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Oregon Regional Haze State Implementation Plan

For the period 2018 - 2028

Submitted for adoption: Oregon Environmental Quality Commission

Air Quality Planning

700 NE Multnomah St.
Suite 600
Portland, OR 97232
Phone: 503-229-5696
800-452-4011
Fax: 503-229-6124

Contact: Michael Orman or
Karen F. Williams

www.oregon.gov/DEQ

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the quality of Oregon's air,



This report prepared by:

Oregon Department of Environmental Quality
700 NE Multnomah Street
Portland, OR 97232
1-800-452-4011
www.oregon.gov/deq

Contact:
Karen F. Williams
503-863-1664

Alternative formats: DEQ can provide documents in an alternate format or in a language other than English upon request. Call DEQ at 800-452-4011 or email deqinfo@deq.state.or.us.

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Principal Authors: D Pei Wu, DEQ Air Quality Division
Karen F. Williams, DEQ Air Quality Division
Joe Westersund, DEQ Air Quality Division
Michael Orman, DEQ Air Quality Division

DEQ Contributors: Phil Allen, Air Quality Division
Brandy Albertson, Air Quality Division
Kristen Martin, Air Quality Division
Clara Funk, Air Quality Division
Jeffrey Stocum, Air Quality Division
Yuki Puram, Western Region
Patty Jacobs, Northwest Region
Walt West, Eastern Region
Frank DeVito (retired), Eastern Region
David Graiver, Northwest Region
Michael Eisele, Eastern Region
Ken Hanna, Eastern Region
Doug Welch, Eastern Region
Janice Tacconi, Western Region
Byron Peterson, Western Region
Claudia Davis, Manager, Eastern Region
Matt Hoffman, Manager Northwest Region
Mark Bailey, Manager, Eastern Region
Eric Feeley, Air Quality Division
Gerik Kransky, Air Quality Division
Margaret Miller, Air Quality Division
Rachel Sakata, Air Quality Division
Morgan Schafer, Air Quality Division

LRAPA Contributors: Kelly Conway
Merlyn Hough
Max Heuffle
Steve Dietrich

1. Introduction

EPA adopted the Regional Haze Rule in 1999 to improve and protect visibility in 156 national parks and wilderness areas across the country. This rule requires States to adopt regional haze plans and provide updates to these plans every 10 years. The Oregon Department of Environmental Quality adopted the first regional haze plan in 2009 and submitted a 5-year update in 2017. This document is the Regional Haze State Implementation Plan for the period from 2018 to 2028 and is submitted with the intention of fulfilling Oregon's requirements for the 1999 Regional Haze Rule, amended in 2017, under the Clean Air Act. DEQ refers to the 2017 Regional Haze rule throughout the rest of this document.

1.1. History of Regional Haze Planning in Oregon

The State of Oregon Environmental Quality Commission adopted the first Regional Haze plan in 2009. The plan included a comprehensive review of visibility conditions in each of Oregon's 12 Class 1 areas, with a projection of statewide emissions and visibility conditions in 2018, a summary of DEQ's BART, Best Available Retrofit Technology, evaluation of the PGE Boardman coal-fired power plant and other sources potentially subject to BART, and a reasonable progress demonstration for the best (clearest) and worst (haziest) visibility days, related to the 2018 milestone benchmark. In 2010, DEQ updated the Regional Haze Plan to incorporate rules that included new emission controls for PGE Boardman.

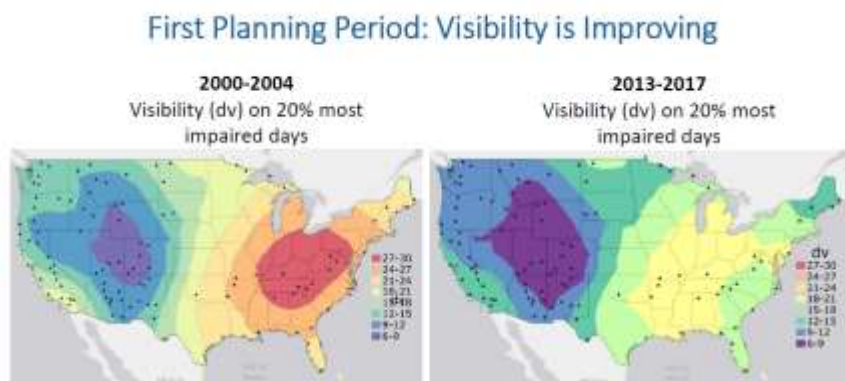
Under the federal 2017 Regional Haze Rule, states are required to develop five-year progress reports showing the latest visibility trends analysis and the current status for meeting reasonable progress milestones since the last submission of the plan. The 2017 progress report summarized changes in monitoring and emissions data since the plan was last adopted in 2010 and evaluated the adequacy of the current State Implementation Plan to meet the progress goals. The 2017 report concluded that visibility was continuing to show positive improvement, the plan was meeting the reasonable progress milestones, and no substantive revision was needed (**Error! Reference source not found.**).

This plan covers the period from 2018-2028 and includes the following chapters and sections. The following outline is based on Appendix D of the August 2019 *Guidance on Regional Haze State Implementation Plans for the Second Implementation Period*.¹

Oregon DEQ commits to submitting the progress report by January 31, 2025 (cf. 40 CFR 51.308(f)).

¹ US EPA. 2019. *Guidance on Regional Haze State Implementation Plans for the Second Implementation Period*. https://www.epa.gov/sites/production/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf (Accessed January 13, 2021)

Figure 1-1: Visibility across the U.S. on the 20% most impaired days during the baseline period (2000-2004) to the most recent 5-year period (2013-2017). Source: EPA, September 2019.



The National Park Service estimates that as of mid-2014, emission controls established under the first planning period led to approximately 500,000 tons/year of SO₂ and 300,000 tons/year of NO_x reductions. EPA estimates that visibility has improved significantly with the average visual range increased by 20 – 30 miles in Class I areas.

1.2. Sections of this report

This document contains the following sections as required by the 2017 Regional Haze Rule for this period.

Table 1-1: Chapters and sections of this document, and the relevant 2017 Regional Haze Rule Provisions for each.

Step or Task	Relevant 2017 Regional Haze Rule Provision(s)
1) Introduction	40 CFR 51.308(f)
a) Short background on previous plans, including commitment to submit the 5-year progress report by January 31, 2025	
b) This table	
c) Description of Class 1 areas and monitoring network	
d) Monitoring	
i) Submit a monitoring strategy for measuring, characterizing, and reporting of regional haze visibility impairment that is representative of all Class 1 areas within the state.	40 CFR 51.308(f)(6)
ii) Provide for the establishment of any additional monitoring sites or equipment needed to assess whether reasonable progress goals to address regional haze for all Class 1 areas within the state are being achieved.	40 CFR 51.308(f)(6)(i)
iii) 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 Class 1 areas both within and outside the state.	40 CFR 51.308(f)(6)(ii)
iv) Provide for reporting of all visibility monitoring data to the Administrator at least annually for each Class 1 area in the state. To the extent possible, the state should report visibility monitoring data electronically.	40 CFR 51.308(f)(6)(iv)

Step or Task	Relevant 2017 Regional Haze Rule Provision(s)
v) Provide other elements, including reporting, recordkeeping, and other measures, necessary to assess and report on visibility.	CFR 51.308(f)(6)(vi)
2) An analysis of visibility monitoring data in Oregon's 12 Class 1 Areas and 5-year Progress Report a) Most Impaired Days i) Baseline and current visibility conditions for most impaired days for each Oregon Class 1 area ii) Natural visibility conditions for most impaired days for each Oregon Class 1 area iii) The difference between the baseline period visibility conditions and the current visibility conditions iv) The difference between the current visibility conditions and natural visibility conditions b) Clearest Days i) Baseline and current visibility conditions for clearest days for each Oregon Class 1 area ii) Natural visibility conditions for clearest days for each Oregon Class 1 area iii) The difference between the baseline period visibility conditions and the current visibility conditions iv) The difference between the current visibility conditions and natural visibility conditions	40 CFR 51.308(f)(1) 40 CFR 51.308(f)(5) 40 CFR 51.308(g)(1) through (5)
c) Emissions Inventory i) Provide for a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class 1 area. The inventory must include emissions for the most recent year for which data are available, and estimates of future projected emissions. The state must also include a commitment to update the inventory periodically.	40 CFR 51.308(f)(6)(v)
3) Stationary sources emissions analysis and controls	40 CFR 51.308(f)(2)(i)
a) An analysis of Class 1 Areas in other states that may be affected by emissions sources in Oregon	40 CFR 51.308(f)(2)
b) An analysis of sources in other states that may be reasonably anticipated to affect Class 1 Areas in Oregon	40 CFR 51.308(f)(2)(ii)
c) Select sources for analysis of control measures	40 CFR 51.308(f)(2)(i)
d) Identify emission control measures to be considered for these sources	40 CFR 51.308(f)(2)(i)
e) Characterize the four factors for these sources and measures	40 CFR 51.308(f)(2)(i)
f) Document the criteria used to determine the sources or groups of sources that have been evaluated and how the four factors were taken into consideration in selecting the measures for inclusion in the long-term strategy (LTS).	40 CFR 51.308(f)(2)(i)
g) Document the technical basis, including information on the four factors and modeling, monitoring, and emissions information on which the state is relying to determine the emission reductions from anthropogenic sources in the state that are necessary for achieving reasonable progress towards natural visibility conditions in each Class 1 area it affects.	40 CFR 51.308(f)(2)(iii)
h) Identify the emissions information on which the state's strategies are based and explain how this information meets the Regional Haze Rule's requirements regarding the year(s) represented in	40 CFR 51.308(f)(2)(iii)

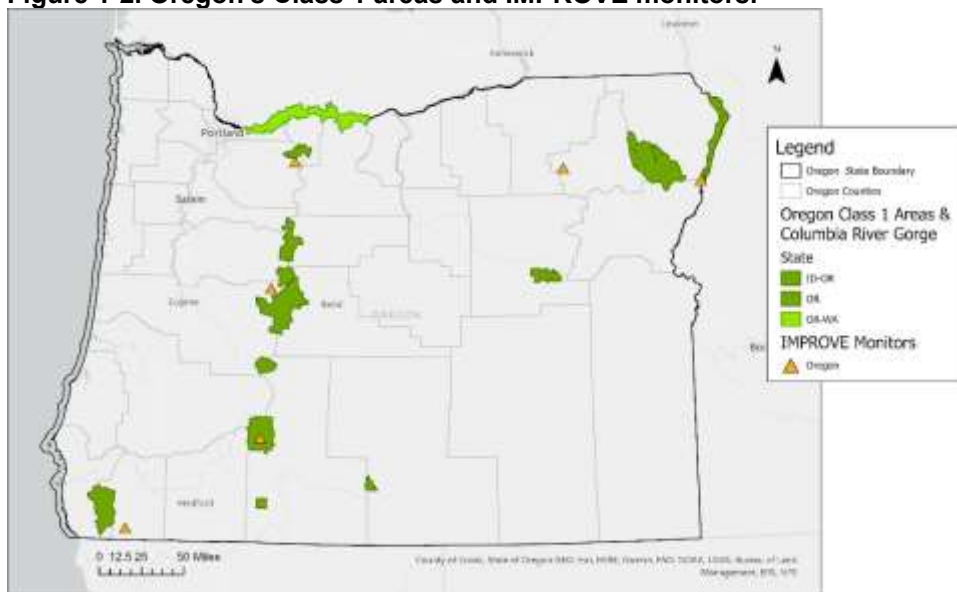
Step or Task	Relevant 2017 Regional Haze Rule Provision(s)
the information, i.e., the tie to the submission of information to the NEI.	
i) Consider source retirement and replacement schedules.	40 CFR 51.308(f)(2)(iv)(C)
j) Set emission limits, averaging periods and monitoring and record keeping requirements.,	40 CFR 51.308(f)(2) – opening text
k) Set compliance deadlines.	40 CFR 51.308(f)(2) – opening text
4) Long-term Strategy	40 CFR 51.308(f)(2)(i)
a) Consider emission reductions due to ongoing air pollution control programs, including measures to address RAVI.	40 CFR 51.308(f)(2)(iv)(A)
b) Consider measures to mitigate the impacts of construction activities.	40 CFR 51.308(f)(2)(iv)(B)
c) Consider basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs. After consideration of basic smoke management practices, states have the option to include the practices into their SIP submittal, but it is not required.	40 CFR 51.308(f)(2)(iv)(D)
d) An analysis of significant future trends in emissions	40 CFR 51.308(f)(2)(iv)(A)
e) Consider the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS.	40 CFR 51.308(f)(2)(iv)(E)
f) Select measures for inclusion in the LTS.	40 CFR 51.308(f)(2)
5) Uniform Rate of Progress Glidepath Check	
a) Determine the URP using the baseline period visibility condition value and the natural visibility conditions value for the 20 percent most anthropogenically impaired days. The URP may be adjusted for impacts from anthropogenic sources outside the U.S. and from certain types of prescribed fires, subject to EPA approval as part of EPA's action on the SIP submission.	40 CFR 51.308(f)(1)(vi)
b) Compare 2028 RPG for the 20 percent most anthropogenically impaired days to the 2028 point on the URP glidepath. If the 2028 point is above the glidepath demonstrate that there are no additional emission reduction measures for anthropogenic sources or groups of sources in the state that may reasonably be anticipated to contribute to visibility impairment in the Class 1 area that would be reasonable to include in the LTS.	40 CFR 51.308(f)(3)(ii)
c) If the 2028 RPG for the 20 percent most anthropogenically impaired days is above the 2028 point on the URP glidepath, calculate the number of years it would take to reach natural conditions at the rate of progress provided by the SIP for the implementation period.	40 CFR 51.308(f)(3)(ii)(A)
d) Compare the 2028 RPG for the 20 percent clearest days to the 2000-2004 conditions for the same days, and strengthen the LTS if there is degradation. Also, compare the 2028 RPG for the 20 percent most anthropogenically impaired days to the 2000-2004 conditions for the same days, and strengthen the LTS if the RPG does not show an improvement.	40 CFR 51.308(f)(3)(i)
e) Project the 2028 RPGs for the 20 percent most anthropogenically impaired and 20 percent clearest days.	40 CFR 51.308(f)(3)
6) Consultations with states through multi-state organizations and directly	40 CFR 51.308(f)(2)(ii)
a) Consult with those states that have emissions that are reasonably anticipated to contribute to visibility impairment in the	40 CFR 51.308(f)(2)(ii)

Step or Task	Relevant 2017 Regional Haze Rule Provision(s)
in-state Class 1 areas to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress. This consultation could include the exchange of relevant portions of analyses of control measures and associated technical information.	
b) Include in the SIP all measures agreed to during state to-state consultations or a regional planning process, or measures that will provide equivalent visibility improvement.	40 CFR 51.308(f)(2)(ii)(A)
c) Consider the emission reduction measures identified by other states for their sources as being necessary to make reasonable progress in the Class 1 area.	40 CFR 51.308(f)(2)(ii)(B)
d) Include in the SIP a description of the actions taken to resolve any disagreements with other states regarding measures that are necessary to make reasonable progress at jointly affected Class 1 areas.	40 FR 51.308(f)(2)(ii)(C)
e) Consultations with Federal Land Managers for all Oregon Class 1 areas and affected out-of-state Class 1 areas on an ongoing basis	40 CFR 51.308(i)(4)
f) Offer an in-person consultation meeting with responsible FLMs at a point early enough in the state's policy analyses of its LTS emission reduction obligation so that information and recommendations provided by the Federal Land Manager can meaningfully inform the state's decisions on the LTS.	40 CFR 51.308(i)(2)
g) Include in the SIP submission a description of how the state addressed any comments provided by the FLMs.	40 CFR 51.308(i)(3)

1.3. Oregon Class 1 Areas

Oregon has 12 designated Class 1 areas, including Crater Lake National Park and 11 wilderness areas. These areas, the focus of Oregon Regional Haze Plan, are shown in **Error! Reference source not found.**

Figure 1-2. Oregon's Class 1 areas and IMPROVE monitors.



1.3.1. Mt. Hood Wilderness Area

The Mt Hood Wilderness Area consists of 47,160 acres on the slopes of Mt Hood in the northern Oregon Cascades. Wilderness elevations range from 3,426 m (11,237 ft.) on the summit of Mt Hood down to almost 600 m (2,000 ft.) at the western boundary. It is almost adjacent to the Portland Oregon metropolitan area; the westernmost boundary is about 20 km east of the Portland Oregon suburb of Sandy and 40 km from the heavily populated metropolitan center, elevation 100 m (300 ft.). Visitation to the Mt. Hood Wilderness Area is approximately 50,000 visitors a year, primarily between May and October. Most visitors come from the Portland/Vancouver area that has a population of approximately 2 million.

1.3.2. Mt. Jefferson Wilderness Area

The Mt. Jefferson Wilderness Area consists of 107,008 acres on the crest of the Cascade Range in central Oregon. Its southern boundary is a few km north of the northern boundary of the Mt Washington Wilderness and it extends 40 to 50 km north along the Cascade crest. West of the crest, it consists primarily of the eastern side of the North Santiam River headwaters basin that connects to the Willamette Valley source region near Salem Oregon, 100 km (60 mi) to the west. East of the crest it occupies the western slopes of the Metolius River drainage that connects eastern slopes with Deschutes River in eastern Oregon. The highest Wilderness elevation is 3,200 m (10,497 ft.) at the summit of Mt Jefferson in the northern part of the Wilderness. Lowest Wilderness elevations are near 1,000 m (3,000 ft.) along the western boundary in the North Santiam headwaters basin and along the eastern boundary in the Metolius River basin.

1.3.3. Mt. Washington Wilderness Area

The Mt. Washington Wilderness Area consists of 52,516 acres on the crest of the Cascade Range in central Oregon. Like the Three Sisters Wilderness that it borders to the south, it includes headwaters tributaries of the McKenzie River that flow west into the Willamette Valley near Eugene and connect the Wilderness with that source region. On the east side eastern slopes of the Cascades descend to the Deschutes River near Bend. The highest Wilderness elevation is 2,376 m (7,794 ft.) at the summit of Mt Washington. Lowest elevations are near 900 m (3,000 ft.) in the upper headwaters basin of the McKenzie River.

1.3.4. Three Sisters Wilderness Area

The Three Sisters Wilderness Area consists of 285,202 acres abreast the crest of the Cascade Range in central Oregon. It includes headwaters tributaries of the McKenzie River that flow west into the Willamette Valley near Eugene and connect the Wilderness with that source region. On the east side streams flow east to the Deschutes River near Bend. The highest crest elevation is 3,158 m (10,358 ft.) at the summit of the South Sister. Lowest elevations are near 600 m (2,000 ft.) where the South Fork of the McKenzie River exits the Wilderness on the west boundary. This is about 500 m (1,600 ft.) above the Willamette Valley at Eugene 70 km (40 mi) west.

1.3.5. Diamond Peak Wilderness Area

The 52,337 acre Diamond Peak Wilderness Area straddles the Cascade Range 50 km (30 mi) north of Crater Lake National Park. The highest crest elevation in the Wilderness is 2,666 m (8,744 ft.) at Diamond Peak, which is also the highest summit in this region of the Cascade Range. Lowest elevations are near 1,450 m (5,000 ft.) where streams exit the Wilderness on the west side. On the east side the Wilderness is bordered by mountain lakes with elevations from 1,459 m to 1,693 m (4,786 to 5,553 ft.). The area includes headwaters of the Middle Fork of the

Willamette River that flows to the Willamette Valley near Eugene, elevation 100 m (300 ft.) and 90 km (60 mi) distant. Wilderness elevations are thus some 1,400 m (4,600 ft.) above the Willamette Valley floor. East of the Cascade crest, streams flow to the Deschutes River in eastern Oregon.

1.3.6. Crater Lake National Park

Crater Lake National Park is the only national park in Oregon. The park was established on May 22, 1902, and now consists of 183,315 acres. It is located in southwestern Oregon on the crest of the Cascade Mountain range, 100 miles east of the Pacific Ocean. Rim elevations range from about 900 to 1,873 ft. above lake level. The highest park elevation is 8,929 ft. at the peak of Mt. Scott, in the eastern Park area. The National Park includes headwaters of the Rogue River that flows southwest towards the Medford/Grants Pass area, and Sun Creek/Wood River that flows southeast to the Klamath Falls area.

1.3.7. Mountain Lakes Wilderness Area

The Mountain Lakes Wilderness Area is a relatively small Class 1 Area in southern Oregon of 23,071 acres, 50 km (30 mi) south of Crater Lake National Park. It consists of several peaks with a highest elevation of 2,502 m (8,208 ft.) at the crest of Aspen Butte. Lowest elevations are near 1,500 m (5,000 ft.). Primary drainages are Varney Creek and Moss Creek that flow into the Upper Klamath Lake, 3 km northeast of the Wilderness boundary.

1.3.8. Gearhart Mountain Wilderness Area

The Gearhart Mountain Wilderness Area consists of 22,809 acres on the flanks of Gearhart Mountain in south central Oregon, primarily the northern slope and eastern drainages of Gearhart Mountain, the dominant topographic feature. Elevations range from near 5,900 ft. at the North Fork of the Sprague River in the northern Wilderness to 8,364 ft. at the summit of Gearhart Mountain.

1.3.9. Kalmiopsis Wilderness Area

The Kalmiopsis Wilderness Area consists of 179,700 acres and is managed by the U.S. Forest Service. The Kalmiopsis Wilderness is located in the Klamath Mountains of southwestern Oregon, part of the coastal temperate rainforest zone that lies between the Pacific Ocean and the east side of the coast ranges in northwestern U.S. and Canada. Its western boundary is 20 to 25 km (12 to 15 mi) from the coast. Its easternmost extent is about 40 km (25 mi) from the coast. Elevations range from about 300 m (900 ft.) on the western boundary where the Chetco River exits the Wilderness towards the Pacific Ocean 25 to 30 miles further west, to 1,554 m (5,098 ft.) on Pearsoll Peak on the eastern Wilderness boundary. Terrain is steep canyons and long broad ridges. The Wilderness is mostly west of the general crest of the coast range, thus exposed to precipitation caused by lifting of eastward moving maritime air, primarily during the winter. Precipitation ranges from 150 to 350 cm (60 to 140 in) annually, depending on elevation.

1.3.10. Strawberry Mountain Wilderness Area

The Strawberry Mountain Wilderness Area consists of 69,350 acres in eastern Oregon, just east of John Day. The Wilderness comprises most of the Strawberry Mountain Range. Terrain is rugged, with elevations ranging from 1,220 m (4,000 ft.) to 2,755 m (9,038 ft.) at the summit of Strawberry Mountain. It borders the upper John Day River valley to the north.

1.3.11. Eagle Cap Wilderness Area

The Eagle Cap Wilderness Area consists of 360,275 acres in northeastern Oregon. Terrain is characterized by bare peaks and ridges and U-shaped glaciated valleys. Elevations range from 5,000 ft. in lower valleys to near 10,000 ft. at the highest mountain summits. The Lostine and Minam Rivers flow north from the center of the Wilderness towards Pendleton and the Columbia, 130 km northwest.

1.3.12. Hells Canyon Wilderness Area

The Hells Canyon Wilderness Area consists of 214,944 acres, and is located on the Oregon-Idaho border. The Snake River divides the wilderness, with 131,133 acres in Oregon, and 83,811 acres are in Idaho. It is managed by the Bureau of Land Management and the Forest Service. The Snake River canyon is the deepest river gorge in North America. The higher terrain is located on the Oregon side. Popular Oregon-side viewpoints are McGraw, Hat Point, and Somers Point.

1.4. Columbia River Gorge National Scenic Area

The 2017 Regional Haze Rule is applicable to federal Class 1 areas only (40 CFR 51.308(d)). While the Columbia River Gorge National Scenic Area is not a Class 1 area, it was designated a National Scenic Area by Congress in 1986. The area consists of 292,500 acres, running from the mouth of the Sandy River to the mouth of the Deschutes and spanning southern Washington and northern Oregon. The National Scenic Area Act of 1986 requires the protection and enhancement of the scenic, natural, cultural, and recreational resources of the Gorge, while at the same time supporting the local economy.

The Columbia River Gorge Commission has responsibility to administer the National Scenic Area Act. As part of a 2000 amendment to the National Scenic Area Management Plan, the CRGC recognized that a Class 1 designation is not appropriate for the Gorge. However, the CRGC did recognize that air quality degradation can jeopardize those resources, and that in order to protect air quality in the Gorge, the CRGC would have the state air quality agencies conduct a study, develop an air quality strategy for the Scenic Area, and provide annual reports regarding implementation of the strategy.

After a comprehensive study and extensive public process, the Oregon DEQ and Southwest Clean Air Agency completed the Columbia River Gorge Air Study and Strategy in 2011.² The Strategy proposed that Gorge visibility be monitored, evaluated and improved through the framework of the Regional Haze program. The goal for visibility in the Gorge is continued improvement, the same approach used in the federal Regional Haze Program. Additionally, the Gorge Visibility Study attributed most visibility impairment to regional, rather than local, sources of haze-forming pollutants. The rationale is that visibility improvement in the Gorge can be expected to mirror the visibility improvement in Class 1 areas such as Mt. Hood and Mt. Adams that will be achieved by emission reduction strategies adopted through the regional haze plans. The Gorge Commission approved the Strategy in 2011, and the agencies provide annual reports to the Commission as they implement the Strategy.

² <https://www.swcleanair.gov/docs/ColumbiaRiverGorge/ColumbiaGorgeAirStrategyDocument-Final.pdf>

1.5. Monitoring

1.5.1 Oregon IMPROVE Monitoring Network

In the mid-1980's, the Interagency Monitoring of PROtected Visual Environments (IMPROVE) program was established to measure visibility impairment in mandatory Class 1 Federal areas throughout the United States. The monitoring sites are operated and maintained through a formal cooperative relationship between the EPA, National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management, and U.S. Forest Service. In 1991, several additional organizations joined the effort: State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials, Western States Air Resources Council, Mid-Atlantic Regional Air Management Association, and Northeast States for Coordinated Air Use Management.

The objectives of the IMPROVE program include establishing the current visibility and aerosol conditions in mandatory Class 1 federal areas; identifying the chemical species and emission sources responsible for existing human-made visibility impairment; documenting long-term trends for assessing progress towards the national visibility goals; and support the requirements of the 2017 Regional Haze Rule by providing regional haze monitoring representing all visibility-protected federal Class 1 areas where practical.

In Oregon there are six IMPROVE monitors that are listed under the site name in Table 1-2. Three are located in the Oregon Cascades, two in Eastern Oregon, and one in the Coast Range. Since there are 12 Class 1 areas in Oregon, some monitors serve multiple Class 1 areas.

Table 1-2. Oregon IMPROVE Monitoring Network and Class 1 areas covered by each.

Site Code	Class 1 Area	Sponsor	Elevation MSL	Start Date
MOHO1	Mt. Hood Wilderness	USFS	1531 m (5022 ft.)	3/7/2000
THS11	Mt. Jefferson Wilderness Mt. Washington Wilderness Three Sisters Wilderness	USFS	885 m (2903 ft.)	7/24/1993
CRLA1	Crater Lake National Park; Diamond Peak Wilderness Mountain Lakes Wilderness Gearhart Mountain Wilderness	NPS	1996 m (6548 ft.)	3/2/1988
KALM1	Kalmiopsis Wilderness	USFS	80 m (262 ft.)	3/7/2000
STAR1	Strawberry Mountain Wilderness Eagle Cap Wilderness	USFS	1259 m (4130 ft.)	3/7/2000
HECA1	Hells Canyon Wilderness Area	USFS	655 m (2148 ft.)	8/1/2000

1.5.2 Monitoring strategy

Oregon will continue to participate in the IMPROVE monitoring network to measure, characterize and report aerosol monitoring data for long-term reasonable progress tracking. DEQ commits a portion of Oregon's PM2.5 EPA funding to support the IMPROVE network. DEQ deems the IMPROVE network representative of conditions in all of Oregon's Class 1 areas and would rely on the IMPROVE Steering Committee to advise states if conditions changed such that additional monitors were necessary. DEQ also deploys two summer visibility

nephelometers at Government Camp (Mt Hood) and Crater Lake July through September. DEQ and the nearby communities refer to the monitors for local information, particularly related to wildfire smoke.

Oregon's continued reliance on the IMPROVE network assumes the network's maintenance by Federal Land Management agencies and other Western Regional Air Partnership³ members (states, tribes, and EPA). Oregon expects that operations and maintenance will continue to include data collection, analysis, quality assurance, and reporting. Oregon expects that FLMs will continue to make IMPROVE data available to the public through WRAP-supported web platforms such as the Technical Support System⁴ and Federal Land Manager Environmental Database.⁵

2 Visibility Impairment in Oregon Class 1 areas and 5-year Progress Report

The federal 2017 Regional Haze Rule requires states to address visibility protection for regional haze in Class 1 Areas in each state. This chapter of the 2018 - 2028 Regional Haze Plan addresses the requirements for states to present calculations of baseline, current visibility, natural visibility conditions, progress to date, and a comparison to a uniform rate of progress [40 CFR 51.308(f)(1)]. Regional Haze is defined in EPA's August 2019 Guidance on Regional Haze as:

“Regional haze” is defined at 40 CFR 51.301 as “visibility impairment that is caused by the emission of air pollutants from numerous anthropogenic sources located over a wide geographic area. Such sources include, but are not limited to, major and minor stationary sources, mobile sources, and area sources.” This visibility impairment is a result of anthropogenic emissions of particles and gases in the atmosphere that scatter and absorb (i.e., extinguish) light, thus acting to reduce overall visibility.⁶

In Oregon there are 12 mandatory federal Class 1 areas, including Crater Lake National Park and 11 wilderness areas. DEQ includes the Columbia River Gorge National Scenic Area in Oregon's Regional Haze analyses (see **Error! Reference source not found.**). The U.S. EPA requires states to adopt regional haze plans that would improve Class 1 area visibility on the most impaired days – the worst 20 percent with some proportion of wildfire-impacted days removed; and ensure no degradation on the clearest days over the next 40 years. The goal of

³ The Western Regional Air Partnership (WRAP) is a voluntary partnership of states, tribes, federal land managers, local air agencies and the US EPA whose purpose is to understand current and evolving regional air quality issues in the West. <https://www.wrapair2.org/>

⁴ <https://views.cira.colostate.edu/tssv2/>

⁵ <https://views.cira.colostate.edu/fed/>

⁶ U.S. EPA. 2019. *Guidance on Regional Haze State Implementation Plans for the Second Implementation Period*, page 2. https://www.epa.gov/sites/production/files/2019-08/documents/8-20-2019_-_regional_haze_guidance_final_guidance.pdf (Accessed 1/20/21)

the 2017 Regional Haze Rule is to return visibility in Class 1 areas to natural background levels by the year 2064.

EPA provides guidance⁷ for states to follow to establish baseline visibility and track visibility from baseline to 2018. The EPA guidance also outlines an adjustment process to distinguish the relative contributions from U.S. anthropogenic and natural sources. Because natural visibility can only be estimated, visibility impairment is calculated in units of daily light extinction, rather than directly measured. The first step in the haze analysis is to divide the daily light extinction into natural and anthropogenic fractions during days when visibility is poor, termed Most Impaired Days. A statistical method is used to estimate the fractions of natural and anthropogenic extinction for monitoring data. The EPA guidance cited below describes the current recommended methodology for determining the MID and the relative fractions of extinction (natural and anthropogenic) occurring on those days.

2.1 Five-year Progress Report

The 2017 Regional Haze Rule requires periodic reports that describe a state's progress toward reasonable progress goals. A state must submit progress reports every five years after submitting its first Regional Haze Plan [40 CFR Section 51.308(g)]. DEQ submitted the most recent 5-year Progress Report and Update to EPA in July 2017, which presented data analysis for the period 2010 – 2014 and 2018 Reasonable Progress Goals.

As this Round 2 Regional Haze Plan is a comprehensive revision to satisfy the requirements of 40 CFR Section 51.308(f), DEQ submits this Section 2.1 as the required 5-year progress report [40 CFR 51.308(f)(5)]. The Regional Haze Rule allows the plan revision to serve also as a progress report, as long as the plan revision addresses the requirements of 40 CFR 51.308 (g)(1) through (5). The period that the progress report should address for these elements shall be the period since the most recent progress report, in this case 2014 – 2018. Three of the required elements of a 5-year progress report are covered in other sections of this Round 2 Regional haze plan. The remaining two required elements of a 5-year progress report are described in the following sections.

Table 2-1 shows baseline monitored conditions (2000-04), 2018 Reasonable Progress Goals, current visibility (2014 – 2018), and estimated natural conditions in 2064 for the 20% worst and best days for Oregon's 12 Class I areas.

⁷ Technical Guidance on Tracking Visibility Progress (2018); Memo and Technical Addendum on Ambient Data Usage (2020).

Table 2-1: Five-year progress report comparison of current visibility with 2018 Reasonable Progress Goals.

IMPROVE Monitor	Oregon Class I Area	20% Worst Days				20% Best Days		
		2000-04 Baseline (dv)	2018 Reasonable Progress Goal (dv)	Current Visibility (2014 – 2018) (dv)	2064 Natural Conditions (dv)	2000-04 Baseline (dv)	2018 Reasonable Progress Goal (dv)	Current Visibility (2014 – 2018) (dv)
MOHO	Mt. Hood Wilderness Area	14.9	13.8	9.27	8.4	2.2	2.0	1.39
THSI	Mt. Jefferson, Mt. Washington, and Three Sisters Wilderness Areas	15.3	14.3	11.46	8.8	3.0	2.9	2.61
CRLA	Crater Lake National Park; Diamond Peak, Mountain Lakes, and Gearhart Mountain Wilderness Areas	13.7	13.4	7.98	7.6	1.7	1.5	1.05
KALM	Kalmiopsis Wilderness Area	15.5	15.1	11.97	9.4	6.3	6.1	5.9
STAR	Strawberry Mountain and Eagle Cap Wilderness Areas	18.6	17.5	11.19	8.9	4.5	4.1	2.79
HECA	Hells Canyon Wilderness Area	18.6	16.6	12.33	8.3	5.5	4.7	4.00

2.1.1 Status of implementation of control measures included in the original regional haze SIP

The Regional Haze Rule requires 5-year progress reports to contain, “a description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.” [40 CFR.308 (g)(1)].

In Oregon’s first Regional Haze Plan, submitted in 2010, DEQ determined that five sources were subject to Best Achievable Retrofit Technology. They were: the Portland General Electric plant in Boardman PGE Beaver Power Plant, Georgia Pacific Wauna Mill, International Paper in Springfield, and the Amalgamated Sugar Plant in Nyssa. DEQ amended the PGE Boardman Title V permit to include conditions requiring BART control installation and to permanently cease burning coal in the main boiler by December 31, 2020. The remaining four facilities opted for one or more federally enforceable permit limits to reduce visibility impacts below 0.5 dv (the evaluative method DEQ employed for Round 1 regional haze analysis).

In the 2017 5-year Progress Report, DEQ reported that in 2011, PGE Boardman installed low NO_x burners with a modified over-fire air system and in 2014, BART SO₂ controls, consisting of a dry sorbent injection (DSI) system. PGE Boardman was meeting BART NO_x and SO₂ emission limitations. A second BART SO₂ emission limit was required in 2018 and the coal-fired facility closed permanently in December 2020.

The PGE Beaver facility requested daily fuel oil limits for facility turbines based upon the daily quantity and the sulfur content of the fuel oil combusted, as well as a requirement that all future shipments of oil contain no more than 0.0015% sulfur (i.e. Ultra Low Sulfur Diesel). An equation was developed to determine a daily fuel oil quantity limit that is tied to the sulfur content of the fuel, so as not to exceed the visibility impact threshold level of 0.5 dv. The PGE Beaver facility still operates under these permit conditions. DEQ’s Round 2 regional haze screening and four factor analysis processes included this facility.

The Amalgamated Sugar facility was shut down at the time of the 2017 5-year Progress Report. DEQ’s BART rules in 340-223-0040(3) (now repealed) had specified that this facility must either modify its permit by adopting a federally enforceable permit limit or be subject to BART before resuming operation. The facility closed permanently in September 2016 and have no active permit.

DEQ renewed the Georgia Pacific Wauna mill Title V permit in June 2009, which incorporated FEPL requirements, revised the permit in December 2010 to reflect elimination of a non-condensable gas incinerator and a major BART-eligible emission unit, and revised the permit in March 2019 to incorporate a new wood chipping operation. The facility still operates under these permit conditions. In the 2017 5-year Progress Report, DEQ reported that the use of fuel oil in the power boiler had been permanently discontinued and the maximum pulp production rate was limited to 1,350 tons per day after completion of the non-condensable gas project. The facility still operates under these constraints. DEQ’s Round 2 regional haze screening and four factor analysis processes included this facility.

The Lane Regional Air Protection Agency modified the International Paper Springfield Title V permit in April 2009 to incorporate FEPL requirements. Requirements included replacing the steam and mud drums on No. 4 Recovery by the end of 2010 and not burning No.6 Fuel Oil in

the Power Boiler when the No.3 Recovery Furnace was operating. The permittee would demonstrate compliance through a formula, emission factors and continuous emissions monitoring data. The facility still operates under these conditions and reports compliance with the BART daily average limit in each monthly air report submitted to LRAPA. DEQ’s Round 2 regional haze screening and four factor analysis processes included this facility.

In the 2017 5-year Progress Report also provided the implementation status of Oregon Smoke Management Plan. In 2013, DEQ evaluated the contribution of prescribed fire to Oregon Class I areas, showing impacts in at least two areas – Kalmiopsis Wilderness and Crater Lake National Park. The Oregon Department of Forestry modified the Smoke Management Plan to incorporate practices that DEQ recommended from that study, including:

- visibility evaluations of October – November prescribed burns within 50 miles of either area;
- assessing potential for a direct plume impact at ground level in Class I areas;
- employing additional emission reduction techniques in the event of an impact;
- rapid mop-up of residual smoke when necessary to prevent intrusion; and
- post-burn reporting and evaluation of smoke intrusion.

These changes were submitted to EPA in June 2014 as a revision to the State Implementation Plan but not approved into the SIP until May 2021 along with 2019 revisions to the Smoke Management Plan. The 2019 revisions were the most comprehensive in some time, including new air quality criteria for smoke intrusions and smoke incidents.

2.1.2 Emission Reductions Achieved by SIP Measures

The Regional Haze Rule requires 5-year progress reports to contain, “a summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1).” [40 CFR.308 (g)(2)]. The 2017 5-year Progress Report reported emission reductions measured or modeled for each of the Round 1 sources that reduced emissions through BART or FEPL. For the purposes of the 5-year progress report within this Round 2 Regional Haze Plan, DEQ reports emission reductions by citing actual emissions as reported to the 2017 National Emissions Inventory for the Round 1 facilities still actively operating in 2017. In Table 2-2, DEQ summarizes actual 2017 emissions for the four facilities regulated through Round 1 Regional Haze and still operating in 2017.

Table 2-2: Actual 2017 emissions for sources reducing emissions in Round 1 Regional Haze

Round 1 Source	NO_x (tons/year)	PM10 (tons/year)	SO₂ (tons/year)
PGE Boardman	1,768.12	387.75	3,297.87
PGE Beaver	359.22	62.19	9.85
Georgia Pacific Wauna	1,037.66	775.80	539.82
International Paper	724.02	181.39	67.64

DEQ reports on emission reductions attributable to the Smoke Management Plan with the same metrics reported in the 2017 5-year Progress Report. The first metric is acres of treated public and private forestland where land managers used alternatives to burning or employed emission reduction techniques instead of using prescribed fire. Alternatives to burning include biomass removal, scattering material, chipping, crushing, firewood removal, non-treatment, other techniques to reduce fire hazard and/or creating planting spots. Emission reduction techniques include piling clean piles instead of broadcast or underburning, use of rapid ignition techniques, covering piles to keep dry, other techniques to reduce particulate and gaseous emissions. Table

2-3 shows the number of alternatively treated acres in 2018, from the 2018 Oregon Smoke Management Annual Report⁸.

