.8 | Mount Rainier NP | Electricity Generation |
| McKinley Paper Company | 83.1 | Olympic NP | Pulp and Paper |
| Alcoa Primary Metals Wenatchee Works | 80.9 | Alpine Lakes Wilderness | Alumina Refining and Aluminum Production |
| Alcoa Primary Metals Intalco Works | 71.7 | North Cascades NP | Alumina Refining and Aluminum Production |
| BP Cherry Point Refinery | 36.4 | North Cascades NP | Petroleum Refineries |
| Tesoro Northwest Company | 30.7 | Olympic NP | Petroleum Refineries |
| WestRock Tacoma | 27.9 | Mount Rainier NP | Pulp and Paper |
| Nippon Dynawave Packaging Company Longview | 25.3 | Mount Adams Wilderness | Pulp and Paper |
| Puget Sound Refining Company (Shell) | 24.5 | Olympic NP | Petroleum Refineries |
| Pt Townsend Paper Corporation | 24.2 | Olympic NP | Pulp and Paper |
| Ash Grove Cement Co, E Marginal | 23.1 | Alpine Lakes Wilderness | Cement Manufacturing |
| Cosmo Specialty Fibers, Inc. | 16.7 | Olympic NP | Pulp and Paper |
| WestRock Longview, LLC | 15.6 | Mount Adams Wilderness | Pulp and Paper |
| Georgia-Pacific Consumer Operations LLC | 14.4 | Mount Hood Wilderness | Pulp and Paper |
| Phillips 66 | 10.9 | North Cascades NP | Petroleum Refineries |
| Cardinal FG Winlock | 10.7 | Mount Rainier NP | Flat Glass Manufacture |
| Packaging Corporation of America (PCA) Wallowa | 9.4 | Eagle Cap Wilderness | Pulp and Paper |
| U.S. Oil & Refining Co | 3.2 | Mount Rainier NP | Petroleum Refineries |

In addition to selecting and evaluating point sources for four-factor analysis, Washington also used EPA emissions inventory data from 2014 and 2017 to review emissions from other source categories such as on-road mobile sources, nonroad vehicles, commercial marine vessels, home heating (wood) and other non-point area sources, agriculture and fugitive dust, prescribed fire, and agricultural fire. The submission addresses these sectors and their potential to contribute to visibility impairment in Chapter 4 *Emissions Inventory* and Chapter 8 *Long-term Strategy for Visibility Improvement* of Washington's submission.

2. The EPA's Evaluation of Washington's Long-Term Strategy Controls

The regulation at 40 CFR 51.308(f)(2)(i) requires States to evaluate and determine the emission reduction measures that are necessary to make reasonable progress by applying the four

statutory factors to sources in a control analysis. These factors are the cost of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts, and the remaining useful life of any potentially affected sources. As laid out in further detail in the following paragraphs, the EPA is proposing to find that Washington's January 28, 2022, submission satisfies the requirements of 40 CFR 51.308(f)(2)(i) related to evaluating sources and determining the emission reduction measures necessary for reasonable progress. EPA also notes that, as depicted in Table 7 of this document, 2028 projected visibility in all Class I areas impacted by sources in Washington are below the URP. Indeed, current visibility (as reflected in Table 2 of this document) in all but two Class I areas in Washington is already below the URP. Thus, Washington has presumptively demonstrated reasonable progress for the second planning period.

Mobile Source Sector

Washington's long-term strategy emphasizes the importance of already enacted Federal and State mobile source controls, and ongoing vehicle fleet turnover, in reducing regional haze precursors.³⁰ With respect to nitrate contribution, on-road mobile emissions accounted for 55% of anthropogenic NO_x emissions from Washington in 2014. Washington adopted, and the EPA approved into the Washington SIP, Washington Administrative Code (WAC), Chapter 173-423 *Low Emission Vehicles* (86 FR 61708, November 8, 2021). The WRAP modeling projects on-road mobile emissions to decline significantly from 130,500 tons per year in 2014 to 34,366 tons per year in 2028 due to the mobile source controls relied upon in Washington's long-term strategy. Since the EPA has already approved these rules into the SIP, there is no action to take at this time other than acknowledging Washington's inclusion of mobile source controls as part of the long-term strategy. Washington's mobile source program addresses visibility impairment in Class I areas within Washington State and Class I areas in other States.

The Oil Refinery Sector

³⁰ Washington's January 28, 2022, submission, Chapter 8. *Long-term Strategy for Visibility Improvement*.

Five petroleum refineries are located in northwest Washington. The refineries are: British Petroleum Cherry Point (BP Cherry Point), Shell Anacortes Refinery (Shell), Marathon Anacortes Refinery (Tesoro), Ferndale Refinery (Phillips 66), and U.S. Oil Refinery (U.S. Oil). As indicated in Table 4 of this document, Ecology selected the facilities for four-factor analysis based on the Q/d screening process.³¹ Ecology notified each of these facilities that Ecology selected them for analysis under the four factors via letters dated May 31, 2019.³² On November 27, 2019, Ecology requested that the facilities perform four-factor analyses of equipment at the refineries, which all the facilities submitted by Ecology’s May 1, 2020, deadline.³³ The results of these four-factor analyses are listed in Table 5 of this document with the determination that additional controls are not cost effective; or in the case of low NO_x burners (LNB) at certain units at the Shell facility the four-factor analysis explains, “Cost calculations are preliminary, and unit-specific engineering will be required to determine technical feasibility and cost of implementation. Additional engineering is expected to result in substantial additional control costs that cannot be quantified based on currently available information about modifications needed at these units.”³⁴

Table 5: Four-Factor Cost-Effectiveness Determinations for the Refinery Sector

| Facility | Unit | Pollutant | Control Technology | Cost per Ton Reduction | Estimated Annual Reduction (TPY) |
|--|-------------------------------|-----------------|--------------------|------------------------|----------------------------------|
| British Petroleum Cherry Point (BP Cherry Point) | Crude Charge Heater | NO _x | SCR ³⁵ | \$32,049 | 421.5 |
| | South Vacuum Heater | NO _x | SCR | \$60,160 | 32.5 |
| | Naphtha HDS Charge Heater | NO _x | SCR | \$70,260 | 19.0 |
| | Naphtha HDS Stripper Reboiler | NO _x | SCR | \$43,854 | 24.7 |
| | #1 Reformer Heaters | NO _x | SCR | \$24,378 | 321.1 |
| | #2 Reformer | NO _x | SCR | \$29,289 | 63.7 |

³¹ Appendix G of Washington’s submission.

³² *Id.*

³³ Appendix P of Washington’s submission.

³⁴ Appendix P of Washington’s submission, at page P-147.

³⁵ Selective catalytic reduction.