The second metric is the number of acres burned in 2014 through 2018 and the number of intrusions into one or more of Smoke Sensitive Receptor Areas. Table 2-4 displays this information. The average number of intrusions per year is 12.2 and represents a small percentage of overall prescribed burning activity.

Table 2-3: Acres treated with prescribed burning and alternatives in 2018.

Treatment	Total Statewide Acres
Prescribed Burning	185,702
Alternatives to Burning	45
Emission Reduction Techniques	136,478

Table 2-4: Prescribed Forestry Burns and Intrusions 2014 - 2018

Year	Total No. Units	No. Units Burned	Acres Burned	Number Intrusions	Percentage of Units with Intrusion
2014	4,095	3,443	208,593	13	0.38%
2015	3,601	3,076	179,613	9	0.29%
2016	3,484	2,868	181,800	11	0.38%
2017	3,597	2,849	159,624	10	0.35%
2018	4,307	3,382	185,702	18	0.53%

In Table 2-5, DEQ provides cross references to sections in this Round 2 Plan that address the three elements required under 40 CFR.308 (g)(3), (g)(4), and (g)(5).

Table 2-5: Five-year progress report required elements cross references to Regional Haze Plan sections.

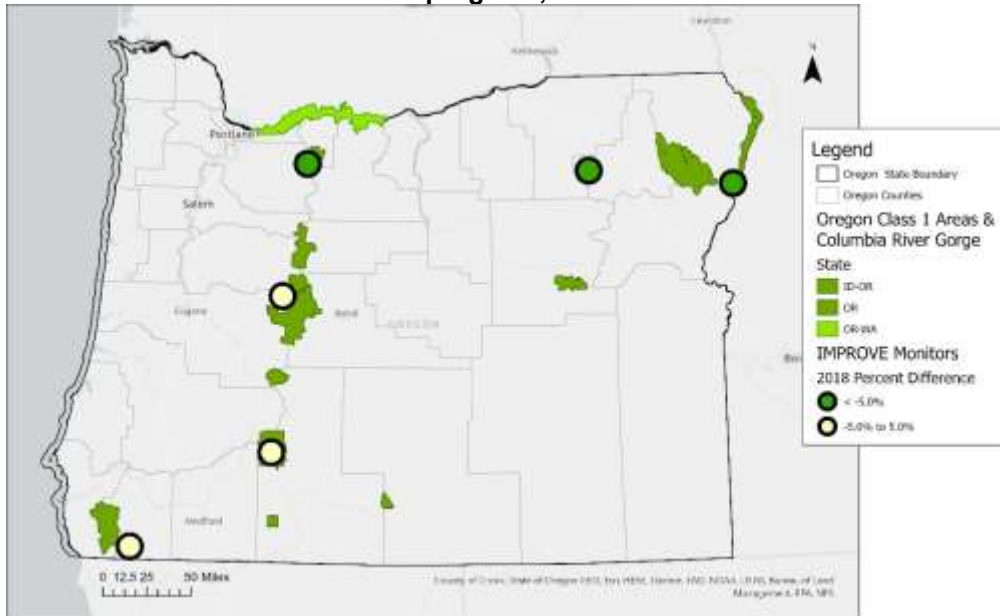
CFR Citation	Progress Report Element	Round 2 Plan Section
40 CFR 51.308 (g)(3)	“For each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired, least impaired and/or clearest days as applicable expressed in terms of 5-year averages of these annual values” for the period since the most recent progress report	Sections 2.1 and 2.2
40 CFR 51.308 (g)(4)	“An analysis tracking the change over the period since the period addressed in the most recent plan required under paragraph (f) of this section in emissions of pollutants contributing to visibility impairment from all sources and activities within the State.”	Section 2.3
40 CFR 51.308 (g)(5)	“An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred since the period addressed in the most recent plan...”	Section 2.4 and 2.5

⁸ <https://www.oregon.gov/odf/Documents/fire/SMR2018.pdf>

2.1. Most Impaired Days

Based on the EPA’s data released in September 2019,⁹ and corrected data released in June 2020,¹⁰ Figure 2-1 shows the visibility at the 6 IMPROVE monitors that cover the 12 Class 1 Areas in Oregon for the period from 2014-2018, for the most impaired days, as a percent difference from a uniform rate of progress in 2018.

Figure 2-1: Visibility on most impaired days at the six Oregon IMPROVE monitors as a percent difference from a uniform rate of progress, 2014-2018.



In 2018, three monitors in light yellow (KALM1, CRLA1, and THSI1) in the southern part of the state are within 5 percent above or below a uniform rate of progress, or “on the glidepath.” In 2018, all of these monitors are meeting the URP, but just barely. These three monitors cover 8 Class 1 Areas (Kalmiopsis Wilderness, Crater Lake National Park, Diamond Peak Wilderness, Mountain Lakes Wilderness, Gearhart Mountain Wilderness, Three Sisters Wilderness, Mount Jefferson Wilderness, and Mount Washington Wilderness).

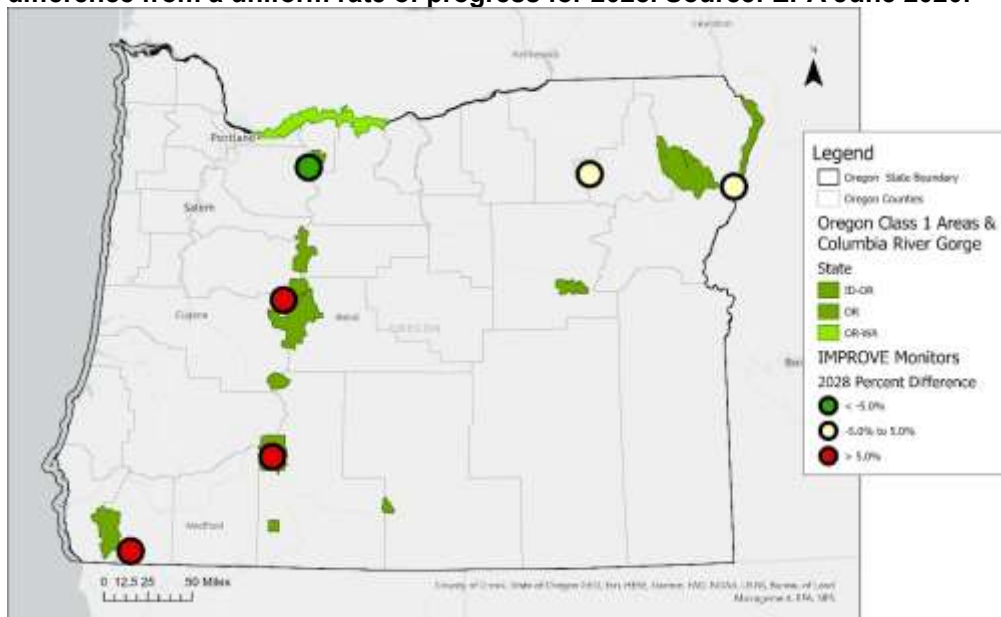
The other three monitors in green (MOHO1, STAR1, and HECA1), are greater than 5% below the URP, or “below the glidepath.” They cover 4 Class 1 Areas (Mount Hood Wilderness, Strawberry Mountain Wilderness, Eagle Cap Wilderness, and Hells Canyon Wilderness).

⁹ U.S. EPA, 2019, *supra*.

¹⁰ U.S. EPA. 2020. *Technical addendum including updated visibility data through 2018 for the memo titled “Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program.”* https://www.epa.gov/sites/production/files/2020-06/documents/memo_data_for_regional_haze_technical_addendum.pdf (Accessed 12/22/20)

Figure 2-2 shows the 2028 projected visibility at the 6 IMPROVE monitors that cover the 12 Class 1 areas in Oregon, for the most impaired days, as a percent difference from the 2028 URP.

Figure 2-2: Projected visibility on most impaired days at the six IMPROVE monitors as a percent difference from a uniform rate of progress for 2028. Source: EPA June 2020.



Based on EPA’s “on the books” 2028 projections (for Oregon, representing regulations in place as of May 2020), if no further reductions are realized, the eight Class 1 Areas covered by the Three Sisters, Crater Lake, and Kalmiopsis monitors will be more than 5% above the glidepath and no longer meeting a uniform rate of progress necessary to achieve natural conditions by 2064 (shown in red in **Error! Reference source not found.**). In addition, the STAR1 monitor and the HECA1 monitor in the eastern part of the state will be within 5% of URP (the two dots in light yellow in the map below). Mount Hood Wilderness is projected to be below the glidepath.

Based on the composition of regional haze forming pollutants at the IMPROVE monitors, the majority of U.S. anthropogenic contribution to regional haze in Oregon Class 1 Areas is from ammonium nitrate. This varies seasonally and by monitor. At some monitors, ammonium sulfate is a large contributor to regional haze formation, but that contribution seems to be significantly from international anthropogenic sources and is projected to decrease by 77%¹¹ as new standards for international marine shipping fuels take effect in 2020. In addition, sulfate performance in the regional model used by EPA over predicted sulfates and nitrates in the Northwest region, where Oregon is located.¹² A more detailed review of the EPA and WRAP 2028 modeled data is presented in more detail in Sections 2.4 and 2.5.

Based on EPA’s published and corrected data for the IMPROVE monitoring network, Table 2-6 shows the monitoring information available for each of the 12 Oregon Class 1 areas on most impaired days:

- The baseline period of 2000-2004
- The projected natural conditions in 2064
- The observed visibility impairment in deciviews for current visibility (2014-2018)
- The calculated uniform rate of progress for 2018 (on the glidepath)

¹¹ International Marine Organization. 2020. *A Breath of Fresh Air*. <https://wwwcdn.imo.org/localresources/en/MediaCentre/HotTopics/Documents/Sulphur%202020%20info%20graphic%202020page.pdf> (Accessed 1/20/21)

¹² U.S. EPA. 2019. *Op. cit.* p. 13.

- The difference in deciviews (observed minus expected) of the observed value from the URP for 2018
- The percent difference (observed minus expected) of the observed value from the URP for 2018
- The difference of 2018 observed visibility impairment to the calculated 2064 natural conditions (NC)
- The projected visibility impairment in deciviews for 2028
- The calculated URP 2028 (on the glidepath)
- The difference between the projected 2028 value and the 2028 URP value on the glidepath
- The percent difference (observed minus expected) of the 2028 projected value to the URP.

Table 2-6: Visibility in deciviews on most impaired days for Oregon's 12 Class 1 areas, showing baseline, current visibility (2014-2018), natural conditions, and comparisons to 2018 and 2028 glidepath (URP) values.¹³

CLASS 1 AREA NAME	IMPROVE SITE	2064 NC (DV)	2000-2004 OBS (DV)	OBS 2008-2012	2014-2018 OBS (DV)	2018 URP (DV)	2018 DIFF TO URP (DV)	2018 PCT DIFF URP	2018 OBS DIFF NC (DV)	2028 OTB PROJ (DV)	2028 URP (DV)	2028 DIFF (DV)	2028 PCT DIFF
Diamond Peak Wilderness	CRLA1	5.16	9.36	9.0	7.98	8.38	-0.40	-5%	2.82	8.09	7.7	0.39	5%
Gearhart Mountain Wilderness	CRLA1	5.16	9.36	9.0	7.98	8.38	-0.40	-5%	2.82	8.09	7.7	0.39	5%
Mountain Lakes Wilderness	CRLA1	5.16	9.36	9.0	7.98	8.38	-0.40	-5%	2.82	8.09	7.7	0.39	5%
Crater Lake NP	CRLA1	5.16	9.36	9.0	7.98	8.38	-0.40	-5%	2.82	8.09	7.7	0.39	5%
Hells Canyon Wilderness	HECA1	6.57	16.51	12.3	12.33	14.19	-1.86	-13%	9.94	12.21	12.53	-0.32	-3%
Kalmiopsis Wilderness	KALM1	7.78	13.34	12.8	11.97	12.04	-0.07	-1%	5.56	11.74	11.13	0.61	5%
Mount Hood Wilderness	MOHO1	6.59	12.1	10.3	9.27	10.81	-1.54	-14%	5.51	8.95	9.9	-0.95	-10%
Strawberry Mountain Wilderness	STAR1	6.58	14.53	11.7	11.19	12.68	-1.49	-12%	7.95	10.88	11.35	-0.47	-4%
Eagle Cap Wilderness	STAR1	6.58	14.53	11.7	11.19	12.68	-1.49	-12%	7.95	10.88	11.35	-0.47	-4%
Three Sisters Wilderness	THSI1	7.3	12.8	11.8	11.46	11.52	-0.06	0%	5.5	11.26	10.6	0.66	6%
Mount Jefferson Wilderness	THSI1	7.3	12.8	11.8	11.46	11.52	-0.06	0%	5.5	11.26	10.6	0.66	6%
Mount Washington Wilderness	THSI1	7.3	12.8	11.8	11.46	11.52	-0.06	0%	5.5	11.26	10.6	0.66	6%

¹³ The data in this table are drawn from “Availability of Modeling Data and Associated Technical Support Document for the EPA’s Updated 2028 Visibility Air Quality Modeling” (EPA 2019). <https://www.epa.gov/visibility/technical-support-document-epas-updated-2028-regional-haze-modeling>; with corrected data as applicable from the June 2020 EPA Memo, “Technical addendum including updated visibility data through 2018 for the memo titled ‘Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program.’” https://www.epa.gov/sites/production/files/2020-06/documents/memo_data_for_regional_haze_technical_addendum.pdf (Accessed 1/20/21)

2.2. Clearest Days

Table 2-7 presents the following data for clearest days for the 12 Class 1 areas in Oregon:

- The baseline period of 2000-2004
- The projected natural conditions in 2064
- The observed visibility impairment in deciviews for current visibility (2014-2018)
- The calculated URP for 2018 (on the glidepath)
- The difference (observed minus expected) of the observed value from the URP for 2018
- The difference of 2018 observed visibility impairment to the calculated 2064 NC
- The calculated URP for 2028 (on the glidepath)
- The difference between the projected 2028 value and the 2018 URP value on the glidepath
- The percent difference (observed minus expected) of the 2018 observed value to the URP.

Results listed in Table 2-7 indicate continued improvement in the clearest days at all of the IMPROVE monitors and Class 1 areas in Oregon.

Table 2-7. Visibility in deciviews on clearest days for Oregon's 12 Class 1 areas, showing baseline, current visibility (2014-2018), natural conditions, and comparisons to 2018 and 2028 glidepath (URP) values.¹⁴

CIA_NAME	I PROVE SITE	2064 NC	OBS 2000-2004	OBS 2008-2012	OBS 2014-2018	2018 URP	2018 OBS DIFF TO URP	2018 PCT DIFF	2018 DIFF FROM NC	2028 URP	2028 DIFF FR 2018 OBS
Diamond Peak Wilderness	CRLA1	0.1	1.69	1.4	1.05	1.32	-0.27	-20%	0.95	1.05	0.00
Gearhart Mountain Wilderness	CRLA1	0.1	1.69	1.4	1.05	1.32	-0.27	-20%	0.95	1.05	0.00
Mountain Lakes Wilderness	CRLA1	0.1	1.69	1.4	1.05	1.32	-0.27	-20%	0.95	1.05	0.00
Crater Lake NP	CRLA1	0.1	1.69	1.4	1.05	1.32	-0.27	-20%	0.95	1.05	0.00
Hells Canyon Wilderness	HECA1	2.52	5.50	4.2	4.00	4.80	-0.80	-17%	1.48	4.31	-0.31
Kalmiopsis Wilderness	KALM1	3.7	6.27	6.2	5.9	5.67	0.23	4%	2.2	5.24	0.66
Mount Hood Wilderness	MOHO1	0.88	2.17	1.4	1.39	1.87	-0.48	-26%	0.51	1.65	-0.26
Strawberry Mountain Wilderness	STAR1	1.48	4.49	3.1	2.79	3.79	-1.00	-26%	1.31	3.29	-0.50
Eagle Cap Wilderness	STAR1	1.48	4.49	3.1	2.79	3.79	-1.00	-26%	1.31	3.29	-0.50
Three Sisters Wilderness	THSI1	1.86	3.04	2.8	2.61	2.76	-0.15	-6%	0.75	2.57	0.04
Mount Jefferson Wilderness	THSI1	1.86	3.04	2.8	2.61	2.76	-0.15	-6%	0.75	2.57	0.04
Mount Washington Wilderness	THSI1	1.86	3.04	2.8	2.61	2.76	-0.15	-6%	0.75	2.57	0.04

¹⁴ The data in this table are drawn from “Availability of Modeling Data and Associated Technical Support Document for the EPA’s Updated 2028 Visibility Air Quality Modeling” (EPA 2019). <https://www.epa.gov/visibility/technical-support-document-epas-updated-2028-regional-haze-modeling>; with corrected data as applicable from the June 2020 EPA Memo, “Technical addendum including updated visibility data through 2018 for the memo titled ‘Recommendation for the Use of Patched and Substituted Data and Clarification of Data Completeness for Tracking Visibility Progress for the Second Implementation Period of the Regional Haze Program.’” https://www.epa.gov/sites/production/files/2020-06/documents/memo_data_for_regional_haze_technical_addendum.pdf (Accessed 1/20/21)

2.3. Emissions Inventory Analysis

WRAP used data from the 2017 National Emissions Inventory to create statewide emissions inventories for all western states participating in Regional Haze Round 2. The inventory was used to model current and projected emission impacts on Class 1 area visibility. DEQ reviewed and provided corrections to the 2017 NEI data that WRAP incorporated into Oregon's inventory. DEQ commits to periodic updates to Oregon's statewide emissions inventory, at a minimum complying with requirements under EPA's Air Emission Reporting Requirements rule.

DEQ analyzed actual emissions (tons per year) from various NEI categories and sectors that contribute to Class 1 area visibility impairment. For this analysis, in order to focus on US anthropogenic emission sources or sectors, WRAP removed emissions for biogenic, wildfire, and dust emission sources for the state. Oregon anthropogenic emission sources in this inventory include, but are not limited to:

- Point sources that are federal or state air permitted facilities and airports (not necessarily permitted by Oregon DEQ). Permitted emissions activities mainly entail fuel combustion and process emissions from pulp and paper, wood products manufacturing, electricity generation and gas transmission, metal processing and fabrication, landfills, etc. in Oregon.
- Nonpoint and event source activities resulting in emissions from fuel combustion, agriculture, fugitive dust, marine shipping, oil and gas, prescribed fires, and railroads.
- Mobile sources such as nonroad vehicles (e.g. construction, agriculture, lawn and garden, recreational equipment) and onroad vehicles (e.g. commercial trucks, passenger cars and trucks).

Regional haze forming pollutants from US anthropogenic emission sources are largely composed of nitrogen oxide (NO_x) particulate matter with diameter of 2.5 and 10 microns (PM_{2.5} and PM₁₀), sulfur dioxide (SO₂), and ammonia (NH₃). DEQ reviewed total regional haze forming pollutant emissions at the county level, shown in Table 2-8. Annual emissions are greatest in Multnomah County, which includes urban Portland, and in the higher-elevations of central Oregon (Deschutes County), which includes the city of Bend. The Interstate-5 corridor south of Portland connects Lane and Marion Counties through the Willamette Valley, and includes the cities of Eugene and Salem, respectively. The Portland metropolitan area includes the urbanized and suburbanized areas of Washington and Clackamas Counties, which also rank among the state's highest producers of regional haze pollutant emissions.

Table 2-8. Regional haze pollutants emissions in tons/year by county, U.S. Anthropogenic, 2017.
Source: 2017 National Emission Inventory.

County	NO_x	PM10-PRI	SO₂	Total
Multnomah	17155	20428	840	38422
Deschutes	4140	33380	88	37608
Lane	9690	23280	513	33482
Washington	8466	21630	345	30441
Clackamas	7667	21786	263	29716
Marion	7820	18622	210	26652
Klamath	3815	20875	297	24987
Douglas	6264	17610	545	24419
Umatilla	3922	18430	85	22437
Linn	5317	13763	261	19341
Jackson	5064	11854	178	17096
Malheur	1456	14870	212	16538
Morrow	3145	8529	3340	15014
Clatsop	4587	6745	669	12001
Wasco	1949	9722	114	11785
Yamhill	2143	9084	157	11384
Coos	1933	8756	105	10794
Polk	1469	9190	60	10719
Jefferson	881	9643	57	10580
Lincoln	2207	7327	69	9603
Harney	604	8472	78	9154
Lake	757	8026	99	8882
Crook	719	8082	58	8859
Josephine	2163	6370	46	8579
Baker	2605	5816	81	8502
Tillamook	1189	7149	100	8439
Union	1897	5899	48	7844
Benton	1511	5588	58	7157
Columbia	2790	4248	60	7098
Curry	763	5275	23	6061
Sherman	539	5398	6	5943
Grant	515	5147	101	5762
Gilliam	1023	2977	59	4059
Hood River	1343	2416	16	3775
Wallowa	284	3098	9	3391
Wheeler	117	1596	23	1736

Table 2-9 through Table 2-11 show the major source sectors for particulate matter, nitrogen oxides, and sulfur dioxide emissions after wildfire, biogenics, and dust emission sources (so-called “natural sources”) were removed from the 2017 NEI. DEQ found that:

- For particulate matter, major source sectors are prescribed fire and agriculture, comprising 77% of the anthropogenic inventory (Table 2-9)
- Statewide, the NO_x emissions are primarily from mobile sources, at about 80% of the inventory, with another 13% of the inventory coming from fuel combustion (Table 2-10).
- The 2017 SO₂ inventory is largely overwhelmed by PGE Boardman’s coal-fired power plant in Morrow County. With the closing of the plant in October 2020, those emissions have largely been eliminated, and the remainder of the emissions come from fuel combustion and prescribed fires (Table 2-11).

Table 2-9. Major sectors contributing to PM10 emissions in tons/year by county, US Anthropogenic, 2017. Source: 2017 National Emissions Inventory.

County	Ag -PM10	Fires - PM10	Fuel Comb - PM10	Ind -PM10	Mobile - PM10	Total
Umatilla	8601	380	311	50	174	9515
Douglas	945	6047	718	588	208	8507
Klamath	2387	3718	414	184	152	6855
Lane	830	3196	1089	670	441	6238
Morrow	4978	87	461	18	47	5593
Malheur	4463	161	84	41	71	4821
Harney	3466	980	32	0	24	4503
Lake	2438	1385	38	64	31	3956
Marion	905	1447	663	177	469	3661
Wasco	1871	1417	80	15	75	3458
Clackamas	558	907	1062	252	563	3342
Multnomah	98	207	1247	475	1140	3208
Baker	2085	530	79	432	70	3196
Linn	750	1161	419	541	238	3110
Sherman	2940	15	13	0	21	2989
Washington	401	473	1124	136	646	2780
Jackson	551	774	643	321	282	2571
Grant	1030	1424	58	0	23	2535
Gilliam	2178	32	33	0	32	2275
Union	1684	292	109	64	64	2213
Clatsop	113	868	296	793	124	2193
Yamhill	572	864	269	163	124	1992
Tillamook	370	1295	157	77	54	1953
Crook	1038	660	93	22	36	1849
Coos	335	968	225	201	87	1816
Deschutes	388	184	699	208	253	1732
Polk	590	508	212	13	81	1403
Jefferson	618	630	96	16	41	1402
Wallowa	1224	67	50	0	23	1364
Lincoln	82	536	215	253	69	1155
Benton	257	265	239	86	102	948
Columbia	245	53	234	219	99	850
Josephine	123	93	297	34	119	671
Wheeler	373	276	10	0	4	663
Curry	81	150	143	95	41	510
Hood River	60	3	86	0	63	212
Total	49629	32056	11995	6212	6089	106040

Table 2-10. Major sectors contributing to NO_x emissions in tons/year by county, US Anthropogenic, 2017. Source: 2017 National Emissions Inventory.

County	Fires-NO _x	FuelComb-NO _x	Industrial-NO _x	Mobile-NO _x	Total
Multnomah	18	1998	603	14535	17155
Lane	292	1227	812	7359	9690
Washington	53	1530		6883	8466
Marion	148	578		7094	7820
Clackamas	90	1170	12	6395	7667
Douglas	584	1445	65	4169	6264
Linn	112	551	427	4227	5317
Jackson	81	863	76	4044	5064
Clatsop	76	582	603	3326	4587
Deschutes	24	392		3724	4140
Umatilla	78	452	1	3392	3922
Klamath	391	474	11	2938	3815
Morrow	16	2099	1	1030	3145
Columbia	5	656	134	1995	2790
Baker	60	198	788	1559	2605
Lincoln	47	542	463	1155	2207
Josephine	13	144	9	1996	2163
Yamhill	94	220	166	1663	2143
Wasco	188	30	7	1724	1949
Coos	87	154	1	1691	1933
Union	38	385	105	1369	1897
Benton	30	154	27	1301	1511
Polk	63	113		1293	1469
Malheur	24	68	44	1320	1456
Hood River	0	55		1287	1343
Tillamook	109	114	1	965	1189
Gilliam	8	176		840	1023
Jefferson	92	37		752	881
Curry	18	81	1	664	763
Lake	153	21		583	757
Crook	80	42	1	596	719
Harney	144	9		450	604
Sherman	5	39		496	539
Grant	155	76		284	515
Wallowa	9	14		261	284
Wheeler	45	2		70	117
Total	3,426	16,692	4,358	93,427	117,907

Table 2-11. Major sectors contributing to SO₂ emissions in tons/year by county, US Anthropogenic, 2017. Source: 2017 National Emissions Inventory.

County	Fires	Fuel Comb	Industrial Processes	Mobile	Total
Morrow	7	3330	1	2	3340
Multnomah	13	334	181	310	840
Clatsop	53	46	514	56	669
Douglas	384	142	4	13	545
Lane	198	165	111	39	513
Washington	31	279		34	345
Klamath	241	38	1	18	297
Clackamas	58	176	1	28	263
Linn	72	100	75	13	261
Malheur	11	15	182	4	212
Marion	86	94		29	210
Jackson	51	99	4	24	178
Yamhill	56	57	36	7	157
Wasco	104	5	1	4	114
Coos	60	34	0	11	105
Grant	95	5		1	101
Tillamook	78	18	1	3	100
Lake	93	4		1	99
Deschutes	13	53		22	88
Umatilla	31	42	1	10	85
Baker	36	8	33	4	81
Harney	75	2		1	78
Lincoln	33	17	12	7	69
Columbia	3	28	7	23	60
Polk	35	20		5	60
Gilliam	3	55		2	59
Crook	46	9	1	2	58
Benton	18	34	0	5	58
Jefferson	43	12		2	57
Union	18	25	2	4	48
Josephine	7	29	4	7	46
Curry	10	9	1	3	23
Wheeler	22	0		0	23
Hood River	0	13		4	16
Wallowa	5	3		1	9
Sherman	2	3		1	6
Total	2090	5304	1175	702	9273

2.4 Pollutant Components of Visibility Impairment

Identification of the significant components contributing to visibility impairment in Class 1 areas is important for 1) determining the glidepath to achieving natural conditions by 2064, 2) assessing projections of 2028 conditions against that glidepath (Sec. 2.5.1), 3) identifying the source categories that are majorly responsible for the impairment (2.5.2), 4) helping to identify sources for the Four Factor analysis (Sec. 3.5) and 5) informing Oregon’s long-term strategy to control emissions and achieve natural conditions in Class 1 areas (Sec. 4).

DEQ first examined the IMPROVE monitoring data from the WRAP Technical Support System website for the period 2000 to 2018. The data for 2000-2004 sets the baseline. The slope of the glidepath, or URP, is based on two endpoints: the 2000 – 2004 baseline and the 2064 Natural Conditions. The data from 2000 to 2018 shows the changes in extinction over that period.

Error! Reference source not found. to Error! Reference source not found. show the measured extinctions at the IMPROVE sites in Oregon. Although sources in Oregon influence extinction at IMPROVE sites in Washington and California, notably MORA (Mt. Rainier, WA), WHPA (White Pass, WA), REDW (Redwoods, CA), and LABE (Lava Beds, CA), their impacts are lower than for Oregon sites, and they are not shown in the figures below. The extinctions are based on monitoring data only; this information does not identify source categories contributing to extinction.

For the eastern Oregon IMPROVE sites (HECA and STAR), there is a noticeable reduction in extinction attributed to ammonium nitrate from 2000-2004 to the 2008-2012 period, but a small increase from 2008-2012 to 2014-2018. For the IMPROVE sites in the Cascades and Kalmiopsis, there is an important reduction in ammonium sulfate, although not as large as ammonium nitrate in the east. The levels of organic mass and elemental carbon, likely from wildfire, prescribed burning, and anthropogenic and biogenic sources of Volatile Organic Compounds vary at all IMPROVE sites from 2000 to 2018, but show no significant trend.

For the following figures, light extinction is expressed as *bext* in inverse million meters (Mm⁻¹). Note that the vertical scale in Mm⁻¹ varies between figures.

Figure 2-3: HECA IMPROVE monitor: Components to visibility impairment.

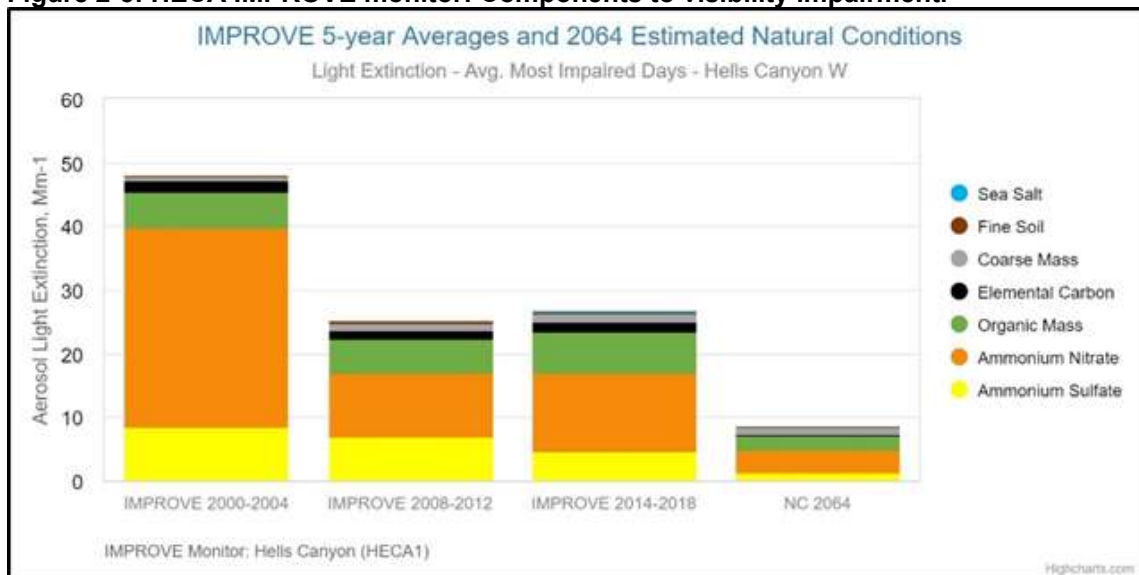


Figure 2-4: STAR IMPROVE monitor: Components to visibility impairment.

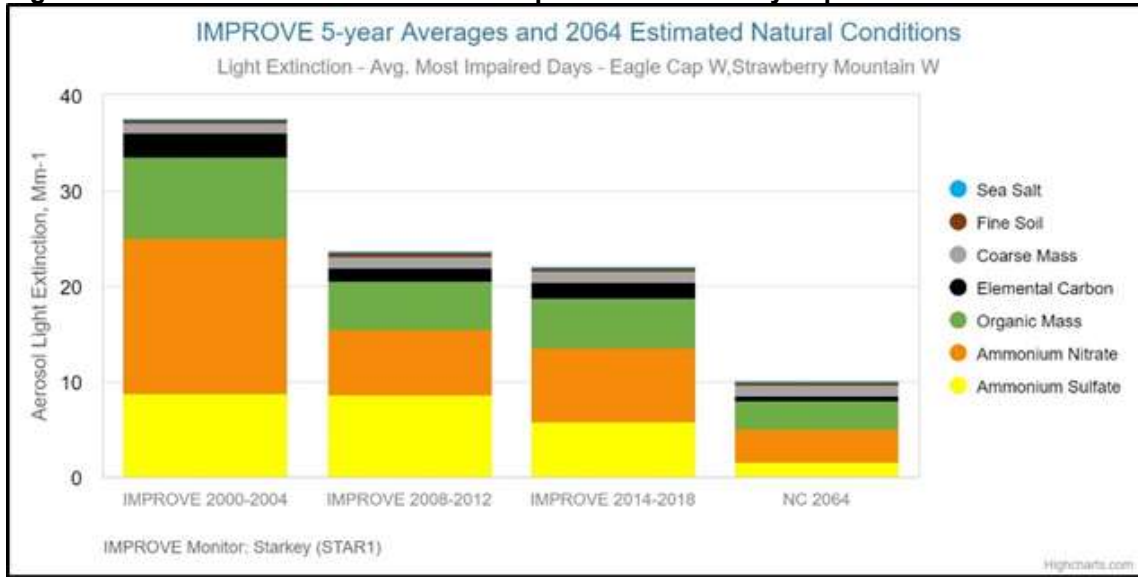


Figure 2-5: MOHO IMPROVE monitor: Components to visibility impairment

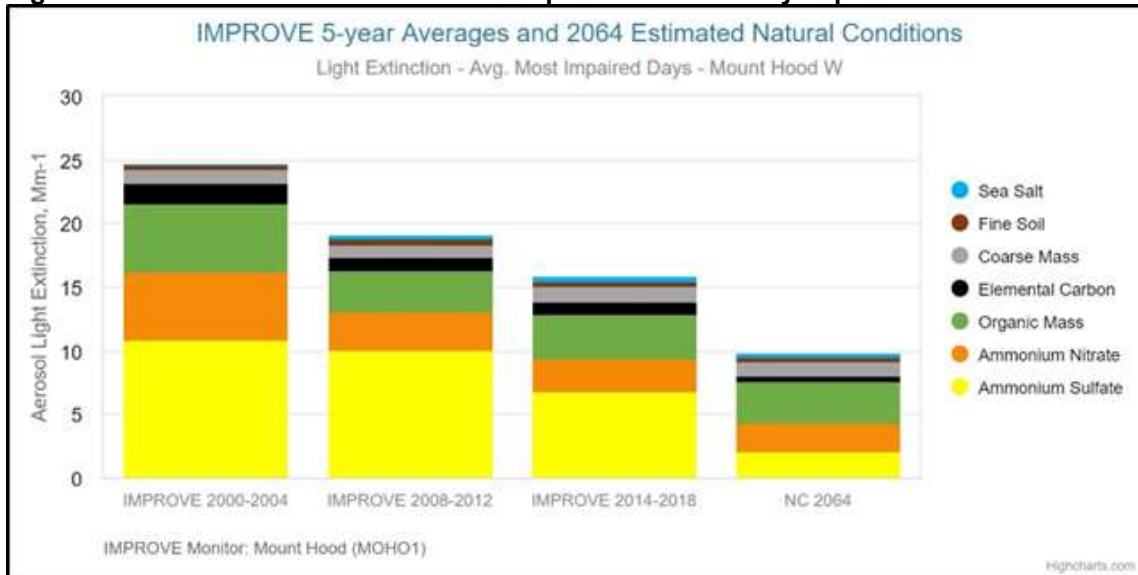


Figure 2-6: THSI IMPROVE monitor: Components to visibility impairment

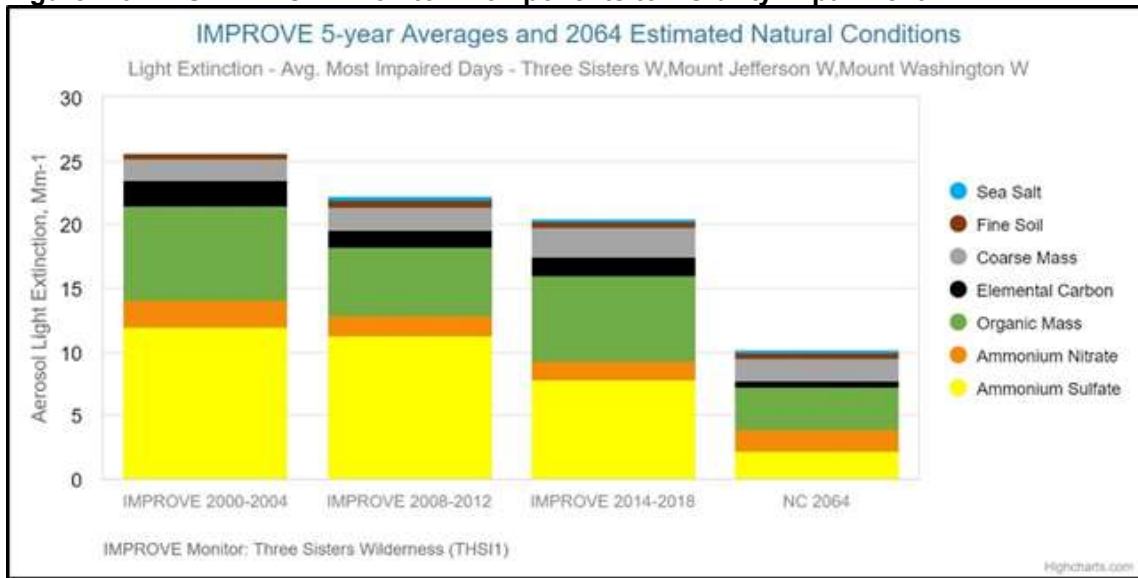


Figure 2-7: CRLA IMPROVE monitor: Components to visibility impairment

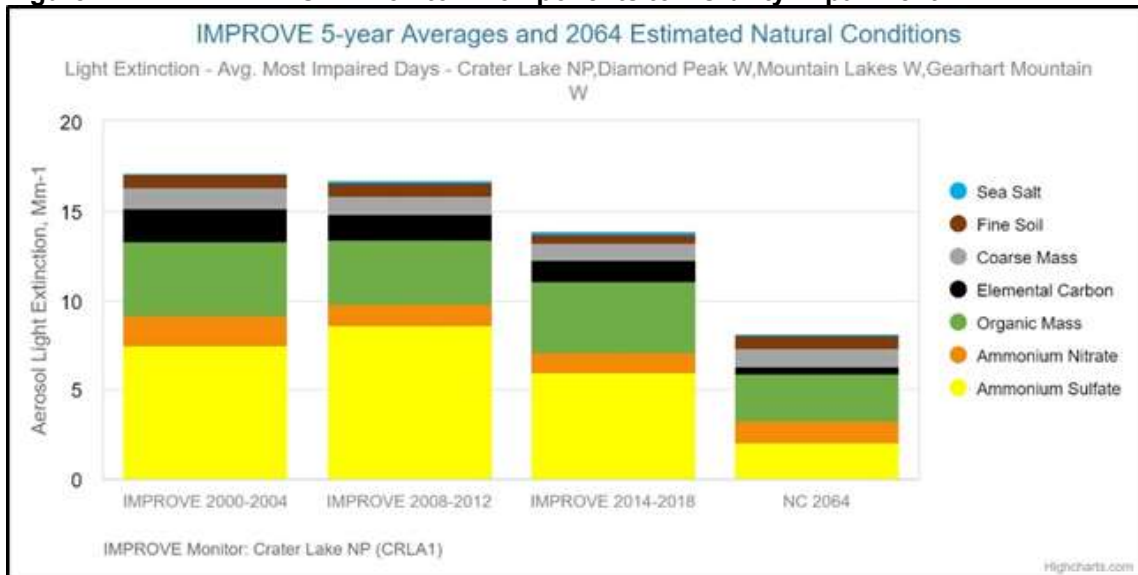
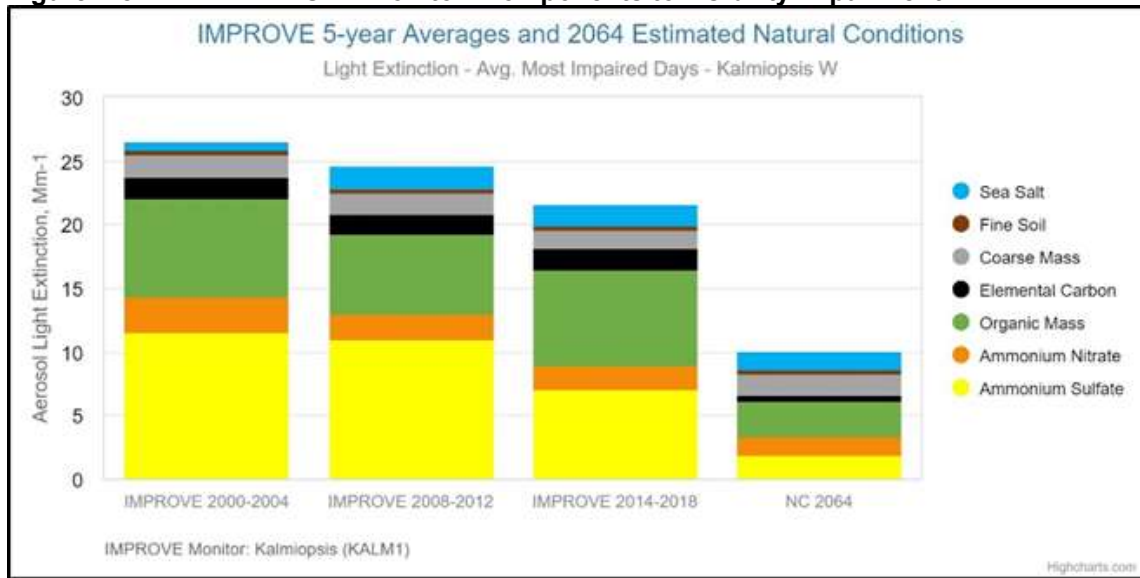


Figure 2-8: KALM IMPROVE monitor: Components to visibility impairment



2.5 Source Apportionment of Visibility Impairment and Weighted Emission Potential

The full suite of WRAP modeling of On the Books emissions includes a high level source apportionment (Region Source Apportionment), low-level source apportionment (State Source-Sector Source Apportionment) and 2028 extinctions based on the projected 2014 extinctions using the EPA Software for the Modeled Attainment Test program. The SMAT projected 2028 extinction is the subject of this section. Both levels of source apportionment modeling assessed extinction for sea salt, soil, coarse mass, organic mass carbon, elemental carbon, ammonium sulfate, and ammonium nitrate.