| | | | | | |
|----------------------------------|---|-----------------|--------------------|-----------|-------|
| | Hydrocracker R-4 Heater | NO _x | SCR | \$23,194 | 26.2 |
| | #1 H2 Plant ((North and South Furnaces) | NO _x | ULNB ³⁶ | \$49,432 | 66.1 |
| | | NO _x | SCR | \$78,082 | 141.4 |
| | | NO _x | ULNB with SCR | \$84,156 | 141.4 |
| | Boiler 5 | NO _x | SCR | \$126,958 | 13.0 |
| Ferndale Refinery (Phillips 66) | Crude Heater 1F-1 | NO _x | SCR | \$12,225 | 159.1 |
| | | NO _x | LNB ³⁷ | \$14,271 | 26.8 |
| | #2 Crude Heater 1F-1A | NO _x | SCR | \$40,111 | 37.6 |
| | | NO _x | LNB | \$19,636 | 10.9 |
| | Alkylation Heater 17F-1 | NO _x | SCR | \$81,410 | 19.1 |
| | #3 Pretreater Heater 18F-1 | NO _x | SCR | \$127,630 | 9.1 |
| | | NO _x | LNB | \$35,848 | 3.4 |
| | #3 Reformer Heater 18F-21 | NO _x | SCR | \$32,207 | 37.3 |
| | | NO _x | LNB | \$15,998 | 5.4 |
| | 18F-22 (Included with Above for SCR) | NO _x | SCR | \$32,207 | 37.3 |
| | | NO _x | LNB | \$15,998 | 5.4 |
| | #3 Reformer Heater 18F-23 | NO _x | SCR | \$32,207 | 37.3 |
| | | NO _x | LNB | \$15,998 | 5.4 |
| | 18F-24 (Included with Above for SCR) | NO _x | SCR | \$32,207 | 37.3 |
| | | NO _x | LNB | \$15,998 | 5.4 |
| | No. 1 Boiler 22F-1C | NO _x | SCR | \$224,104 | 8.4 |
| | No. 2 Boiler 22F-1A | NO _x | SCR | \$51,067 | 29.1 |
| | | NO _x | LNB | \$9,643 | 8.5 |
| | No. 3 Boiler 22F-1B | NO _x | SCR | \$42,634 | 37.1 |
| | | NO _x | LNB | \$7,572 | 10.8 |
| DHT Heater 33F-1 | NO _x | SCR | \$312,383 | 3.9 | |
| S-Zorb Heater 38F-100(CNG) | NO _x | SCR | \$479,473 | 2.5 | |
| Shell Anacortes Refinery (Shell) | 1A-F5 | NO _x | SCR | \$19,906 | 69.8 |
| | 1A-F8 | NO _x | SCR | \$45,593 | 11.2 |
| | 15F-100 | NO _x | SCR | \$30,859 | 18.9 |
| | 7C-F4 | NO _x | SCR | \$25,693 | 35.5 |
| | 11H-102 | NO _x | SCR | \$53,289 | 16.7 |
| | 10H-101 | NO _x | SCR | \$12,010 | 58.8 |
| | | NO _x | LNB | \$2,758 | 17.2 |
| | 10H-102 | NO _x | SCR | \$12,010 | 58.8 |
| | | NO _x | LNB | \$2,002 | 22.9 |
| | 10H-104 | NO _x | SCR | \$16,813 | 18.9 |
| | | NO _x | LNB | \$4,354 | 10.2 |
| | ECB1 | NO _x | SCR | \$12,774 | 164.2 |
| NO _x | | LNB | \$1,166 | 147.3 | |
| Marathon Anacortes | FCCU/COBs | NO _x | SCR | \$14,381 | 747.4 |
| | Crude Heater 2 | NO _x | SCR | \$16,086 | 125.7 |

³⁶ Ultra low-NO_x burners.

³⁷ Low-NO_x burner.

| | | | | | |
|---------------------------------|-----------------------|-----------------|-----------|-----------|-------|
| Refinery (Tesoro) | | NO _x | LNB | \$6,470 | 114.8 |
| | Vacuum Flasher Heater | NO _x | SCR | \$35,276 | 51.4 |
| | CCU Feed Heater | NO _x | SCR | \$332,721 | 4.7 |
| | | NO _x | LNB | \$172,807 | 3.4 |
| | DHT Feed Heater | NO _x | SCR | \$84,710 | 16.5 |
| | | NO _x | LNB | \$50,296 | 11.1 |
| | Boiler 1 | NO _x | SCR | \$10,060 | 178.9 |
| | | NO _x | LNB | \$8,682 | 113.9 |
| | Boiler 2 | NO _x | SCR | \$10,513 | 171.1 |
| | | NO _x | LNB | \$9,491 | 104.2 |
| | Boiler 3 | NO _x | SCR | \$79,240 | 15.8 |
| | NHT Feed Heater | NO _x | SCR | \$114,739 | 14.0 |
| | | NO _x | LNB | \$58,926 | 9.2 |
| | CR Feed Heater | NO _x | SCR | \$21,196 | 137.1 |
| NO _x | | LNB | \$14,458 | 104.7 | |
| NHT Column C-6600 Reboiler | NO _x | SCR | \$103,459 | 15.4 | |
| | NO _x | LNB | \$53,802 | 10.1 | |
| U.S. Oil Refinery (U.S. Oil) | B-4 | NO _x | SCR | \$21,847 | 22.5 |
| | | NO _x | LNB | \$6,131 | 11.0 |
| | B-5 | NO _x | SCR | \$44,584 | 9.4 |
| | | NO _x | LNB | \$16,282 | 3.8 |
| | H-11 | NO _x | SCR | \$18,387 | 28.4 |
| | | NO _x | LNB | \$11,018 | 9.0 |

In the January 28, 2022, SIP submission, Washington considered the four-factor analyses provided by the refineries and summarized in Table 5, of this document. According to the January 28, 2022, SIP submission, Washington did not explicitly determine that controls on oil refinery sources are necessary for reasonable progress, however, based on the State’s consideration of the four statutory factors, and considering visibility conditions for Class I areas impacted by Washington are projected to be below the URP in 2028, with “on the books” controls, we have determined that Washington has presumptively demonstrated reasonable progress for the second implementation period. Thus, no additional measures for oil refinery sources are necessary to make reasonable progress during the second planning period.

The EPA acknowledges that in Chapter 10 *Future Planning Process and Summary* of the January 2022 submission Ecology stated its intent to supplement the regional haze SIP with the findings of its State-initiated RACT process to determine if additional controls may be reasonable for this sector under the State’s RACT statute (Revised Code of Washington Section

70A.15.2230). This process is not yet complete. Nevertheless, for the purposes of Regional Haze, the January 28, 2022 submission demonstrates that Washington has met its obligations under 40 CFR 51.308(f)(2).

Chemical Pulp and Paper Sector

Chemical pulping processes use a combination of high temperature and alkaline (kraft) or acidic (sulfite) chemicals to break the chemical bonds of the lignin in the preparation of pulp, paper, and paperboard. On September 10, 2019, Ecology requested four-factor analyses from the seven chemical pulp mills operating in Washington State at that time.³⁸ The four-factor analyses submitted by the mills all determined that additional emission controls are not reasonable.³⁹ The results of these four-factor analyses are summarized in Table 6 of this document.

Table 6: Four-Factor Cost-Effectiveness for the Pulp and Paper Sector

| Facility | Unit | Pollutant | Control Technology | Cost per Ton Reduction |
|---------------------------------|----------------------|------------------|---------------------------|------------------------|
| Port Townsend Paper Corporation | Recovery Furnace | PM ₁₀ | WESP ⁴⁰ | \$14,461 |
| | | PM ₁₀ | ESP upgrade ⁴¹ | \$12,571 |
| | Lime Kiln | PM ₁₀ | WESP | \$13,367 |
| | Power Boiler #10 | NO _x | SNCR ⁴² | \$11,794 |
| | | NO _x | SCR | \$12,648 |
| | Package Boiler | NO _x | SNCR | \$53,398 |
| | | NO _x | SCR | \$72,954 |
| WestRock Longview Mill | Recovery Furnace #19 | PM ₁₀ | WESP | \$15,687 |
| | | PM ₁₀ | ESP upgrade | \$13,952 |
| | | SO ₂ | Wet scrubber | \$102,975 |
| | Recovery Furnace #22 | PM ₁₀ | WESP | \$23,247 |
| | | PM ₁₀ | ESP upgrade | \$20,527 |
| | | SO ₂ | Wet scrubber | \$47,596 |
| | Lime Kiln #4 | PM ₁₀ | WESP | \$16,960 |
| | Lime Kiln #5 | PM ₁₀ | WESP | \$40,845 |
| | | PM ₁₀ | ESP upgrade | \$24,807 |
| | Power Boiler #20 | NO _x | SCR | \$15,116 |
| Nippon | Recovery Furnace #10 | PM ₁₀ | WESP | \$25,383 |

³⁸ An eighth facility, Georgia-Pacific Consumer Operations LLC, was no longer operating as a Kraft mill in 2019 and would have to apply as a new source if it ever wanted to become a chemical pulp mill in the future, which would result in evaluation of emission controls requirements under the new source review permitting program.

³⁹ Appendix O of Washington's submission.

⁴⁰ Wet Electrostatic Precipitator.

⁴¹ Electrostatic Precipitator Upgrade.