DEQ examined the WRAP source apportionment modeling and the Weighted Emission Potential analysis to help discern the degree to which different sectors affect visibility in each Class 1 area. The source apportionment and WEP analysis described in this section are based on data from WRAP's TSS website for the Round 2 regional haze analysis. DEQ consulted both the high and low level source apportionment results and WEP analysis to inform the Long-term Strategy (Section 4) and as part of a weight of evidence approach (Section 3.5) before making decisions about facility pollution control requirements. DEQ's pollution control decision methodology is described in Section 3. DEQ based pollution control decisions for particular facilities on source-specific characteristics (e.g. distance to Class 1 area, potential emissions) and a control-specific four-factor analysis.

2.5.1 Estimated future projected emissions

After examining the monitored visibility data, DEQ reviewed the WRAP CAMx modeling results projected to 2028, based on controls that were On The Books as of May 2020, referred to as 2028 OTB emissions.

The initial unadjusted 2028 source apportionment modeling provided information about the relative contributions to extinction from source categories, including US anthropogenic, international, natural, US wildfire, US prescribed wildland fire, and Mexico/Canada wildfire. In general, these model results, not shown here, suggest the three largest contributors to visibility impairment are ammonium nitrate, ammonium sulfate and organic carbon. Important sources of ammonium sulfate are from international and natural emissions and ammonium nitrate comes from mobile and industrial sources. Sources of organic carbon are from US wildfires, US prescribed fires, natural sources, and anthropogenic and biogenic sources of VOCs.

In order to estimate the 2028 RPGs for comparison to the glidepath, WRAP “normalized” the unadjusted 2014 modeled data using the 2014 measured data and the SMAT program. SMAT uses Relative Response Factors to project the measured IMPROVE values for each extinction component, such as ammonium nitrate, to 2028 using the relative changes in the WRAP 2014 and 2028 model results. Simply stated, SMAT takes the actual measured 2014 extinctions as a reference point and projects them to 2028 using the relationship between the 2014 and 2028 modeling. In addition, the 2028 projections included adjustments to certain emission categories. Using the 2014 measured extinction as the reference resolved modeled over predictions in the initial 2014 and 2028 “raw” model results, such as the contributions from wildfire.

Error! Reference source not found. through **Error! Reference source not found.** illustrate the 2014-2018 monitored and 2028 OTB projected modeled extinctions by components for each IMPROVE monitor in Oregon. The 2028 projected values in these bar charts are the result of the SMAT program using RRFs, as noted above, and are shown in comparison to the 2014 – 2018 monitored extinctions. In these figures, light extinction is expressed as *bext* in Mm⁻¹. Abbreviations are: CM = coarse mass, EC = elemental carbon, OMC = organic mass carbon, AmmNO₃ = ammonium nitrate, AmmSO₄ = ammonium sulfate.

When comparing the charts for the six IMPROVE sites, note that the vertical scale of light extinction is different for different sites.

Figure 2-9: STAR1 monitor, Projected 2028 visibility using SMAT.

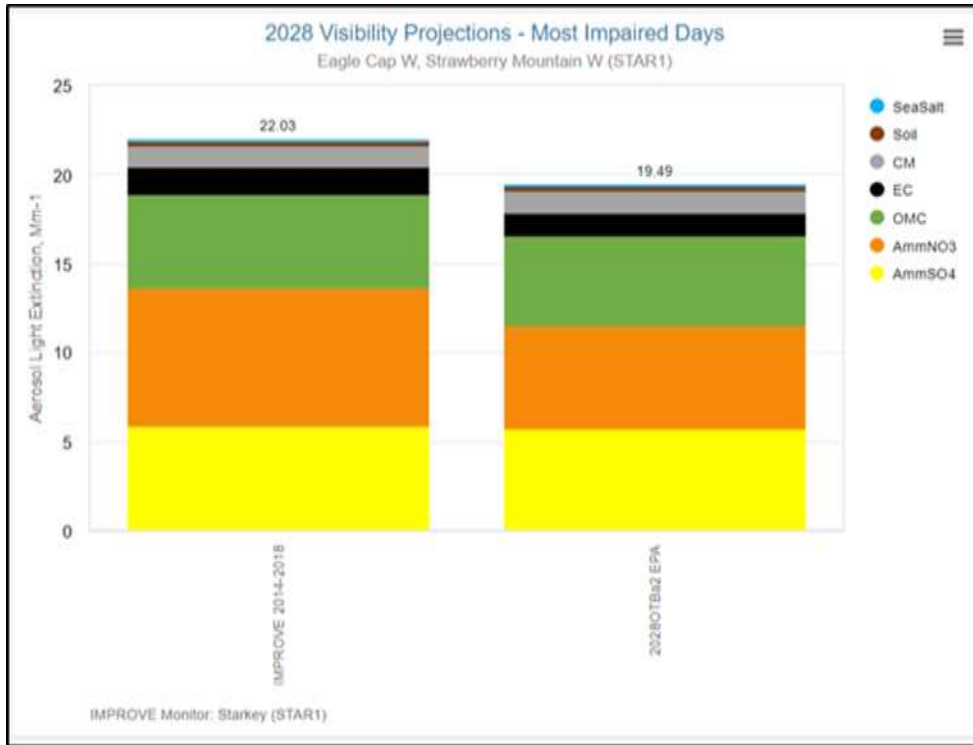


Figure 2-10: HECA monitor, Projected 2028 visibility using SMAT.

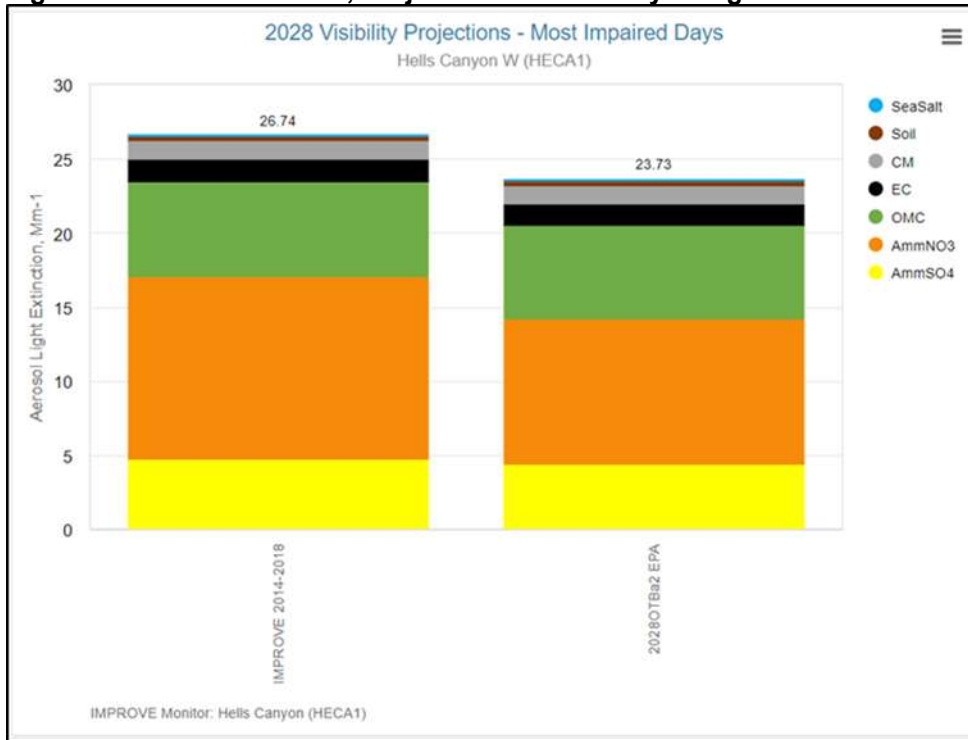


Figure 2-11: THIS monitor, Projected 2028 visibility using SMAT.

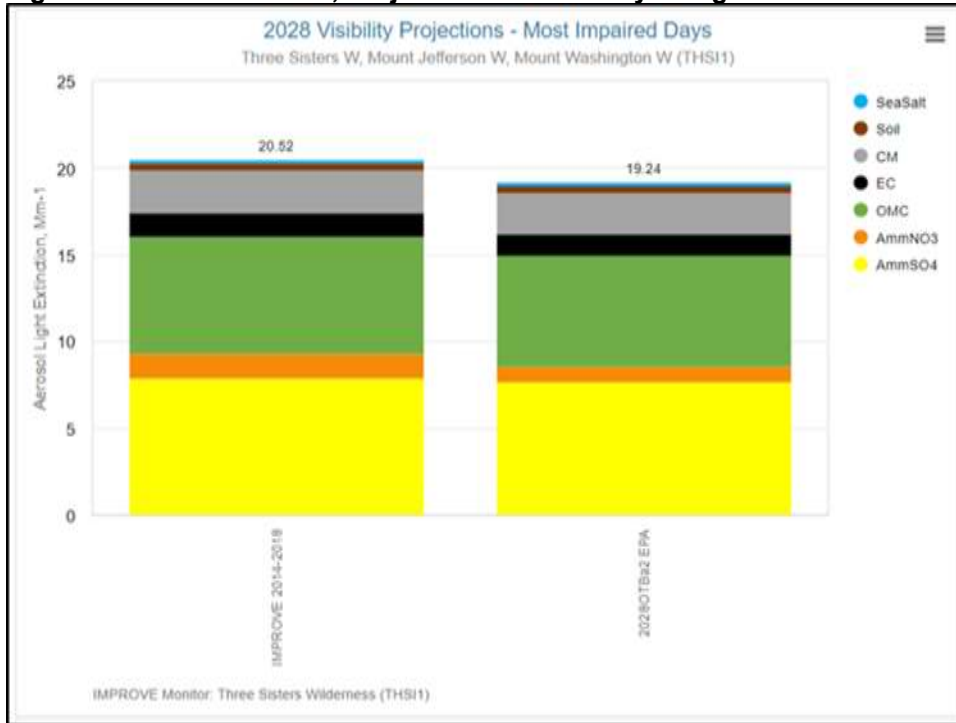


Figure 2-12: MOHO monitor, Projected 2028 visibility using SMAT.

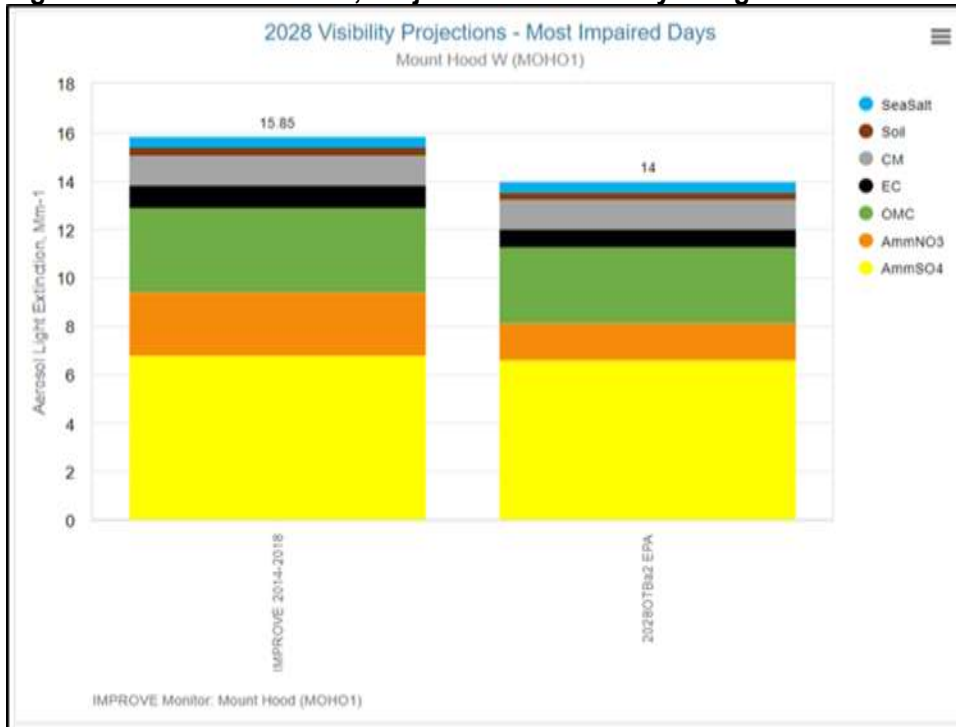


Figure 2-13: CRLA monitor, Projected 2028 visibility using SMAT.

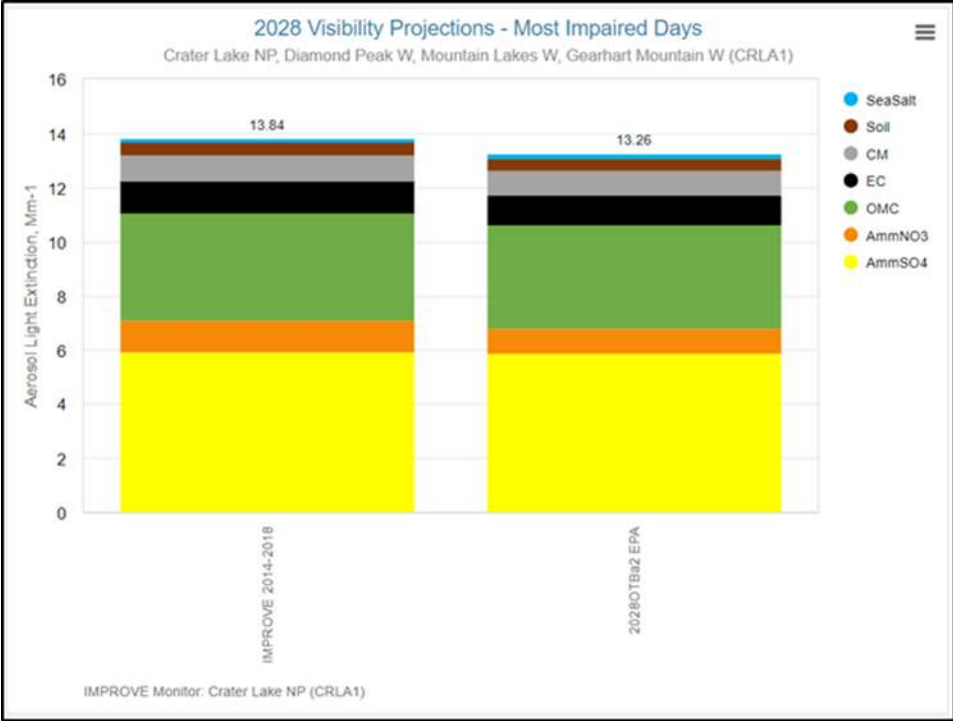
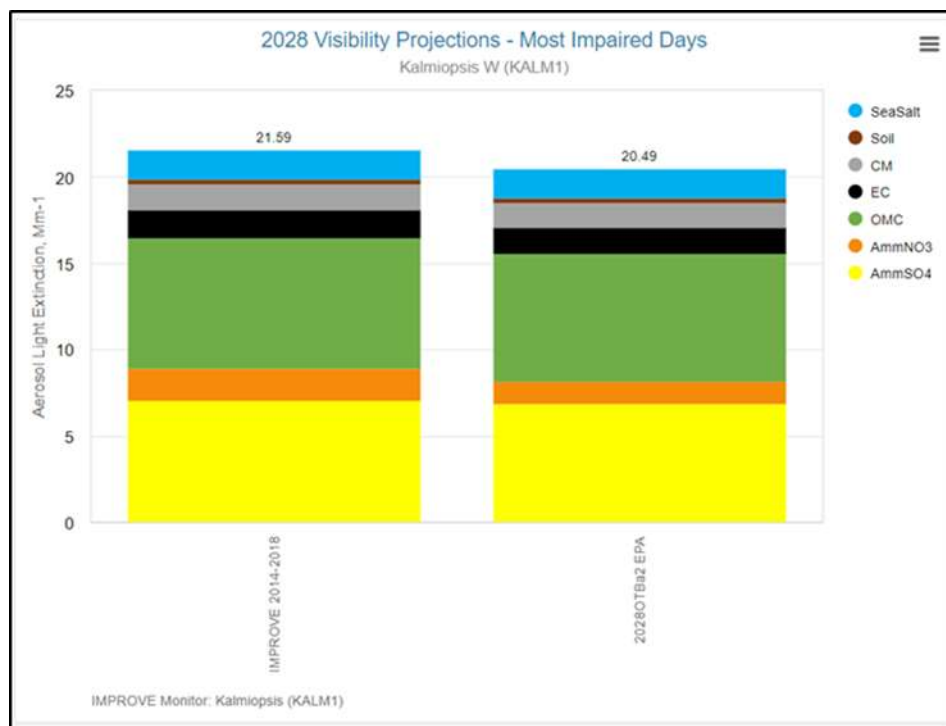


Figure 2-14: KALM monitor, Projected 2028 visibility using SMAT.



2.5.2 Weighted Emission Potential and Source Apportionment

In addition to source apportionment modeling, DEQ relied on the WRAP weighted emission potential analysis for the development of this plan, using WEP to categorize anthropogenic sources into electric generating units, non-EGUs, oil and gas sources, mobile sources (onroad and nonroad) and nonpoint sources. The Nonpoint or area source category includes residential wood combustion, fugitive dust, agricultural sources and prescribed burning. The WEP methodology to identify source categories and sources contributing to visibility extinction at each IMPROVE monitor includes:

- 1) Monitored extinction data by component
- 2) Back trajectories using the HYSPLIT model with five years of wind data
- 3) Residence Time of the back trajectories passing over the 36 km grid cells in the trajectory domain for each IMPROVE monitor
- 4) The Extinction Weighted Residence Time
- 5) The calculation of the WEP that takes the EWRT and factors in emissions in the grid cell and the distance of the grid cell from the IMPROVE monitor.

Each grid cell in the model has its own unique RT and EWRT. These numbers are based on the number of HYSPLIT back trajectories that pass over that grid cell on its way to the IMPROVE monitor and the species extinction, such as NO₃, associated with each trajectory. The RT and EWRT for each cell applies to all sources in the grid cell. The WEP analysis can add refinement to the low-level State Source-Sector apportionment for assessing the relative contributions from

different source categories. In contrast to the State Source-Sector apportionment, which is based on modeled predictions of 2028 OTB emissions, the WEP is based on 2017 emissions and back trajectories. DEQ assumes the emissions for 2017 and the predicted emissions for 2028 are roughly correlative between sources, and between source categories, and the winds and meteorology controlling the back trajectory analysis are good approximations of the meteorology used in the source apportionment modeling. Under these assumptions, data from the WEP analysis can supplement and expand on the source apportionment modeling of Regional Source and State Source Sector categories.

Table 2-12 through Table 2-17 show the WEP analysis of the major pollutant contributions at each IMPROVE site in Oregon, by source category. These results are based on 2028 OTB emissions in all of the 36 km grid cells in the back trajectory domain for each of the IMPROVE monitors. The WEP values in the tables are shown as unitless, but are the product of extinction in Mm⁻¹, residence time in %, and Q/d as emissions in tons per year divided by distance in kilometers. The WEP emissions categories are NO_x, SO_x, primary organic aerosol (abbreviated POA) and primary elemental carbon (abbreviated PEC).

Table 2-12: STAR, Weighted emission potential values (unitless) by pollutant and source category.

STAR 2028OTB					Description
WEP=Bext x RT x Q/d					
	wep_nox	wep_sox	wep_poa	wep_pec	
EGU Point	Sum = 298,716	37,850	29,243	8,022	Electric generating units
Non-EGU Point	Sum = 1,405,068	455,907	82,383	6,606	Industrial activities and airports
Non Point	Sum = 1,010,391	223,064	1,262,160	31,245	Low-level area: non-pt, ag., RWC, and fugitive dust
On-Road Mobile	Sum = 2,455,407	24,702	41,764	8,790	On-road mobile sources
Non-Road Mobile	Sum = 2,428,393	22,645	59,060	19,574	Off highway: non-road, commercial marine, and rail
Oil & Gas	Sum = 160,246	3,355	1,863	322.0	Oil & G area & pt sources (Upstream and Midstream)
Total Anthropogenic	Sum = 7,797,542	768,386	1,476,602	74,679	All anthropogenic emissions

Table 2-13: MOHO, Weighted emission potential values (unitless) by pollutant and source category.

MOHO 2028OTB					Description
WEP=Bext x RT x Q/d					
	wep_nox	wep_sox	wep_poa	wep_pec	
EGU Point	Sum = 128,296	41,285	16,166	4,259	Electric generating units
Non-EGU Point	Sum = 4,036,820	1,845,007	197,764	20,672	Industrial activities and airports
Non Point	Sum = 3,596,444	1,892,050	4,074,635	103,622	Low-level area: non-pt, ag., RWC, and fugitive dust
On-Road Mobile	Sum = 5,674,369	159,074	145,813	24,009	On-road mobile sources
Non-Road Mobile	Sum = 5,689,775	127,862	216,713	55,332	Off highway: non-road, commercial marine, and rail
Oil & Gas	Sum = 190,037	3,862	2,134	319	Oil & G area & pt sources (Upstream and Midstream)
Total Anthropogenic	Sum = 19,317,985	4,069,436	4,653,242	208,235	All anthropogenic emissions

Table 2-14: THSI, Weighted emission potential values (unitless) by pollutant and source category.

THSI 2028OTB					Description
WEP=Bext x RT x Q/d					
	wep_nox	wep_sox	wep_poa	wep_pec	
EGU Point	Sum = 49,406	48,479	19,393	2,416	Electric generating units
Non-EGU Point	Sum = 881,675	1,075,824	285,548	12,730	Industrial activities and airports
Non Point	Sum = 650,462	754,867	2,923,256	54,528	Low-level area: non-pt, ag., RWC, and fugitive dust
On-Road Mobile	Sum = 1,330,405	69,637	105,645	15,125	On-road mobile sources
Non-Road Mobile	Sum = 1,084,086	57,014	146,895	26,497	Off highway: non-road, commercial marine, and rail
Oil & Gas	Sum = 18,098	1,668	1,277	118	Oil & G area & pt sources (Upstream and Midstream)
Total Anthropogenic	Sum = 4,017,950	2,008,019	3,482,087	111,492	All anthropogenic emissions

Table 2-15: CRLA, Weighted emission potential values (unitless) by pollutant and source category.

CRLA 2028OTB					Description
WEP=Bext x RT x Q/d					
	wep_nox	wep_sox	wep_poa	wep_pec	
EGU Point	Sum = 67,952	39,601	26,825	1,942	Electric generating units
Non-EGU Point	Sum = 308,397	290,281	139,118	7,173	Industrial activities and airports
Non Point	Sum = 213,919	225,548	756,550	22,927	Low-level area: non-pt, ag., RWC, and fugitive dust
On-Road Mobile	Sum = 530,724	26,054	29,724	6,179	On-road mobile sources
Non-Road Mobile	Sum = 425,200	19,095	37,364	9,359	Off highway: non-road, commercial marine, and rail
Oil & Gas	Sum = 14,646	2,188	1,204	96	Oil & G area & pt sources (Upstream and Midstream)
Total Anthropogenic	Sum = 1,580,550	604,131	990,929	47,934	All anthropogenic emissions

Table 2-16: KALM, Weighted emission potential values (unitless) by pollutant and source category.

KALM 2028OTB					Description
WEP=Bext x RT x Q/d					
	wep_nox	wep_sox	wep_poa	wep_pec	
EGU Point	Sum = 152,457	50,084	75,929	1,880	Electric generating units
Non-EGU Point	Sum = 428,089	271,641	349,602	9,570	Industrial activities and airports
Non Point	Sum = 240,685	194,022	1,147,387	28,050	Low-level area: non-pt, ag., RWC, and fugitive dust
On-Road Mobile	Sum = 595,223	19,517	38,238	6,042	On-road mobile sources
Non-Road Mobile	Sum = 524,119	30,285	60,728	10,773	Off highway: non-road, commercial marine, and rail
Oil & Gas	Sum = 4,364	385	355	23.1	Oil & G area & pt sources (Upstream and Midstream)
Total Anthropogenic	Sum = 1,951,754	566,481	1,672,425	56,537	All anthropogenic emissions

Table 2-17 HECA, Weighted emission potential values (unitless) by pollutant and source category.

HECA 2028OTB					Description
WEP=Bext x RT x Q/d					
	wep_nox	wep_sox	wep_poa	wep_pec	
EGU Point	Sum = 834,659	38,816	45,585	2,990	Electric generating units
Non-EGU Point	Sum = 2,273,748	278,698	75,265	4,746	Industrial activities and airports
Non Point	Sum = 2,036,044	131,473	1,254,935	27,318	Low-level area: non-pt, ag., RWC, and fugitive dust
On-Road Mobile	Sum = 5,140,591	15,582	37,663	7,396	On-road mobile sources
Non-Road Mobile	Sum = 3,666,368	7,281	50,091	12,591	Off highway: non-road, commercial marine, and rail
Oil & Gas	Sum = 169,449	1,465	1,094	121	Oil & G area & pt sources (Upstream and Midstream)
Total Anthropogenic	Sum = 14,168,399	473,909	1,464,713	55,250	All anthropogenic emissions

3. Stationary source emissions and controls analysis

EPA guidance from August 2019 states that a Class 1 Area meeting its reasonable progress goals is not a “safe harbor,” and that a state must still determine the emission reduction measures that are necessary to make reasonable progress based on the four statutory factors and include such measures in the regional haze Long-term Strategy [40 CFR 51.308(f)(2)].

Based on the 2017 Regional Haze Rule, EPA’s August 2019 Technical Guidance, and in alignment with other states in the WRAP, DEQ conducted source screening for stationary sources based on the “Q/d” index, where Q is the total tons per year of haze-forming pollutants for a facility (NO_x, PM₁₀, and SO₂), and d is the distance in kilometers from the facility to the edge of a Class 1 Area. DEQ consulted with states in the WRAP partnership regarding the effects of sources outside of Oregon on Oregon Class 1 areas, as well as the effect of Oregon sources on Class 1 areas in adjacent states.

Additional information that DEQ consulted in selecting sources for the Four Factor Analysis, and in the determination of feasible controls and emission reductions, are data and analyses provided on the WRAP TSS website. These include:

- 1) Analyzing IMPROVE visibility data,
- 2) Performing a back trajectory analyses using 2014 – 2017 meteorological data
- 3) Calculating the Residence Time that the trajectories have over each 36 km grid cell centered on each IMPROVE site.
- 4) Weighting each grid cell RT by the extinction of each component (e.g. ammonium nitrate) at the IMPROVE site when the trajectory passes over the grid cell. The result is an Extinction Weighted Residence Time for each grid cell.
- 5) Multiplying the EWRT of each component (e.g. nitrate) by the grid cell emissions/distance (Q/d) value for the precursor (e.g. NO_x). The resulting value is the Weighted Emission Potential for the grid cell.

DEQ considered 31 facilities where Q/d exceeded 5.00 as initially required to go through an FFA process. The FFA process derives from 40 CFR 51.308(f)(2)(i) where the 2017 Regional Haze Rule lays out the factors that states must consider in establishing reasonable progress goals. Those factors are: 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.

DEQ presented an option for facilities where actual emissions were below the Q/d threshold; if those sources agreed to lower Plant Site Emission Limits such that Q/d was less than 5, those facilities could “screen out” and DEQ would not require further analysis from those facilities.

DEQ worked with the remaining facilities that did not screen out of further analysis as they proceeded through the FFA process. DEQ, in consultation with EPA and other states, developed criteria by which to assess the cost effectiveness of pollution controls. DEQ considered the results of the initial cost effectiveness analysis and additional information facilities submitted. In addition, DEQ employed a weight of evidence approach to better understand regional model results.

EPA’s 2019 Guidance describes several elements a state may wish to consider in assessing “energy and other non-air environmental effects” of source controls, including effects on energy consumption, waste disposal and water quality, as well as beneficial effects. In assessing potentially beneficial non-air environmental effects of source controls, DEQ completed an environmental justice analysis which presents preliminary vulnerability indices of populations living near subject facilities. DEQ did not analyze potential public health benefits on these populations but is confident that public health benefits will arise from PM and NO_x controls, in particular.

DEQ did not analyze environmental co-benefits of reducing haze forming pollutants; however, DEQ is aware of the ecological importance of reducing nitrogen and sulfur deposition in sensitive areas, such as high elevation lakes and streams. The National Park Service has studied and published on acidification effects of sulfur and nitrogen deposition and the nutrient enrichment effects of nitrogen deposition. The effects of excess sulfur and nitrogen deposition include acidification of water and

soils, eutrophication and toxic algal blooms in lakes and general disruption of nutrient cycling, which adversely affects plant and animal communities.¹⁵

NPS published studies in 2011, based in part on 2002 National Emissions Inventory data and projections from EPA's Community Multi-scale Air Quality model. Sullivan *et al.* (2011a,b)^{16,17} found Crater Lake National Park to be at high risk of acidification and nutrient enrichment, although nitrogen and sulfur pollutant loading in that region was relatively low. Sullivan, *et al.* (2011c)¹⁸ found nitrogen deposition (expressed as kilograms/hectare/year) in the Columbia River Gorge to be in the low to mid-range nationally (5 – 15 kg-N/ha/yr), but higher than surrounding areas in the North Coast and Cascades Network. While DEQ did not quantitatively assess other environmental co-benefits of haze forming pollutant emission reductions, potential co-benefits have informed DEQ's Long-term Strategy for the 2018 - 2028 implementation period.

3.1. Q/d screening process

DEQ screened sources for four factor analysis using the Q/d metric, as recommended in EPA's 2019 guidance Step 3: Selection of sources for analysis and the Western Regional Air Partnership Methodology.¹⁹ Q/d is a measurement of the ratio of facility-level emissions (Q) to the distance from the facility to a Class 1 Area (d), and can serve as a surrogate for the baseline visibility impact of the facility's emissions on that Class 1 Area. EPA's 2019 guidance describes the Q/d metric as:

A state may use a source's annual emissions in tons divided by distance in kilometers between the source and the nearest Class I area (often referred to as Q/d) as a surrogate for source visibility impacts, along with a reasonably selected threshold for this metric. This metric is a less reliable indicator of actual visibility impact because it does not consider transport direction/pathway, dispersion and photochemical processes, or the particular days that have the most anthropogenic impairment due to all sources. Therefore, it is recommended that use of this technique be limited to source selection for the purpose of developing a list of sources for which a state may conduct a four-factor analysis.

¹⁵ Nitrogen and Sulfur Pollution in Parks. <https://www.nps.gov/subjects/air/nature-nitrogensulfur.htm#critical>, accessed 01/20/22.

¹⁶ Sullivan *et al.*, (2011a): Sullivan, T. J., G. T. McPherson, T. C. McDonnell, S. D. Mackey, and D. Moore. 2011. Evaluation of the sensitivity of inventory and monitoring national parks to acidification effects from atmospheric sulfur and nitrogen deposition: Klamath Network (KLMN). Natural Resource Report NPS/NRPC/ARD/NRR—2011/360. National Park Service, Denver, Colorado.

¹⁷ Sullivan *et al.* (2011b): Sullivan, T. J., T. C. McDonnell, G. T. McPherson, S. D. Mackey, and D. Moore. 2011. Evaluation of the sensitivity of inventory and monitoring national parks to nutrient enrichment effects from atmospheric nitrogen deposition: Klamath Network (KLMN). Natural Resource Report NPS/NRPC/ARD/NRR—2011/312. National Park Service, Denver, Colorado.

¹⁸ Sullivan, et al. (2011c): Sullivan, T. J., G. T. McPherson, T. C. McDonnell, S. D. Mackey, and D. Moore. 2011. Evaluation of the sensitivity of inventory and monitoring national parks to acidification effects from atmospheric sulfur and nitrogen deposition: North Coast and Cascades Network (NCCN). Natural Resource Report NPS/NRPC/ARD/NRR—2011/365. National Park Service, Denver, Colorado.

¹⁹ Western Regional Air Partnership Technical Support System V2. "Methodology For Development Of The Q/D Analysis For Screening Sources Of Regional Haze-Forming Emissions." <http://views.cira.colostate.edu/tssv2/emissions/qdanalysis.aspx> (accessed 1/10/2020)

WRAP’s methodology also recommends that states target sources with larger Q/d values that will account for a reasonably large fraction of all the in-state major, minor and area stationary source emissions contributing to regional haze. WRAP also refers to EPA draft Regional Haze guidance that states that 80 percent could be considered a reasonably large fraction of the extinction budget to be captured.

WRAP defined Q/d as:

- $Q = NO_x + SO_2 + PM_{10}$ (tons per year)
- d = distance from a source to the boundary of a Class 1 Area (km)

The parameter d was calculated by the GenerateNear function using the Oregon Geolocator in ArcGISPro for all Class 1 Areas within 400 km of the Oregon state boundary only.

In alignment with the methods and criteria developed by the WRAP, the Q/d was calculated for each facility and each Class 1 Area if

- $d < 400$ km
- $Q > 25$ tpy

For both Q_{PSEL} and Q_{Actual} .

Table 3-1 shows the data and sources for each of the files used to calculate Q/D. **Error! Reference source not found.** shows a map of facilities and Class 1 Areas within 400 km of the Oregon state boundary.

Table 3-1. Data sources used to calculate Q/d.

Data	Source
Title V facility location & emission information	Oregon TRAACS – Title V Plant Site Emission Limits and 2017 NEI draft (released 9/3/2019)
ACDP facility location & emission information	Oregon TRAACS – ACDP Plant Site Emission Limits
Mandatory Class 1 Areas shapefile	EPA OAR OAQPS: https://edg.epa.gov/data/public/OAR/OAQPS/Class1/
Oregon State boundary shapefile	US Bureau of Land Management
Columbia River Gorge National Scenic Area shapefile	Columbia River Gorge Commission website

The goal of selecting sources for analysis was to capture 80% of total Q for major sources (Title V) sources. For this round of the Regional Haze Planning and Implementation Period, a Q_{PSEL}/d greater than or equal to 5 captures 80% of the total Q from major sources for all Oregon CIAs, including sources not located in Oregon.

DEQ used the Plant Site Emissions Limits for a facility in 2017 to calculate Q, and calculated d for all facilities and Class 1 Areas within a 400 km radius of Oregon state boundaries in ArcGIS. DEQ assessed facilities permitted under the Title V program and the Air Contaminant Discharge Permit program. Table 3-2 and Appendix A contain the results of the Q/d screening.

Figure 3-1: Class 1 areas and Title V facilities within 400 km of the Oregon state boundary.

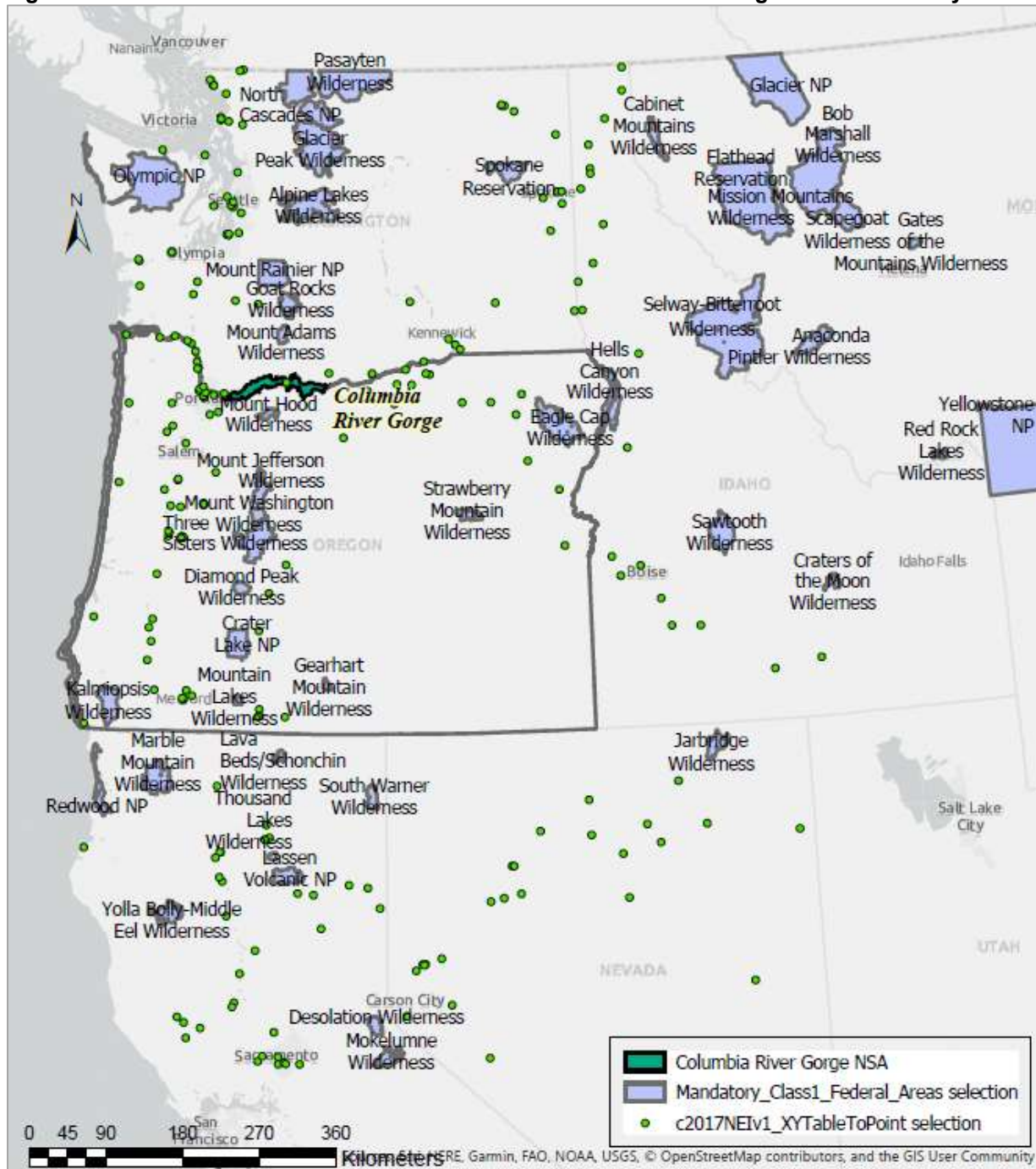


Table 3-2. Oregon facilities with Q/d greater than 5.00 that screened into four factor analysis.