⁴² Selective Non-Catalytic Reduction.

| | | | | |
|----------------------------|------------------------|------------------|--------------|-----------|
| Dynawave Packaging Company | | PM ₁₀ | ESP upgrade | \$21,726 |
| | | SO ₂ | Wet scrubber | \$207,035 |
| | Hogged Fuel Boiler #11 | PM ₁₀ | ESP upgrade | \$13,086 |
| | Power Boiler #6 | NO _x | SNCR | \$14,242 |
| | | NO _x | SCR | \$17,042 |
| | | NO _x | LNB | \$12,093 |
| | Power Boiler #7 | NO _x | SNCR | \$11,603 |
| | | NO _x | SCR | \$13,884 |
| | | NO _x | LNB | \$9,543 |
| | Power Boiler #9 | NO _x | SNCR | \$7,068 |
| | | NO _x | SCR | \$6,819 |
| | | NO _x | LNB | \$4,081 |
| | Boiler #11 | PM ₁₀ | WESP | \$15,391 |
| | | SO ₂ | Wet scrubber | \$11,884 |
| NO _x | | SNCR | \$5,672 | |
| NO _x | | SCR | \$6,198 | |
| PCA Wallula Mill | #2 Recovery Furnace | PM ₁₀ | WESP | \$276,008 |
| | | PM ₁₀ | ESP upgrade | \$75,751 |
| | #3 Recovery Furnace | PM ₁₀ | WESP | \$413,630 |
| | | PM ₁₀ | ESP upgrade | \$118,265 |
| | SO ₂ | Wet scrubber | \$27,910 | |
| | | | | |
| | Lime Kiln | PM ₁₀ | WESP | \$14,985 |
| | Hogged Fuel Boiler | PM ₁₀ | ESP upgrade | \$8,962 |
| | | NO _x | SNCR | \$8,566 |
| | | NO _x | SCR | \$8,662 |
| | #1 Power Boiler | NO _x | SNCR | \$14,003 |
| | | NO _x | SCR | \$13,586 |
| | | NO _x | LNB | \$8,732 |
| | #2 Power Boiler | NO _x | SNCR | \$11,754 |
| NO _x | | SCR | \$11,177 | |
| NO _x | | LNB | \$7,162 | |
| WestRock Tacoma Mill | Recovery Furnace #4 | PM ₁₀ | WESP | \$7,949 |
| | | PM ₁₀ | ESP upgrade | \$6,464 |
| | Lime Kiln #1 | PM ₁₀ | WESP | \$7,099 |
| | Lime Kiln #2 | PM ₁₀ | WESP | \$17,375 |
| | Power Boiler #6 | NO _x | SNCR | \$5,615 |
| | | NO _x | SCR | \$5,639 |
| | Power Boiler #7 | PM ₁₀ | WESP | \$15,543 |
| | | PM ₁₀ | ESP upgrade | \$12,050 |
| NO _x | | SNCR | \$7,030 | |
| NO _x | | SCR | \$7,395 | |
| GP Camas | #5 Power Boiler | NO _x | SNCR | \$13,636 |
| | | NO _x | SCR | \$12,413 |

Based on the State's consideration of the four statutory factors, Washington determined that additional controls are not necessary for reasonable progress on pulp and paper sources

during the second planning period.⁴³ Like the refinery sector, Ecology's January 28, 2022 submission discussed the potential for additional analysis or possible additional controls under the State RACT process. The EPA reviewed the four factor analyses in Washington's SIP submission and proposes to agree that no additional controls on the selected pulp and paper facilities are necessary for reasonable progress during the second planning period.

Cardinal Glass

Cardinal FG Company Winlock (Cardinal Glass) operates a flat glass manufacturing plant in Lewis County, Washington. Ecology originally selected this facility for review under the regional haze program because it had a Q/d value of 10.7 for Mount Rainier National Park, based on 2014 emissions inventory data. On February 11, 2021, Southwest Clean Air Agency (SWCAA), the local clean air agency with direct jurisdiction over Cardinal Glass, issued a final permit (Permit 20-3409) and associated Technical Support Document (TSD) establishing a minor source best available control technology (BACT) determination for the Glass Furnace/Annealing Lehr unit at Cardinal Glass for NO_x control.⁴⁴

This BACT determination included a selective catalytic reduction (SCR) system with ammonia injection capable of reducing NO_x emissions by a minimum of 80%, low sulfur fuel and spray dryer system using a sodium carbonate solution for control of SO₂, and an electrostatic precipitator for control of particulate matter. In Chapter 7.4 *Facility Specific Reasonableness Analyses*, Ecology considered the cost of compliance, time necessary for compliance, energy and non-air quality environmental impacts of compliance, and the remaining useful life at Cardinal Glass and determined that installing SCR on the Glass Furnace to achieve 80% NO_x reduction is necessary for reasonable progress. SWCAA subsequently issued and Washington submitted as part of its January 28, 2022 SIP submission a permit requiring Cardinal Glass to install and operate SCR on the Glass Furnace and to meet a NO_x emission limit of 101.8 lbs. NO_x/hr (24-hr

⁴³ Washington's January 28, 2022, submission, at page 179-180.

⁴⁴ See *207_2021_Cardinal_TSD.pdf* and *206b_Cardinal Glass permit_20-3409ADP.pdf* included in the docket for this action.

avg) during normal operations, using an emissions factor of 1.63 lbs. NO_x/ per ton of glass (30-day avg).

Washington's determination of the controls necessary for reasonable progress at Cardinal Glass is consistent with the regional haze rule. SCR is the top-level NO_x control for industrial point sources, obviating the need for Washington to consider less effective controls. Thus, Washington was reasonable in aligning its consideration of SCR with SWCAA's BACT determination in the agency's 2021 TSD.

By extension, Washington was reasonable in relying upon the expertise of the local permitting authority in determining the feasibility of SCR and the achievable emission rate when considering installation of SCR under the four statutory factors. We acknowledge comments submitted during the State public comment period that SCR has been demonstrated to achieve upwards of 90% NO_x control in certain applications.⁴⁵ However, installation of SCR on flat glass furnaces is relatively rare and still a relatively new application of the control technology in the glass industry. A search of the RACT/BACT/LAER Clearinghouse identified only a single flat glass plant in the U.S. equipped with SCR.⁴⁶ This plant had undergone permitting under the Prevention of Significant Deterioration (PSD) program in 2014, and the resulting BACT determination for NO_x was the installation of SCR at 80% control efficiency.⁴⁷

Ash Grove Cement

Ash Grove Cement Company (Ash Grove) operates a cement kiln in the Duwamish Industrial area of Seattle. The primary haze causing emissions at the plant come from the cement kiln and its associated clinker cooler baghouses. The existing particulate controls installed at the plant meet the regulatory requirements for dry material handling. The plant also complies with the Portland Cement Manufacturing National Emission Standards for Hazardous Air Pollutants (NESHAP). This standard regulates particulate matter (PM) as a surrogate for metals (40 CFR

⁴⁵ Appendix U of Washington's submission, at page 29.

⁴⁶ See *207b_20250304 RBLC search glass-NOx.pdf* included in the docket for this action.

⁴⁷ See *207c_SJVAPCD Guardian permit C-598-4-21.pdf* included in the docket for this action.

part 63 subpart LLL). This NESHAP was last updated in 2018 when the EPA determined that there were no developments in practices, processes, and control technologies that warrant revisions to the Maximum Achievable Control Technology (MACT) standards for this source category (83 FR 35122, July 25, 2018).

SO₂ emissions at the plant come from burning sulfur containing fuels. The alkaline cement clinker removes some SO₂ from the combustion gases, which the facility uses as a primary method of SO₂ control. While the plant is capable of burning coal, natural gas, and tire-derived fuels, the facility has not used coal in recent years. Ecology noted that the primary focus of the State's analysis was NO_x because current NO_x emissions at the facility are 20 times greater than SO₂ emissions.⁴⁸ Nevertheless, the State analyzed under the four statutory factors the feasibility of installing a wet scrubber at the facility for SO₂ control, determining that installation was not cost effective due to space constraints and the ensuing capital costs of facility rearrangement to accommodate a wet scrubber system.⁴⁹

With respect to NO_x emissions, Ash Grove entered into a consent decree with the EPA, Ecology, the Puget Sound Clean Air Agency (PSCAA), and other State agencies in 2013.⁵⁰ The consent decree required the Seattle facility to submit an optimization protocol for the Seattle Kiln. The purpose of the protocol was to optimize the operation of the Seattle Kiln to reduce NO_x emissions to the maximum extent practicable from that kiln. The EPA reviewed the optimization plan in consultation with PSCAA. On June 30, 2016, the facility submitted the NO_x demonstration period report and data related to optimization. On August 25, 2016, the EPA, in consultation with Ecology and PSCAA, reviewed the data and approved the limit of 5.1 pounds of NO_x per ton of clinker on a 30-day rolling average. This ultimately resulted in the construction of selective non-catalytic reduction (SNCR) at Ash Grove.