Agency Facility ID	Facility Name	Permit	Fac State	Operating Status	EIS Facility ID	CIA Name	Distance (km)	Actual Emissions (tons per year)					PSEL (tons per year)					
								NOX	PM10	SO2	Q	Q/d	NOX	PM10	SO2	Q(tpy)	Q/d	EmissYear
25-0016	PGE Boardman	TV	OR	Active	8171111	Mount Hood Wilderness	142.6	1768.12	387.75	3297.87	5454	38.24	5961	1086	9525	16572	116.21	2017
208850	INTERNATIONAL PAPER	TV	OR	Active		Three Sisters Wilderness	58.9	724.02	181.39	67.64	973	16.51	1692	750	1521	3963	67.24	
05-1849	A Division of Cascades Holding US Inc.	TV	OR	Active	7219311	Mount Hood Wilderness	87.7	244.40	14.53	6.10	265	3.02	1449	738	3400	5587	63.72	2017
01-0029	Ash Grove Cement Company	TV	OR	Active	7219011	Eagle Cap Wilderness	51.9	788.00	140.82	33.10	962	18.54	1778	176	42	1996	38.47	2017
05-2520	Beaver Plant/Port Westward I Plant	TV	OR	Active	7393911	Mount Hood Wilderness	133.3	359.22	62.19	9.85	431	3.24	3776	241	595	4612	34.60	2017
10-0025	Roseburg Forest Products - Dillard	TV	OR	Active	8219211	Kalmiopsis Wilderness	81.8	1006.94	479.24	73.52	1560	19.07	1655	743	110	2508	30.67	2017
04-0004	Georgia Pacific- Wauna Mill	TV	OR	Active	8055711	Mount Hood Wilderness	145.5	1037.66	775.80	539.82	2353	16.18	2139	1077	913	4129	28.38	2017
03-2145	West Linn Paper Company	TV	OR	Active	8417511	Mount Hood Wilderness	53.7	186.13	14.99	2.72	204	3.79	597	82	743	1422	26.46	2017
22-3501	Halsey Pulp Mill	TV	OR	Active	7394911	Three Sisters Wilderness	80.4	352.06	278.81	80.92	712	8.86	687	366	851	1904	23.69	2017
26-1876	Owens-Brockway Glass Container Inc.	TV	OR	Active	8520811	Mount Hood Wilderness	55.1	403.65	76.15	118.07	598	10.86	711	132	313	1156	21.00	2017
21-0005	Georgia-Pacific- Toledo	TV	OR	Active	8418611	Three Sisters Wilderness	147.0	939.11	195.76	16.07	1151	7.83	1351	799	839	2989	20.33	2017
18-0096	Gas Transmission NW - Compressor Station #13	TV	OR	Active	7393311	Crater Lake NP	14.1	29.40	2.08	1.47	33	2.34	224	14	39	277	19.68	2017
31-0002	Particleboard	TV	OR	Active	7298311	Eagle Cap Wilderness	25.0	305.10	25.49	2.38	333	13.32	379	42	39	460	18.41	2017
18-0003	Klamath Cogeneration Proj	TV	OR	Active	9223711	Mountain Lakes Wilderness	24.4	143.00	19.56	6.40	169	6.91	314	48	39	401	16.40	2017
18-0005	Interfor Gilchrist	TV	OR	Active	8518711	Diamond Peak Wilderness	22.3	60.15	125.28	2.31	188	8.42	104	208	39	351	15.74	2017
31-0006	Elgin Complex	TV	OR	Active	8170611	Eagle Cap Wilderness	18.1	128.15	41.10	13.01	182	10.08	171	62	39	272	15.04	2017
01-0038	Baker Compressor Station	TV	OR	Active	7219111	Eagle Cap Wilderness	40.2	158.48	1.97	1.17	162	4.02	542	14	39	595	14.81	2017
12-0032	Ochoco Lumber Company	ACDP - Standard	OR	Active		Strawberry Mountain Wilderness	8.5						50	31	39	120	14.19	PSEL
09-0084	Compressor Station 12	TV	OR	Active	7410011	Three Sisters Wilderness	30.4	63.60	4.62	2.56	71	2.33	377	14	39	430	14.13	2017
302847	Oregon City Compressor Station	TV	OR	Active	8417911	Mount Hood Wilderness	43.8	156.66	1.72	1.02	159	3.64	536	16	39	591	13.49	2017
08-0003	Pacific Wood Laminates, Inc.	TV	OR	Active	8416611	Kalmiopsis Wilderness	23.5	52.50	139.12	3.27	195	8.29	76	189	29	294	12.50	2017
26-1865	EVRAZ Inc. NA	TV	OR	Active	8521611	Mount Hood Wilderness	73.1	139.40	118.74	3.27	261	3.57	493	340	39	872	11.92	2017
18-0013	Collins Products, L.L.C.	TV	OR	Active	7219711	Mountain Lakes Wilderness	23.6	6.85	105.89	0.03	113	4.78	39	166	50	255	10.82	2017
15-0159	Biomass One, L.P.	TV	OR	Active	8056211	Mountain Lakes Wilderness	56.4	239.00	15.57	14.32	269	4.77	469	48	39	556	9.86	2017
15-0073	Roseburg Forest Products- Medford MDF	TV	OR	Active	8056111	Mountain Lakes Wilderness	59.5	131.16	36.24	5.94	173	2.91	272	215	39	526	8.84	2017
18-0014	Columbia Forest Products, Inc.	TV	OR	Active	8186211	Mountain Lakes Wilderness	24.6	43.19	57.16	0.73	101	4.10	65	87	39	191	7.75	2017
15-0004	Boise Cascade- Medford	TV	OR	Active	8418111	Mountain Lakes Wilderness	60.6	113.42	125.26	15.00	254	4.19	227	167	31	425	7.02	2017
10-0045	Swanson Group Mfg. LLC	TV	OR	Active	8004811	Kalmiopsis Wilderness	48.8	55.24	144.76	2.99	203	4.16	80	193	39	312	6.39	2017
18-0006	dba JELD-WEN	TV	OR	Active	7219611	Mountain Lakes Wilderness	21.1	26.59	16.78	1.58	45	2.13	67	27	39	133	6.30	2017
15-0025	Timber Products Co. Limited Partnership	TV	OR	Active	8054711	Mountain Lakes Wilderness	59.4	69.18	25.21	2.43	97	1.63	162	159	39	360	6.07	2017
10-0078	Roseburg Forest Products- Riddle Plywood	TV	OR	Active	8005011	Kalmiopsis Wilderness	68.9	79.49	50.16	15.13	145	2.10	199	127	39	365	5.29	2017
204402	KINGSFORD MANUFACTURING COMPANY	TV	OR	Active		Three Sisters Wilderness	61.0	289.12	177.59	44.1	511	8.38						

Last updated 1/10/2020

3.2. Impact of Oregon facilities on other states' Class 1 areas

Table 3-3 shows the list of Oregon facilities that had a Q/d of greater than 5.00 for a non-Oregon Class 1 area, and the closest Class 1 area. The full list of potentially impacted Class 1 areas for each facility is located in Appendix B. Oregon facilities with potential visibility impacts in other states. Unless they screened out by reducing Plant Site Emission Limits to Q/d < 5.00, all of the facilities in Table 3-3 underwent four factor analysis for their impact on at least one Oregon Class 1 area.

Table 3-3. Oregon facilities with potential visibility impacts on other states.

Agency Facility ID	Facility Name	Fac State	Closest non-Oregon Class 1 area	CIA State	Distance (km)	Q/d Actual	Q/d PSE L
05-1849	A Division of Cascades Holding US Inc.	OR	Mount Adams Wilderness	WA	98.41	2.69	56.77
01-0029	Ash Grove Cement Company	OR	Sawtooth Wilderness	ID	181.25	5.31	11.01
05-2520	Beaver Plant/Port Westward I Plant	OR	Mount Rainier NP	WA	114.86	3.75	40.15
15-0159	Biomass One, L.P.	OR	Marble Mountain Wilderness	CA	87.83	3.06	6.33
15-0004	Boise Cascade-Medford	OR	Marble Mountain Wilderness	CA	78.01	3.25	5.45
18-0013	Collins Products, L.L.C.	OR	Lava Beds/Schonchin Wilderness	CA	46.50	2.43	5.48
26-1865	EVRAZ Inc. NA	OR	Mount Adams Wilderness	WA	107.17	2.44	8.14
04-0004	Georgia Pacific-Wauna Mill	OR	Mount Rainier NP	WA	131.17	17.94	31.48
21-0005	Georgia-Pacific-Toledo	OR	Mount Adams Wilderness	WA	248.27	4.64	12.04
22-3501	Halsey Pulp Mill	OR	Mount Adams Wilderness	WA	228.78	3.11	8.32
18-0003	Klamath Cogeneration Project	OR	Lava Beds/Schonchin Wilderness	CA	46.14	3.66	8.69
03-2729	Oregon City Compressor Station	OR	Mount Adams Wilderness	WA	106.80	1.49	5.53
26-1876	Owens-Brockway Glass Container Inc.	OR	Mount Adams Wilderness	WA	97.54	6.13	11.85
25-0016	PGE Boardman	OR	Mount Adams Wilderness	WA	137.66	39.62	120.38
10-0025	Roseburg Forest Products - Dillard	OR	Redwood NP	CA	150.14	10.39	16.70
03-2145	Willamette Falls Paper Company	OR	Mount Adams Wilderness	WA	116.25	1.75	12.23

3.3. Impact of facilities in other states on Oregon Class 1 areas

The 2017 Regional Haze Rule requires states to investigate and plan for out-of-state facility emissions that affect visibility in that state's Class 1 areas (40 CFR 51.308(f)(2)(ii)). Specifically, "the State must consult with those States that have emissions that are reasonably anticipated to contribute to visibility impairment in the mandatory Class 1 Federal area to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress." Through state consultations during 2019 and 2020 (described in Section 6.2), Q/d calculations, and the regional model available through WRAP, DEQ identified the facilities listed in Table 3-4 as being reasonably likely to contribute to visibility impairment in Oregon Class 1 areas. DEQ's high level analysis did not quantify meteorological characteristics, such as predominant wind direction between points, other than by considering WRAP model results that included those inputs. All of these facilities were on the four factor analysis lists for their respective states.

Eleven facilities located in Washington may impair visibility in the Mt. Hood Wilderness area in Oregon. According to draft documents posted on Washington Ecology's Regional Haze webpage, Ecology relied on the 2014 National Emissions Inventory for Regional Haze Round 2 input. Ecology used a Q/d ratio of 10 as the threshold for facilities to screen into FFA.²⁰ For oil refinery facilities where Ecology found pollution controls reasonable, Ecology will implement those decisions through state rules governing Reasonably Available Control Technology, with controls installed in the next Regional Haze implementation period. As well, Ecology will issue orders and consent decrees to several facilities during this implementation period. The Agreed Orders include NO_x reductions at TransAlta until that facility ceases coal-fired power generation in 2025, and AOs with two Alcoa Intalco smelters to do an FFA prior to start-up and implement identified controls approved by Ecology within three years of startup. Ecology also currently has a consent decree with Cardinal Glass for NO_x reductions.

According to written communications between Idaho Department of Environmental Quality and Oregon DEQ, Idaho screened 10 facilities into FFA based on a Q/d threshold of 2. As of this writing, Idaho DEQ had not reached final decisions regarding facility controls, but shared the Clearwater facility FFA with Oregon DEQ.

According to notes from the Nevada – Oregon state consultation meeting and subsequent electronic mail communications, Nevada Division of Environmental Protection screened in 8 facilities based on a Q/d > 4 and required five of the largest emitting facilities to go through FFA. The owners of one of these facilities, the North Valmy power plant, determined to affect visibility in an Oregon Class 1 area, may close the plant by 2028. The FFA for this facility showed all control technology to exceed a cost effectiveness threshold of \$8,000/ton for NO_x and SO₂. Nevada will pursue regulatory emissions limits for the North Valmy plant based on the reduced generating capacity of the plant due to the departure of an operating partner. Idaho Power will no longer exercise its 50% ownership in the North Valmy generating station and will cease obtaining any power from the plant in 2021. Nevada will continue discussions with the plant operator, NV Energy, concerning possible closure scenarios, the timing of which may or may not factor into Nevada's regional haze planning.

²⁰ Regional Haze SIP Revision – DRAFT Second 10-Year Plan, Chapter 11: Four Factor Analysis. <https://fortress.wa.gov/ecy/ezshare/AQ/RegionalHaze/docs/RhSIPCh11202101.pdf> and March 31, personal communications.

Table 3-4. Facilities in other states reasonably likely to cause visibility impairment in Oregon Class 1 areas.

Facility Name	Fac State	OR CIA Name	d (km)	Q-act (tpy)	Q/d Act	NO _x Act	PM10-PRI Act	SO ₂ Act	FFA Decision ²¹
TransAlta Centralia Generation, LLC	WA	Mount Hood	169.98	8,323.32	48.97	6,214.37	419.33	1,689.62	<ul style="list-style-type: none"> Will cease coal-fired power generation by 12/31/25. reduced NOX emission standard for remaining facility life.
Nippon Dynawave Packaging Co.	WA	Mount Hood	118.70	2,463.94	20.76	1,949.43	124.30	390.21	
Georgia-Pacific Consumer Operations LLC	WA	Mount Hood	45.45	689.00	15.16	486.00	163.00	40.00	<ul style="list-style-type: none"> Control measures do not appear necessary to meet the reasonable progress goals and would not provide meaningful visibility improvement.
Boise Paper	WA	Eagle Cap	114.04	1,656.24	14.52	637.27	133.56	885.41	
Longview Fibre Paper and Packaging, Inc. dba KapStone Kraft Paper Corporation	WA	Mount Hood	113.46	1,449.26	12.77	1,040.95	210.33	197.98	<ul style="list-style-type: none"> Ecology will reevaluate these sources during the next implementation period.
WestRock Tacoma Mill	WA	Mount Hood	210.43	1,532.36	7.28	1,120.90	221.74	189.72	
Alcoa Primary Metals Intalco Works	WA	Mount Hood	386.45	4,776.22	12.36	190.17	598.71	3,987.34	<ul style="list-style-type: none"> Not cost reasonable to add emission control devices. Currently in curtailment.
BP Cherry Point Refinery	WA	Mount Hood	391.39	2,808.00	7.17	1,918.00	82.00	808.00	<ul style="list-style-type: none"> Additional controls are cost-effective.
Tesoro Northwest Company	WA	Mount Hood	347.26	2,194.33	6.32	1,970.78	143.83	79.72	<ul style="list-style-type: none"> Ecology recommends RACT rule development
Ash Grove Cement Company	WA	Mount Hood	241.76	1,466.47	6.07	1,367.89	29.15	69.42	<ul style="list-style-type: none"> Unreasonable cost to install equipment. Recent upgrade of PM controls. Recent consent decree addressed SO₂, NO_x, and PM emissions.

²¹ From Washington Regional Haze website: <https://ecology.wa.gov/Air-Climate/Air-quality/Air-quality-targets/Regional-haze;>

Facility Name	Fac State	OR CIA Name	d (km)	Q-act (tpy)	Q/d Act	NO _x Act	PM10-PRI Act	SO ₂ Act	FFA Decision ²¹
Cardinal FG Winlock	WA	Mount Hood	151.89	881.83	5.81	809.14	16.47	56.22	<ul style="list-style-type: none"> • Installation SCR in 2021; large decrease in NO_x; minor increase in PM and SO₂. • New permit limit for ammonia of 10 ppm and 9.5 tpy is reasonable.
Clearwater Paper Corp. - PPD & CPD	ID	Hells Canyon	70.62	1,614.27	22.86	1,372.03	191.14	51.09	<ul style="list-style-type: none"> • Awaiting information on FFA decision.
Valmy Cooling Tower #2	NV	Gearhart Mountain	348.95	2,858.07	8.19	1,218.79	51.01	1,588.27	<ul style="list-style-type: none"> • Best case scenario – close by 2028. • Second option – modify permit per FFA.

3.4. Four factor analysis

The four factors that the 2017 Regional Haze Rule and guidance require facilities and DEQ to consider for this planning period are: (1) cost of controls; (2) time necessary to install controls; (3) remaining useful life; and (4) energy and other non-air environmental impacts.

DEQ sent 31 facilities letters in December 2019, notifying those sources that DEQ had found their potential emissions to exceed a $Q/d = 5$ threshold, and that DEQ was requesting information to begin the FFA process. Facilities initially had until May 31, 2020, to conduct those analyses. DEQ extended the deadline until June 15, 2020, upon request from some facilities to accommodate challenges arising from COVID-19.

If a facility's actual emissions were below the screening threshold and potential emissions above the screening threshold, DEQ provided the source an opportunity to reduce Plant Site Emission Limits to a point where Q/d would be less than 5.00. If a facility chose the option to reduce PSELs, DEQ exempted the source from further control analysis. Seven facilities took this option by June 2020. In the following months, one facility found the controls to be cost effective and a second had recently completed a controls analysis, so DEQ did not required additional analysis.

DEQ received FFA information from those facilities that had not opted for PSEL reductions or were otherwise exempt from FFA by June 15, 2020. DEQ reviewed the submitted FFA information and consulted with other states to strive for consistency, where appropriate, in identifying criteria and screening levels used in assessing presumed cost-effectiveness of pollution controls. The process and criteria that DEQ used to identify the emission units for additional review and information were:

- Step 1: Divide emissions units for each facility into three bins:
 - Bin 1. Likely cost-effective candidates. Control devices with cost less than \$10,000/ton, or those that appear to be technically feasible but for which no cost analysis was provided.
 - Bin 2. Retain for further analysis. Control devices with cost more than \$10,000/ton but less than \$30,000/ton.
 - Bin 3. Cost is unlikely to be reasonable. Above \$30,000/ton.
- Step 2: Adjust cost estimates for consistency among emissions units.
 - Bins 1 & 2. Adjust for basic factors (PSEL, interest rate, useful life).
 - Bin 3. No further analysis. Unlikely to be cost effective.

After initial review, DEQ ruled out control devices that:

- Cost of control was greater than \$10,000 per ton, after adjustment to current prime rate (3.25%),²² 30 year lifetime, and emissions at PSEL, or
- Provided an emissions reduction (using emissions at PSEL) of less than 20 tons/year.

DEQ then selected 43 emissions units at 17 facilities for additional review for a total of 62 control devices. In August 2020, DEQ notified those 17 facilities of one or more facility emissions units for which DEQ would require additional analysis. DEQ requested that facilities submit additional or more detailed information about control costs by mid-September 2020. DEQ extended

²² Per EPA Cost Control Manual, pages 14-17: https://www.epa.gov/sites/production/files/2017-12/documents/epaccmcostestimationmethodchapter_7thedition_2017.pdf

the deadline until the end of September due to extreme weather events, including fire and wind events, across the West in early September.

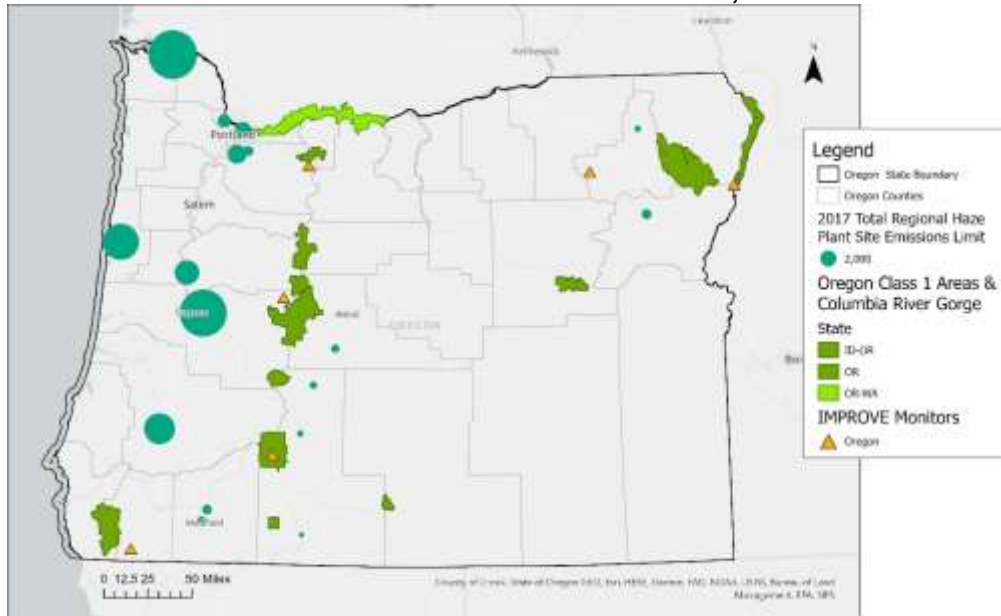
Between September 2020 and January 2021, DEQ reviewed the additional cost estimate information and sent facilities letters notifying them of DEQ's decisions about the cost effectiveness of controls. During that period and continuing through March 2021, DEQ met with facility representatives to discuss options for facilities to achieve and track the emission reductions that would be required. Figure 3.2 illustrates the timelines and decision points DEQ followed throughout the FFA process.

Figure 3-2: Four factor analysis process and timeline.



Figure 3-3 shows the total permitted emissions of regional haze-forming pollutants for the facilities where FFAs indicated cost-effective controls.

Figure 3-3: Total Plant Site Emissions Limits (tons per year) of Regional Haze Forming Pollutants for facilities where FFAs indicated cost-effective controls, as of December 2020.



3.5. Division 223 Rulemaking

In July 2021, the Oregon Environmental Quality Commission, DEQ’s rulemaking board, adopted rules in Oregon Administrative Rules Chapter 340 Division 223 that codified the Q/d screening procedure, establishing what sources DEQ would require to take action under Regional Haze Round 2, and the four factor analysis process. DEQ had existing authority under OAR 340-214-0110 to request information from facilities related to the four factor analysis, but the revised Division 223 rules gave DEQ additional authority to establish requirements and compliance options for facilities regulated under Regional Haze Round 2. The July 2021 revisions to Division 223 also repealed rules that implemented the first round of Regional Haze requirements for the Portland General Electric coal-fired facility in Boardman, OR and which were no longer relevant because that facility closed in December 2020. DEQ includes the Division 223 rules, as filed with the Oregon Secretary of State in July 2021, in Appendix D.

DEQ’s authority under Division 223 allowed DEQ to fulfill the requirement under the federal 2017 Regional Haze Rule that Regional Haze Plans include enforceable emission reductions of haze-forming pollutants. In Section 3.7 of this plan, DEQ documents the agency’s FFA findings, facilities’ compliance decisions and resulting orders issued to stationary sources under DEQ’s Division 223 authority.

3.6. Weight of evidence approach

DEQ first assessed the four factors as required 40 CFR 51.308 (d)(1)(i)(A) to determine reasonable progress goals. Following the FFA process, DEQ applied a weight of evidence approach to qualitatively assess potential connections between a facility’s emissions and visibility impairment in Class 1 areas, as well as co-benefits to surrounding communities

potentially associated with emission reduction. Weight of evidence approaches are commonly used in ecological assessment and health risk assessment. They are used when an inference needs to be drawn from various and heterogeneous pieces of evidence.

DEQ followed the methodology described in Suter, *et al.* (2017) for qualitative assessments.²³ **Error! Reference source not found.** shows the factors and relative weighting that DEQ considered to assess environmental impacts and potential connection between a facility’s emissions and visibility impairment on a most impaired day.

The factors DEQ weighted the most were the Q/d value, the Weighted Emission Potential analysis (described in Section 2.5.2), and the Extinction Weighted Residence Times. The Q/d, WEP and EWRT provide the strongest evidence that emissions from the facilities contribute to visibility impairment in Class 1 areas. Facilities that rank high among these four pieces of evidence indicate that reasonable controls on the facility are likely to improve visibility at Class 1 areas. DEQ relied on the WEP and EWRT analysis found on the WRAP TSS²⁴ for each Class 1 area.

Factors weighted in a second tier include indices representing population vulnerability and a prototype of a cumulative burden – or environmental justice - score for people residing near each source. By considering an EJ score and vulnerable population rank, DEQ can identify locations where facility controls will have the co-benefit of not only improving visibility, but also reducing environmental burden on vulnerable communities. DEQ believes that emission reductions in Oregon should be targeted towards those communities that experience the greatest burden.

Table 3-5: Scoring table for DEQ’s Weight of Evidence approach, after Table 1 in Suter et al., 2017.

Statutory factor	Piece of Evidence	Relevance	Strength	Reliability	Overall weight
Facility emissions can be reasonably attributed/anticipated to cause visibility impairment on most impaired days for at least one Class 1 area in Oregon (PSEL and actual)					
	Q/d	+++	+	+	+++
	EWRT	+++	++	+++	+++
	WEP	+++	++	++	+++
Local environmental impacts					
	Vulnerable populations (0-5)	+	+	+++	++
	EJ Score (cumulative burden, 1-10)	++	++	++	++

3.6.1 Environmental Justice Analysis

The 2017 Regional Haze Rule requires states to consider what beneficial effects controls for visibility improvement are likely to have on other factors, such as public health. Environmental advocacy stakeholders have also raised the question of environmental justice benefits of Regional Haze Program reductions in pollutants to states. To better understand the potential co-benefits of pollutant controls, DEQ undertook an environmental justice analysis of communities surrounding the facilities that DEQ’s Regional Haze decisions will affect.

²³ Suter et al. 2019. “A Weight of Evidence Framework for Environmental Assessments: Inferring Qualities.” Integrated Environmental Assessment and Management — Volume 13, Number 6—pp. 1038–1044. <http://index.osl.state.or.us/illiad/pdf/197992.pdf> (Accessed 1/27/21)

²⁴ <https://views.cira.colostate.edu/tssv2/>

EPA defines environmental justice as “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

Executive Order 12898 (1994) focused federal attention on the environmental and human health conditions of minority and low-income populations with the goal of achieving environmental protection for all communities. The Executive Order established an Interagency Working Group on Environmental Justice. Additionally, the Executive Order directed federal agencies to develop strategies on how to identify and address the disproportionately adverse human health and environmental effects of programs, policies, and activities on minority and low-income populations.

3.6.1.1 Vulnerable Populations Score

DEQ first identified the demographic profiles of the communities immediately surrounding the facilities for which DEQ considered controls.²⁵

DEQ used data provided in the 2019 version of EJSCREEN to calculate the following measures of potentially vulnerable communities for each census block group in the state. This version of EJSCREEN uses the 2013-2017 5-year American Community Survey data for demographic indicators.

- Percent minority (percent population identifying as + percent of the population identified as Hispanic/Latino white)
- Percent low income (percent of population living in households making less than 200% of the federal income poverty level)
- Educational attainment (percent of the population over the age of 25 without a high school diploma)
- Linguistic isolation (percent of the population self-identified as speaking English “less than well”)
- Percent of population under 5
- Percent of population over 64

These indicators, or variations thereof, are the standard demographic indicators used in dozens, if not hundreds of studies since the publication of *Toxic Wastes and Race* (United Church of Christ, 1987) for examining potential patterns of disproportionate burden of environmental pollution on communities of color and/or low-income communities.

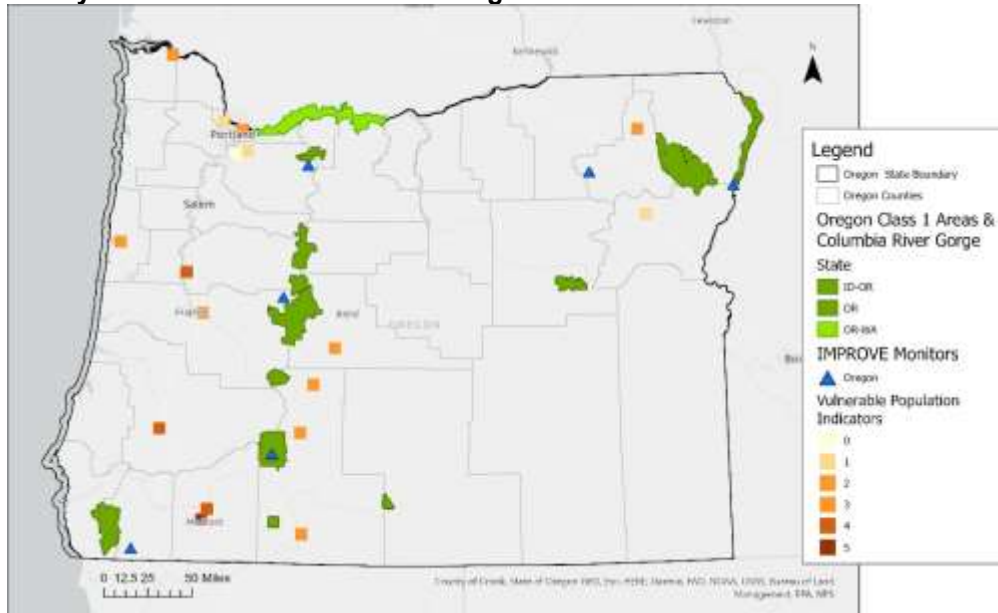
For each facility, DEQ tallied a “1” if the value of that indicator was above the statewide average, or a “0” if the value was below the statewide average. The figure below shows the number of indicators for which the community within 2.5 miles of a facility was above the statewide average in 2017 (**Error! Reference source not found.**). The maximum was 6 and the minimum was 0. If a census block group was only partially contained within the 2.5 mile radius of the facility, then the value for that census block group was scaled to the proportion of the block group within the circle.

Figure 3-4 illustrates the outcome of DEQ’s vulnerable populations analysis. The analysis shows that most communities surrounding the affected Title V facilities are above the state

²⁵ Wu et al. 2020. Towards an assessment of cumulative environmental burden and disproportionate impact for Oregon communities. Poster presented virtually at American Geophysical Union Annual Meeting 2020.

average vulnerability score. Areas with the highest vulnerability scores were Medford, Roseburg and southeastern Linn County. Income indicators in these areas most influenced the vulnerability scores while percent minority indicators and linguistic isolation indicators most influence overall vulnerability scores in Portland and eastern Oregon counties.

Figure 3-4: Number of socioeconomic indicators for which the community within 2.5 km of a facility was above the statewide average.



DEQ completed a preliminary analysis to improve understanding about the location of particularly vulnerable communities relative to the stationary sources for which DEQ considered pollution controls to improve visibility in Class 1 areas and the Columbia Gorge²⁶.

3.6.1.2 Towards an Environmental Justice “Score” Methodology for Oregon

A review of the published literature shows that as of January 2021, California, Washington State, and Maryland have published their own state-specific versions of EPA EJSCREEN. In addition, DEQ is aware that Minnesota, North Carolina, and some local jurisdictions have done some work to make EPA EJSCREEN applicable to a specific geography.

²⁶ This EJ analysis also illustrates a method DEQ could develop further to identify “environmental justice communities” across the state. In future EJ analyses, DEQ would need to establish criteria and definitions around environmental justice. In the absence of an Oregon-specific definition of “environmental justice communities,” or a standard process for analyzing disproportionate effects, DEQ relied on best professional judgment and the academic literature to indicate where pollution reductions might have benefits (in addition to visibility improvement) to communities that experience disproportionate socioeconomic, health and environmental burdens.

The figures below are taken from the Washington Environmental Health Disparities Map Project²⁷ and Driver's et al. (2019) work on Maryland EJSCREEN.²⁸ The table below shows a high level comparison of the data inputs into CalEnviroScreen, Washington Environmental health Disparities map, and MD EJSCREEN. A detailed table in Appendix C lists the data sources used in each application, along with the inputs DEQ used in its preliminary examination of environmental justice "scores" in Oregon. DEQ attempted to identify areas of the state with higher cumulative environmental burden.

As shown in Figure 3-5, and summarized in Table 3-6, all the methods DEQ reviewed for calculating an EJ Score multiplied a pollution burden by a population characteristics score. Pollution burden was calculated by some averaging function of the rank percentiles of environmental exposures and environmental effects, where environmental exposures are largely air-based exposures while environmental effects were related to land and water variables. Washington's method double weighted environmental exposures over environmental effects, while Maryland's method takes an average of the rank percentiles in each category.

All methods calculate an index for population characteristics by averaging the average percentile ranks of sensitive populations and socioeconomic factors, where sensitive populations are health-based indicators, and socioeconomic factors were census-based demographic data.

Common to California, Washington, and Maryland methods was the process used to develop both the list of indicators to be shown in the tool and used in score calculations, weighting, and review of other methodological considerations. All of them involved multi-year efforts (a minimum of two years) to conduct meaningful community outreach and input into developing the tool, as well as some customization of indicators available based on health outcomes as well as environmental indicators.

If DEQ were to develop an Oregon-specific EJSORE, the literature and other states' methods suggest the following actions would be important:

- Conduct extensive community outreach to gain input and feedback, following the Washington process;
- Partner with environmental and occupational health agency staff, and/or other sections of relevant public health agencies;
- Identify additional potentially relevant environmental data from all DEQ programs;
- Conduct additional statistical analysis of the various factors to better understand and establish meaningful thresholds (or ranges of thresholds) for scoring based on factor analysis, and the propagation of probability distributions and uncertainty throughout the various steps of the model.
 - For instance, DEQ learned that the score is sensitive to the inclusion (MD) or exclusion (WA) of the age factors (under 5, over 64).

²⁷ University of Washington Department of Environmental & Occupational Health Sciences. Washington Environmental Health Disparities Map: technical report. Seattle; 2019. https://deohs.washington.edu/sites/default/files/images/Washington_Environmental_Health_Disparities_Map.pdf (Accessed 12/17/20)

²⁸ Driver et al. 2019. "Utilization of the Maryland Environmental Justice Screening Tool: A Bladensburg, Maryland Case Study." *Int. J. Environ. Res. Public Health* **2019**, *16*(3), 348. <https://www.mdpi.com/1660-4601/16/3/348> (Accessed 12/17/20)

- However, when significance thresholds are above 60% or above 70%, that only made a difference in 2 sites out of approximately 30 locations analyzed.
- Refer to Zapata et al. (2017)²⁹ for an example of this methodology.

Figure 3-6 illustrates the results of DEQ's preliminary environmental justice analysis as cumulative burden scores for the populations residing within 2.5 miles of the stationary sources to be regulated under Regional Haze Round 2.

²⁹ Zapata et al. 2017. Findings Brief for Equity Considerations for Greenhouse Gas Emissions Cap and Trade Legislation in Oregon.

https://www.oregonlegislature.gov/helm/workgroup_materials/WG%204%20-%20Marisa%20A.%20Zapata%20Findings%20Brief.pdf (Accessed June 2020)

Figure 3-5: A comparison of Washington Environmental Health Disparities map and Maryland's MD EJSCREEN.

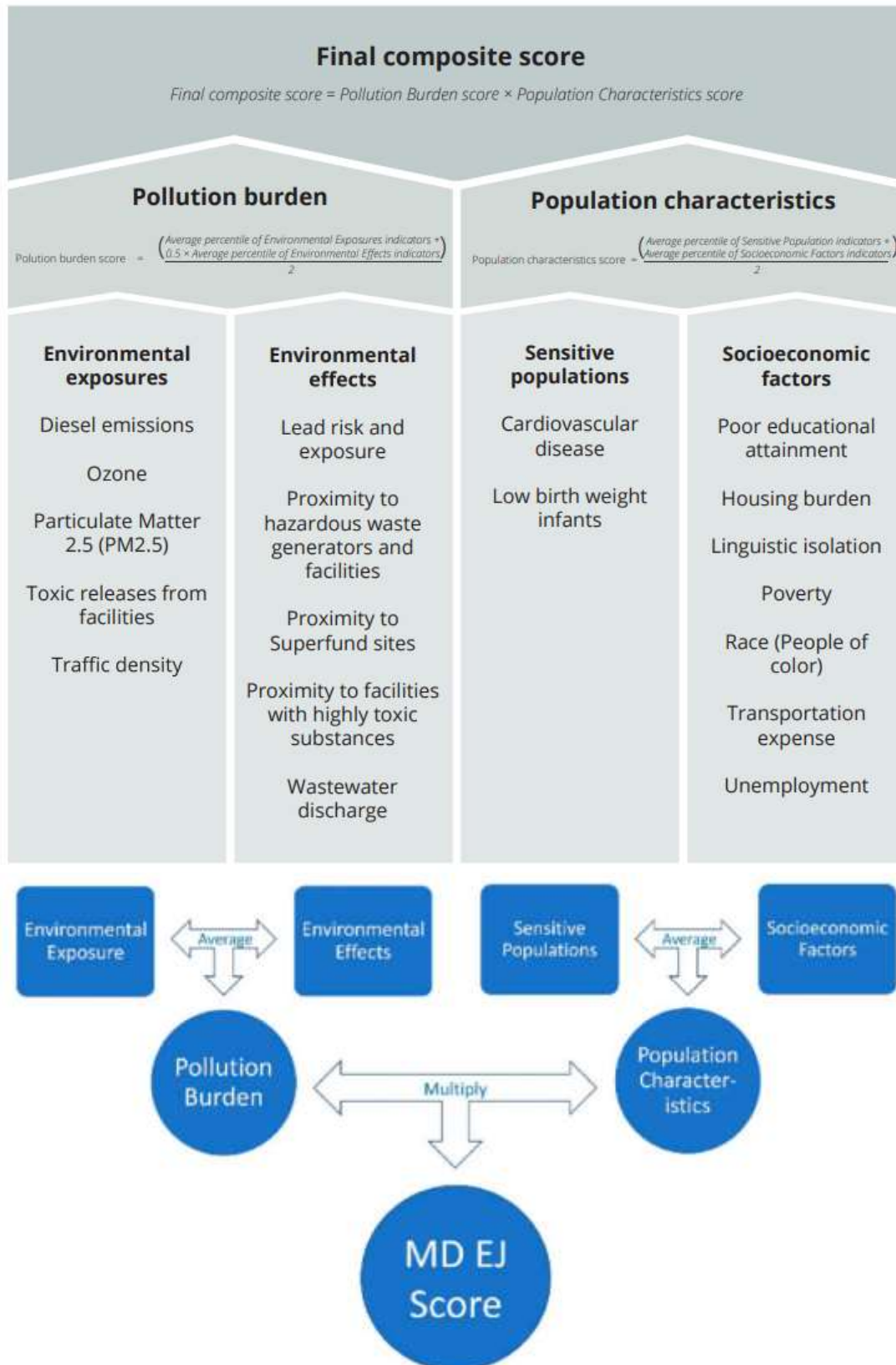
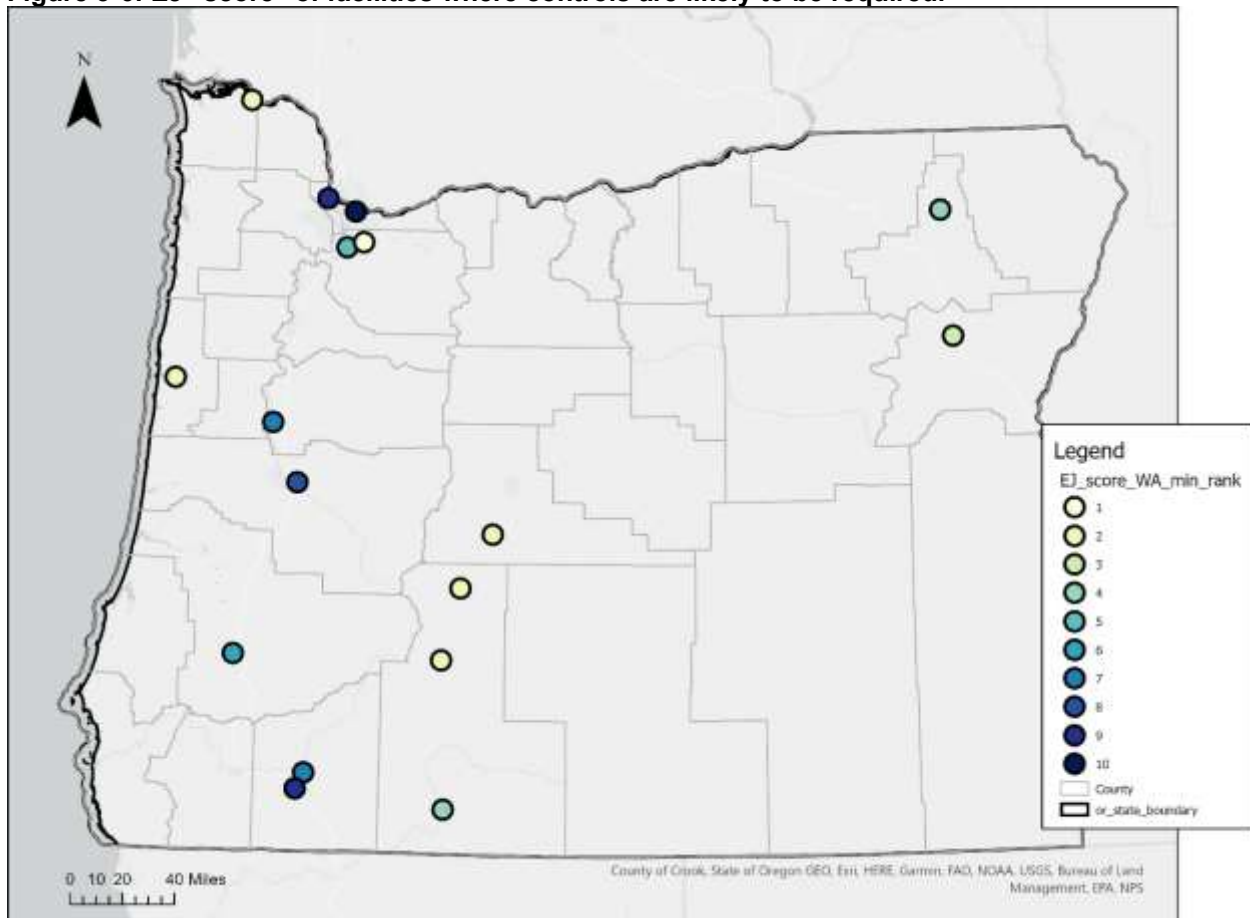


Table 3-6. Comparison of data inputs into CalEnviroScreen, WA Environmental Health Disparity Map, and MD EJSCREEN.