In Chapter 7.4 *Facility Specific Reasonableness Analyses* of Washington's January 28,

⁴⁸ Appendix W of Washington's submission, at page 34.

⁴⁹ Washington's submission, at page 167.

⁵⁰ Appendix E of Washington's submission.

2022, submission, Ecology evaluated the cost of compliance, time necessary for compliance, energy and non-air quality environmental impacts of compliance, and the remaining useful life in assessing potential additional controls. Ecology evaluated SCR for control of NO_x. Ecology concluded SCR was not reasonable due to space constraints requiring significant facility reconstruction and supporting equipment, which would increase costs to an unreasonable level.⁵¹ Thus, Washington determined that no additional controls are necessary at Ash Grove to meet reasonable progress in the second planning period.

TransAlta Centralia Generation (TransAlta)

During the first regional haze planning period, TransAlta was subject to BART (40 CFR 51.308(e)). In 2011, Ecology issued Order # 6426 to address BART requirements for NO_x which the EPA approved in 2012.⁵² Among other requirements, this 2011 order required the installation of an SNCR emission control device as BART for NO_x. In 2020, Ecology revised Order #6426 to establish a more stringent NO_x emissions limitation. The EPA approved the revised Order #6426 on May 7, 2021 (86 FR 24502). In considering this relatively recent update to Order #6426, Ecology determined that existing controls at TransAlta are adequate to meet reasonable progress. The EPA agrees with this determination. We note that emissions controls on TransAlta Centralia Generation address visibility impacts to Class I areas in Washington and Class I areas in other States.

Primary Aluminum Production

Ecology used Washington's 2014 point-source emissions data to calculate Q values for initial Q/d source screening. Therefore, Ecology selected both Alcoa Primary Metals Wenatchee Works (Q/d = 80.9) and Alcoa Primary Metals Intalco Works Ferndale (Q/d = 71.7) for consideration under the four statutory factors. Subsequently, Alcoa curtailed the Wenatchee facility in 2015 and the Ferndale facility in 2020, with announcements that Alcoa planned

⁵¹ Washington's submission, at page 138.

⁵² 77 FR 72742 (December 6, 2012). The EPA previously approved controls for SO₂ and PM as meeting BART (68 FR 34821, June 11, 2003).

permanent closure at both facilities. In response to these curtailments and the lack of current emissions upon which to base a four-factor analysis, Ecology negotiated and submitted for incorporation into the SIP agreed orders for both facilities. Subsequently, both facilities closed permanently with Ecology terminating the operating permits.⁵³ Any future sources at these sites would need to comply with the new source review permitting process, including a determination of BACT for major sources, and compliance with WAC 173-400-117 *Special Protection Requirements for Federal Class I Areas*, as applicable. Therefore, the EPA is not proposing to approve or incorporate by reference the obsolete orders now that the two facilities are permanently closed. Also, as discussed in section V.B of this document, the EPA is proposing to remove and/or revise regulatory text in 40 CFR 52.2470(d), 52.2498, 52.2500, and 52.2502 related to these permanently closed facilities. The permanent closure of these facilities will improve visibility in Class I areas in Washington as well as Class I areas in other States. Visibility impacts in other Class I areas were in part attributable to the SO₂ emissions from these sources.

Summary of the EPA's Evaluation of Washington's Long-Term Strategy

Based on the foregoing, Washington's long-term strategy contains enforceable emission limitations the State determined are necessary for reasonable progress based on consideration of the four statutory factors. EPA also notes that as shown in Table 7 of this document, all Washington Class I areas have 2028 visibility projections below the URP, and all out-of-State Class I areas impacted by Washington have 2028 projections below the URP when adjusted for international contribution.⁵⁴ These 2028 projections include anticipated emissions reductions from the revised Order #6426 at the TransAlta facility, already approved in the SIP, as well as the Cardinal Glass controls which Ecology determined were necessary for reasonable progress

⁵³ See *203_Alcoa Ferndale permit termination.pdf* and *204_AlcoaWenatchee-AirOperatingPermit-TerminationLetter.pdf*, included in the docket for this action.

⁵⁴ "Availability of Modeling Data and Associated Technical Support Document for the EPA's Updated 2028 Visibility Air Quality Modeling." EPA Office of Air Quality Planning and Standards, Research Triangle Park (September 19, 2019). See *201_updated_2028_regional_haze_modeling-td-2019.pdf* included in the docket for this action.

during the second implementation planning period. Washington did not include potential reductions that may ensue from the State's RACT process for refineries and pulp and paper facilities in the 2028 projections. Additional emissions reductions from this effort would further improve visibility in impacted Class I areas beyond what the State determined was necessary for reasonable progress in the second planning period. In sum, Washington selected a number of sources, evaluated emissions control measures, and considered the four statutory factors. In light of these facts, the EPA is proposing to determine that Washington met the requirements of 40 CFR 51.308(f)(2)(i).

3. Additional Long-Term Strategy Requirements

The consultation requirements of section 51.308(f)(2)(ii) provides that States must consult with other States that are reasonably anticipated to contribute to visibility impairment in a Class I area to develop coordinate emission management strategies containing the emission reductions measures that are necessary to make reasonable progress. Section 51.308(f)(2)(ii)(A) and (B) require States to consider the emission reduction measures identified by other States as necessary for reasonable progress and to include agreed upon measures in their SIPs, respectively. Section 51.308(f)(2)(ii)(C) speaks to what happens if States cannot agree on what measures are necessary to make reasonable progress.

The documentation requirement of 40 CFR 51.308(f)(2)(iii) provides that States may meet their obligations to document the technical bases on which they are relying to determine the emission reductions measures that are necessary to make reasonable progress through an RPO, as long as the process has been "approved by all State participants."

Section 51.308(f)(2)(iii) also requires that the emissions information considered to determine the measures that are necessary to make reasonable progress include information on emissions for the most recent year for which the State has submitted triennial emissions data to the EPA (or a more recent year), with a 12-month exemption period for newly submitted data.

Ecology participated in and provided documentation of the WRAP intra- and inter-

regional planning organization consultation processes. Ecology also had direct consultations with Idaho, Nevada, and Oregon to discuss potential impacts on Washington Class I areas and the potential impacts of Washington sources on Class I areas outside the State, as documented in Appendix R of the January 28, 2022, submission. Chapter 6.8 *Other Mandatory Class I Areas Impacted by Washington Anthropogenic Emissions* of the January 28, 2022, submission contains the list of out of State Class I areas potentially impacted by Washington.

In reviewing the contribution modeling of these out-of-State impacted Class I areas, Ecology found that the majority of anthropogenic emissions originating in Washington are from mobile sources (nitrates) and non-electric generating units (sulfates). With respect to sulfates, Ecology noted that 64% of the modeled SO₂ emissions (7,729 tons) were from the two permanently closed aluminum facilities in Washington (Alcoa Wenatchee and Alcoa Intalco) described in section IV.E.b of this document. In light of the PSAT analysis and the cessation of emissions from the aluminum facilities, Ecology determined that measures to address visibility impacts in Class I areas within Washington were sufficient to address significant impacts to Class I areas outside of Washington.

In making the determination above, Washington considered measures already approved into the SIP that will have emissions reductions during the 2018-2028 second planning period. These measures include Order 6426, which imposed BART requirements at the TransAlta Centralia facility. With respect to nitrate contribution, on-road mobile emissions accounted for 55% of anthropogenic NO_x emissions from Washington in 2014, with dramatic reductions projected during the planning period.⁵⁵

Based on this analysis, Ecology determined that the controls Washington considered as necessary for reasonable progress based on impacts to Washington Class I areas are sufficient to address impacts in out of State Class I areas. The Washington regional haze plan also details the State's coordination under 40 CFR 51.308(f)(2)(ii)(C) by participating in the WRAP's

⁵⁵ See Washington's January 28, 2022, submission, at page 69.

consultation process and direct consultation with Idaho, Nevada, and Oregon during which no disagreements were raised by other States with respect to Washington's planning efforts. In our review, Washington appropriately consulted with other States regarding emissions that are reasonably anticipated to contribute to visibility impairment in Class I areas. We are therefore proposing to determine that Washington met the requirements of section 51.308(f)(2)(ii).