Similarities	Differences
<ul style="list-style-type: none"> • Calculate an EJ Score based on pollution burden x population characteristics • Pollution burden is calculated from environmental exposures and environmental effects • Population characteristics are calculated from sensitive populations and socioeconomic factors • Sensitive populations = health-based data • Socioeconomic factors = population data (mostly census based, may also come from other data sets) 	<ul style="list-style-type: none"> • Specific data used in each category (see Appendix C) • Formula for calculating pollution burden and population characteristics <ul style="list-style-type: none"> • MD EJSCREEN: Uses average of factors (not weighted) • WA EHDMP: Uses weighted averages • How EJ Score is assigned after the composite score is calculated <ul style="list-style-type: none"> • MD EJSCREEN: Uses a score from 1-5 based on percentile rank (1 = 0-50%; 2 = 50-80%; 3 = 80-90%; 4 = 90-95%; 5 = 95-100%) • WA EHDMP: Uses a score from 1-10 based on decile rank.

Figure 3-6: EJ "score" of facilities where controls are likely to be required.



3.6.2 Weight of Evidence Results

This weight of evidence approach indicated that controls are both environmentally beneficial and cost effective at many facilities evaluated by DEQ. Section 3.7 details the considerations made for each facility and what controls are required.

3.7 Facility-specific findings and results

This section summarizes the control analyses and the outcomes for each facility evaluated in Regional Haze Round 2. Table 3-7 lists the 32 facilities that DEQ initially determined exceeded the Q/d = 5 threshold. For each facility, DEQ has categorized its findings with a key. Keys 0 and 1 indicate facilities that did not undergo the FFA process because the facilities shut down or had recently undergone a control analysis, unrelated to the 2017 Regional Haze Rule. Key 2 Facilities did not need to undergo FFA because they agreed to lower their PSELs such that potential emissions would be lower than the Q/d threshold. For Key 3 facilities, the FFA outcome did not find any controls deemed cost effective, i.e. <\$10,000/ton pollutant reduced. Key 4 facilities were those where DEQ's review of the FFAs found controls cost effective. The 17 Key 5 facilities are those for which DEQ requested a second round of more detailed FFA analysis and found controls to be cost effective.

Table 3-6 does not reflect final outcomes, but rather DEQ's findings based on FFA review. DEQ continued to accept information from and confer with facilities through August 9, 2021. In August 2021, using the authority provided by EQC's adoption of the revised Division 223 rules, DEQ issued orders to facilities to install pollution controls or otherwise reduce emissions of Round 2 Regional Haze pollutants. In some cases, DEQ determined that facilities had taken appropriate action to reduce their permitted emissions below the thresholds identified in Division 223 rules. In Appendix E, DEQ includes the orders and permits that document DEQ's Round 2 Regional Haze determinations for each regulated facility, with exceptions noted in the text of the following sections.

Table 3-7. Summary of DEQ findings for 32 facilities that initially screened into consideration for Round 2 emissions controls.

Facility ID	Facility Name	Actual Q/d	2017 PSEL Q/d	FFA key	Description
25-0016	PGE Boardman	38.24	116.2 1	0	No FFA. Facility shut down coal-fired operations, Carty GS, Q/d << 5.00
01-0029	Ash Grove Cement Company	18.54	38.47	1	No FFA, 2013 consent decree with EPA = max controls.
204402	Kingsford Manufacturing Company	8.38		2	No FFA - lowered PSEL to Q/d < 5.00
05-1849	Cascades Tissue Group: A Division of Cascades Holding US Inc.	3.02	63.72	2	No FFA - lowered PSEL to Q/d < 5.00.
15-0025	Timber Products Co. Limited Partnership	1.63	6.07	2	No FFA - lowered PSEL to Q/d < 5.00.
05-2520	PGE Beaver Plant/Port Westward I Plant	3.24	34.6	2	No FFA - Will lower PSEL to Q/d < 5.00 by 2025.
10-0078	Roseburg Forest Products - Riddle Plywood	2.1	5.29	2	No FFA, PSEL Q/d < 5.00
15-0073	Roseburg Forest Products - Medford MDF	2.91	8.84	2	No FFA, Q/d < 5.00

Facility ID	Facility Name	Actual Q/d	2017 PSEL Q/d	FFA key	Description
18-0003	Klamath Energy LLC – Klamath Cogeneration Proj	6.91	16.4	2	No FFA - lowered PSEL to Q/d < 5.00
08-0003	Pacific Wood Laminates, Inc.	8.29	12.5	3	FFA - no controls <\$10K, no further action.
10-0045	Swanson Group Mfg. LLC	4.16	6.39	3	FFA - no controls <\$10K, no further action.
12-0032	Ochoco Lumber Company	4.60	14.19	3	FFA - no controls <\$10K, no further action.
18-0014	Columbia Forest Products, Inc.	4.1	7.75	3	FFA - no controls <\$10K, no further action
18-0013	Collins Products, L.L.C.	4.78	10.82	3	FFA - no controls <\$10K, no further action.
31-0002	Woodgrain Millwork LLC - Particleboard	13.32	18.41	3	FFA - no controls <\$10K, no further action.
26-1876	Owens-Brockway Glass Container Inc.	10.86	21	4	FFA – controls cost effective.
18-0005	Gilchrist Forest Products	8.42	15.74	4	FFA – controls cost effective.
31-0006	Boise Cascade Wood Products, LLC - Elgin Complex	10.08	15.04	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
04-0004	Georgia Pacific - Wauna Mill	16.18	28.38	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
22-3501	Cascade Pacific Pulp, LLC - Halsey Pulp Mill	8.86	23.69	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
15-0004	Boise Cascade Wood Products, LLC - Medford	4.19	7.02	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
09-0084	Gas Transmission Northwest LLC - Compressor Station 12	2.33	14.13	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
18-0096	Gas Transmission Northwest LLC - Compressor Station 13	2.34	19.68	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
208850	International Paper - Springfield	16.51	67.24	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
21-0005	Georgia-Pacific – Toledo LLC	7.83	20.33	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
01-0038	Northwest Pipeline LLC - Baker Compressor Station	4.02	14.81	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
03-2729	Northwest Pipeline LLC - Oregon City Compressor Station	3.64	13.49	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
26-1865	EVRAZ Inc. NA	3.57	11.92	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
15-0159	Biomass One, L.P.	4.77	9.86	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
10-0025	Roseburg Forest Products - Dillard	19.07	30.67	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
18-0006	JELD-WEN	2.13	6.3	5	FFA - Step 2. More detailed controls analysis; controls cost effective.
03-2145	Willamette Falls Paper Company	3.79	26.46	5	FFA - Step 2. More detailed controls analysis; controls cost effective.

3.7.1 PGE Boardman (25-0016)

While PGE Boardman's emissions in 2017 would have screened the facility into four factor analysis based on the facility PSELS, and actual emissions, early communication in January 2020, confirmed that the facility was still on track to close operations by December 31, 2020. The closure of this facility, the last coal-fired power plant in Oregon, was a product of the first round of Regional Haze planning that took place in 2009-2010.

The facility officially closed its doors on October 15, 2020.³⁰ The remaining operations onsite are known as Carty Generating Station, and DEQ expects emissions to have a maximum Q/d of slightly over 1.00.

3.7.2 Ash Grove Cement Co, Durkee (01-0029)

Ash Grove Cement, Durkee plant (01-0029) recently underwent a stringent control analysis and DEQ determined that no additional controls required through Regional Haze Round 2 were likely to be effective or reasonable. To reach this determination, DEQ reviewed information the facility sent in early 2020, the facility's construction ACDP permit from 2017 (Permit No. 01-0029-CS-01), and the 2017 administrative amendment to the permit (Permit No. 01-0029-TV-01). In addition, DEQ took into account the actions that EPA took on Portland Cement companies.³¹

DEQ requires Ash Grove Cement to maintain existing controls to minimize visibility impairment and comply with this Regional Haze SIP. DEQ enforces existing controls through the facility's Title V permit and National Emission Standards for Hazardous Air Pollutants requirements. The provisions of the permit on which DEQ relies to enforce emission limits are described below.

Permit location: https://www.deq.state.or.us/AQPermitsonline/01-0029-TV-01_P_2020.PDF.

The facility's particulate matter emissions are controlled by a recently installed baghouse system in accordance with the 2018 Portland Cement NESHAP revisions for particulate matter for the kilns and the clinker cooler. The particulate limit is 0.07 lbs./ton clinker for the kiln and the clinker cooler, both continuously monitored by Continuous Parametric Monitoring Systems. Limits are based on a 30-day rolling average. Annual stack tests indicate compliance with the PM limit and the facility has passed all audits to ensure the PM CPMS is functioning.

The permit also limits SO₂ emissions to 0.4 lb./ton clinker on a 3-hour average. Compliance is determined by stack testing for SO₂ at least once every 2 years. NO_x emissions and emission factors have undergone recent substantive control reviews with EPA and are controlled by selective non-catalytic reaction with ammonia injection. The NO_x limit is 2.0 lb./ton clinker from the kiln monitored by Continuous Emission Monitoring System. All limits are on a 30-day rolling average. The 2.0 lb./ton clinker permit limit is being used as the emission factor to establish the PSEL in the draft permit. The permit requires the NO_x CEMS be operated and maintained in accordance with 40 CFR 60, Appendices B and F and DEQ's Continuous Monitoring Manual.

³⁰ DEQ press release. October 15, 2020. "Closure of Boardman coal-fired plant a major milestone in reducing greenhouse gas emissions."

<https://www.oregon.gov/newsroom/Pages/NewsDetail.aspx?newsid=53598> (Accessed 2/1/2021)

³¹ U.S.A. vs. Ash Grove Cement Co. 2013. Consent Decree.

<https://www.epa.gov/sites/production/files/documents/ashgrove-cd.pdf> (Accessed 3/18/20)

These documents require quarterly audits which are performed by the permittee. The results of the audits are submitted to DEQ for review. No exceedances have been reported for a NO_x limit since the SNCR was installed. Per Permit No. 01-0029-CS-01, emissions reductions in PM, NO_x, and SO₂ resulting from compliance with the standards in that construction permit shall not be considered as a creditable contemporaneous emission decrease for the purposes of obtaining a netting credit under DEQ's PSD program.

Given the reasons outlined above, the unique circumstances of the facility of having recently gone through a control technology review through the NESHAPs and the global enforcement process, and per the Regional Haze guidelines issued by EPA, DEQ found that no further controls or analysis was necessary.

3.7.3 Facilities that lowered PSELs

DEQ offered facilities an option when their actual emissions had a screening value (Q/d) of less than the threshold of 5.00, but the screening value of the PSELs was greater than 5.00. Those facilities could lower PSELs and screen out of the FFA process. In some cases, facilities entered stipulated agreements and orders with DEQ that document PSEL reduction; in others PSEL reductions were documented in permit modifications or applications.

During consultation, the National Park Service expressed concern that these facilities might propose increasing PSELs under a future permitting action that would cause the facility to exceed the initial Q/d screening criteria. NPS stated that "facilities going through a permitting action may be allowed to focus only on the affected units and not required to take a facility-wide look at control options. This could, in effect, allow the source to piecemeal control technology determinations and restrict FLM opportunities for engagement." In response to that concern, DEQ asserts that under circumstances where a source proposes to increase emissions, including this scenario that NPS suggested, DEQ may reopen the issued permit to include requirements consistent with Oregon Regional Haze regulations and sources may be subject to reexamination of visibility impacts.

3.7.3.1 Kingsford Manufacturing Company (LRAPA #204402)

In a January 24, 2020 letter, Kingsford requested DEQ reevaluate the visibility impacts from the Springfield facility based on the PSELs contained in the Title V Operating Permit issued in August 2019 and confirm that the Springfield facility is not required to perform FFA for the Regional Haze program. In subsequent conversations with Kingsford and Lane Regional Air Protection Agency (LRAPA), DEQ stated that the Springfield facility could be excluded from conducting a four factor analysis for this round of the Regional Haze program if the Springfield facility was willing to accept a combined limitation on regional haze precursor PSELs and unassigned emissions such that a Q/d analysis based on the combined limitation resulted in a value of less than 5 at all Class 1 areas (see Table 3-8). In an April 16, 2020, email to DEQ and LRAPA, Kingsford agreed to a combined limitation on regional haze precursor PSELs and unassigned emissions of no more than 304 tons per year. Based on this agreement, DEQ concurred that Kingsford was not required to undergo FFA for their Springfield facility during this round of the Regional Haze program. DEQ required that Kingsford submit a permit modification application for the updated PSELs to LRAPA by August 1, 2020. The modified permit, reflecting the PSEL reduction is located here:

<https://www.lrapa.org/DocumentCenter/View/6032/Kingsford-204402---Permit-and-Addendums-No-1-and-2>.

Table 3-8. Reduced PSELs for Kingsford Manufacturing (LRAPA #204402) to Q/d < 5.00.

	NO _x	SO ₂	PM10	Total (Q)	d (km)	Q/d
PSEL (Aug 2019 Permit)	103	39	103	245	61.0	4.02
PSEL + Unassigned Emissions (Aug 2019 Permit)		549		549	61.0	9.00
PSEL + Unassigned Emissions (Proposed)		304		304	61.0	4.98

3.7.3.2 Cascade Tissue Group: A Division of Cascades Holding US, Inc. (05-1849)

Cascades Tissue Group communicated via a May 14, 2020, letter to DEQ that the facility had voluntarily agreed to lower PSELs for the St. Helens facility in April 2018, resulting in a Q/d value of 1.78. The facility stated they expected reduction of unassigned emissions and netting basis to occur in June 2021, rather than at the next permit renewal, which would take place in 2023 or 2024. In a stipulated agreement and final order signed August 18, 2021, included in Appendix E, the facility agreed that DEQ will set the PSEL for SO₂, PM10 and NO_x to 39, 14 and 103 tons per year, respectively, and set the unassigned emissions for each regional haze pollutant to zero.

3.7.3.3 Timber Products Co. (15-0025)

In a letter dated August 13, 2020, DEQ confirmed that the Timber Products Co. April 2020 permit renewal application had requested reduced PSELs below the screening threshold of Q/d = 5.00 (Q/d = 4.68; Table 3-9). Given the total emissions of the facility will be below the screening threshold of 5.00, DEQ agreed that this facility did not need to undergo FFA for Regional Haze Round 2. DEQ is drafting the permit renewal to reflect this PSEL reduction but the permit renewal was not complete at the time of this Regional Haze SIP submission.

Table 3-9. 2020 PSELs for Timber Products Co (15-0025)

	2016 PSEL	2020 PSEL
NO _x	162	154
PM10	159	85
SO ₂	39	39 (PTE = 5)
Total (Q)	360	278
d	59.4 km	59.4 km
Q/d	6.07	4.68

3.7.3.4 PGE Beaver / Port Westward I (05-2520)

As PGE stated in their June 15, 2020, letter to DEQ, PGE committed to voluntarily reduce the PSELs of Regional Haze pollutants for the facility below the screening threshold of Q/d = 5.00. Given that the total emissions of the facility would be below the screening threshold of 5.00, and the facility's voluntary acceptance of lower limitation of their unassigned emissions, DEQ agreed that the facility did not need to undergo FFA for Regional Haze Round 2. In a Stipulated Agreement and Final Order signed August 10, 2021, included in Appendix E, PGE committed to reducing the PSELs for the facility on the following schedule:

- From August 1, 2021, to July 31, 2022, the Permittee's PSELs for the following pollutants are: 99 tons for PM10; 1,900 tons for NO_x; and 99 tons for SO₂.

- From August 1, 2022, to July 31, 2023, the Permittee’s PSEs for the following pollutants are: 99 tons for PM10; 1,542 tons for NOx; and 99 tons for SO₂.
- From August 1, 2023, to July 31, 2024, the Permittee’s PSEs for the following pollutants are: 99 tons for PM10; 1,184 tons for NOx; and 99 tons for SO₂.
- From August 1, 2024, to July 31, 2025, the Permittee’s PSEs for the following pollutants are: 99 tons for PM10; 826 tons for NOx; and 99 tons for SO₂.
- On August 1, 2025, the Permittee’s PSEs for the following pollutants are: 99 tons for PM10; 436 tons for NOx; and 39 tons for SO₂.

3.7.3.5 Roseburg Forest Products – Riddle Plywood (10-0078)

Based on the letter from Roseburg Forest Products dated February 19, 2020, DEQ concurred that FFA was not required for this facility based on lowered PSEs in the July 2019 permit renewal (Table 3-10). The Title V permit sets federally enforceable permit limits. In addition, the 2019 permit renewal reduced unassigned emissions, so any increases in emissions above the netting basis by more than the Significant Emission Rates would trigger New Source Review or Prevention of Significant Deterioration permitting and analyses. DEQ has posted air quality permits on its webpage and Permit #10-0078-TV-01 may be accessed here: https://www.deq.state.or.us/AQPermitonline/10-0078-TV-01_P_2019.PDF.

Table 3-10: Roseburg Forest Products - Riddle Plywood (10-0078) PSEs, July 2019 permit renewal Plant Site Emission Limits.

NO_x (tons/year)	SO₂ (tons/year)	PM10 (tons/year)	Total (Q) (tons/year)	d (km)	Q/d
144	39	108	291	68.9	4.2

3.7.3.6 Roseburg Forest Products – Medford MDF (15-0073)

In a letter dated June 2, 2020, DEQ concurred that FFA was not required for this facility based on lowered PSEs in the June 2017 permit renewal that reduced the Q/d to less than 5.

3.7.3.7 Klamath Energy LLC – Klamath Cogeneration Project (18-0003)

In a May 18, 2020, letter to DEQ, Klamath Energy LLC proposed that the Klamath Energy facility (18-0003) screen out of the Round 2 Regional Haze FFA process based on planned installations of ultra low-NO_x burners to combustors on the facility’s combined cycle combustion turbines (emissions units CT1 and CT2) by May 2021 for CT2 and May 2022 for CT1. These upgrades would reduce the facility PSEL to 122 tons/year for PM10, SO₂, and NO_x combined, and reduce the Q/d to less than 5.00. Table 3-11 shows the Klamath Energy proposal below the 2017 PSEs DEQ used for initial Q/d screening and the 2017 actual emissions from the National Emissions Inventory.

DEQ agreed with the emissions reductions achievable through the installations of ultra low NO_x burners at the Klamath Energy facility and that the facility would not be required to go through the FFA process. Klamath Energy LLC submitted a permit modification application for the updated PSEs, as agreed, before August 1, 2020. DEQ issued the permit modification in December 2020, which now requires annual reporting of the combined rolling 12-month annual emissions for PM10, SO₂, and NOx, as tons per year. DEQ has posted air quality permits on its webpage and Permit #18-0003-TV-01 modification may be accessed here:

https://www.deq.state.or.us/AQPermitsonline/18-0003-TV-01_PM_2020_1.PDF. An administrative amendment to correct a typographical error is located here: https://www.deq.state.or.us/AQPermitsonline/18-0003-TV-01_AA_2021_1.PDF.

Table 3-11. Klamath Energy LLC's proposed PSEL reductions for Regional Haze.

Facility Emissions	NO _x	PM10	SO ₂	Q	d	Q/d
2017 PSEL	314	48	39	401	24.45 km	16.4
2017 NEI Actual	143.0	19.6	6.4	169	24.45 km	6.91
Klamath Energy proposal				122 combined	24.45 km	4.99

3.7.4 Facilities for which no controls were cost-effective

Six facilities completed the FFA and after adjustment for interest rate and remaining useful life, the costs of control were significantly above \$10,000/ton. DEQ's review found no emissions units and control devices at these facilities met the criteria for further analysis. The FFAs are included in Appendix F.

DEQ requires each of these facilities to maintain existing controls to minimize visibility impairment and comply with this Regional Haze SIP. DEQ enforces existing controls through each facility's Title V or Air Contaminant Discharge permit and National Emission Standards for Hazardous Air Pollutants. For each facility listed below, DEQ provides the permit number, where to find that permit and the provisions of the permit on which DEQ relies to enforce emission limits.

Collins Products, L.L.C.

Permit number: 18-0013-TV-01

Permit location: https://www.deq.state.or.us/AQPermitsonline/18-0013-TV-01_P_2015.PDF

Controls to maintain: biofilter, bag filter, fugitive control plan (see Permit Condition 3 Table – Emissions Unit and Pollution Control Device Identification)

Emission Limits and Standards. Testing, Monitoring and Recordkeeping Requirements:

Table 3-12 to Table 3-16 summarize the emission limits, standards, testing, monitoring and recordkeeping requirements within permit number 18-0013-TV-01. Permit sections 71 – 77 contain general reporting requirements.

Table 3-12: Facility wide emission limits, standards and monitoring requirements for Collins Products

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
340-208-0210(2)	4	Fugitive emissions	Fugitive Control Plan/Minimize Emissions	Visual Survey	8
340-240-0520	6				
340-234-0520(1)(a) & 234-0530(1)(a)]	5				
ACDP Condition 16	7				
340-240-0530	9	Operation and Maintenance	O&M Plan	Review plan periodically	10
340-208-0300	11	Air contaminants	Not cause a nuisance	Complaint investigation	13
340-208-0450	12	PM >250µ	No observable deposition off site	Complaint investigation	13
340-228-0110(1)	14	ASTM Grade 1 distillate fuel oil	<0.3% Sulfur by weight	Vendor certificate or analysis	15 & 16
340-228-0110(2)		ASTM Grade 2 distillate fuel oil and used oil	<0.5% Sulfur by weight		
40 CFR Part 68	17	Risk management	Risk management plan	NA	17
40 CFR Part 63, Ssubpart DDDD	18	General compliance provisions			

Table 3-13: Particle board emission limits, standards and monitoring requirements for Collins Products

Emission Unit	Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Condition
PB01-PB10, PB12	340-208-0110(2) and 340-240-0510 (1)	19	Visible Emissions	20% opacity, 3 min. aggregate in 60 minutes	20
PB01-PB10, PB12	340-226-0210(1)(b)	21	PM	0.1 gr/dscf, avg. of 3 test runs	20 and 22
PB01-PB04, PB06-PB10, PB12	340-234-0520(2)(a)	23	PM	3 lbs/1,000 ft ² , 3/4"	24
PB01 and PB02	40 CFR 63.2240	25	HAP	Compliance options	28
	40 CFR 63.2240(b)	26	HAP	Capture efficiency	28
	40 CFR 63.2240	29	HAP	Biofilter temperature operating limit	32
PB05	40 CFR 63.2241(a)	30	HAP	Dryer inlet temperature and furnish moisture content work practice requirements	32
PB06	40 CFR 63.2240(a)	27	HAP	0.26 lb/ODT	31-33

Table 3-14: Particle board test methods for Collins Products.

Emissions Unit	Test Method	Frequency
PB01/PB45 Biofilter (press area and unloader)	Modified EPA Method 9	Weekly
PB03 (board side and end trim saws), PB04 (board cooler vents), PB05 (core dryers), PB06 (surface dryers), PB07 (cyclone PB22), PB08 (cyclone PB24), PB09 (cyclones with primary filters), PB10 (cyclones with secondary filters), PB12 (secondary screen with primary filter)	Modified EPA Method 9	At least once during each semi-annual compliance certification period with at least 30 days between observations

Table 3-15: Hard board emission limits, standards and monitoring requirements for Collins Products

EU ID	Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Condition
HB01-HB04, HB08-HB17	340-208-0110(2) and 340-240-0510(1)	34	Visible Emissions	20% opacity, 3 min. aggregate in 60 minutes	35
HB01-HB04, HB08-HB17	340-226-0210(1)(b)	36	PM	0.1 gr/dscf, avg. of 3 test runs	35, 37, 38, 39, 40
HB01-HB16	340-234-0530(2)(b)(B)	41	PM	1.4 lbs/1,000 ft ² , 1/8"	42
HB01-HB04 and HB16	40 CFR 63.2240	43	HAP	Compliance options	45
	40 CFR 63.2240(b)	44	HAP	Capture efficiency	45
	40 CFR 63-2240	46	HAP	Biofilter temperature operating limit	49
HB08	40 CFR 63.2240	43	HAP	Compliance options	45
	40 CFR 63-2240	47	HAP	RCO minimum operating temperature	49

Table 3-16: Hard board test methods for Collins Products

Emissions Unit	Test Method	Frequency
HB01 – HB04 and HB16 (HB50 biofilter - existing and future defibrators, press, loader, and unloader)	Modified EPA Method 9	Weekly
HB09 (bake oven/dehumidifier roof vents), HB10 (Cyclone HB7), HB12 (cyclones HB8-12, 16, 18), HB14 (cyclones HB23, 31, 32, 44), HB15 (cyclone HB27), HB17 (coating ovens)	Modified EPA Method 9	At least once during each semi-annual compliance certification period with at least 30 days between observations

Columbia Forest Products, Inc.

Permit number: 18-0014-RV-01

Permit location: https://www.deq.state.or.us/AQPermitsonline/18-0014-TV-01_P_2017.PDF

Controls to maintain: multiclone, baghouse (see Permit Condition 3 Table 1 – Emissions Unit and Pollution Control Device Identification)

Emission Limits and Standards. Testing, Monitoring and Recordkeeping Requirements: Error! Reference source not found. to Table 3-19 summarize the emission limits, standards, testing, monitoring and recordkeeping requirements within permit number 18-0014-TV-01. Permit sections 58 – 66 contain additional recordkeeping and reporting requirements.

Table 3-17: Summary of facility wide emission limits and standards for Columbia Forest Products

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
340-208-0210(2)	4	Fugitive Emissions	Minimize	Fugitive Dust Control Plan, observations, and recordkeeping	40 & 41
340-208-0300	5	Air Contaminants	Not cause a nuisance	Complaint investigation	42
340-208-0450	6	PM >250 μ	No observable deposition off site	Complaint investigation	42
40 CFR Part 68	7	Risk Management	Risk management plan	NA	NA

Table 3-18: Emission unit specific emission limits and standards for Columbia Forest Products.

EU ID	Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
BLR-S and BLR-N	340-208-0110(2)(a) and (5)	8	Visible Emissions	40% opacity, 6-minute block average through 12/31/2019 ^(a)	VE periodic monitoring	43
	340-228-0210(2)(a)(B) and (C)	9	PM	0.24 gr/dscf @ 12% CO ₂ through 12/31/2019 ^(b)	Periodic VE observations and O&M	43, 44 and 45
	40 CFR Part 63, Subpart JJJJJ	10 - 13	HAPs	Biennial Tune-up	Biennial Tune-up Records	12
V-N	340-234-0510(1)(b)	14	VE and PM	10% daily average operating opacity	VE periodic monitoring	46
	340-234-0510(1)(e)	15	VE and PM	Highest and Best	Periodic VE observations and O&M	47
	340-234-0510(1)(f)	16	PM	Concealing Emissions	Periodic VE observations and O&M	47
	340-226-0210(2)(b)(B)	17	PM	0.14 gr/dscf	ST periodic monitoring	46 and 47
PV	340-208-0110(2)(a) and (4)	18	Visible Emissions	20% opacity, 6-minute block average	VE periodic monitoring	48
	340-226-0210(2)(b)(A)	19	PM	0.10 gr/dscf	ST periodic monitoring	48
MH	340-208-0110(2)(a) and (4)	18	Visible Emissions	20% opacity, 6-minute block average	VE periodic monitoring	49
	340-226-0210(2)(b)(B)	19	PM	0.14 gr/dscf	ST periodic monitoring	49 and 50
PV and MH	340-234-0510(2)(a)	19	PM	56.25 lb/hr	Periodic VE observations, equipment I&M and material throughput	48, 49, 50 and 51
EU ID	Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
NG1	340-208-0110(5)	22	Visible Emissions	20% opacity, 6-minute block average	VE periodic monitoring	52
	340-226-0210(2)(b)(B)	23	PM	0.14 gr/dscf avg. of 3 test runs	Periodic VE observations and O&M	52

(a) Boiler limits (BLR-S & BLR-N) becomes 20% opacity on and after January 1, 2020.

(b) Boiler limit (BLR-S) becomes 0.15 gr/dscf on and after January 1, 2020. Boiler limit (BLR-N) becomes 0.20 gr/dscf on and after January 1, 2020, if operated 870 hours or less in a calendar year.

Table 3-19: Compliance source testing methods for Columbia Forest Products.

Emissions Unit	Pollutant	Test Method
V-N	PM	Oregon Method 7
PV	PM	Oregon Method 7
MH	PM	Oregon Method 5 or 8
NG1	Visible Emissions (opacity)	EPA Method 9
NG1	PM	Oregon Method 5

Ochoco Lumber Company (12-0032)

Permit number: 12-0032-ST-01

Permit location https://www.deq.state.or.us/AQPermitsonline/12-0032-ST-01_P_2019.PDF:

Controls to maintain: multiclone on boilers 1 and 2, electrostatic precipitator on boiler 3.

Emission Limits and Standards, Testing, Monitoring, Recordkeeping and Reporting Requirements:

Within permit number 12-0032-ST-01, Section 1.0 sets general emission standards and limits for visible, PM, fugitive and nuisance emissions. Section 1.6 specifies that the permittee must operate and maintain air pollution controls devices and emission reduction processes at the highest reasonable efficiency and effectiveness to minimize emissions. Section 2.0 sets specific performance and emission standards for the boilers, including associated reporting. Section 4.0 establishes required compliance demonstration at source testing, including monitoring requirements. Sections 5.0 and 6.0 establish recordkeeping and reporting requirements, respectively.

Pacific Wood Laminates, Inc.

Permit number: 08-0003-TV-01

Permit location: https://www.deq.state.or.us/AQPermitsonline/08-0003-TV-01_P_2019.PDF.

Controls to maintain: wet scrubber, baghouses 1 – 4 (see Permit Condition 3, Table 1)

Emission Limits and Standards, Testing, Monitoring, Recordkeeping and Reporting Requirements:

Table 3-20 through Table 3-27 summarize the emission limits, standards, testing, monitoring and recordkeeping requirements within permit number 08-0003-TV-01. Permit section 57 establishes requirements for visible emissions monitoring for boiler PH2, veneer dryers, plywood presses and conveyors. Sections 58 - 69 contain additional monitoring, recordkeeping and reporting requirements.

Table 3-20: Facility wide emission limits and standards for Pacific Wood Laminates, Inc.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition
340-208-0210(1-2)	4	Fugitive emissions	Minimize	Fugitive emission survey	5
340-208-0300	6	Air contaminants	No nuisance	Complaint Investigation	8
340-208-0450	7	PM >250 μ	No fallout	Complaint Investigation	8
340-234-0510(2)	9	Particulate Matter	34.7 pounds/hour, daily basis	Recordkeeping	10
40 CFR Part 68	11	Risk management	Risk management plan	NA – below threshold	NA

Table 3-21: Summary of requirements for emission unit boiler PH2 at Pacific Wood Laminates, Inc.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(6)	12	Visible emissions	20% opacity	6-minute block average	NA	13
340-228-0210(2)(b)(A)	14	PM	0.10 gr/dscf @ 12% CO ₂	Avg. of 3 test runs	19	15-18
40 CFR Part 63 Subpart JJJJJ	20	HAPs	Tune-up & one time energy assessment	Biennial tune-up	20.a, 20.b	21-25

Table 3-22: Emission test methods for emission unit boiler PH@ at Pacific Wood Laminates, Inc.

PM	ODEQ Methods 1-5
NOx	EPA Method 7E
CO	EPA Method 10
Opacity	EPA Method 9

Table 3-23: Summary of requirements for emission units veneer dryers A, B and C and Pacific Wood Laminates, Inc.

Applicable Requirement	Requirement Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition Number
340-234-0510(1)	26	Visible emissions	10% average, opacity 20% maximum opacity as 6 min. block average	VE, I & M	27, 32
340-226-0210(2)(b)	28	PM	0.10 gr/dscf (avg. of 3 test runs)	Monthly I & M, source test, CAM	32-37
340-226-0310	29	PM	Table 1 OAR 340 Division 226	Monthly I & M, source test, CAM	32-37
340-234-0510(1)(e) & (g)	30	Air contaminant emissions	Minimize with highest and best operation	Monthly I & M	32
340-234-0510(1)(f)	31	Air contaminant emissions	Concealing emissions prohibited	Yearly I & M	33

Table 3-24: Emission test methods for emission units veneer dryers A, B and C and Pacific Wood Laminates, Inc.

Location: RTO/RCO Exhaust Duct

PM	ODEQ Method 5
NO _x	EPA Method 7E
CO	EPA Method 10
Opacity	EPA Method 9
VOC	EPA Method 25A

Location: RTO/RCO Inlet Duct

Flow	EPA Methods 1-4
VOCs	EPA Method 25A
Methanol and formaldehyde	NCASI Method 98.01 (or equivalent)

Table 3-25: Summary of requirements for emission unit plywood presses, 1, 2, 3 and 4 at Pacific Wood Laminates, Inc.

Applicable Requirement	Requirement Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition Number
340-208-0110(4)	38.a	Visible emissions from Press 1, 3, & 4	20% opacity as 6-minute block average	VE	40
340-208-0110(3)(a)	38.b	Visible emissions from Press 2	40% opacity as 6 min. block avg. until December 31, 2019; 20% opacity on or after January 1, 2020	VE	40
340-226-0210(2)(c)	39.a	PM	0.10 gr/dscf (avg. of 3 test runs) for Press 4	VE, ST	40, 41
340-226-0210(2)(b)(B)	39.b	PM	0.14 gr/dscf (avg. of 3 test runs) for Press 1 and 3	VE, ST	40, 41
340-226-0210(2)(a)(B)	39.c	PM	0.24 gr/dscf through 12/31/19, then 0.15 gr/dscf (avg. of 3 test runs) for Press 2	VE, ST	40, 41

Table 3-26: Emission test methods for emission unit plywood presses, 1, 2, 3 and 4 at Pacific Wood Laminates, Inc.

Location: Press Exhaust Duct

Stack Flow and conditions	EPA Methods 1-4
PM	ODEQ Method 5
Opacity	EPA Method 9
VOC	EPA Method 25A
Formaldehyde and Methanol	NCASI Method 98.01
TTE	EPA Method 204

Table 3-27: Summary of requirements for emission units material transport and pneumatic conveyors at Pacific Wood Laminates, Inc.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3) & (4)	42	Visible emissions	20% opacity or 40% opacity thru 12/31/19, then 20% opacity	6-minute block average	NA	45
340-226-0210(1)(b)	43	PM	0.10- 0.24 gr/dscf, see condition	Avg. of 3 test runs	NA	46, 47
340-226-0310	44	PM	See Table 1	Avg. of 3 test runs	NA	46, 47

Swanson Group Mfg. LLC

Permit number: 10-0045-TV-01

Permit location: https://www.deq.state.or.us/AQPermitsonline/10-0045-TV-01_P_2017.PDF.

Controls to maintain: multiclones, electrostatic precipitator, baghouse (see Permit Condition 4, Table 1 – Emission Units).

Emission Limits and Standards, Testing, Monitoring, Recordkeeping and Reporting Requirements:

Table 3-28 through Table 3-32 summarize the emission limits, standards, testing, monitoring and recordkeeping requirements within permit number 10-0045-TV-01. Sections 51 – 62 contain additional monitoring, recordkeeping and reporting requirements.

Table 3-28: Summary of facility wide emission limits and standards for Swanson Group Mfg.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0210	5	Fugitive emissions	Minimize	NA	NA	8
340-208-0300	6	Air contaminants	No nuisance	NA	NA	8
340-208-0450	7	PM >250 μ	No fallout	NA	NA	8
40 CFR Part 68	9	Risk management	Risk management plan	NA	NA	9

Table 3-29: Summary of requirements for emission unit hog fuel boiler at Swanson Group Mfg.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(5)	10	Visible emissions	40%/20% opacity	6-minute block average	NA	11
340-228-0210(2)(a)(A)	12	PM	0.10 gr/dscf @ 12% CO ₂	Avg. of 3 test runs	13	14-18
40 CFR Part 63 Subpart JJJJJ	19 and Part 2	HAP	Operate boiler in compliance with requirements of JJJJJ	NA	NA	Part 2

Table 3-30: Summary of requirements for veneer dryer emissions units at Swanson Group Mfg.

Applicable Requirement	Requirement Condition Number	Pollutant/Parameter	Limit/Standard	Monitoring Requirement	Monitoring Condition Number
340-234-0510(1)(a) and (b)	20	Visible emissions	10% average opacity, 20% maximum opacity as 6 min. avg.	Quarterly VE tests	20.c
340-226-0210(2)(a)(A)	21	PM---Dryer 1	0.10 gr/dscf (avg. of 3 test runs)	RTO temperature	25
340-226-0210(2)(a)(B)	22	PM---Dryer 2	0.24/0.15 gr/dscf (avg. of 3 test runs)	RTO temperature	25
340-226-0210(2)(b)(B)	23	PM---Dryer 3	0.14 gr/dscf (avg. of 3 test runs)	RTO temperature	25
340-226-0310	24	PM	Table 1 OAR 340 Division 226	RTO temperature	25
340-234-0510(1)(e) & (g)	26.a	Air contaminant emissions	Minimize with highest and best operation	Monthly I & M	26.e
340-234-0510(1)(f)	26.b	Air contaminant emissions	Concealing emissions prohibited	Yearly I & M	26.d

Table 3-31: Summary of requirements for presses 1, 2 and 3 emission units at Swanson Group Mfg.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b); 340-208-0010(4)	29	Visible emissions--- Presses 1 & 2; Press 3	20% opacity	6-minute block average	NA	33
340-226-0210(2)(a)(B)	30	PM---Presses 1 & 2	0.24/0.15 gr/dscf	Avg. of 3 test runs	NA	33
340-226-0210(2)(b)(B)	31	PM---Press 3	0.14 gr/dscf	Avg. of 3 test runs	NA	33
340-226-0310	32	PM	Table 1 OAR 340 Division 226	Avg. of 3 test runs	NA	33

Table 3-32: Summary of requirements for pneumatic conveyors, sander, presses, and material handlers.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit /Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(4)	34	Visible emissions	20% opacity	6-minute block average	NA	35
340-226-0210(2)(b)(B)	36	PM---4CON & 1SAN	0.14 gr/dscf	Average of 3 test runs	NA	38
340-226-0310	37	PM	Process weight	Average of 3 test runs	NA	38
340-234-510(2)(a)	38	PM	33.0 lb/hr from PLY	24 hours	NA	40

Woodgrain Millwork LLC – Particleboard

Permit number: 31-0002-TV-01

Permit location: https://www.deq.state.or.us/AQPermitsonline/31-0002-TV-01_P_2021.PDF.

Controls to maintain: multiple baghouses, dry and wet electrostatic precipitators.

Emission Limits and Standards, Testing, Monitoring, Recordkeeping and Reporting

Requirements: Table 3-33 through Table 3-43 summarize the emission limits, standards, testing, monitoring and recordkeeping requirements within permit number 31-0002-TV-01. Sections 81 – 92 contain additional monitoring, recordkeeping and reporting requirements.

Table 3-33: Facility wide requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
OAR 340-208-0210(1), 340-234-0520(1), 1/19/95 ACDP Condition 7	4	Fugitive Emissions	Minimize	NA	NA	5
340-208-0300	6	Nuisance	No Nuisance	NA	NA	8
340-208-0450	7	PM >250 μ	No Fallout	NA	NA	8
340-228-0110(2)	9	#2 Fuel Oil Sulfur Content	$\leq 0.5\%$ Sulfur by Weight	Each Shipment	NA	10
40 CFR Part 68	11	Risk Management	Risk Management Plan	NA	NA	11

Table 3-34: Emission unit boiler 1 requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b)	12	Visible Emissions	20% Opacity	6-Minute Block Average	14	15
340-228-0210(2)(a)(B)(ii)	13	PM	0.15 gr/dscf @ 50% Excess Air	Avg. of 3 Test Runs	14	15
40 CFR 63.7540(a)(10)	16	Work Practice	Annual Tune-Up	NA	NA	17.c

Table 3-35: Emission unit boiler 2 requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(6)	18	Visible Emissions	20% Opacity	6-minute Block Average	NA	27
340-228-0210(2)(b)	19	PM	0.10 gr/dscf @ 12% CO ₂	Avg. of 3 Test Runs	23	20, 21, 24
40 CFR 63.7500(a)(1)	22.a.i or	Filterable Particulate or	0.051 lb/MMBtu Heat Input, or 0.052 lb/MMBtu Steam Output	Avg. of 3 Test Runs	23	20, 22.f, 25, 26
	22.a.ii	Total Selected Metals	6.5E-03 lb/MMBtu Heat Input, or 0.052 lb/MMBtu Steam Output	Avg. of 3 Test Runs	23	26, 29
40 CFR 63.7500(a)(1)	22.b	Carbon Monoxide	2,400 ppmv, dry @ 3% O ₂ , or 1.9 lb/MMBtu Steam Output	Avg. of 3 Test Runs	23	22.f, 24
	22.c	Mercury	5.7E-06 lb/MMBtu Heat Input, or 6.4E-06 lb/MMBtu Steam Output	Avg. of 3 Test Runs	23	26, 29
	22.d	HCl	0.022 lb/MMBtu Heat Input, or 0.025 lb/MMBtu Steam Output	Avg. of 3 Test Runs	23	26, 29
	22.f	Work Practice	Tune-Up	Annually	NA	30.g
40 CFR 63.7500(a)(2)	25	Visible Emissions	10% Opacity	Daily Block Average	23	27
40 CFR 63.7500(f)	28	Startup/Shutdown	Fuel Limitations During Startup, CMS Operating	NA	NA	28

Table 3-36: Boiler 2 testing requirements for Woodgrain Millwork.

Pollutant/Parameter	Test Method	Frequency	Purpose
Particulate (filterable) Particulate (total)	EPA Method 5 or 17 ODEQ Method 5	Annually Once during permit term	Compliance testing EF verification
Opacity	COMS and/or EPA Method 9	Continuous for COMS M9 during PM test	Compliance testing
NO _x	EPA Method 7E	Once during permit term	EF verification
CO	EPA Method 10	Annually	Compliance testing EF verification
Total Selected Metals (TSM)	EPA Method 29	Annually	Compliance testing
Mercury	EPA Method 29, 30A, 30B, 101A, or ASTM D6784	Annually	Compliance testing
Hydrogen Chloride (HCl)	EPA Method 26 or 26A	Annually	Compliance testing

Table 3-37: Emission unit green furnish dryer requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(4)	31	Visible Emissions	20% Opacity	6-Minute Block Bverage	NA	35, 37
340-228-0210(2)(b)(B)	32	PM	0.14 gr/dscf @ 12% CO ₂	Avg. of 3 Test Runs	34	35, 37
40 CFR 63.2240(b) Table 1B-option 3	33	Methanol	90% Reduction	Avg. of 3 Test Runs	NA	36, 37

Table 3-38: Emission unit line 1 and 2 dryers requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b)	40	Visible Emissions	20% opacity	6-minute block average	43	44, 46
340-226-0210(2)(a)(B)(i)	41	PM	0.15 gr/dscf	avg. of 3 test runs	43	44, 46
40 CFR 63.2241(a) Table 3-Item 1	42	Inlet Moisture, Temperature	≤30% (by weight, dry), ≤600°F	24-hour block	NA	45

Table 3-39: Emission unit line 1 and 2 presses/thermal catalytic oxidizers requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b)	48	Visible Emissions	20% Opacity	6-Minute Block Average	NA	52, 53
340-226-0210(2)(a)(A)	49	PM	0.10 gr/dscf	Avg. of 3 Test Runs	51	52, 53
40 CFR 63.2240(b) Table 1B-option 3	50	Methanol	90% Reduction	Avg. of 3 Test Runs	51	52, 53

Table 3-40: Emission unit board cooler requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b)	55	Visible Emissions	20% Opacity	6-minute block average	57	58
340-226-0210(2)(a)(B)(ii)	56	PM	0.15 gr/dscf	Avg. of 3 test runs	57	58

Table 3-41: Emission unit uncontrolled cyclone requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b)	60	Visible Emissions	20% Opacity	6-minute block average	62	63
340-226-0210(2)(a)(B)(ii)	61	PM	0.15 gr/dscf	Avg. of 3 test runs	62	63

Table 3-42: Emission unit material handling cyclone requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-208-0110(3)(b)	65	Visible Emissions	20% Opacity	6-minute block average	67	68, 69
340-226-0210(2)(a)(B)(ii)	66.a	PM	0.15 gr/dscf for C11, C12, C16-22, C31, C32 and C36	Avg. of 3 test runs	67	68, 69
340-226-0210(2)(b)(B)	66.b	PM	0.14 gr/dscf for C1-C3, C25-C28, C37-C39, C42, C43, C47, C48, and C50-C55	avg. of 3 test runs	67	68, 69

Table 3-43: Emission unit particle board manufacturing requirements for Woodgrain Millwork.

Applicable Requirement	Condition Number	Pollutant/Parameter	Limit/Standard	Averaging Time	Testing Condition	Monitoring Condition
340-234-0520(2)	71	PM	117 lb/hr	24-hour period divided by 24	NA	72

3.7.5 Facilities where DEQ found controls cost effective

In two cases, DEQ found controls cost effective based on the facility-submitted FFAs. For the remaining 15 facilities, DEQ requested a second analysis of control cost effectiveness. DEQ continued to confer with and consider information these facilities provided through August 9, 2021. On and after August 9, 2021, DEQ either entered stipulated agreements and orders with facilities or issued orders to facilities to install controls or otherwise reduce Round 2 regional haze pollutant emissions.

3.7.5.1 Owens-Brockway (26-1876)

In a letter dated October 27, 2020, DEQ concurred with Owens-Brockway's findings in FFA submitted on June 12, 2020, that costs of installing controls were reasonable. Specifically, DEQ concurred with the findings that combined control of NO_x, SO₂ and PM by catalytic ceramic filters is cost-feasible for the facility's glass-melting furnaces A and D.

Owens-Brockway informed DEQ by an April 27, 2021, letter that the facility intended to shut down Furnace A permanently and request Furnace A and its emissions units' removal from their Title V permit. Rather than install controls, Owens-Brockway chose the alternative compliance option to lower PSELs. On August 8, 2021, Owens Brockway entered a stipulated agreement and order with DEQ to accept federally enforceable reductions of combined PSELs for Round 2 Regional Haze pollutants to bring the facilities Q/d below 5.00.

The final order, included in Appendix E, requires the following and contains other requirements and provisions:

- The permittee shall not operate Furnace A
- On and after January 1, 2022, the permittee shall comply with the following PSELs, which apply to each 12 consecutive calendar month period after that date: 55 tons/year PM10, 137 tons/year NO_x, and 108 tons/year SO₂.
- Unassigned emissions shall be set to 0.
- The netting basis for Furnace A, Furnace B, and Furnace C shall be removed from the total netting basis of the facility.
- On July 21, 2025, the permittee's PSELs for the following pollutants are: 274.95 tons/year PM10 + NO_x + SO₂, which results in a Q/d = 4.99.

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 26-1876-TV-01 with this Regional Haze SIP for approval:

- 32. Annual PSEL Requirement
- 33. Monitor and Record: for PM10, SO₂, and NO_x
- 34. General Testing Requirement
- 35. EU4 Emission Factor Verification Testing Requirements: for PM10, NO_x, SO₂
- 36 – 38. General Monitoring and Recordkeeping Requirements
- 39 – 42. General Recordkeeping Requirements
- 43 – 46. General Reporting Requirements
- 47 – 48. Semi-annual and Annual Reports

3.7.5.2 Gilchrist Forest Products

In a letter dated September 11, 2020, Interfor US agreed that installation of an Electrostatic Precipitator on boilers B-1 and B-2 would be cost-effective, and provided a letter from a boiler

vendor indicating that retrofitting those boilers with Selective Non-Catalytic Reduction was not technically feasible. Based on the information submitted, DEQ concurred. On June 8, 2021, Gilchrist Forest Products submitted a Notice to Construct to install the ESP on boilers B-1 and B-2. After ESP installation, Gilchrist PSELS will remain 99 tons/year NO_x and 39 tons/year SO₂. Their PM₁₀ PSEL will be reduced to about 52 tons/year, depending on the control efficiency of the new ESP, which would represent a reduction of 120 tons/year from current PSELS. The Notice to Construct is included in Appendix E. As of late January 2022, the ESP has been installed and the boiler restarted, but the facility is working to resolve some operational issues that are weather dependent. Gilchrist has one year from installation submit a permit application for a modification. Once the facility submits the permit modification application, DEQ will incorporate permit conditions requiring operation of the ESP into the Title V permit.

3.7.5.3 Boise Cascade Wood Products, LLC - Elgin Complex (31-0006)

In a letter dated January 21, 2021, DEQ notified Boise Cascade Wood Products of its preliminary determination that their Elgin facility would likely be required to install Selective Catalytic Reduction on Boilers 1 and 2. Boise Cascade provided DEQ a technical memo dated April 19, 2021, in which Boise Cascade's consultant concluded that SCR was not technically feasible on boilers at the Elgin facility. DEQ did not agree that SCR was infeasible; however, DEQ did accept the facility's argument that the feasibility was unknown due to the potential for catalyst fouling. Boise Cascade also provided DEQ a second technical memo dated May 10, 2021, in which a vendor provided their recommendations regarding the feasibility and effectiveness of other NO_x reduction technologies including low oxygen operation, air staging, flue gas recirculation natural gas co-firing, and steam or water injection.

Rather than install SCR, Boise Cascade proposed an alternative compliance option to accept federally enforceable requirements to install and continually operate combustion controls, monitoring equipment and accept emission limitations to reduce Round 2 regional haze pollutants from the Elgin facility. Based on an enforceable 15% emissions reduction or equivalent PSEL reductions, DEQ accepted this proposal. On August 12, 2021, Boise Cascade entered into a stipulated agreement and order with DEQ. The final order, included in Appendix E, requires the following and contains other requirements and provisions:

- On and after July 31, 2022, the permittee's PSELS for SO₂ are 17.1 tons/year
- Within three months of the signed order, permittee shall install a Continuous Emission Monitoring System on Boiler 1 and Boiler 2 to measure NO_x emissions.
- By July 31, 2023, the permittee shall begin installation of combustion improvement project(s) designed to achieve emissions reductions of NO_x from Boiler 1 and Boiler 2 by 15%, and permittee shall begin monitoring NO_x emissions using the CEMS to determine actual NO_x emission reductions achieved by controls.
- If initial boiler combustion improvement project(s) fail to achieve a minimum 15% NO_x reduction, the permittee may implement additional combustion improvement projects to achieve 15% NO_x reduction or accept PSEL reductions.
- By December 31, 2025, the permittee shall submit 12 months of CEMS data to DEQ demonstrating the NO_x emission reductions achieved by combustion controls, and shall propose a NO_x limit based on the achieved reductions.

- If combustion controls fail to achieve 15% NO_x reduction, the permittee must reduce PSEL (PM₁₀+NO_x+SO₂) to a level that would achieve a Q/d commensurate with a 15% Boiler NO_x reduction.
- On and after March 31, 2026, the permittee must comply with emission limits and the PSEL established under the conditions listed in the order.

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following conditions of permit number 31-0006-TV-01 with this Regional Haze SIP for approval:

56. Monitoring Requirement, 56a.Emission Calculation, Table 6 (Emission Factors) for Boilers 1 and 2 for PM₁₀, SO₂, NO_x

59 - 61. General Monitoring Requirements

62 - 65. General Recordkeeping Requirements

66 - 70 Boiler NESHAP Recordkeeping Requirements

71 - 75 General Reporting Requirements

3.7.5.4 Georgia Pacific - Wauna Mill (04-0004)

In a letter dated January 21, 2021, DEQ notified Georgia Pacific of its preliminary determination that their Wauna facility would likely be required to install control devices on several of its emissions units, as shown in Table 3-44, including Low NO_x Burners and SCR.

Table 3-44: Control devices likely required Georgia Pacific – Wauna Mill.

Emissions Unit	Control Device	Target Pollutant
Paper Machine 1: Yankee Burner	LNB	NO _x
Paper Machine 2: Yankee Burner	LNB	NO _x
Paper Machine 5: Yankee Burner	LNB	NO _x
21 - Lime Kiln	LNB	NO _x
Paper Machine 6: TAD1 Burners	LNB	NO _x
Paper Machine 7: TAD1 Burners	LNB	NO _x
Paper Machine 6: TAD2 Burners	LNB	NO _x
Paper Machine 7: TAD2 Burners	LNB	NO _x
33 - Power Boiler	SCR	NO _x

In a letter to DEQ dated April 30, 2021, Georgia Pacific stated concerns with installing SCR or SNCR on the power boilers based on undesirable associated effects such as health exposure and safety risk of handling and storing aqueous ammonia, ammonia slip, increased water usage and subsequent wastewater disposal, and higher electricity and natural gas use. Georgia Pacific also stated concerns with installing a low NO_x burner on the lime kiln based on such installation not being likely to alter all the pathways to NO_x formation and not necessarily resulting in a lower annual NO_x emission rate. Georgia Pacific also submitted information showing that emission reductions from low NO_x burner installation on Paper Machine 1 and 2 Yankee Burners would be less than the 20 tons per year threshold that DEQ had set.

Georgia Pacific proposed to install LNB on the remaining units and to install LNB and flue gas recirculation on the power boiler, with continuous monitoring, rather than SCR. With continuous emission monitoring on the power boiler, an emission limit of 0.09 lb/MMBtu on a 7-day rolling average, and a NO_x PSEL reduction of 726 tons/year, DEQ accepted GP's proposal. On August 9, 2021, Georgia Pacific entered a stipulated agreement and order with DEQ. The order is

included in Appendix E. The order requires the following and contains other requirements and provisions:

- On August 1, 2022, PSEs are: PM₁₀ = 1,077 tons/year; NO_x = 2,019 tons/year; SO₂ = 913 tons/year.
- On December 31, 2024, PSEs are PM₁₀ = 1,077 tons, NO_x = 1,999 tons, and SO₂ = 913 tons.
- On July 31, 2026, PSEs are PM₁₀ = 1,077 tons, NO_x = 1,413 tons, and SO₂ = 913 tons.
- For the Paper Machine 5 Yankee Burner, by December 31, 2024, permittee shall replace existing Yankee burner with a Low NO_x Burner achieving ≤ 0.03 lb/MMBtu.
- For the TAD1 and TAD 2 burners on Paper Machines 6 and 7, permittee shall have a NO_x emissions rate no greater than 0.06 lb/MMBtu and shall use this emission rate for PSEL compliance.
- For Power Boiler - 33, by December 31, 2022, permittee shall meet with DEQ to discuss the technical details of the low NO_x burner, flue gas recirculation, and CEMS installation to determine what permitting permittee shall need prior to construction.
- As expeditiously as practicable, but not later than July 31, 2026, permittee shall install low NO_x burners and flue gas recirculation in order to achieve an emissions rate no greater than 0.09 lb/MMBtu on a seven day rolling basis.
- Within one year of completing the Power Boiler project, but not later than July 31, 2026, permittee shall install a CEMS to measure the emissions of NO_x from Power Boiler - 33.
- Upon DEQ's approval of the CEMS certification, permittee shall use data collected from the CEMS to demonstrate compliance with the applicable NO_x PSEL.

3.7.5.5 Cascade Pacific Pulp, LLC - Halsey Pulp Mill (22-3501)

In a letter dated January 21, 2021, DEQ notified Cascade Pacific Pulp of its preliminary determination that their Halsey facility would likely be required to install LNB/Flue Gas Recirculation on their Power boiler #1, and also switch to Ultra Low Sulfur Diesel instead of #6 fuel oil as an emergency backup fuel on site. The facility had previously demonstrated that SNCR was not technically feasible due to the dimensions of the boiler.

On August 9, 2021, Cascade Pacific entered a stipulated agreement and order with DEQ to eliminate use of #6 fuel oil and conduct source testing and install a low NO_x burner on Power Boiler #1. In response to EPA comments submitted during the public comment period, DEQ and Cascade Pacific negotiated a second SAFO, included in Appendix E, that requires the following and contains other requirements and provisions:

- The permittee not combust fuel oil #6 at any emission unit in the facility by June 30, 2024.
- By January 31, 2022, conduct source testing for NO_x at Power Boiler #1.
- By March 31, 2024, finalize design of low NO_x burner to be installed on Power Boiler #1, designed to achieve 33% reduction in NO_x emissions.
- By March 31, 2025, construct and install the low NO_x burner at Power Boiler #1.

- Beginning on April 1, 2025, Permittee's emissions of NO_x from Power Boiler #1 shall be at least 20% less than the current emission factor of 282 lb NO_x per MM ft³ natural gas and shall be demonstrated to meet this emission reduction through source testing.
- By June 30, 2025, Permittee shall conduct source testing for NO_x at Power Boiler #1.
- By September 30, 2025, Permittee shall submit to DEQ a report that analyzes the data and information collected in source testing. The report shall include a proposal from Permittee on a revised emission limit in lb NO_x per MM ft³ natural gas for Power Boiler #1. DEQ will consider the Permittee's proposal and will make a determination of the final emission limit for incorporation into the Permit pursuant to 340-218-0200(1)(a)(A), if applicable, or upon permit renewal.
- By March 31, 2023, In lieu of installing a low NO_x Burner in Power Boiler #1 and associated requirements, Permittee may request in writing to replace Power Boiler #1 with new technology to reduce round II regional haze pollutants.
- If Permittee, makes a request to replace Power Boiler 31, then:
 - DEQ and Permittee shall meet no later than January 1, 2025, to discuss the project and determine what permitting is needed to approve the proposed replacement and a permit application schedule.
 - The technology proposed by Permittee for replacement shall meet the emission limits and requirements of the most recent New Source Performance Standard in place at the time of the Permittee submitting a permit application for the project.
 - NO_x emissions from the proposed replacement shall meet the emission limits and requirements of the most recent applicable standard in place at the time of the permitting of the new emissions unit.
 - Permittee shall meet all permitting deadlines and provide a complete permit application to DEQ, including any required permitting fees. Both parties will agree to a schedule for permitting of the construction project during this meeting.
 - Permittee shall submit an application for a construction for replacement project in accordance with, and by the deadline established in the SAFO
 - Upon completion of the replacement, Permittee shall not operate Power Boiler #1.
 - Permittee shall complete the replacement no later than July 31, 2031.

3.7.5.6 Boise Cascade Wood Products, LLC - Medford (15-0004)

In a letter dated January 21, 2021, DEQ notified Boise Cascade Wood Products of its preliminary determination that their Medford facility would likely be required to install SCR on Boilers 1, 2 and 3. Boise Cascade provided DEQ technical memo dated April 19, 2021 in which Boise Cascade's consultant concluded that SCR was not technically feasible on boilers at the Medford facility, citing in particular, concerns with irregular operating loads, fuel type (bark) that contains metals and other constituents that deactivate catalysts, and such catalyst poisoning constituents being prevalent in Oregon soils (and wood).

Rather than install controls, Boise Cascade chose the alternative compliance option to accept federally enforceable reductions of combined plant site emission limitation limits of Round 2 regional haze pollutants to bring the facility's Q/d below 5.00. On August 9, 2021, Boise Cascade entered a stipulated agreement and order with DEQ, included in Appendix E, that requires the following and contains other requirements and provisions:

- From August 1, 2021, to July 31, 2023, the Permittee's PSELs are: 396 tons for PM10 + NO_x + SO₂ (Q/d = 6.53).
- From August 1, 2023, to July 31, 2024, the Permittee's PSELs are: 381 tons for PM10 + NO_x + SO₂ (Q/d = 6.29).
- From August 1, 2024, to July 31, 2025 the Permittee's PSELs are: 365 tons for PM10 + NO_x + SO₂ (Q/d = 6.03).
- From August 1, 2025, to July 31, 2026 the Permittee's PSELs are: 347 tons for PM10 + NO_x + SO₂ (Q/d = 5.73).
- On August 1, 2026, the Permittee's PSELs for the following pollutants are: 302 tons for PM10 + NO_x + SO₂ (Q/d = 4.99).

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 15-0004-TV-01 with this Regional Haze SIP for approval:

68 – 70. Plant Site Emission Limits: for PM10, NO_x, and SO₂
 71: Plant Site Emission Limit Monitoring: for PM10, NO_x, and SO₂
 72. Source-specific Recordkeeping Requirements
 74. General Testing Requirements
 75 – 77. General Monitoring and Recordkeeping Requirements
 78 – 81. General Recordkeeping Requirements
 82 – 86. General Reporting Requirements
 87 – 88. Semi-annual and Annual Reports

3.7.5.7 Gas Transmission Northwest LLC - Compressor Station 12 (09-0084)

In a letter dated January 21, 2021, DEQ notified Gas Transmission Northwest of its preliminary determination that Compressor Station #12 would likely be required to install SCR on turbines 12A and 12B. On August 9, 2021, Gas Transmission Northwest entered a stipulated agreement and order with DEQ, included in Appendix E, that requires the following and contains other requirements and provisions:

- From August 1, 2022, the Permittee's PSELs are 12.7 tons per year for PM10; 317.1 tons per year for NO_x; and 30.4 tons per year for SO₂.
- From August 1, 2023, the Permittee's PSELs are: 11.4 tons per year for PM10; 257.2 tons per year for NO_x; and 21.7 tons per year for SO₂.
- From August 1, 2024, the Permittee's PSELs are: 10.2 tons per year for PM10; 197.3 tons per year for NO_x; and 13.1 tons per year for SO₂.
- From August 1, 2025, the Permittee's PSELs are: 8.9 tons per year for PM10; 137.4 tons per year for NO_x; and 4.4 tons per year for SO₂.

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 09-0084-TV-01 with this Regional Haze SIP for approval:

32 - 34: General Monitoring Requirements
 37 - 38: Emission Unit Specific Monitoring

- 39: Plant Site Emissions Monitoring, Table 8 (PSEL Procedures, Test Methods, and Frequencies), Emission Calculation, Table 9 (Pollutant Emission Factors)
- 40 - 43: General Recordkeeping Requirements
- 44: Source Specific Recordkeeping Requirements
- 45 - 48: General Reporting Requirements
- 49 - 50: Semi-annual and annual reports

3.7.5.8 Gas Transmission Northwest LLC - Compressor Station 13 (18-0096)

In a letter dated January 21, 2021, DEQ notified Gas Transmission Northwest of its preliminary determination that Compressor Station #13 would likely be required to install SCR on turbines 13C and 13D. On August 9, 2021, DEQ issued a unilateral order, included in Appendix E, that requires the following and contains other requirements and provisions:

- By July 31, 2023, submit a complete and approvable permit application for the installation and operation of SCR and CEMS on Turbines 13C and 13D;
- By July 31, 2024, install a CEMS on Turbines 13C and 13D;
- By July 31, 2026, install, maintain and continuously operate SCR on Turbines 13C and 13D with a minimum control efficiency of 90%.

3.7.5.9 International Paper Company – Springfield Mill (TV #208850)

In a letter dated January 21, 2021, DEQ notified International Paper of its preliminary determination that their Springfield facility would likely be required to install SCR on the Power Boiler (EU-150A) and also take several actions related to restricting alternative or emergency fuels, as shown in Table 3-45.

Table 3-45: Control devices DEQ found cost-effective at International Paper Company – Springfield Mill.

Emissions Unit	Control Device	Target Pollutant
Power Boiler EU-150A	SCR	NO _x
Facility-wide	Eliminate use of #6 fuel oil and petroleum coke fuel. Replace backup fuels with ULSD	multiple
Power Boiler (EU-150A), Package Boiler (EU-150B)	Restrict annual use of ULSD to NESHAP 5D "Gas 1" unit allowance	multiple
No. 4 Recovery Furnace (EU-445C), Lime Kilns #2 & 3 (EU-455)	Restrict use of ULSD to only periods of natural gas curtailment	multiple

For the power boiler, DEQ deemed equivalent emission reduction could be achieved through PSEL reduction across all emission units and continuous emission monitoring on the power boiler to monitor compliance with an emission rate of 0.25 lb NO_x/MMBtu on a 7-day rolling average. On August 9, 2021, International Paper entered a stipulated agreement and order with DEQ and LRAPA, included in Appendix E. The order requires the following and contains other requirements and provisions:

- On and after July 31, 2022, the Permittee' s combined assigned PSELs for the Power Boiler, Package Boiler, Lime Kilns and Recovery Furnace for the following pollutants are:

237 tons per year for SO₂, as a 12-month rolling average; 962 tons per year for NO_x, as a 12-month rolling average; 177 tons per year for PM₁₀, as a 12-month rolling average.

- the only fuel that it may combust in the Power Boiler and Package Boiler is natural gas, except that it may operate the Power Boiler and Package Boiler on ultra-low sulfur diesel for no more than 48 hours per year and when needed for natural gas curtailments.
- the only fuels that it may combust in the Recovery Furnace are Black Liquor Solids and natural gas, except that it may operate the Recovery Furnace on ultra-low sulfur diesel no more than 48 hours per year and when needed for natural gas curtailment.
- the only fuels that it may combust in the Lime Kilns are natural gas, product turpentine and product methanol, except that it may operate the Lime Kilns on ultra-low sulfur diesel no more than 48 hours per year and when needed for natural gas curtailment.
- By December 31, 2022, International Paper shall install CEMS and measure the emissions of NO_x from the Power Boiler.
- Upon demonstrating proper installation of the NO_x CEM by completing performance/certification testing no later than March 31, 2023, International Paper shall ensure that the CEMS are certified/approved by DEQ and LRAPA no later than May 31, 2023.
- International Paper shall use the CEMS to document Power Boiler NO_x emissions, replacing the Power Boiler NO_x PSEL monitoring condition 186.g, no later than May 31, 2023.
- On and after January 31, 2025, International Paper shall meet the following emission limit: a 0.25 lb NO_x/MMBtu on a 7-day rolling average from the Power Boiler.
- On and after December 31, 2025, the Permittee's assigned PSEL for the following pollutants and Emission Unit is: 179 tons per year for NO_x, as a 12-month rolling average for the Power Boiler.

DEQ and LRAPA will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 208850 with this Regional Haze SIP for approval:

Conditions 186 – 189: PSEL monitoring for PM₁₀, NO_x and SO₂

Condition 192: recordkeeping requirements

Condition 198: PSEL compliance reporting.

3.7.5.10 Georgia-Pacific – Toledo LLC (21-0005)

In a letter dated January 21, 2021, DEQ notified Georgia Pacific of its preliminary determination that their Toledo facility would likely be required to install control devices on several of its emissions units, as shown in Table 3-46. DEQ agreed at the time that cost effectiveness of adding a baghouse to EU-118 could be revised after the results of upcoming source testing.

Table 3-46: Control devices DEQ found cost-effective at Georgia-Pacific, Toledo

Emissions Unit	Control Device	Target Pollutant
EU-118 Hardwood Chip handling	Baghouse	PM10
EU-1 Lime Kiln	LNB	NO _x
EU-2 Lime Kilns	LNB	NO _x
EU-3 Lime Kiln	LNB	NO _x
EU-11 No. 4 Boiler	SCR	NO _x
EU-13 No. 1 Boiler	SCR	NO _x
EU-18 No. 3 Boiler	SNCR	NO _x

Georgia Pacific performed a source test on the EU-118 Emission Unit and demonstrated that the emissions from this unit were substantially lower than previously estimated. DEQ agreed that a baghouse on EU-118 would no longer be cost-effective. GP also submitted information, which DEQ accepted, that showed low NO_x burners to be technically infeasible on the lime kilns because of the high temperatures required. As an alternative to SCR and SNCR on the boilers, GP proposed LNB and flue gas recirculation. With continuous emission monitoring and an emission limit of 0.09 lb/MMBtu on a 7-day rolling average, a NO_x PSEL reduction of 398 tons/year and an agreement to replace the boilers if the emission rate was not achievable, DEQ accepted GP's proposal.

On August 9, 2021, Georgia Pacific Toledo entered a stipulated agreement and order, contained in Appendix E, that required the following and contains other requirements and provisions:

- Either complete a NO_x reduction project that includes the installation of low NO_x burners, flue gas recirculation and CEMS on the three Boilers, EU-11, EU-13, and EU-18 or replace the boilers with one or more new boilers.
- Determine whether to complete the NO_x reduction project or replace the boilers by July 31, 2022, and meet with DEQ by December 31, 2022, to discuss the technical details of the selected project to determine needed permitting.
- If Permittee chooses to complete a NO_x reduction project:

By July 31, 2026, Permittee shall install low NO_x burners and flue gas recirculation on EU-11, EU-13, and EU-18 in order to achieve an emissions rate no greater than 0.09 lb/MMBtu on a seven day rolling basis.

As expeditiously as practicable, but not later than July 31, 2026, install a CEMS to measure the emissions of NO_x from EU-11, EU-13, and EU-18.
- If Permittee chooses to replace EU-11, EU-13, and EU-18:

PSELS for Round 2 regional haze pollutants incorporated in the Permit for the replacement shall be no more than the potential to emit of the replacement, or a Q of 889 tons per year of NO_x, 437 tons per year of SO₂, and 311 tons per year of PM10, whichever is lower.

Complete the replacement of the EU-11, EU-13, and EU-18 with new technology no later than July 31, 2031.

3.7.5.11 Northwest Pipeline LLC - Baker Compressor Station (01-0038)

In a letter dated January 21, 2021, DEQ notified Northwest Pipeline of its preliminary determination that its Baker Compressor Station would likely be required to install Low Emissions Combustion controls on engines EU1 (compressor units C1, C2 and C3 combined) and EU2.

On August 9, 2021, Northwest Pipeline entered a stipulated agreement and order for PSEL reduction or alternately, emission unit replacement. After receiving comment from EPA during the public comment period, DEQ and Northwest Pipeline executed an amended SAFO, included in Appendix E, that included a date by which a new emission unit would need to be installed if Northwest Pipeline chose that option. The SAFO specifies that Northwest Pipeline must lower PSELS on the following schedule:

- From August 1, 2022, to July 31, 2023, the Permittee's PSELS for the following pollutants are: 5 tons for PM₁₀; 473 tons for NO_x; and 2 tons for SO₂.
- From August 1, 2023, to July 31, 2024, the Permittee's PSELS for the following pollutants are: 5 tons for PM₁₀; 404 tons for NO_x; and 2 tons for SO₂.
- From August 1, 2024, to July 31, 2025, the Permittee's PSELS for the following pollutants are: 5 tons for PM₁₀; 335 tons for NO_x; and 2 tons for SO₂.
- From August 1, 2025, to July 31, 2026, the Permittee's PSELS for the following pollutants are: 5 tons for PM₁₀; 266 tons for NO_x; and 2 tons for SO₂.
- On August 1, 2026, the Permittee's PSELS for the following pollutants are: 5 tons for PM₁₀; 193 tons for NO_x; and 2 tons for SO₂.

Alternatively, the facility, up until July 2026, could opt to commit to replace units EU1 and EU2 with new technology by July 31, 2031, that would reduce Round 2 regional haze pollutants. The technology would have to meet the emission limits and requirements of the most recent New Source Performance Standard in place at the time of the permittee submitting a permit application for the project. PSELS for Round 2 regional haze pollutants for the replacement shall be no more than 201 tons/year.

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 01-0038-TV-01 with this Regional Haze SIP for approval:

27 - 30: General Monitoring Requirements

32: Plant Site Emissions Monitoring, Table 6 (Process monitoring), Emission Calculation, Table 7 (Emission Factors) for EU1 and EU2

33 - 36: General recordkeeping requirements

37: Source specific recordkeeping requirements for EU1 and EU2

38 - 41: General reporting requirements

42 - 43: Semi-annual and Annual Reports

3.7.5.12 Northwest Pipeline LLC - Oregon City Compressor Station (03-2729)

In a letter dated January 21, 2021, DEQ notified Northwest Pipeline of its preliminary determination that its Oregon City Compressor Station would likely be required to install low-emission combustion controls on EU1 (Ingersoll-Rand 412KVS Engines 1 and 2).

On August 9, 2021, Northwest Pipeline entered a stipulated agreement and order with DEQ. After receiving comment from EPA during the public comment period, DEQ and Northwest Pipeline executed an amended SAFO, included in Appendix E, that included a date by which a new emission units would need to be installed. Northwest Pipeline agreed to replace two RICE that comprise EU1 at the facility with new emissions units to reduce PSELS of round II regional haze pollutants. The technology would have to meet the emission limits and requirements of the most recent New Source Performance Standard in place at the time of the permittee submitting a permit application for the project. PSELS for Round 2 regional haze pollutants for the replacement shall be no more than the potential to emit of the replacement or 219 tons/year, whichever is lower.

3.7.5.13 EVRAZ Inc. NA (26-1865)

In a letter dated January 21, 2021, DEQ notified EVRAZ of its preliminary determination that their facility would likely be required to install LNB on their reheat furnace. On August 9, 2021, EVERAZ entered a stipulated agreement and order with DEQ, included in Appendix E, and agreed to install low NO_x burners on the pre-heat portions of the EU-10 Reheat Furnace with a designed NO_x emission factor of 170 pounds per million cubic feet of natural gas, by December 31, 2024. The order also requires source testing to verify the emission factor, associated reporting to DEQ, and permit modification.

3.7.5.14 Biomass One, L.P. (15-0159)

In a letter dated January 21, 2021, DEQ notified Biomass One of its preliminary determination that their facility would likely be required to install SCR on their North Boiler and South Boiler. On August 9, 2021, Biomass One entered a stipulated agreement and order, included in Appendix E, that requires the following and contains other requirements and provisions:

- Install a Continuous Emission Monitoring System, submit to DEQ a NO_x optimization plan that describes the permittee's plan to use the CEMS data to operate in a way that minimizes NO_x emissions and implement the plan.
- If a new power purchase agreement is signed, within 180 days of notifying DEQ, Biomass One shall submit a complete application for installation of NO_x reduction technology that includes SCR on the North and South Boiler or demonstrates SCR is technically infeasible or presents other unacceptable energy or non-air quality impacts.
- If SCR is technically infeasible or presents such other unacceptable impacts, the Permittee will propose the best available, technically feasible and achievable NO_x reduction option for DEQ's review and approval.
- Permittee shall install controls approved by DEQ within 18 months of that approval.

3.7.5.15 Roseburg Forest Products - Dillard (10-0025)

DEQ's preliminary determination was that installation of SNCR would be cost-effective on Boiler 1, Boiler 2 and Boiler 3 at this facility. DEQ did not include this facility in the January 21, 2021, letters because DEQ was already in discussions with the facility about how to achieve similar emission reduction by optimizing the operation of the boiler.

On August 9, 2021, Roseburg Forest Products entered a stipulated agreement and order, contained in Appendix E, that required the following and contains other requirements and provisions:

By July 31, 2022, Permittee shall install CEMS to measure the emissions of NO_x from Boiler 1, Boiler 2 and Boiler 6. 2. From January 31, 2023 until June 30, 2025, Permittee shall meet the following emission limits:

- 0.30 lb NO_x/MMBtu on a 7-day rolling average at Boiler 1;
- 0.30 lb NO_x/MMBtu on a 7-day rolling average at Boiler 2;
- 0.28 lb NO_x/MMBtu on a 7-day rolling average at Boiler 6; Or
- average of emissions from boiler 1, boiler 2, and boiler 6 of 0.28 lb NO_x/MMBtu (7-day rolling average)

By January 31, 2024, the permittee shall notify DEQ whether the permittee will comply with emission limits using boiler optimization or through installation of SNCR. If permittee determines SNCR is necessary to meet emission limits, SNCR shall be installed, permitted, and operational by June 30, 2025.

3.7.5.16 JELD-WEN (18-0006)

In a letter dated January 21, 2021, DEQ notified JELD-WEN of its preliminary determination that their facility would likely be required to install SNCR on their Wood Fired Boiler (BLRG). Rather than install controls, Jeld-Wen decided to reduce their PSEL so that Q/d < 5. DEQ is drafting the permit modification to reflect this PSEL reduction but the permit modification was not complete at the time of this Regional Haze SIP submission.