As previously discussed in section II.B of this document, Washington chose to rely on WRAP technical information, modeling, and analysis to support development of its long-term strategy. The WRAP technical analyses on which Washington relied are listed in the State's submission and includes source contribution assessments and evaluations of emission reductions based on the anticipated control measures.⁵⁶ The anticipated emissions reductions for Cardinal Glass and TransAlta were incorporated into the 2028 projections modeled by the WRAP.⁵⁷ As discussed in more detail in section IV.F of this document, the 2028 projections modeled by the WRAP for "on the books" controls (Cardinal Glass and TransAlta) are below the 2028 URP glidepath for all Washington Class I areas. Section 51.308(f)(2)(iii) also requires that the emissions information considered to determine the measures that are necessary to make reasonable progress include information on emissions for the most recent year for which the State has submitted triennial emissions data to the EPA (National Emissions Inventory or NEI). Chapter 4 *Emissions Inventory* of Ecology's January 2022 submission contains comprehensive emissions inventory data based on the 2014 and 2017 NEI data. Additional emissions inventory data, through 2021, is available in the docket for this action.⁵⁸ Therefore, the EPA proposes to approve Washington's submission as meeting the requirements of 40 CFR 51.308(f)(2)(iii).

Five Additional Factors

In developing its long-term strategy, a State must also consider five additional factors set forth at 40 CFR 51.308(f)(2)(iv). The factors are: (1) emission reductions due to ongoing air

⁵⁶ January 28, 2022 Washington SIP submission, Chapter 5 Regional Haze Modeling.

⁵⁷ January 28, 2022 Washington SIP submission, at page 43.

⁵⁸ See *202_Washington RH Emission Trends.xlsx*.

pollution control programs, including measures to address reasonably attributable visibility impairment; (2) measures to mitigate the impacts of construction activities; (3) source retirement and replacement schedules; (4) smoke management practices for agricultural and forestry burning; and (5) anticipated net effect on visibility over the period of the long-term strategy. The following paragraphs address each of the five additional factors.

In Chapter 8 *Long-Term Strategy for Visibility Improvement*, of Washington's submission, Ecology addresses the five additional factors of 40 CFR 51.308(f)(2)(iv) in developing its long-term strategy. Pursuant to 40 CFR 51.308(f)(2)(iv)(A), Washington detailed the existing and ongoing State and Federal emission control programs that contribute to emission reductions through 2028. The Washington regional haze SIP highlights the programs for mobile sources being implemented in Washington State.⁵⁹ Many of these same measures, as well as other measures for the nonroad mobile source category, also mitigate the impacts of construction activities as required by 40 CFR 51.308(f)(2)(iv)(B).⁶⁰

Pursuant to 40 CFR 51.308(f)(2)(iv)(C), Washington addressed source retirements and replacement schedules in Chapter 8.6 *Controls on Visibility-Impairing Pollutants not in Previous RH SIP* of Washington's submission. The primary source retirement considered in developing the 2028 emission projections was the implementation of Order 6426 at the TransAlta facility, submitted as part of the regional haze plan for the first implementation period (77 FR 72742, December 6, 2012).

In considering smoke management as required in 40 CFR 51.308(f)(2)(iv)(D), Washington explained that it addresses smoke management through its SIP-approved smoke management plan.⁶¹ The open burning and agricultural burning rules under WAC 173-425 and WAC 173-430 regulate the types of open burning within the State and imposes requirements for

⁵⁹ January 28, 2022, Washington SIP submission, Chapter 8.2 Washington's approach to long-term strategy

⁶⁰ January 28, 2022, Washington SIP submission, Chapter 8.6 Controls on visibility-impairing pollutants not in previous RH SIP

⁶¹ 88 FR 54240, August 10, 2023.

mitigating the impacts on air quality. Washington also has several existing measures that help improve visibility at Class I areas including SIP-approved residential woodstove restrictions in WAC 173-433.⁶²

Washington considered the anticipated net effect of projected changes in emissions as required by 40 CFR 51.308(f)(2)(iv)(E) by discussing, in Chapter 5 *Regional Haze Modeling* of its January 28, 2022, submission, the photochemical modeling for the 2018-2028 period it conducted in collaboration with the WRAP. Washington has reasonably considered each of the five additional factors under 40 CFR 51.308(f)(2)(iv) in its January 28, 2022, submission.

Accordingly, EPA proposes to approve Washington's submission as meeting the requirements of 40 CFR 51.308(f)(2)(iv).

F. Reasonable Progress Goals

The regulation at 40 CFR 51.308(f)(3) contains the requirements pertaining to RPGs for each Class I area. The regulation at 40 CFR 51.308(f)(3)(i) requires a State in which a Class I area is located to establish RPGs—one each for the most impaired and clearest days--reflecting the visibility conditions that will be achieved at the end of the implementation period as a result of the emission limitations, compliance schedules and other measures required under paragraph (f)(2) to be in States' long-term strategies, as well as implementation of other CAA requirements. The long-term strategies as reflected by the RPGs must provide for an improvement in visibility on the most impaired days relative to the baseline period and ensure no degradation on the clearest days relative to the baseline period. Section 51.308(f)(3)(ii) applies in circumstances in which a Class I area's RPG for the most impaired days represents a slower rate of visibility improvement than the uniform rate of progress calculated under 40 CFR 51.308(f)(1)(vi). Under 40 CFR 51.308(f)(3)(ii)(A), if the State in which a mandatory Class I area is located establishes an RPG for the most impaired days that provides for a slower rate of visibility improvement than the URP, the State must demonstrate that there are no additional emission reduction measures for

⁶² 79 FR 26628, May 9, 2014.

anthropogenic sources or groups of sources in the State that would be reasonable to include in its long-term strategy. The regulation at 40 CFR 51.308(f)(3)(ii)(B) requires that if a State contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in another State, and the RPG for the most impaired days in that Class I area is above the URP, the upwind State must provide the same demonstration.

Chapter 3 *Current Visibility Conditions in Washington's Class I Areas* of Washington's January 28, 2022, submission summarizes baseline visibility conditions (i.e., visibility conditions during the baseline period) for the most impaired and clearest days, as well as information on natural visibility conditions and the calculated uniform rate of progress in 2018. Chapter 9 *Reasonable Progress Goals* shows the 2028 calculated uniform rate of progress and the anticipated 2028 projections modeled by the WRAP to represent reasonable progress goals for the most impaired days. Washington's submission also compares the modeled 2028 projections to the baseline for the clearest days. The 2028 projections are based on the WRAP's modeling of the significant anticipated reductions from Washington's mobile source regulations under the SIP approved WAC, Chapter 173-423 *Low Emission Vehicles*,⁶³ as well as anticipated reductions from stationary source controls for TransAlta and Cardinal Glass.⁶⁴

The Regional Haze Rule at 40 CFR 51.308(f)(3)(i) requires that a State in which a mandatory Class I area is located must establish reasonable progress goals that reflect the visibility conditions that are projected to be achieved by the end of the applicable implementation period as a result of those enforceable emissions limitations, compliance schedules, and other measures required under the long-term strategy for regional haze that can be fully implemented by the end of the applicable implementation period.

In developing the uniform rate of progress for comparison to the reasonable progress

⁶³ 86 FR 61705 (November 8, 2021). Following the EPA's SIP approval, Washington subsequently renamed Chapter 173-423 WAC to the "Clean Vehicles Program" following Washington's adoption of the zero-emission vehicle standards effective December 30, 2021 (WSR 21-24-059).