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 18-0006-TV-01 with this Regional Haze SIP for approval:

- 53. Plant Site Emission Limits: for PM₁₀, NO_x, and SO₂
- 55 – 57. Testing Requirements
- 58 – 60. General Monitoring Requirements
- 61 – 64. Facility-wide Monitoring Requirements
- 65 – 71. Emissions Unit Specific Monitoring
- 72. Plant Site Emissions Monitoring: for PM₁₀, NO_x, SO₂
- 73 – 76. General Recordkeeping Requirements
- 77. Source Specific Recordkeeping Requirements
- 80 – 84. General Reporting Requirements
- 85 – 87. Semi-annual and Annual Reports

3.7.5.17 Willamette Falls Paper Company (03-2145)

In a letter dated January 21, 2021, DEQ notified Willamette Falls Paper of its preliminary determination that their facility would likely be required to install control devices on several of its emissions units, and accept restrictions on emergency backup fuel. On August 9, 2021, Willamette Falls Paper Company entered a stipulated agreement and order, included in Appendix E, to lower PSELs as follows and contains other requirements and provisions: on August 1, 2022, the permittee's PSELs for the following pollutants are: 20 tons/year for PM₁₀, 240 tons/year for NO_x and 5 tons/year for SO₂. The order also states that the only fuel the

permittee may combust in Boiler 1, Boiler 2 and Boiler 3 is natural gas, except for ULSD for no more than 48 hours/year.

DEQ will enforce compliance with the PSEL reductions through the facility's Title V permit monitoring, recordkeeping and reporting requirements. DEQ submits the following sections of permit number 03-2145-TV-01 with this Regional Haze SIP for approval:

- 38. Plant Site Emission Limits: for PM10, NOx, SO₂
- 40a – 40g. Monitoring Requirement: for PM10, NOx, SO₂
- 41. Visible Emission Monitoring Procedure
- 42. Source Testing and Emission Factor Verification Procedure: for PM10, NOx, SO₂
- 43 – 45. General Monitoring Requirements
- 46 – 49. General Recordkeeping Requirements
- 50 – 53. General Reporting Requirements
- 54 – 56. Semi-annual and Annual Reports

3.8 Federal Enforceability

This 2017 Regional Haze Rule (Section 51.308(f)(2)) requires that a state's long-term strategy include "the enforceable emission limitations, compliance schedules and other measures that are necessary to make reasonable progress."

3.8.1 Rulemaking

In July 2021, DEQ completed rulemaking to codify the screening procedure to identify facilities required to undergo four factor analysis, the process to determine cost effectiveness of controls and means of compliance. The Oregon Environmental Quality Commission adopted Division 223 Regional Haze rules at its July 22 – 23, 2021 meeting.

3.8.2 Department Orders

With Division 223 rule adoption, EQC gave DEQ the authority to issue orders to each facility required to install controls or otherwise reduce emissions of Round 2 regional haze pollutants. The orders specify emission limits, averaging periods, and schedules for control installation or PSEL reduction, as appropriate for the means of compliance on which DEQ and each facility settled. DEQ has incorporated in this Regional Haze SIP the Title V permit conditions providing monitoring, recordkeeping and reporting requirements for sources taking PSEL reductions as a means of compliance. Each order became effective on the issuance date. The orders for each facility required to install controls or reduce emissions – described in Section 3.7 – are included in Appendix E.

3.8.3 Permit Modification

DEQ, working with sources, will implement the order requirements through permit modifications. DEQ will require facilities that must install controls to submit an ACDP application and notice of construction. DEQ will then open associated Title V permits for cause and modify the permit for the new controls and revised emission limits. For facilities ordered to reduce PSELs, DEQ will incorporate the PSEL reductions at the source's next permit renewal.

4 Long-term strategy

The 2017 Regional Haze Rule (51.308(f)) requires DEQ to submit a long-term strategy that addresses regional haze visibility impairment for each Class 1 area within the State and for each Class 1 area located outside Oregon that may be affected by Oregon emissions. The long-term strategy must include enforceable emissions limitations, compliance schedules, and other measures necessary to achieve the reasonable progress goals.

4.1 Information consulted and technical basis for Long-term Strategy

DEQ took several factors into account in compiling the elements of Oregon's Long-term Strategy to meet Regional Haze reasonable progress goals. DEQ relied on the regional modeling results available through WRAP and the TSS, as well as monitoring data from the IMPROVE sites to analyze pollutant contributions and source apportionment. DEQ consulted the 2017 National Emissions Inventory to understand total and relative pollutants contributions among sectors and variation among different parts of the state. This report discusses IMPROVE measurements in Section 2.4, WRAP's modeled source apportionment from the IMPROVE monitoring sites in Section 2.5 and the 2017 emissions inventory in Section 2.3. This monitored and analyzed data, modeling and reported emissions informed Oregon's apportioned emission reduction obligations. DEQ also relied on agency staff expertise – primarily operations and permit engineers and analysts – as well as permit files to inform the stationary source long-term strategy elements.

As described in the introduction to Chapter 3 and Section 3.6 of this Regional Haze Plan, DEQ also qualitatively considered non-air and environmental factors in developing its Long-term Strategy for the 2018 – 2028 implementation period. DEQ considered the public health co-benefits to vulnerable populations in the vicinity of regulated stationary sources. DEQ also considered ecological co-benefits of reducing nitrogen and sulfur deposition in sensitive land and water ecosystems.

4.2 Anthropogenic Sources Considered in Developing Long-term Strategy

To support a state's long-term strategy, the 2017 Regional Haze Rule (§51.308(f)(2)) requires a state to identify all anthropogenic sources of visibility impairment that the state considered – including major and minor stationary sources, mobile sources, and area sources. The state must also document the technical basis, including modeling, monitoring and emissions information, which informed the state's apportioned emission reduction obligations.

After considering the four factors in determining the measures necessary to make reasonable progress [CFR 51.308(f)(2)(i)], DEQ considered the five additional factors at 40 CFR 51.308(f)(2)(iv) in developing its long-term strategy, including:

- (A) Emission reductions due to ongoing air pollution control programs, including measures to address reasonably attributable visibility impairment;
- (B) Measures to mitigate the impacts of construction activities;

- (C) Source retirement and replacement schedules;
- (D) Smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs; and
- (E) 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.

4.3 Findings informing Long-term Strategy

At the eastern Oregon IMPROVE sites (Hells Canyon and Strawberry Mountain/Eagle Cap) ammonium nitrate causes the most visibility impairment; while the absolute and relative contribution of ammonium nitrate has decreased from the baseline period, WRAP modeling shows the contribution has increased slightly since the last regional haze reporting period. For the IMPROVE sites in the Cascades and Kalmiopsis, absolute contribution from ammonium sulfate has continued to decline from the baseline period, although relative ammonium sulfate contribution remains high.

DEQ, as described in Section 2.5, consulted WRAP's source apportionment and weighted emission potential analysis to estimate relative visibility impairment from mobile onroad, nonroad, area and stationary sources – divided into EGU and non-EGU sources. Using WRAP's modeling, coupled with IMPROVE monitoring results, DEQ discerned contributions from the following categories: US anthropogenic, international anthropogenic, natural, US wildfire, US prescribed wildland fire, and Mexico/Canada wildfire. DEQ discerned that visibility at Oregon IMPROVE sites is most affected by ammonium sulfate from international and natural sources, and organic carbon from US wildfires, US prescribed fires, and natural sources. Within US anthropogenic sources, the three largest contributors to visibility impairment are ammonium nitrate, ammonium sulfate and organic carbon.

The Mount Hood IMPROVE site shows extinction from US anthropogenic sources is mainly from ammonium nitrate and organic carbon, which DEQ expects comes from combustion and transportation sources, as well as VOC use, in the Portland metropolitan area and Columbia River Gorge.

The emission inventory DEQ compiled for this Regional Haze plan provides more specificity around annualized haze-contributing emissions originating in Oregon, both statewide and at the county level. Statewide, major source sectors contributing to particulate matter are prescribed fire and agriculture. NO_x emissions are primarily from mobile sources and other fuel combustion. With PGE Boardman's SO₂ emissions eliminated by the coal-fired power plant's closure in October 2020, the remainder of SO₂ emissions come from fuel combustion and prescribed fires.

DEQ did not designate VOCs as Round 2 Regional Haze pollutants, however, DEQ recognizes that anthropogenic VOCs are likely components of organic carbon species that contribute to visibility impairment. DEQ controls mobile source VOCs through programs described in section 4.4. Within this Regional Haze implementation period DEQ intends to develop rules to reduce VOCs at gasoline dispensing facilities by updating requirements for Stage II vapor recovery controls. DEQ also intends to develop statewide rules to reduce VOCs in consumer products and work with Washington and Idaho to formulate a northwest regional strategy.

In Table 4.1, DEQ summarizes pollutants and source categories that monitoring and modeling suggest contribute most to regional haze at each IMPROVE site location. DEQ bases the top pollutants on the 2014 – 2018 speciation and light extinction calculations for each IMPROVE

site, compiled from the WRAP TSS and illustrated in Figures 2-3 through 2-8. DEQ summarizes contributing categories in Table 4-1 from the weighted emission potential and source apportionment modeling discussed in Section 2.5. DEQ intends to apply each of the long-term strategies statewide, however, in Table 4-1 DEQ calls out those strategies most applicable to the top pollutants and likely sources at each IMPROVE site.

Table 4-1 Top contributing pollutants, sources, and long-term strategies, summary by IMPROVE site.

IMPROVE Location	Top 3 Monitored Pollutants^a	Greatest Contributing Sources^b		Applicable Strategies
HECA	Ammonium nitrate Organic mass Ammonium sulfate	<i>NOx</i>	Onroad mobile Nonroad mobile Non-EGU point sources	<ul style="list-style-type: none"> • Mobile source emission controls • Stationary source emission controls
		<i>SOx</i>	Non EGU point source Area sources Onroad mobile sources	<ul style="list-style-type: none"> • Stationary source emission controls • Smoke mgmt./open, agriculture/residential wood burning programs • Mobile source emission controls
		<i>PM</i>	Area sources Non EGU point sources Nonroad mobile sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Stationary source emission controls • Mobile source emission controls
STAR	Ammonium nitrate Organic mass Ammonium sulfate	<i>NOx</i>	Onroad mobile sources Nonroad mobile sources Non EGU point sources	<ul style="list-style-type: none"> • Mobile source emission controls • Stationary source emission controls
		<i>SOx</i>	Non EGU point sources Area sources EGU point sources	<ul style="list-style-type: none"> • Stationary source emission controls • Smoke mgmt./open, agriculture/residential wood burning programs
		<i>PM</i>	Area sources Non EGU point sources Nonroad mobile sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Stationary source emission controls • Mobile source emission controls
MOHO	Ammonium sulfate Organic mass Ammonium nitrate	<i>NOx</i>	Nonroad mobile sources Onroad mobile sources Non EGU point sources	<ul style="list-style-type: none"> • Mobile source emission controls • Stationary source emission controls
		<i>SOx</i>	Area sources Non EGU point sources Onroad/nonroad mobile sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Stationary source emission controls • Mobile source emission controls
		<i>PM</i>	Area sources Nonroad mobile sources Non EGU point sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Mobile source emission controls • Stationary source emission controls
THSI	Ammonium sulfate Organic mass Elemental carbon	<i>NOx</i>	Onroad mobile sources Nonroad mobile sources Non EGU point sources	<ul style="list-style-type: none"> • Mobile source emission controls • Stationary source emission controls
		<i>SOx</i>	Non EGU point sources Area sources Onroad/nonroad mobile sources	<ul style="list-style-type: none"> • Stationary source emission controls • Smoke mgmt./open, agriculture/residential wood burning programs • Mobile source emission controls
		<i>PM</i>	Area sources Non EGU point sources Onroad/nonroad mobile sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Stationary source emission controls • Mobile source emission controls

CRLA	Ammonium sulfate Organic mass Elemental carbon	<i>NOx</i>	Onroad mobile sources Nonroad mobile sources Non EGU point sources	<ul style="list-style-type: none"> • Mobile source emission controls • Stationary source emission controls
		<i>SOx</i>	Non EGU point sources Area sources Onroad/nonroad mobile sources	<ul style="list-style-type: none"> • Stationary source emission controls • Smoke mgmt./open, agriculture/residential wood burning programs • Mobile source emission controls
		<i>PM</i>	Area sources Non EGU point sources Onroad/nonroad mobile sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Stationary source emission controls • Mobile source emission controls
KALM	Ammonium sulfate Organic mass Elemental carbon	<i>NOx</i>	Onroad mobile sources Nonroad mobile sources Non EGU point sources	<ul style="list-style-type: none"> • Mobile source emission controls • Stationary source emission controls
		<i>SOx</i>	Non EGU point sources Area sources EGU point sources	<ul style="list-style-type: none"> • Stationary source emission controls • Smoke mgmt./open, agriculture/residential wood burning programs
		<i>PM</i>	Area sources Non EGU point sources EGU point sources	<ul style="list-style-type: none"> • Smoke mgmt./open, agriculture/residential wood burning programs • Stationary source emission controls

a: Based on measured extinction from IMPROVE monitoring data, WRAP Technical Support System website for the period 2014 to 2018. Illustrated in Figures 2-3 through 2-8.

b: Based on Weighted Emission Potential and source apportionment modeling, discussed in Section 2.5.

4.4 Necessary Emission Reduction Measures, On-going Air Pollution Control Programs and Source Retirement/Replacement

EPA's 2019 Regional Haze Guidance states, "If a state determines that an in-place emission control at a source is a measure that is necessary to make reasonable progress and there is not already an enforceable emission limit corresponding to that control in the SIP, the state is required to adopt emission limits based on those controls as part of its LTS in the SIP." In addition, the guidance states, "The LTS can be said to include those controls only if the SIP includes emission limits or other measures (with associated averaging periods and other compliance program elements) that effectively require the use of the controls."

DEQ's long-term strategy for stationary sources that DEQ determined in Regional Haze Round 2 are likely to contribute to visibility impairment is to implement the mandatory controls and PSEL reductions described in Section 3.7. DEQ has issued a Department Order for each facility that mandates emission limits via control installation or PSEL reduction and compliance schedules. Monitoring, record keeping and reporting requirements are contained in the Orders or applicable Title V permit conditions that are incorporated into this Regional Haze SIP.

In addition to mandating new emission controls and reductions, DEQ will continue to implement rules on the books to protect visibility in Class 1 areas: Prevention of Significant Deterioration and New Source Review.

In developing this Regional Haze Plan's Long-term Strategy, DEQ considered source retirement and replacement during stationary source screening and four factor analysis, as described in sections 3.1, 3.4 and 3.7. For example, DEQ's analyses accounted for the permanent closure of the Boardman coal-fired power plant in October 2020.

4.5 Measures to Mitigate Impacts of Construction Activities and Mobile Source Strategies

This 10-year Regional Haze plan incorporates and recognizes significant local and state efforts to reduce mobile source emissions, including mitigating impacts of construction activities. Key efforts include:

- As a section 177 state, DEQ adopted recent California rules for medium- and heavy-duty on-road vehicles. In November 2021, Oregon's Environmental Quality Commission adopted new zero emission vehicle and NO_x standards for medium- and heavy-duty trucks.
- Local governments in the Portland-metro region, including the Port of Portland, Multnomah County and the City of Portland have adopted new procurement standards for construction projects which should result in significant reductions in the nonroad mobile source category.
- The Volkswagen and DERA grant programs aim to reduce emissions from diesel engines and provide funding to support the purchase of new, cleaner equipment across multiple sectors of the mobile source category.
- In 2019, the Oregon Legislature adopted HB 2007, prohibiting titling and registration of older (pre-2007 and pre-2010 model year) medium- and heavy-duty diesel trucks in Clackamas, Multnomah and Washington counties. By 2029 the laws will be in full effect.

Other Oregon-specific programs such as the Clean Fuels Program encourage fuel switching to fuels with lower carbon intensities. The Oregon Clean Vehicle Rebate Program incentivizes electric vehicle ownership in the state. DEQ's Vehicle Inspections Program plays an important part in reducing emissions from mobile sources in Medford and the Portland metropolitan areas. DEQ plans to expand the Employee Commute Options program to help reduce mobile sector pollution in the state's urban areas.

4.5.1 Programs to Reduce Medium and Heavy Duty Diesel Engine Emissions

Mandatory standards will go into effect in the Portland Metro region beginning in 2023 for in-use diesel, medium- and heavy-duty trucks. These standards will phase out certain older model medium and heavy duty diesel engines. Additional phase outs of older vehicles will occur in 2025 and 2029. By 2029 most medium and heavy-duty vehicles must be 2010 or newer unless retrofitted to reduce emissions. DEQ's Vehicle Inspection Program will be responsible for certifying compliance with the retrofit pathway and will be completing the rulemaking for this new policy in 2021.

DEQ adopted heavy and medium duty diesel engine standards by reference under Section 177 of the Clean Air Act from previously adopted California Air Resources Board standards that go into effect beginning in 2022. DEQ expects these standards to reduce greenhouse gasses and tailpipe emissions from new diesel vehicles by requiring a percentage of zero emission medium- and heavy-duty engines. The standards also reduce NO_x emissions from new medium and heavy-duty diesel engines by 90%. The standards apply to new vehicles and engines sold in Oregon, beginning with 2024 model year vehicles. DEQ expects some manufacturers to choose early compliance in order to place ZEV medium- and heavy-duty vehicles in the state for early credit through the Clean Fuels Program.

In 2021, DEQ developed model clean contracting standards for state contracting agencies to use as they set policies for equipment used on public projects in the Portland metropolitan area. Developing model clean contracting standards was an element of state legislation (HB 2007) which required that procurement standards go into effect in 2022. While the standards are not mandates or regulations, retrofitted or newer equipment will be required to complete work under these contracts as described in individual agency contracts and procurement policies. In general, the model standards focus on nonroad diesel engines but the standards have onroad components, as well.

With approximately \$73 million in funding from the Volkswagen Mitigation Trust Fund court settlement and annual allocations from EPA under the Diesel Emission Reduction Act, Oregon is retrofitting, repowering, and replacing older diesel engines with newer, cleaner burning technology. This work requires older, more-polluting diesel equipment to be permanently destroyed, ensuring diesel emissions are reduced while supporting the purchase of new equipment that meets more stringent emissions standards. DEQ's initial target is to treat at least 450 school buses across the state. In early 2021, DEQ completed a rulemaking that set parameters for awarding remaining VW Mitigation Trust funding over the next 4 to 5 years. The grant program has an expanded focus, addressing additional kinds of diesel equipment as well as weighting the environmental justice benefits of diesel emission reduction projects.

4.5.2 Programs to Reduce Passenger Vehicle Emissions

DEQ's Vehicle Inspection Program requires light duty gasoline and diesel vehicles and heavy duty gasoline vehicles registered in the Portland and Medford metropolitan areas meet certain emissions standards before vehicle owners can renew vehicle registrations. VIP is a mandatory

control set in the Portland area's Ozone Maintenance Plan and the Medford area's CO Maintenance Plan.

Oregon is a Section 177 state, a designation through which states can adopt vehicle standards that are more stringent than federal standards for new vehicles but must adopt California's rules identically. Oregon has opted in to California's vehicle emission standards and adopted Low Emission Vehicle and ZEV standards. The LEV program requires strict emission standards for the reduction of criteria pollutants and greenhouse gases and the ZEV program requires manufacturers to deliver a certain percentage of zero emission vehicles to Oregon. Additionally, DEQ is considering the adoption of several recent California rules for medium- and heavy-duty on-road vehicles. The department intends to propose new ZEV and NO_x standards for medium- and heavy-duty trucks in late 2021 for EQC consideration

Part of Oregon's transportation electrification strategy is the Oregon Clean Vehicle Rebate Program. The Oregon Clean Vehicle Rebate Program offers a cash rebate for Oregon drivers who purchase or lease electric vehicles. DEQ designed the program to reduce vehicle emissions by encouraging more Oregonians to purchase or lease electric vehicles rather than gas vehicles. The program contains two rebate options: a Standard Rebate for the purchase or lease of a new plug-in hybrid electric vehicle or a new battery electric vehicle and the Charge Ahead Rebate for income-qualified households who purchase or lease a new or used battery electric vehicle or plug-in hybrid electric vehicle.

In the Portland metropolitan area, DEQ implements the mandatory Employee Commute Options Program. These program rules are adopted as part of the Portland area Ozone Maintenance Plan and require employers with at least 100 employees at a worksite to offer commute alternatives to their employees. Employers must submit trip reduction plans for DEQ's approval, survey employees biannually and report results to DEQ. DEQ has initiated a rulemaking to expand the commute options program requirements to employers in other urban areas in Oregon. DEQ expects to complete this rulemaking in 2022.

4.5.3 Clean Fuels Program

The purpose of the Oregon Clean Fuels program is to reduce the carbon footprint associated with transportation. In 2009, the Oregon Legislature authorized the Oregon Environmental Quality Commission to adopt rules to reduce lifecycle emissions of greenhouse gases. In 2015, the Oregon Legislature removed a Dec. 31, 2015 sunset date, and the Oregon Clean Fuels Program began in 2016. The rules require a 10 percent reduction in transportation fuel average carbon intensity from 2015 levels by 2025.

CFP is a mandatory program that regulates transportation fuel importers. Regulated parties must register with DEQ before producing fuel in Oregon, importing fuel into Oregon or generating or transacting credits for fuels supplied in Oregon; keep records for each transaction of transportation fuel imported, sold or supplied for use in Oregon; and submit quarterly annual reports. The CFP sets a standard for gasoline and gasoline substitutes and one for diesel and diesel substitutes.

DEQ will be expanding the Clean Fuels Program over the next five years, including efforts to increase mandatory carbon intensity reductions. In 2021, DEQ will complete a rulemaking that will advance transportation electrification by helping utilities generate clean fuels credits. DEQ will also consider rule revisions that reduce the carbon intensity of electricity used as a

transportation fuel, increase access to renewable electricity for transportation, and encourage new types of electric vehicles.

The program has created an Oregon market for lower-carbon fuels (e.g. ethanol, biodiesel, renewable diesel, electricity, hydrogen, and fossil and renewable natural gas and propane). Many of those fuels have lower or no PM, carbon monoxide, and NO_x tailpipe emissions. DEQ is currently working with researchers at the University of California, Davis, to begin to quantify tailpipe emission reductions. DEQ expects that implementation and expansion of CFP will continue to reduce haze forming pollutants from mobile sources.

4.6 Smoke Management Practices and Programs and Area Source Strategies

Area source sectors include prescribed fire, open burning, residential wood combustion, agriculture and dairies, rail, airports and facilities and products that emit volatile organic compounds.

4.6.1 Smoke Management and Prescribed Burning for Wildland Vegetation Management

Forestry prescribed burning occurs across the state and is controlled under a mandatory smoke management program operated by the Oregon Department of Forestry. Under state statute ORS 477.013, the State Forester and DEQ are required to protect air quality through a smoke management plan, which is included in the SIP. ODF smoke management rules are listed in OAR 629-048-0001 through 629-048-0500. The rules specify that the Smoke Management Plan is to be consistent with the Oregon Visibility protection Plan (Section 5.2 of Oregon's SIP) and the Oregon Regional Haze Plan.

In 2014, ODF and EQC adopted changes to the Smoke Management Plan, including particular provisions in the Operational Guidance to protect visibility in Crater Lake National Park and Kalmiopsis Wilderness from prescribed burns. The provisions indicate that if ODF fire district personnel receive a complaint or become aware of a smoke intrusion or smoke incident in either of these areas, the District Forester shall assign a qualified individual to conduct an investigation and document the findings. Since ODF and EQC adopted these additional actions, there have been no prescribed burn intrusions into either Crater Lake National Park or Kalmiopsis. DEQ finds the additional protections are necessary elements to retain as part of Oregon's Long-term Strategy and credits the Oregon Department of Forestry for successfully managing the prescribed burns in these areas.

DEQ is concerned about smoke management practices, including prescribed burning, pile burning, and agricultural burning that contribute to visibility impairment in Class 1 areas. Over the next three years, before the next Regional Haze status reporting, DEQ will engage with the US Forest Service, EPA and state agencies to evaluate and compare smoke management rules in adjoining states in order to develop and adopt uniformly stringent rules to protect visibility.

On March 1, 2019, the Board of Forestry and the Environmental Quality Commission adopted revisions to Oregon Smoke Management Plan, as part of a periodic plan review requirement. These recent rule revisions were the most comprehensive in some time, striking a balance between the need to address the rising risk of catastrophic wildfire in Oregon through the use of prescribed fire, and the need to protect public health and visibility in Class 1 Areas. Numerous changes related to protection of air quality, including new air quality criteria for smoke intrusions

and smoke incidents. Historically, no amount of smoke was acceptable within a Smoke Sensitive Receptor Area. The revised rules allow a small level of smoke to enter these areas, but the levels still must comply with the federal 24-hour National Ambient Air Quality Standard for particulate matter and avoid excessive short-duration smoke events. The visibility protection provisions that were previously adopted (OAR 629-048-0130) remain in effect.

Two main objectives of the Smoke Management Plan are to minimize smoke emissions from prescribed burning and promote development of techniques that minimize or reduce emissions, such as utilization of forestland biomass. When prescribed burning is used, land managers are encouraged to employ the emission reduction techniques described in OAR 629-048-0210 to ensure the least emissions practicable. In the next few years, DEQ staff will be working to provide information on alternatives to burning such as clarifying permit requirements for air curtain incinerators and promoting non-burn alternatives.

Oregon, like many western states, is prone to wildfires and in order to reduce the risk of catastrophic wildfires, forest managing agencies conduct forestry prescribed burning. Beyond the hazardous fuel reduction benefits, prescribed burning has many ecological & silvicultural benefits. Underburning is typically used to maintain forest health through reduction of understory fuels and broadcast burning is used for habitat restoration and fuels reduction purposes.

Pile burning accounts for the majority of forestry prescribed burning in Oregon. While important to maintain prescribed burning as one important tool in forest management, DEQ will be working to reduce emissions by promoting alternatives to pile burning. One of those alternatives is the use of air curtain incinerators. When used to dispose of clean woody debris an ACI will increase combustion efficiency especially when the alternative is outdoor pile burning. An ACI operates by forcefully projecting a high velocity of air across an open combustion chamber in which clean wood is loaded. The "air curtain" that is created in this process traps unburned particles (smoke) under it where it is re-burned. Currently, these incinerators require a Title V permit. A proposed EPA rule change could remove the requirement for "other solid waste incineration" from needing a Title V permit. This proposed rule change is only for the OWSIs and is not for the "commercial and industrial solid waste incineration." In Oregon, most sources are CISWIs. Permitting for ACIs can be complex so DEQ is working to simplify the process. In 2020, DEQ adopted rule amendments to allow issuance of general permits for similar Title V sources. (Administrative Order No. DEQ 7-2020).

Another way to reduce emissions from prescribed burning is by burning fewer piles and using some other non-burn alternative. Non-burn alternatives include lop and scatter, crushing, piling, chipping, and removal. According to the National Cohesive Wildland Fire Management Strategy, non-burn fuel treatments involving mechanical, biological, or chemical methods offer many advantages in terms of greater control over the outcome and reduced risk of unintended consequences. The disadvantage is usually higher economic cost, which in some cases can be offset by active economic markets for the byproducts of the treatment. DEQ is currently working to establish a team of specialists to examine biomass utilization as an alternative to pile burning in an effort to reduce emissions, protect public health, and maintain good visibility. Starting in 2021, DEQ will host a series of biomass working group meetings which will include representation from other state and regulatory agencies, industry experts, and biomass stakeholders. The goal of this working group is to:

- Understand the regulatory authority, process complexities, operational limitations and barriers related to biomass utilization;

- Understand associated environmental impacts that exist or have the potential to exist; and
- Identify needs and opportunities related to biomass utilization.

With many of Oregon's Class 1 visibility areas being located near active forestlands, DEQ believes that the promotion and utilization of ACIs and non-burn alternatives, including biomass utilization, has the potential to improve visibility in these areas.

In 2022 and 2023, DEQ will be administering multiple grants for community response planning and implementation of alternatives to burning. The passage of Senate Bill 762 – the Omnibus Wildfire Bill - by the 2021 Oregon Legislature made this funding available and provided additional resources to DEQ. DEQ will also use a portion of this funding to contract with research institutions and gather new information about emission factors, source testing and best practices for alternatives to burning.

4.6.2 Area Source Strategy: Residential Wood Heating

Residential wood burning is a public health concern as well as a contributor to regional haze. DEQ will continue and expand the following regulatory and incentive programs to reduce emissions from residential woods combustion:

- Oregon's HeatSmart program requires uncertified stoves to be removed at the time of home sales for the whole state. DEQ intends to improve and update this program through a rulemaking in 2023.
- DEQ administers community grants biennially authorized by the Oregon Legislature that pay for wood stove changeouts to natural gas or electric-powered home heating devices in communities for which fine particulate matter pollution has been identified as a major source of wintertime air pollution.
- In 2019, DEQ partnered with Klamath County and successfully received an EPA Targeted Airshed Grant of \$1.8 million. From this grant, DEQ expects permanent reduction of emissions from residential wood combustion by converting wood-burning residential heating devices with non-wood burning devices such as gas inserts and ductless heat pumps.

DEQ also intends to pursue resources and partnerships to implement recommendations from DEQ's September 2016 report to the Oregon Legislature: Woodsmoke in Oregon: House Bill 3068 – 2015. Those top recommendations were community funding to implement woodsmoke reduction programs, sustained funding for woodstove changeout programs, and statewide education on the health effects of excessive woodsmoke. DEQ intends to continue partnerships with other state and local agencies, such as DEQ's participation in the Multnomah County Woodsmoke Working group in 2021.

DEQ partnered with Oregon State University in 2021 to conduct a statewide survey of residential heating. DEQ intends to use the results from this survey to improve Oregon's 2020 emission inventory.

4.6.3 Area Source Strategy: Agricultural Open Burning

DEQ's Open Burning and Smoke Management staff have started a collaborative effort with ODF, ODA and the Oregon State Fire Marshal. Over the next few years, DEQ will lead this group in assessing each agency's current rules and regulatory gaps, create process documents, and develop shared messaging campaigns to promote alternatives to and best practices for burning. In addition, DEQ intends to update the Open Burning rules to clarify how DEQ delegates responsibilities and enforcement to other agencies.

Agricultural open burning takes place across the state, except if prohibited by local jurisdictions. The amount of this burning is not well documented and DEQ has found little reliable information on daily burning activity in most areas of the state. DEQ tends to assume that emissions estimates of general outdoor burning include agricultural open burning. DEQ's Open Burning and Smoke Management staff have started a collaborative effort with ODF, ODA and the Oregon State Fire Marshal. Over the next few years, DEQ will lead this group in assessing each agency's current rules and regulatory gaps, create process documents, and develop shared messaging campaigns to promote alternatives to and best practices for burning. In addition, DEQ intends to update the Open Burning rules to clarify how DEQ delegates responsibilities and enforcement to other agencies.

There are two main types of agricultural related burning, "agricultural open burning" and "field burning." Agricultural open burning means the open burning of any agricultural waste except as provided in OAR 340-264-0040(5). Open Field Burning means burning of any grass seed or cereal grain crops, or associated residue, including steep terrain and species identified by the Director of Agriculture, or any "emergency" or "experimental" burning, as identified in OAR 603-077-0105(29). The majority of agricultural field burning in Oregon is associated with grass seed and cereal grain production. This burning is concentrated in specific locations during the summer months, with the majority in the Willamette Valley (about 15,000 acres) and smaller amounts in central and eastern Oregon in Jefferson and Union counties.

The Willamette Valley burning is controlled under the smoke management program operated by the Oregon Department of Agriculture (ORS 468A.590). ODA field burning rules are listed in OAR Chapter 603, Division 77, OAR Chapter 837 Division 110, and OAR Chapter 340, Division 264. The rules apply to areas lying between the crest of the Coastal Range and the crest of the Cascade Range (in the counties Multnomah, Washington, Clackamas, Marion, Polk, Yamhill, Linn, Benton and Lane). ODA's rules indicate that open field burning shall be regulated in a manner consistent with the Oregon Visibility Protection Plan.

Jefferson and Union county field burning is controlled through smoke management programs established by county ordinance and operated at that level. These county programs have requirements to avoid burning upwind of nearby Class 1 areas when smoke dispersion is poor and could impair visibility.

Oregon has prioritized the reduction of agricultural field burning while providing alternative methods of field sanitation and utilization of commercial residues to control, reduce, and prevent air pollution from field burning. Since the previous Regional Haze SIP revision, ODA's agricultural field burning program has decreased significantly, with maximum burnable acres reduced to 15,000 from 50,000 acres. Additionally, counties listed in ORS 468A.560 are no longer able to participate in propane flaming or stack burning. ODA encourages growers to utilize many different techniques which minimize emissions from field burning, including rapid ignition and ensuring field residues are dry and in good burning condition.

4.6.4 Area Source Strategy: Agricultural Sources

DEQ recognizes that agricultural sources, including dairies and other confined animal feeding operations, are potentially the major source for the visibility impairments observed at Strawberry Mountain Wilderness, Eagle Cap Wilderness, and Hells Canyon Wilderness in the wintertime months. This sector also seems to have an impact on visibility in the Columbia River Gorge National Scenic Area in the wintertime months. DEQ will work with stakeholders and the Oregon Dept. of Agriculture during this planning period in order to identify potential agricultural sector reductions for the next planning period.

DEQ recognizes that ammonium nitrate from dairy operations is probably a significant contributor to regional haze, particularly in the winter in the Columbia Gorge. In the last two decades, DEQ, the Columbia River Gorge Commission, Southwest Washington Clean Air Agency, the Oregon Department of Agriculture, the Oregon Legislature and others have put resources toward studying visibility impacts from agriculture and refining our understanding of sources, emissions, and best management practices.

The 2007 Oregon Legislature passed Senate Bill 235 that allowed the Oregon EQC limited authority to regulate agricultural operations and established a Task Force on Dairy Air Quality; specifically, the EQC could “implement a recommendation of the Task Force on Dairy Air Quality...for the regulation of dairy air contaminant emissions.”³² SB 235 charged the Task Force with studying emissions from dairy operations, evaluating available alternatives for reducing emissions, and presenting findings and recommendations to DEQ and ODA.

In 2008, the Oregon Dairy Air Task Force released its findings and recommendations. Among the Task Force recommendations were to develop a program based on Best Management Practices, such as manure management, feed practices and installation of waste management systems (e.g. digesters). The task force recommended a voluntary Phase I, followed by a mandatory Phase II. The Task Force recommended that DEQ, ODA, Oregon Health Authority and research institutions provide technical assistance so agricultural operations can develop expertise in BMPs that reduce ammonia, methanol and odors, as well as educational material and outreach to the general public and neighboring communities. Based on the approach of adjacent states, about 45 dairies in Oregon would be subject to newly developed regulations.

In 2017, the Oregon Dept. of Agriculture, also tasked by the Oregon Legislature, completed a comparison of practices of two large Oregon dairies in the Columbia Gorge with programs in Idaho and Washington. ODA found the practices of the two dairies met the standards in adjoining states, but also recommended practices and technologies that could be explored as opportunities to mitigate dairy air emissions. Those recommendations included optimizing digester operations, lagoon storage covers and bacterial or other substrate additions, installation of bio-filters to capture and treat emissions, and opportunities for air sequestration through crop production.

DEQ has brought requests for funding a Dairy Air program to the Oregon Legislature twice but has not yet been successful in securing funding for such a program. DEQ will continue partnering with ODA and other stakeholders to develop a Dairy Air Quality permitting program based on implementation of best practices.

DEQ will also develop and refine the state’s ammonia emission inventory and will seek EPA’s assistance, as necessary.

³² ORS 468A.020(2)(c)

4.6.5 Area source strategy: Rail and Airports

The majority of airport emissions, and therefore visibility impairment, are attributable to airplane takeoffs and landings. These emissions fall under the scope of Federal, not state, environmental regulation. However, there are two significant actions that will reduce emissions associated with ground support equipment and non-road construction equipment at the Port of Portland. As described briefly above, the Port is a part of the Clean Air Construction Coalition which will reduce diesel emissions associated with Port construction projects. In addition, the Port has plans to electrify its ground operations to the maximum extent possible and has achieved significant reductions already.

Locomotives are responsible for 8% of diesel particulate matter emissions statewide. While new locomotive engines are regulated at the Federal level, Oregon does have authority to adopt in-use standards. We are currently tracking California Air Resources Board policies in this area. If California adopts new in-use locomotive rules DEQ will consider the impacts of those rules on emission inventories and visibility impairment in Oregon. DEQ may consider taking similar action to avoid the shifting of California's oldest locomotives across the border.

4.6.6 Area Source Strategy: Volatile Organic Compounds

DEQ did not specify Volatile Organic Compounds as Round 2 Regional Haze pollutants. However, the apportionment charts in Section 2.5 show that organic carbon from US anthropogenic sources contribute to visibility impairment on a similar scale to ammonium nitrate and ammonium sulfate. In addition, DEQ is concerned that VOCs are significant contributors to other secondary pollutants such as ozone and toxic air contaminants, as well as visibility-impairing particulate matter. DEQ plans to undertake several regulatory and incentive-based efforts in the next three years to reduce VOC emissions from area sources. DEQ's Air Quality Division is working with DEQ's Materials Management Program to implement the agency's Toxics Reduction Strategy, which includes reducing VOCs in building materials, encouraging pollution prevention practices, and promoting product substitutions such as water-based automotive paints. DEQ also expects to undertake rulemaking, preferably at the regional level with Washington and Idaho, that will require reducing VOCs in consumer products and architectural, industrial and maintenance coatings; separate rules will require upgrades to vapor recovery systems at gasoline dispensing facilities.

4.7 Implement SIPs and Proactive Programs

DEQ and LRAPA will continue to meet Clean Air Act responsibilities to enforce strategies and report progress in PM Maintenance and Nonattainment areas. The strategies to reduce PM in these areas are directed at achieving health-based NAAQS, but DEQ expects those strategies will improve visibility as well. Oregon's PM10 Maintenance areas are: Grants Pass, Medford, and Klamath Falls. Areas designated nonattaining for PM2.5 are Klamath Falls and Oakridge. DEQ will be undertaking the Klamath Falls PM 2.5 Maintenance Plan in 2021 with expected completion by early 2022.

Two communities in Oregon voluntarily participate in EPA's PM Advance Program. DEQ supported these communities through the PM Advance application process and will continue to work closely with them. PM Advance is a voluntary and proactive program for communities where PM 2.5 measurements often exceed the NAAQS, but are not yet designated nonattaining. Air quality in the urban growth boundaries of Prineville and Lakeview often does not meet the NAAQS and these areas have ongoing winter-time PM2.5 issues. Both areas entered the PM Advance Program in 2014, organizing advisory committees develop strategies for compliance with the PM2.5 NAAQS.

These strategies include local ordinances to reduce wood smoke, public education and outreach, voluntary or mandatory wood stove advisories with curtailment of wood stove use during poor air quality days and other measures. Most of the focus and effort in PM Advance is local, in partnership with DEQ, although EPA will occasionally, if invited, participate in local Air Quality Committee meetings.

Both areas have had many wood stoves removed and replaced with non-wood burning devices or replaced with new and certified wood stoves. Lakeview has had over 100 wood stove replacements in the last several years, as funding was available. There is no natural gas available in Lakeview so it is more of a challenge to offer non-wood burning heating devices. Prineville has had fewer than 25 replacements, but has reduced burning in burn barrels and also has implemented a reduced cost or free green woody waste collection events.

Lakeview was successful in past years lowering PM10 measurements -- now well below the standard – and DEQ is confident this community will continue making progress on PM 2.5 through the Advance program. Prineville has shown a strong trend of compliance with the NAAQS; even if Prineville withdraws from PM Advance, DEQ expects the community would continue to convene their Air Quality Committee and implement woodsmoke reduction strategies.