⁶⁴ Puget Sound Clean Air Agency's April 29, 2022, permit modification to install and operate SNCR at the Ash Grove facility occurred after the WRAP modeling, and these emission reductions would be in addition to the emissions reductions calculated by the WRAP.

goals, the 2017 Regional Haze Rule includes a provision that allows States to propose an adjustment to the glidepath to account for impacts from anthropogenic sources outside the U.S. if the adjustment has been developed through scientifically valid data and methods. The EPA’s visibility guidance states “to calculate the proposed adjustment(s), the State must add the estimated impact(s) to the natural visibility condition and compare the baseline visibility condition for the most impaired days to the resulting sum.” In 2019, the EPA conducted modeling to assist States in the development of Regional Haze SIPs for the second implementation period. In particular, the modeling provided the EPA’s first comprehensive estimate of international anthropogenic emissions contributions to visibility impairment at Class I areas.⁶⁵ Washington used similar adjusted glidepaths calculated by the WRAP to account for impacts from anthropogenic sources outside the United States, which used a more conservative 2064 endpoint adjustment relative to the 2019 modeling conducted by the EPA. The calculated 2028 projections representing “on the books” controls at the time of the WRAP modeling are all below the unadjusted 2028 uniform rate of progress glidepath for all Washington Class I areas, except the Pasayten Wilderness Area. In the case of the Pasayten Wilderness Area, significant wildfire events influenced the underlying 2014 to 2018 data used in the modeling, with corresponding impacts to future year projections.⁶⁶ However, once adjusted for anthropogenic sources outside the United States, the 2028 projections calculated for the Pasayten Wilderness Area also meet the 2028 URP as shown in Table 7 of this document. For the most impaired days, the 2028 projections represent an improvement relative to both current visibility conditions and baseline visibility conditions, as stipulated in 40 CFR 51.308(f)(3)(i). The 2028 projections modeled for the most impaired days are presented in Table 7 of this document, along with unadjusted and adjusted 2028 uniform rate of progress as calculated by the WRAP.⁶⁷

Table 7: Modeled 2028 Projections for the Most Impaired Days

⁶⁵ Availability of Modeling Data and Associated Technical Support Document for the EPA’s Updated 2028 Visibility Air Quality Modeling, September 2019.

⁶⁶ Washington’s January 28, 2022, submission at page 60.

⁶⁷ Chapter 9.8 *Summary* of Washington’s January 28, 2022, submission.

| Monitor ID | Class I Area | Baseline 2000-2004 (dv) | Current Conditions 2014-2018 (dv) | WRAP 2028 Projections (dv) | 2028 Unadjusted Glidepath 20% most Impaired Days (dv) | 2028 Adjusted URP Glidepath (dv)⁶⁸ |
|-------------------|---|--------------------------------|--|-----------------------------------|--|--|
| OLYM | Olympic National Park | 14.9 | 11.9 | 11.5 | 11.7 | 12.5 |
| NOCA | Glacier Peak Wilderness Area and North Cascades National Park | 12.6 | 10.0 | 9.8 | 10.3 | 10.8 |
| SNPA | Alpine Lakes Wilderness Area | 15.4 | 12.7 | 12.0 | 12.1 | 12.5 |
| MORA | Mount Rainier National Park | 16.5 | 12.7 | 12.0 | 13.0 | 13.9 |
| WHPA | Goat Rocks Wilderness Area and Mount Adams Wilderness Area | 10.5 | 8.0 | 7.6 | 8.7 | 9.5 |
| PASA | Pasayten Wilderness Area | 10.4 | 9.5 | 9.2 | 8.6 | 9.4 |

For the clearest days, the 2028 projections represent an improvement relative to both current visibility conditions and baseline visibility conditions, required under 40 CFR 51.308(f)(3)(i), as shown in Table 8 of this document.

Table 8: 2028 WRAP Projections for the Clearest Days

| Monitor ID | Class I Area | Baseline 2000-2004 (dv) | Current Conditions 2014-2018 (dv) | WRAP 2028 Projections (dv) |
|-------------------|---------------------|--------------------------------|--|-----------------------------------|
| | | | | |

⁶⁸ Adjusted by the WRAP to account for international anthropogenic contribution, as discussed further in section IV.F of this document.

| | | | | |
|------|---|-----|-----|------|
| OLYM | Olympic National Park | 6.0 | 3.6 | 3.37 |
| NOCA | Glacier Peak Wilderness Area and North Cascades National Park | 3.4 | 2.5 | 2.38 |
| SNPA | Alpine Lakes Wilderness Area | 5.5 | 3.3 | 3.0 |
| MORA | Mount Rainier National Park | 5.5 | 3.9 | 3.68 |
| WHPA | Goat Rocks Wilderness Area and Mount Adams Wilderness Area | 1.7 | 1.0 | 0.91 |
| PASA | Pasayten Wilderness Area | 2.7 | 1.6 | 1.46 |

Chapter 8.2 *Washington’s Approach to Long-Term Strategy* of Washington’s January 28, 2022, submission, describes the regional haze precursor reductions anticipated from SIP-approved regulatory updates to Chapter 173-423 WAC *Low Emission Vehicles*.⁶⁹ The emissions reductions are anticipated to reduce NO_x emissions from a 2014 baseline of 130,500 tons per year to 34,366 tons per year in 2028.⁷⁰ These reductions are the primary factor in driving the modeled 2028 projections well below the 2028 uniform rate of progress for most Class I areas in the State, along with the State’s implementation of Order 6426 for BART at the TransAlta facility, submitted as part of the regional haze plan for the first implementation period. Consistent with 40 CFR 51.308(f)(3)(i), these enforceable emission limitations are adopted into Washington’s SIP. Accordingly, EPA proposes to approve Washington’s submission as meeting the requirements of 40 CFR 51.308(f)(3)(i).

Because 2028 projections based on measures “on the books” are already below the glidepath for Washington Class I areas, the demonstration requirement under 40 CFR 51.308(f)(3)(ii)(A) is not triggered. Under 40 CFR 51.308(f)(3)(ii)(B), a State that contains sources that are reasonably anticipated to contribute to visibility impairment in a Class I area in

⁶⁹ 86 FR 61705 (November 8, 2021), renamed to the *Clean Vehicles Program* with subsequent State updates effective December 30, 2021, and January 19, 2023.

⁷⁰ January 28, 2022, SIP submission at page 68.

another State for which a demonstration by the other State is required under 40 CFR 51.308(f)(3)(ii)(A) must demonstrate that there are no additional emission reduction measures that would be reasonable to include in its long-term strategy.

Several Class I areas in Central and Southern Oregon had 2028 reasonable progress goals at or slightly above the unadjusted glidepath. For policy reasons, the State of Oregon chose not to adjust the glidepath to account for impacts from anthropogenic sources outside the United States. However, Oregon determined based on an SO₂ analysis of these Class I areas that, “contribution seems to be significantly from international anthropogenic sources and is projected to decrease by 77% as new standards for international marine shipping fuels take effect in 2020.”⁷¹ Using Oregon’s Q/d screening methodology to identify sources that are reasonably anticipated to contribute to visibility impairment, only the Mount Hood and Eagle Cap Wilderness are potentially affected by Washington sources.⁷² Both of these areas have reasonable progress goals well below the unadjusted 2028 uniform rate of progress.⁷³ Therefore, Washington does not have an obligation under 40 CFR 51.308(f)(3)(ii)(B). We also note that Washington conducted State-to-State consultation with Idaho, Oregon, Nevada, and the WRAP States generally, and no disagreements under 40 CFR 51.308(f)(2)(ii)(C) were identified by any other State.

G. Monitoring Strategy and Other Implementation Plan Requirements

Section 51.308(f)(6) specifies that each comprehensive revision of a State’s regional haze SIP must contain or provide for certain elements, including monitoring strategies, emissions inventories, and any reporting, recordkeeping and other measures needed to assess and report on visibility. A main requirement of this section is for States with Class I areas to submit monitoring strategies for measuring, characterizing, and reporting on visibility impairment. Compliance with this requirement may be met through participation in the Interagency Monitoring of Protected Visual Environments (IMPROVE) network.

⁷¹ April 29, 2022 Oregon SIP submission, at page 17.

⁷² April 29, 2022 Oregon SIP submission, Chapter 3.3 Impact of facilities in other States on Oregon Class 1 areas.

⁷³ April 29, 2022 Oregon SIP submission, Chapter 5.1 Reasonable progress goals for Class I Areas

Chapter 10.1 *Future Planning Process* of Washington’s submission describes Washington’s participation and continued commitment to support the IMPROVE monitoring network to measure, characterize and report aerosol monitoring data for long-term reasonable progress tracking. Ecology “will collaborate with the EPA, FLMs, other States, Tribes, and the IMPROVE committee to ensure adequate and representative data collection and reporting by the IMPROVE program.”⁷⁴

Section 51.308(f)(6)(i) requires SIPs to provide for the establishment of any additional monitoring sites or equipment needed to assess whether reasonable progress goals to address regional haze for all mandatory Class I Federal areas within the State are being achieved. Regional haze data for Washington Class I areas are shown in Table 1 of this document. The monitoring stations are primarily operated and maintained by the U.S. Forest Service, except for the OLYM1, NOCA1, and MORA1 IMPROVE monitoring stations operated and maintained by the National Park Service. As noted in Washington’s monitoring strategy chapter, Washington would rely on the IMPROVE Steering Committee to advise if conditions changed such that additional monitors were necessary.

Section 51.308(f)(6)(ii) requires SIPs to provide for procedures by which monitoring data and other information are used in determining the contribution of emissions from within the State to regional haze visibility impairment at mandatory Class I Federal areas both within and outside the State. Washington relied on the WRAP source apportionment modeling and the weighted emission potential (WEP) analysis to help discern the degree to which different sectors affect visibility in each Class I area. The source apportionment and WEP analysis are based on data from WRAP’s Technical Support System website⁷⁵ for the Round 2 regional haze analysis.⁷⁶ Section 51.308(f)(6)(iii) does not apply to Washington, as it has Class I areas.

Section 51.308(f)(6)(iv) requires the SIP to provide for the reporting of all visibility

⁷⁴ January 28, 2022, SIP submission at page 236.

⁷⁵ <http://views.cira.colostate.edu/tssv2/>

⁷⁶ January 28, 2022, Washington SIP submission, Chapter 5. *Regional Haze Modeling*

monitoring data to the Administrator at least annually for each Class I area in the State. As noted above, the IMPROVE monitoring stations in Washington are operated and maintained by the U.S Forest Service and the National Park Service. The monitoring strategy for Washington relies upon the continued availability of the IMPROVE network.

Section 51.308(f)(6)(v) requires SIPs to provide for a Statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment, including emissions for the most recent year for which data are available and estimates of future projected emissions. It also requires a commitment to update the inventory periodically. Washington provides for emissions inventories and estimates for future projected emissions by participating in the WRAP regional planning organization (RPO) and complying with EPA's Air Emissions Reporting Rule (AERR). In 40 CFR part 51, subpart A, the AERR requires States to submit updated emissions inventories for criteria pollutants to EPA's Emissions Inventory System (EIS) every three years. The emission inventory data is used to develop the NEI, which provides for, among other things, a triennial Statewide inventory of pollutants that are reasonably anticipated to cause or contribute to visibility impairment.

Chapter 4. *Emissions Inventory* of Washington's submission includes tables of NEI data.⁷⁷ The source categories of the emissions inventories are point sources, nonpoint sources, non-road mobile sources, on-road mobile sources, and fire events. Washington included NEI emissions inventories based on 2014 data, with updates to include 2017 data when it became available. Washington observed that Statewide 2014 NO_x emissions are primarily from mobile sources, at about 55% of the inventory, with another 25% of the inventory coming from nonroad mobile sources. The SO₂ inventory largely consists of point source emissions at 51% of the 2014 baseline inventory. However, this contribution will decline significantly with Alcoa's determination to permanently close both aluminum smelters in the State. SO₂ emissions from commercial marine vehicles are also anticipated to decline significantly from 35% of the

⁷⁷ January 28, 2022, submission, at pages 68-72.

baseline inventory to 3% of the projected 2028 inventory due to low-sulfur fuels and port electrification efforts.⁷⁸ For particulate matter, depending on the year, wildfires generate the majority of PM_{2.5} emissions in Washington. The primary anthropogenic sources are non-point, including fugitive dust (agriculture, construction, and roads) and residential wood combustion.

Section 51.308(f)(6)(v) also requires States to include estimates of future projected emissions and include a commitment to update the inventory periodically. Washington relied on the WRAP 2028 emissions projections for WRAP States. WRAP completed two 2028 projected emissions modeling cases—a 2028 base case and a 2028 control case that considers implementation of the controls, including point source reductions at TransAlta and Cardinal Glass.⁷⁹

The EPA proposes to find that Washington has met the requirements of 40 CFR 51.308(f)(6) as described in the preceding paragraphs of this document, including through its continued participation in the IMPROVE network and the WRAP and its on-going compliance with the AERR, and that no further elements are necessary at this time for Washington to assess and report on visibility pursuant to 40 CFR 51.308(f)(6)(vi).

H. Requirements for Periodic Reports Describing Progress Towards the Reasonable Progress Goals

The regulation at 40 CFR 51.308(f)(5) requires that periodic comprehensive revisions of States' regional haze plans also address the progress report requirements of 40 CFR 51.308(g)(1) through (5). The purpose of these requirements is to evaluate progress towards the applicable RPGs for each Class I area within the State and each Class I area outside the State that may be affected by emissions from within that State. 40 CFR 51.308(g)(1) and (2) apply to all States and require a description of the status of implementation of all measures included in a State's first implementation period regional haze plan and a summary of the emission reductions achieved

⁷⁸ January 28, 2022, submission, at page 68.

⁷⁹ January 28, 2022 Washington SIP submission, page 165.

through implementation of those measures. The regulation at 40 CFR 51.308(g)(3) applies only to States with Class I areas within their borders and requires such States to assess current visibility conditions, changes in visibility relative to baseline (2000-2004) visibility conditions, and changes in visibility conditions relative to the period addressed in the first implementation period progress report. The regulation at 40 CFR 51.308(g)(4) applies to all States and requires an analysis tracking changes in emissions of pollutants contributing to visibility impairment from all sources and sectors since the period addressed by the first implementation period progress report. This provision further specifies the year or years through which the analysis must extend depending on the type of source and the platform through which its emission information is reported. Finally, 40 CFR 51.308(g)(5), which also applies to all States, requires an assessment of any significant changes in anthropogenic emissions within or outside the State have occurred since the period addressed by the first implementation period progress report, including whether such changes were anticipated and whether they have limited or impeded expected progress towards reducing emissions and improving visibility.

Washington's submission outlines the progress report requirements under 40 CFR 51.308(g) and identifies the chapters where the relevant information is addressed.⁸⁰ Washington's 2017 5-year progress report describes the Best Available Retrofit Technology controls already imposed and implemented at BP Cherry Point Refinery, Intalco (Ferndale), Tesoro, Alcoa Wenatchee Works, Lafarge Cement, Weyerhaeuser Corporation (Longview), TransAlta, and Port Townsend Paper.⁸¹ None of these controls changed since the 2017 progress report except the installation of a neural network and a more stringent NO_x emissions limit at the TransAlta facility.⁸²

Chapter 4.3 *Emissions Inventory Comparison of Washington's January 28, 2022*, submission shows the most recent 2017 NEI data for sources subject to control in the first

⁸⁰ January 28, 2022, submission, Chapter 1.3 Progress Report Requirements.

⁸¹ 83 FR 36752 (July 31, 2018)

⁸² January 28, 2022, submission, pages 172 and 173.

implementation period and describes the emissions decline anticipated from implementation of BART controls at the TransAlta facility. The EPA proposes to find that Washington has met the requirements of 40 CFR 51.308(g)(1) and (2) because the submission, in conjunction with the 2017 progress report, describes the measures included in the long-term strategy from the first implementation period, as well as the status of their implementation and the emission reductions achieved through such implementation.

Washington's submission included summaries of the visibility conditions and the trend of the 5-year averages through 2018 at Class I areas in the State.⁸³ As shown in Tables 2 and 3 of this document, the submission included the 5-year baseline (2000-2004) visibility conditions for the clearest and most impaired days. The submission also included the current 5-year status (2014-2018) for the clearest and most impaired days. The submission also illustrated in Chapter 3.1 *Overview of Visibility Conditions in Washington* the visibility metrics levels at each Class I area, including the 5-year rolling average for the clearest and most impaired days. The EPA therefore proposes to find that Washington has satisfied the requirements of 40 CFR 51.308(g)(3).

Pursuant to 40 CFR 51.308(g)(4), Washington included a detailed analysis of NO_x, SO₂, PM₁₀, PM_{2.5}, VOCs, and NH₃ emissions for 2014 and 2017 in the January 28, 2022, submission.⁸⁴ Additionally, the RH Emission Trends spreadsheet, included in the docket for this action, provides a summary of emissions of NO_x, SO₂, PM₁₀, PM_{2.5}, VOCs, and NH₃ from all sources and activities, including from point, nonpoint, non-road mobile, and on-road mobile sources, for the time period from 2002 to 2021.⁸⁵

The reductions achieved by Washington's emission control measures are seen in the emissions inventory. Based on Washington's submission, and the supplemental information in the Washington RH Emission Trends spreadsheet, NO_x emissions have continuously declined in

⁸³ January 28, 2022, submission, Chapter 3. *Current Visibility Conditions in Washington's Class I Areas*.

⁸⁴ January 28, 2022, submission, at pages 68-72.

⁸⁵ <https://www.epa.gov/air-emissions-inventories/air-pollutant-emissions-trends-data>

Washington from 2002 through 2021, especially in the point, nonroad and onroad mobile sectors. NO_x emissions are expected to continue to decrease as fleet turnover occurs and the older more polluting vehicles and equipment are replaced by newer, cleaner ones. During that period, onroad sources contributed 65% of the emissions, followed by nonroad sources contributing 21%, and NEI point and nonpoint sources contributing 13%.

Emissions of SO₂ have shown a significant decline in Washington over the period 2002 to 2021, particularly in the point, and onroad and nonroad mobile sectors. NEI point and nonpoint emissions have declined 83%. Onroad SO₂ mobile source emissions have declined 95% and nonroad sources have declined 97%. These reductions are primarily from electric utility and industrial fuel combustion, as well as low sulfur fuel regulations.

PM₁₀ emissions declined 25% for the period from 2002 to 2021, with onroad mobile source emissions declining 52% and nonroad sources declining 59%. Overall PM_{2.5} emissions declined with the removal of wildfire emissions, with onroad mobile source emissions declining 74% and nonroad sources declining 59% due to Federal engine standards.

Overall VOC emissions declined, with onroad mobile source emissions declining 75% and nonroad sources declining 62% due to Federal engine standards. Ammonia (NH₃) emissions increased from 2002 to 2021; however, this might be due to changes in the emissions inventory reporting with the “miscellaneous” category experiencing significant growth.

The EPA is proposing to find that Washington has satisfied the requirements of 40 CFR 51.308(g)(4) by providing emissions information for NO_x, SO₂, PM₁₀, PM_{2.5}, VOCs, and NH₃ broken down by type of source. The emissions data in the submission⁸⁶ and the supplemental trend information⁸⁷ support the assessment that anthropogenic haze-causing pollutant emissions in Washington have decreased during the reporting period and that changes in emissions have not limited or impeded progress in reducing pollutant emissions and improving visibility. The

⁸⁶ January 28, 2022, submission, Chapter 4. *Emissions Inventory*.

⁸⁷ Washington RH Emission Trends.xlsx

EPA is proposing to find that Washington has met the requirements of 40 CFR 51.308(g)(5).

I. Requirements for State and Federal Land Manager Coordination

Section 169A(d) of the Clean Air Act requires States to consult with FLMs before holding the public hearing on a proposed regional haze SIP, and to include a summary of the FLMs' conclusions and recommendations in the notice to the public. In addition, 40 CFR 51.308(i)(2)'s FLM consultation provision requires a State to provide FLMs with an opportunity for consultation that is early enough in the State's policy analyses of its emission reduction obligation so that information and recommendations provided by the FLMs' can meaningfully inform the State's decisions on its long-term strategy. If the consultation has taken place at least 120 days before a public hearing or public comment period, the opportunity for consultation will be deemed early enough. Regardless, the opportunity for consultation must be provided at least sixty days before a public hearing or public comment period at the State level. Section 51.308(i)(2) also provides two substantive topics on which FLMs must be provided an opportunity to discuss with States: assessment of visibility impairment in any Class I area and recommendations on the development and implementation of strategies to address visibility impairment. Section 51.308(i)(3) requires States, in developing their implementation plans, to include a description of how they addressed FLMs' comments.

Chapter 1.4 *Regional Haze State Implementation Plan Development* and Appendix A of Ecology's January 28, 2022, submission discusses Washington's consultation and coordination with Federal Land Managers. The Federal Land Managers and Ecology are partners in the WRAP, and as partners, engaged early in inter-State coordination calls and WRAP technical support system development calls. Ecology provided a draft of the regional haze plan to the U.S. Forest Service and National Park Service on September 22, 2020. Additionally, Ecology met or held conference calls with the National Park Service on June 9, 2017, August 8, 2017, March 14, 2018, July 16, 2020, and October 6, 2020. The U.S. Forest Service and the U.S. Fish and Wildlife Service participated in many of these meetings and consultations, as well. Ecology

received comments from the National Parks service in several communications between November 19, 2020 and June 29, 2021. Ecology summarized the dates and topics of the National Parks Service comments received in Appendix A of the January 28, 2022, submission along with Ecology's responses.

Washington took the administrative steps to provide the Federal Land Managers an opportunity to review and provide feedback on the State's draft plan for the January 2022 submission. Therefore, we are proposing to find that the submission meets the consultation requirements of 40 CFR 51.308(i).

V. Proposed Action

A. Proposed Approval of the Regional Haze Plan for the Second Implementation Period

For the reasons set forth in this rulemaking, EPA is proposing to approve Washington's January 28, 2022, SIP submittal as satisfying the regional haze requirements for the second planning period contained in 40 CFR 51.308(f).

B. Proposed Revision to Incorporation by Reference and Federal Implementation Plan

On June 11, 2014 (79 FR 33438), as part of the regional haze SIP for the first planning period, the EPA approved Administrative Order No. 7837, Revision 1, for the Alcoa Intalco Works facility located in Ferndale, Washington. In the same action the EPA promulgated Federal implementation plan (FIP) requirements under 40 CFR 52.2500 *Best available retrofit technology requirements for the Intalco Aluminum Corporation (Intalco Works) primary aluminum plant—Better than BART Alternative* and 40 CFR 52.2502 *Best available retrofit technology requirements for the Alcoa Inc.—Wenatchee Works primary aluminum smelter*. Section IV of this document explains that the two Alcoa aluminum smelters in Washington both permanently closed with termination of the operating permits. Therefore, we are proposing to remove from the incorporation by reference in 40 CFR 52.2470(d), Administrative Order No. 7837, Revision 1, for the Alcoa Intalco Works in Ferndale. We are also proposing to remove the FIP requirements for both closed facilities in 40 CFR 52.2500 and 52.2502, along with revising

cross references to these provisions in 40 CFR 52.2498(c).

VI. Incorporation by Reference

In this document, the EPA is proposing to include regulatory text in an EPA final rule that includes incorporation by reference. In accordance with requirements of 1 CFR 51.5, the EPA is proposing to both incorporate by reference the source-specific provisions described in section IV. of this document and to remove obsolete source-specific provisions described in section V. of this document. The EPA has made, and will continue to make, these materials generally available through <https://www.regulations.gov> and at the EPA Region 10 Office (please contact the person identified in the **FOR FURTHER INFORMATION CONTACT** section of this document for more information).

VII. Statutory and Executive Order Reviews

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Clean Air Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, the EPA's role is to approve State choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this action merely approves State law as meeting Federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, this action:

- Is not a significant regulatory action subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);
- Is not subject to Executive Order 14192 (90 FR 9065, February 6, 2025) because SIP actions are exempt from review under Executive Order 12866;
- Does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- Is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- Does not contain any unfunded mandate or significantly or uniquely affect small

governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104-4);

- Does not have federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- Is not subject to Executive Order 13045 (62 FR 19885, April 23, 1997) because it approves a State program;
- Is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001); and
- Is not subject to requirements of section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because application of those requirements would be inconsistent with the Clean Air Act.

In addition, this action is not approved to apply on any Indian reservation land or in any other area where the EPA or an Indian Tribe has demonstrated that a Tribe has jurisdiction. In those areas of Indian country, the rule does not have Tribal implications and will not impose substantial direct costs on Tribal Governments or preempt Tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000). Nevertheless, we provided an opportunity for consultation to all Tribes in Washington in letters dated June 27, 2022, included in the docket for this action.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Ozone, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Volatile organic compounds.

(Authority: 42 U.S.C. 7401 *et seq.*)

Dated: July 11, 2025.

Emma Pokon,

Regional Administrator, Region 10.

[FR Doc. 2025-13957 Filed: 7/23/2025 8:45 am; Publication Date: 7/24/2025]