4.8 International emissions

WRAP modeling indicates that a large percentage of regional haze pollutants measured in Oregon originate internationally. DEQ recognizes that international emissions contributing to US visibility impairment is not new, but WRAP's modeling suggests that the portion of visibility impairment attributed to international emissions will continue to increase in the coming decades. For example, WRAP's modeling of visibility at the Eagle Cap/Strawberry Mountain IMPROVE monitor, shows approximately one deciview impairment from international emissions in 2028 and approximately 3 deciviews in 2064. The 2017 Regional Haze Rule requires that states develop and implement comprehensive plans to reduce human-caused regional haze in designated areas. States also must calculate and work towards interim, short-term progress goals, with a long-term goal of returning targeted areas to their natural visibility conditions by 2064. Natural conditions have been defined and were agreed upon previously and Oregon is planning to implement strategies to achieve that goal. The increased contribution of international emissions will cause us to fail unless those emissions are mitigated.

Oregon disagrees with the suggested approach of changing the target, and thus the glidepath, to accommodate the resulting impairments. The international emissions that obstruct our view of Oregon's 12 Class 1 areas also form background particulate aerosols (PM_{2.5}) and cause ozone exceedances. The Clean Air Act places the responsibility to address international pollution with the federal government and EPA, who have the jurisdiction and authority which states lack to legislate, negotiate and implement policies that reduce international emissions transport.

The success of Oregon's plan as well as the success of most other western states' to meet natural background conditions that is envisioned by the Clean Air Act, depend on the EPA to do its share and address international transport. Most of the increase in international transport is related to sulfate and nitrates, suggesting increased use of fossil fuels. EPA should consider strengthening aircraft standards, ships and other marine vessel standards and climate targets that will rapidly phase out fossil fuel dependence in the US and internationally.

Oregon's Regional Haze SIP is dependent on the federal government to successfully reduce the impact of international transport. Oregon commits to track progress and report on the federal share in its future plan updates.

5 Uniform Rate of Progress

In this section, DEQ demonstrates that Reasonable Progress Goals for 2028 will meet a Uniform Rate of Progress toward natural visibility goals by 2064. DEQ has demonstrated based on the required analysis of the four factors, that Oregon's Round 2 regional haze Long-term Strategy contains all "emission reduction measures for anthropogenic sources or groups of sources in the State that may reasonably be anticipated to contribute to visibility impairment in the Class I area that would be reasonable to include in the long-term strategy" and therefore meets the requirements of 40 CFR 51.308(f)(3)(ii)(A). In particular, with a screening factor, $Q/d > 5.00$, DEQ called in 31 facilities for analysis that contribute 80% of the total Q from major sources for all Oregon Class I Areas, including sources not located in Oregon. Several facilities that DEQ called in agreed to lower PSEs such that $Q/d < 5.00$, leaving 23 facilities to undergo four factor analysis. DEQ set a cost effectiveness threshold at \$10,000 ton, which led to controls or emission reductions at 17 facilities, encompassing 43 emission units.

5.1 Reasonable progress goals for Class I Areas

Table 5.1 shows Reasonable Progress Goals for 2028 at each of the Oregon IMPROVE sites. **Error! Reference source not found.** through 10 illustrate the Regional Haze Uniform Rate of Progress glidepath and the 2028 projections at each of Oregon's IMPROVE sites, and sites in Washington and California that are affected by Oregon sources. The 2028 projections are based on WRAP modeling of the second Potential Additional Controls scenario, which represents regulations on the books as of 2020 plus stationary source controls recommended from DEQ's review of initial four factor analyses submittals and incorporated into Oregon's Long-term Strategy.

Generally, the predicted 2028 PAC2 visibility is lower than the URP glideslope for sites in the northern part of the region, including the northern and eastern Oregon IMPROVE sites (MOHO, STAR, and HECA), and two sites in Washington affected by Oregon sources (MORA and WHPA). Sources in the central and southern part of the region exhibit an opposite trend, and the PAC2 projections lie above or on the glideslopes. These IMPROVE sites include THSI, CRLA, and KALM in Oregon, and REDW and LABE in northern California, which are affected by Oregon sources.

Table 5-1: 2028 Reasonable progress goals for Oregon IMPROVE sites in deciviews, from WRAP TSS.

	Class I areas Served	Most Impaired Days (MID)				Clearest Days			
		Observed		Modeled RPG	Estimated Nat. Conditions 2064 DV	Observed		Modeled RPG	No degradation Limit 2064 DV
		Baseline		PAC 2		Baseline		PAC 2	
		2000-2004 DV	2014-2018 DV	2028 DV	2000-2004 DV	2014-2018 DV	2028 DV		
HECA	Hells Canyon	16.51	12.33	11.66	6.57	5.52	4.00	3.79	5.52
STAR	Eagle Cap Strawberry Mt.	14.53	11.19	10.47	6.58	4.49	2.79	2.62	4.49
MOHO	Mt. Hood	12.10	9.27	8.50	6.59	2.17	1.39	1.29	2.17
THSI	Mt Washington Mt Jefferson Three Sisters Crater Lake	12.80	11.28	10.86	7.30	3.04	2.61	2.53	3.04
CRLA	Diamond Peak Mt. Lakes Gerhart Mt.	9.36	7.98	7.72	5.16	1.69	1.05	0.98	1.69
KALM	Kalmiopsis	13.34	11.97	11.63	7.78	6.27	5.90	5.84	6.27

The following figures are organized geographically, from north to south, primarily along the alignment of the Cascades, to highlight regional trends in extinction, glideslopes, and modeled 2028 PAC2 projections.

Figure 5-1: MORA URP Glidepath and Modeled 2028 PAC2.



Figure 5-2: WHPA URP Glidepath and Modeled 2028 PAC2.

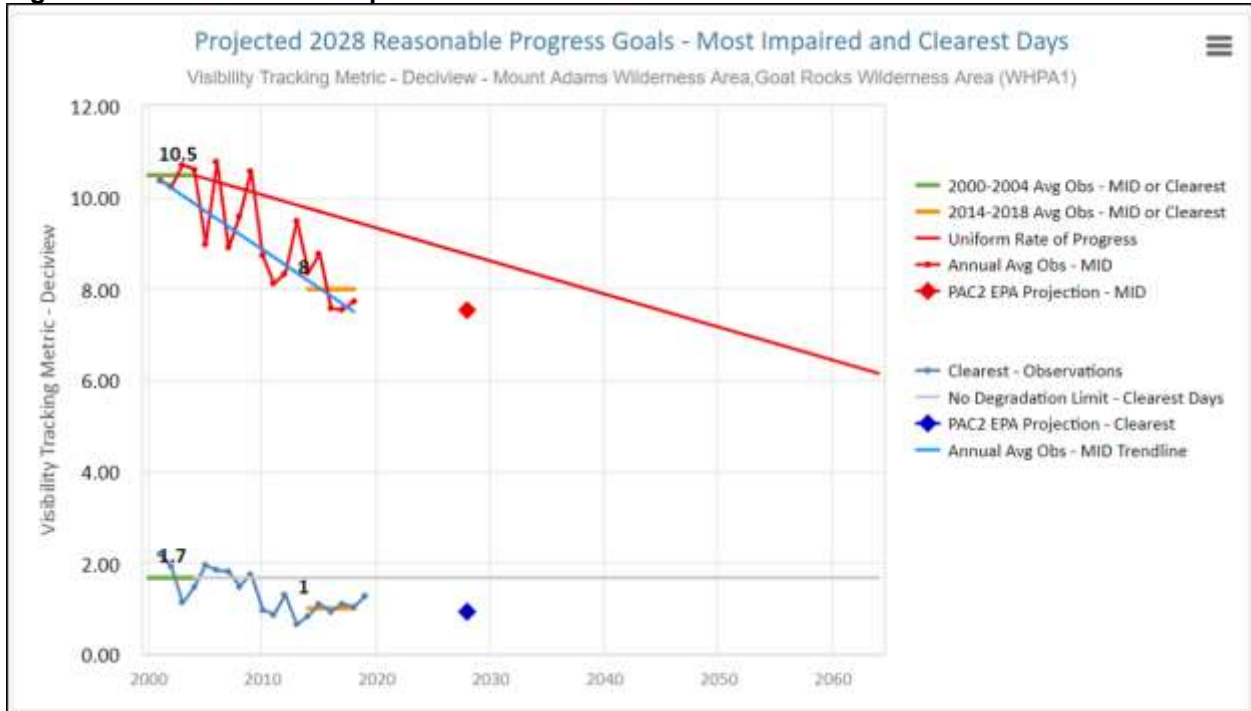


Figure 5-3: HECA URP Glidepath and Modeled 2028 PAC2.



Figure 5-4: STAR URP Glidepath and Modeled 2028 PAC2.



Figure 5-5: MOHO URP Glidepath and Modeled 2028 PAC2.

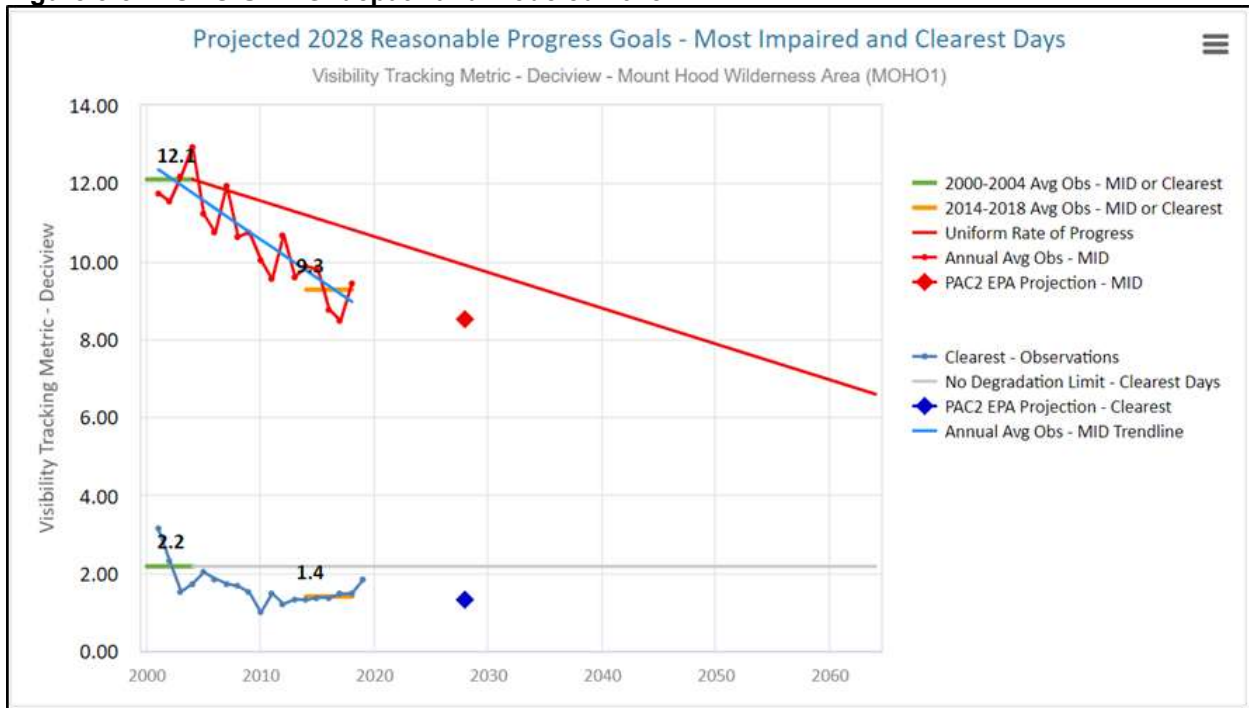


Figure 5-6: THSI URP Glidepath and Modeled 2028 PAC2.



Figure 5-7: CRLA URP Glidepath and Modeled 2028 PAC2.



Figure 5-8: KALM URP Glidepath and Modeled 2028 PAC2.



Figure 5-9: REDW URP Glidepath and Modeled 2028 PAC2.



Figure 5-10: LABE URP Glidepath and Modeled 2028 PAC2.



5.2 Glidepath policy choice

The URP glidepath originates with the EPA-calculated 20% most impaired days using observations from the IMPROVE monitoring site that represents either a single Class 1 area, or multiple areas. The URP glidepath starting point is the MID for the 2000-2004 5-year baseline period and the glidepath slope is the straight line drawn to estimated natural conditions in 2064. In the second regional haze planning period, the default glidepath endpoint uses natural conditions estimates based on the 15-year average of natural conditions on most impaired days in each year 2000-2014.

For each IMPROVE monitor site, there are three options which estimate projected visibility conditions in 2028. The projection options are: the EPA Projection, the EPA Projection without fire, and the EPA Projection using Modeled MID. For the 2028 projections, DEQ found the presence or absence of fire effects to be relatively small. For that reason, DEQ chose the EPA 2028 projected visibility without a fire correction.

The WRAP TSS site also provides calculations for two alternative glidepath end point projections at 2064. The glideslope options are: no adjustment; adjust 2064 natural conditions by adding International Anthropogenic emissions; or adjust 2064 natural conditions by adding International Anthropogenic and Wildland Prescribed Fire emissions. The 2017 Regional Haze Rule allows a state to select the default glidepath slope or one of the alternatives for the individual Class 1 areas. DEQ chose to compare 2028 projected emissions under the Potential Additional Controls 2 scenario to the unadjusted glide path.

DEQ chose these options because they best represent the conditions that will be used for Oregon's Long-term Strategy to improve visibility. Adjusting the glidepath is conceding to a

future that has poorer visibility, more pollution and is less healthy. DEQ considers the Regional Haze plan as partnership between states, tribes and the federal government. DEQ accepts responsibility to address emissions from sources within DEQ's direct control and relies on its partners to do their share. DEQ's policy decision to represent URP as an unadjusted glidepath has some effect on whether 2028 visibility projections fall slightly below or slightly above the glidepath (primarily at the central and southern Oregon IMPROVE sites), but DEQ did not base regulatory stationary source control decisions on the URP. DEQ based control decisions on the factors described in Section 3 of this plan and EPA's 2019 Regional Haze guidance that visibility projections below the glidepath do not provide "safe harbor" for sources.

6 Consultations, public comment, and responses

6.1 Consultations with Tribes

6.1.1 Oregon statutes for state-tribal government-to-government relations

Oregon was the first state to pass a state-tribal government-to-government relations law. In 2001, Senate Bill 770 (SB 770) established a framework for communication between state agencies and tribes. Effective government-to-government communication increases our understanding of tribal and agency structures, policies, programs, and history. These state and tribe relations inform decision makers in both governments and provides an opportunity to work together on shared interests. The state statute created from SB 770³³ is ORS 182.162-168.

State agencies also follow Executive Order EO-96-30, established in 1996, that defined a process to "assist in resolving potential conflicts, maximize key inter-governmental relations, and enhance an exchange of ideas and resources for the greater good of all of Oregon's citizens." Agencies responded to the executive order by presenting interest statements to the Governor and tribal government. DEQ developed a Tribal Government-to-Government Relations Program in 1996 following the signing of EO 96-30. In 2001, when the Oregon Legislature approved Senate Bill 770, this institutionalized the executive order into law.

DEQ's official response to the directives of Senate Bill 770 is contained in our tribal relations policy. The statement expresses DEQ's commitment to maximize inter-governmental relations between the agency and the nine federally recognized tribes in the State of Oregon.³⁴

The US Environmental Protection Agency is also an important participant in government-to-government relations between DEQ and the tribal governments. EPA has a responsibility to protect and restore the lands and environmental treaty resources (on-and-off reservation) of tribes. Regulation of federal environmental laws on tribal lands is also the responsibility of EPA. However, tribes may seek direct delegation authority from EPA to carry out federal and tribal environmental regulations on tribal lands. DEQ participates in a partnership with EPA and tribal

³³ http://nrc4tribes.org/files/Tab%209_9H%20Oregon%20SB770.pdf

³⁴ <https://www.oregon.gov/deq/about-us/Pages/tribal.aspx>

governments in carrying out their respective responsibilities for protecting and enhancing Oregon's environmental resources.

For this Round 2 Regional Haze plan, DEQ's Director initially reached out to Oregon's nine federal recognized tribal governments via letter in December 2019. DEQ, through its Director and tribal liaison continued to offer consultation at multiple points as DEQ was developing Round 2 strategies and methods. DEQ staff have updated tribal staff on the Round 2 Regional Haze process over the last two years at bimonthly DEQ-Tribal roundtable meetings and by presenting statute updates at the Legislative Commission on Indian Service Natural Resource Cluster meetings. DEQ staff also engaged with tribes through the regional modeling forum convened by WRAP, in particular the Tribal Data Work Group.

6.1.2 Western Regional Air Partnership

The Western Regional Air Partnership is a voluntary partnership of states, tribes, federal land managers, local air agencies and the US EPA whose purpose is to understand current and evolving regional air quality issues in the West.³⁵

The Tribal Data Work Group of the WRAP convened monthly from September 2018 to January 2020 and developed a WRAP Communication Framework for Regional Haze Planning, reviewed several data products of interest to the work group. That information is located on the WRAP Tribal Data Work Group website: <https://www.wrapair2.org/TDWG.aspx>

6.2 Consultations with States

State-to-State consultation followed the Long-term Strategy section of the 2017 Regional Haze Rule [40 CFR 51.308(f)(2)(ii)], which states:

“The State must consult with those States that have emissions that are reasonably anticipated to contribute to visibility impairment in the mandatory Class 1 Federal area to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress.

(A) The State must demonstrate that it has included in its implementation plan all measures agreed to during state-to-state consultations or a regional planning process, or measures that will provide equivalent visibility improvement.

(B) The State must consider the emission reduction measures identified by other States for their sources as being necessary to make reasonable progress in the mandatory Class 1 Federal area.

(C) In any situation in which a State cannot agree with another State on the emission reduction measures necessary to make reasonable progress in a mandatory Class 1 Federal area, the State must describe the actions taken to resolve the disagreement. In reviewing the State's implementation plan, the Administrator will take this information into account in determining whether the plan provides for reasonable progress at each mandatory Class 1 Federal area that is located in the State or that may be affected by emissions from the State. All substantive interstate consultations must be documented.”

³⁵ <https://www.wrapair2.org/>

DEQ participated in monthly calls with EPA Region 10 and Idaho, Washington, and Alaska agencies preparing Regional Haze plans. In addition, DEQ participated in regular calls with WESTAR states as organized by WRAP's Regional Haze Planning group. Those conversations are archived here: <https://www.wrapair2.org/RHPWG.aspx>. Finally, DEQ also had individual consultations with Idaho, Washington, California and Nevada regarding approaches to four factor analysis and general SIP preparation.

6.3 Consultations with Federal Land Managers

6.3.1 Regional Haze Rule

40 CFR 51.308(i) State and Federal Land Manager coordination states:

(2) The State must provide the Federal Land Manager with an opportunity for consultation, in person 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 Federal Land Manager can meaningfully inform the State's decisions on the long-term strategy. The opportunity for consultation will be deemed to have been early enough if the consultation has taken place at least 120 days prior to holding any public hearing or other public comment opportunity on an implementation plan (or plan revision) for regional haze required by this subpart. The opportunity for consultation on an implementation plan (or plan revision) or on a progress report must be provided no less than 60 days prior to said public hearing or public comment opportunity. This consultation must include the opportunity for the affected Federal Land Managers to discuss their:

- (i) Assessment of impairment of visibility in any mandatory Class 1 Federal area; and
- (ii) Recommendations on the development and implementation of strategies to address visibility impairment.

(3) In developing any implementation plan (or plan revision) or progress report, the State must include a description of how it addressed any comments provided by the Federal Land Managers.

(4) The plan (or plan revision) must provide procedures for continuing consultation between the State and Federal Land Manager on the implementation of the visibility protection program required by this subpart, including development and review of implementation plan revisions and progress reports, and on the implementation of other programs having the potential to contribute to impairment of visibility in mandatory Class 1 Federal areas.

6.3.2 Consultations with Federal Land Managers in advance of draft SIP review

Federal Land Managers were part of the WRAP quarterly Regional Haze Planning meetings. DEQ met individually with two federal agencies - US Forest Service and National Park Service – on multiple occasions before providing the draft SIP to those agencies for comment.

6.3.2.1 National Park Service

DEQ met with the National Park Service initially on January 28, 2020. DEQ described the agency's overall approach to source screening and review of four factor analyses at that point, which was one month after DEQ sent initial four factor analysis letters to facilities, and after the initial call with facilities on January 9, 2020.

DEQ held a subsequent meeting with National Park Service on September 25, 2020. DEQ described the Q/d screening process, the adjustments for 30 year equipment life, the bank prime rate, and the facilities that had screened out of additional analysis at that point. DEQ also discussed the probable cost effectiveness threshold of \$10,000 per ton of pollutant removed. NPS affirmed that these factors and this approach aligned with NPS's approach to reviewing four factor analyses. DEQ followed up by emailing all the four factor analyses to NPS for the 17 facilities where controls were still in consideration.

DEQ met again with NPS on February 19, 2021. EPA Region 10 was also present at this meeting. DEQ described the Regional Haze SIP status and reviewed the timeline for revising Oregon's Chapter 340 Division 223 rules. DEQ described how the Division 223 rulemaking would codify the Q/d screening and four factor analysis requirements used in Round 2 Regional Haze, as well as provide the authority for DEQ to issue orders to facilities for mandatory and enforceable emission reductions. DEQ also received NPS's consultation expectations and described the timeline DEQ considered ideal for receiving FLM comments while allowing DEQ to submit the Regional Haze SIP to EPA during summer 2021.

DEQ met NPS two more times, in addition to the May 27, 2021, draft SIP presentation meeting, on June 30 and July 15, 2021. At the June 30 meeting, NPS stated they did not consider the required 60-day consultation period to have started because the draft SIP did not include the final control and emission reduction requirements for the facilities that underwent four factor analysis. As NPS had requested, DEQ reviewed the timeline for the Division 223 rulemaking underway and its relationship to the SIP. DEQ explained that the current rulemaking would give DEQ authority to issue orders to facilities, requiring that they install controls or otherwise reduce emissions. DEQ explained that the proposed rules would require DEQ to issue the orders by August 9, 2021, allowing DEQ sufficient time to incorporate the orders in the SIP that DEQ wished to notice in September. DEQ committed to sending NPS updated information about the status of DEQ's facility control findings.

At the July 15 meeting with NPS, DEQ presented a spreadsheet that summarized DEQ's findings for each of the 32 facilities subject to four factor analysis and any tentative agreements with facilities if they had been reached. DEQ noted the facilities with whom DEQ was still negotiating and where DEQ would send updated information to NPS. NPS requested all documentation related to DEQ's analysis of facility-submitted FFA information for those facilities that had not already tentatively agreed to reduce plant site emission limits as a means to comply with the then-proposed Division 223 rules. On July 23, 2021, DEQ made all files NPS requested available to NPS on a Google drive, including an updated summary spreadsheet of DEQ's findings and tentative agreements with facilities about control installation or emission reduction.

6.3.2.2 U.S. Forest Service

DEQ met initially with the U.S. Forest Service on August 21, 2020. DEQ presented our analysis of the visibility impairment data for Class 1 areas. This included a finding that for the Columbia River Gorge, the STARKEY monitor, and Hells Canyon, that the ammonium nitrate levels could

potentially be above the glidepath by 2028. The agencies discussed that for all three monitors ammonium nitrate seems to be the pollutant of concern especially in the wintertime months.

DEQ and USFS discussed USFS interest in partnering to better understand the periodic increases in ammonium nitrate levels observed at the Hells Canyon, Starkey, and the Columbia River Gorge National Scenic Area. Such a partnership would include consideration of meteorological conditions, sources, and potential solutions to reduce overall impact on visibility. USFS noted they had conducted passive ammonium monitoring and maintained the necessary monitoring equipment. DEQ and USFS agreed that if such monitoring showed that ammonium nitrate trends in the Gorge differ from the Mt. Hood and Mt. Adams Class I Areas, then both agencies would confer about those discrepancies.

DEQ also reviewed the Smoke Management Plan with USFS and the agencies discussed DEQ’s plan to rely on SMP implementation to manage and reduce visibility impacts from anthropogenic burning and smoke. This would be the same management strategy proposed for Round 1 implementation of the Regional Haze Rule. DEQ then reviewed the anticipated timeline for consultations; at the time of the August 2020 meeting, DEQ expected FLM consultation to begin in February 2021.

DEQ met again with USFS on February 24, 2021. At that meeting, USFS summarized their expectations for what DEQ would provide before they would consider the formal 60-day consultation period to have begun. USFS reiterated their interest in improving visibility in the Gorge and asked DEQ to include discussion of Gorge winter-time ammonium nitrate measurements and the likelihood of Gorge visibility benefits from controls that benefit the Mt. Hood CIA. USFS also asked DEQ to consider including a detailed description of the sources included in emissions inventories relied on for modeling. DEQ and USFS also discussed DEQ’s decision not to adjust the glidepath to account for prescribed burning. USFS recommended adjusting the glidepath to allow for a likely need to increase prescribed burning to reduce wildfires, while relying on the SMP as a backstop.

6.3.3 Federal Land Manager review of draft State Implementation Plan

DEQ provided a draft of the Round 2 Regional Haze Plan to USFS and NPS on May 5, 2021. DEQ met with NPS and USFS, respectively on May 25 and May 27, 2021 to present the draft SIP, answer questions and receive preliminary feedback.

DEQ received USFS written comments on June 23, 2021. DEQ received comments from NPS in several communications between April 2 and July 15, 2021. DEQ summarizes the dates and topic of NPS comments received in Table 6-1.

Table 6-1: Summary of NPS comment dates and subject matter

Comment Date (2021)	NPS Commenter	Comment Subject Matter
April 2	Debra Miller	FFAs Roseburg Forest Products – Dillard and Biomass One
June 3	Debra Miller	FFAs Roseburg Forest Products – Dillard and Biomass One
July 1	Melanie Peters	Draft SIP, generally
July 1	Don Shepherd	FFA report prepared by All4 for Northwest Pulp and Paper Assoc., covering several facilities. FFA Boise Cascade – Elgin FFA Boise Cascade – Medford

		FFA Cascade Pacific FFA Georgia Pacific – Toledo FFA Georgia Pacific – Wauna FFA International Paper
July 7	Andrea Stacey	FFAs Gas Transmission Northwest Compressor Stations 12 & 13
July 15	Andrea Stacey	Selective catalytic reduction feasibility for compressor stations over variable loads

6.3.4 Federal Land Manager Comments and DEQ Responses

In the following sections, DEQ summarizes FLM comments, responds, and describes what changes, if any, DEQ made to the Regional Haze Plan.

6.3.4.1 US Forest Service

Comment FS-1

Observed changes since Round 1 of the Regional Haze SIP: significant emission reductions made in Oregon over the past decade have resulted in substantial improvements in visibility at all Forest Service Class I Areas within the state.

DEQ Response FS1

DEQ agrees.

Comment FS-2

Lack of site-specific plans to reduce haze at each Class I Area: Include specific analyses and long-term strategies for each individual or group of Class I areas represented by an IMPROVE monitor. For example, include probable locations of contributing sources, seasonality of impacts, identification of haze-contributing source types and which fall under DEQ authority, long-term strategy to reduce haze-causing pollutants for each of these sites, and whether or not these reductions will be sufficient to meet the Uniform Rate of Progress; revise the report to clarify the basis for and the specific plans to reduce haze following the URP for each Class I area, separately.

DEQ Response FS-2

DEQ intends to apply long-term strategies to reduce regional haze forming pollutants statewide. However, DEQ agrees this report would benefit from a discussion of the top haze forming pollutants and sources at each Class I Area or IMPROVE site and how certain elements of the LTS would be particularly applicable at those locations. DEQ provides such a summary in Table 4.1 in Section 4.3, Findings informing Long-term Strategy.

DEQ did consider probable locations of sources in developing the Long-term Strategy, primarily by consulting the Weighted Emission Potential, Extinction Weighted Residence Time, and back trajectory modeling results available on the WRAP TSS site. DEQ chose not to analyze seasonality of visibility impairment in developing the Long-term Strategy since DEQ found that calculating seasonal changes is hampered by gaps in the data available through TSS. DEQ relied on the Round 2 regional haze use of the 20% Most Impaired Days metric to account for removal of non-anthropogenic contributions.

Comment FS-3

Prescribed fire: The SIP implies limitations to prescribed fire based on the amount of fire used in the modeling projections. The 2017 NEI data DEQ used lacks important detail such as the total number of acres burned, the type of burning (pile burning, understory, etc.), fuel type, associated emission factors, and resulting emissions. DEQ states that the agency made corrections to the NEI but does not specify what those corrections were.

The 2017 tons/year PM10 from fires, listed in Table 2.4, converted to estimated PM 2.5 (28,850 tons/year), is three times the PM 2.5 emissions that the ODF Smoke Management Program calculates for 2017 (9,874 tons/year) based on acres burned.

DEQ states that the amount of burning assumed for the 2017 inventory was kept constant for 2028 projections; this conflicts with recommendations from the Governor's Wildfire Response Council. DEQ should correct emissions for 2028 projections or discuss the discrepancies from the Council's recommended future prescribed fire activity.

DEQ Response FS-3

DEQ acknowledges different methodologies used by state agencies and the NEI in attributing emissions to prescribed burning. Generally, DEQ the activity data that DEQ sends to the NEI for prescribed fires includes location, burn type, owner of property, acres and total tons burned, ignition date and time, and some fuel moisture information. DEQ has both collected this data ourselves from ODF and hired contractors to do so.

DEQ acknowledges that USFS, ODF and NEI are not using the same methodologies and emission factors to estimate fire emissions. DEQ can provide more detail on NEI methodology, emission factor estimates and calculations used to estimate fire emissions. In developing the Round 2 Regional Haze Plan and Long-term Strategy, DEQ relied on the consultations that took place in the WRAP regional haze fire working group to address discrepancies and gaps in NEI fire data.

DEQ has included some details about prescribed fire and alternative treatments statewide between 2014 and 2018 in the Five-year Progress Report section of this Round 2 Regional Haze Plan.

Comment FS-4

Adjustment to the Uniform Rate of Progress: Encourage DEQ to adjust the URP for prescribed fire per EPA guidance; disagree that such adjustment is, as DEQ states, "conceding to a future that has poorer visibility, more pollution and is less healthy;" EPA states "These particular types of fires are generally consistent with the goal of making reasonable progress because they are most often conducted to improve ecosystem health and to reduce the risk of catastrophic wildfires, both of which can result in net beneficial impacts on visibility;" DEQ is relying on an unnecessarily restrictive URP and this may place an unfair share of the burden on some to reduce haze.

DEQ Response FS-4

Thank you for the comment. DEQ has chosen to maintain its policy choice not to adjust the glidepath for international emissions or prescribed fire.

Comment FS-5

Long-Term Strategy for Hells Canyon Wilderness Area: DEQ should identify a more complete long-term strategy for each Oregon Class I area or monitoring site, including Hells Canyon. The identification of prescribed burning on Forest Service lands in Idaho as the LTS to reduce haze impacts at the HECA monitor seems unsupported by the documentation in the SIP

and therefore, unjustified. For example, the largest speciation of pollutants contributing to regional haze on the MID at the HECA site is ammonium nitrate and the Weighted Emissions Potential analysis for NO_x for HECA shows on-road and off-road mobile sources as the largest source. DEQ should explain why ammonium nitrate decreased dramatically (2000 – 2008) and then increased after 2008, and then discuss specific strategies to reduce the largest contributing pollutant to haze at HECA.

Another example: Organic mass is the second largest contributor to haze on the Most Impaired Days at HECA. WEP and source-apportionment modeling suggests that area non-point sources, such as agricultural sources, residential wood combustion, and fugitive dust, are the largest contributors to primary organic aerosols. Figures illustrating extinction-weighted residence times are insufficient evidence that prescribed fire on Forest Service lands in Idaho are the cause of haze at HECA on 20% MID. DEQ should clarify why other low-level area sources with relatively high weighted residence times are not addressed in the LTS for HECA and why only the Forest Service is mentioned rather than all prescribed burning, including agricultural burning.

DEQ Response FS-5

In Table 4.1, DEQ provides a summary of the top haze forming pollutants and sources at each Class I Area or IMPROVE site and how certain elements of the LTS would be particularly applicable at those locations. DEQ removed the figures and text related to the WEP analysis of HECA visibility impairment.

6.3.4.2 National Park Service

6.3.4.2.1 General Comments

Comment NPS-1

Four factor analyses: We find that Oregon DEQ's process directly follows the requirements of the Clean Air Act (CAA). We fully support Oregon DEQ's process for evaluating potential controls for further reasonable progress, which only applied the four statutory factors identified in the Clean Air Act. In contrast to many other states, Oregon DEQ did not introduce factors that are not in the CAA reasonable progress provisions (i.e., the visibility benefit of individual reasonable progress control determinations).

DEQ Response NPS-1

DEQ did not make changes to the Regional Haze SIP in response to this comment.

Comment NPS-2

Energy and non-air factor, co-benefits, environmental justice: We applaud DEQ's analysis of co-benefits from potential reasonable progress controls as this demonstrates environmental leadership in the region. Evaluating the co-benefits of reductions to further environmental justice is vitally important for promoting thriving communities in underserved areas as well as our national parks. We suggest that DEQ also consider the co-benefits of reducing nitrogen and sulfur deposition in nearby national parks in their analyses. Pollutant deposition can lead to acidification, eutrophication, and/or exceedance of critical loads for sensitive ecosystems in national parks and beyond. Reducing haze causing emissions will also reduce nitrogen and sulfur deposition across the region.

DEQ Response NPS-2

DEQ appreciates this recommendation and will include an assessment of environmental co-benefits in the final SIP.

Comment NPS-3

Q/d screening: We support DEQ's source screening methodology. The DEQ screening process was sufficiently inclusive to select a reasonable number of sources for consideration in the four-factor analyses. The use of Plant Site Emission Limits and the goal of capturing 80% of the total Q (NO_x + SO₂ + PM10 in TPY) represents a robust source selection process. We note that at least four states are using lower Q/d values than DEQ and at least two other states are also using Q/d =5, highlighting that Oregon DEQ's source selection process was reasonable and consistent with other state processes. Of the 32 facilities initially selected using Q/d, 23 were required to submit four-factor analyses FFAs and 17 of these undertook a detailed analysis.

DEQ Response NPS-3

DEQ did not make changes to the Regional Haze SIP in response to this comment.

Comment NPS-4

Cost threshold: We support DEQ's use of a \$10,000/ton cost threshold for determining whether controls are reasonable. For example, we understand that Colorado is also using a \$10,000/ton cost-effectiveness threshold. We agree that the 3-step "binned" process followed by DEQ to evaluate sources is a logical approach to determining where cost-effective reductions may be achieved. The \$10,000/ton cost-effectiveness threshold is higher than the threshold DEQ used in the first round of RH planning. We find it logical that cost thresholds will need to increase in subsequent planning periods as considering smaller sources and more costly controls becomes necessary for further reasonable progress. Additionally, Oregon is home to 12 Class I areas that DEQ needs to address, far more than many other states. Each of these considerations suggests that it is appropriate for DEQ to set a slightly higher cost threshold relative to previous planning periods and relative to other states. We also note that many of the controls considered are well below DEQ's cost-effectiveness threshold. These controls may be less expensive (and more cost-effective) once the errors in the cost analyses are revised.

DEQ Response NPS-4

DEQ did not make changes to the Regional Haze SIP in response to this comment.

Comment NPS-5

PSEL reductions below Q/d threshold: We appreciate this as an anti-backsliding effort by Oregon DEQ. Bringing the PSEL more in-line with actual emissions from recent years is a positive step to prevent emission increases in the future. We recommend that DEQ include a SIP requirement for the 17 facilities that accepted PSEL reductions. The SIP should require a FFA analysis if these facilities propose increasing PSELs under a subsequent permitting action in this planning period that would cause the facility to exceed the initial Q/d screening criteria. Without this provision, facilities going through a permitting action may be allowed to focus only on the affected units and not required to take a facility-wide look at control options. This could, in effect, allow the source to piecemeal control technology determinations and restrict FLM opportunities for engagement in such decisions.

DEQ Response NPS-5

DEQ allowed seven facilities to forgo FFAs because the facilities agreed to PSEL reductions or demonstrated they had lowered PSELs in a recent permit renewal. DEQ made those PSEL

reductions enforceable through stipulated agreements and orders or permit modifications. SAFOs include the following statements:

- The PSEL and unassigned emissions reductions required by this SAFO shall not be banked, credited, or otherwise accessed by Permittee for use in future permitting actions.
- PSELs for this Facility shall not be increased above those established in this SAFO except as approved in accordance with applicable state and federal permitting regulations.

DEQ includes SAFOs and modified permits documenting PSEL reductions in Appendix E, as follows:

- Kingsford Manufacturing Co: modified permit
- Klamath Energy LLC: modified permit
- Roseburg Forest Products – Medford: June 2017 permit renewal
- Roseburg Forest Products – Riddle: July 2019 permit renewal
- Timber Products: May 2020 permit renewal
- Cascade Tissue Group: SAFO
- PGE - Beaver: SAFO

While DEQ did not choose to include in the SIP an explicit, potential FFA requirement for these facilities, DEQ did add the following statement to Section 3.7.3: For facilities choosing to comply with Regional Haze Round 2 through PSEL reduction, DEQ may reopen any issued permit to include applicable requirements consistent with Oregon Regional Haze regulations and sources may be subject to reexamination of visibility impacts if new information warrants reassessment.

Comment NPS-6

Cost calculations, interest rate, equipment life: We agree with decision to adjust the interest rate and equipment life assumptions (which affects the capital recover factors) in the cost analyses provided by sources/consultants. This is consistent with the EPA Control Cost Manual and recommendations that the NPS has provided to states/sources across the country. Please provide the full cost analyses/determinations made by DEQ.

We find that many consultants are applying other analysis assumptions/methods that tend to artificially inflate the costs of control (e.g., operating costs and retrofit factors). In our analyses we attempted to correct these errors. We recommend Oregon DEQ identify and address these issues where possible in order to develop accurate cost analyses. In most cases, correcting these errors will reduce the cost of control.

DEQ Response NPS-6

DEQ provided NPS agency files and documents related to DEQ's full cost analyses and pollution control determinations for each facility on July 23, 2021. DEQ sent NPS all SAFOs for comment on August 16, 2021.

Comment NPS-7

Weight of evidence approach: We applaud DEQ's use of a weight-of-evidence approach when evaluating reasonable controls. DEQ's approach was used to verify that the appropriate sources were included in the RP determinations, rather than using it to remove potential candidate sources from the list. As noted previously, this is in line with the CAA requirements to evaluate sources according the four statutory factors and does not introduce an unintended "fifth factor" into the individual source determinations.

DEQ’s weight-of-evidence analysis assessed the overall state-wide benefits of potential controls and considered additional metrics beyond the initial Q/d screening analysis. In addition to Q/d, DEQ considered Extinction Weighted Residence Times, Weighted Emission Potential, an environmental justice score and the facility impact on vulnerable populations. We agree that WEP and EWRTs are a more sophisticated surrogate for the potential visibility impact of facility as these approaches also account for meteorology and visibility monitoring information.

We conclude Oregon’s thresholds for selecting sources were sufficiently robust to capture a reasonable subset of sources. The weight-of-evidence ranking approach applied reasonable comparisons of the potential importance or weight of control to focus on the facilities where reductions would achieve the greatest improvement. We find that Oregon applied this information in a reasonable way to derive a reasonable set of potential control options under the RHR.

DEQ Response NPS-7

DEQ did not make changes to the Regional Haze SIP in response to this comment.

Comment NPS-8

Glidepath adjustment. We support Oregon’s decision to opt out of adjusting the glidepath for international contributions. As we have shared with other states, when made, glidepath adjustments for international emissions cannot be treated as static. Modeling the future influence of international emissions in 2028 is challenging and extrapolating that to 2064 is even more so, especially given dynamics in international economies and global commitments to address climate change. Regional haze glidepath adjustments for international emissions are based on the best modeling information available and will need to be revisited in future planning periods as new information about international emissions becomes available. By choosing not to apply an interim international adjustment to the regional haze glideslopes for its Class I areas, Oregon is keeping the regional haze target fixed and making more substantive strides to reduce haze causing emissions in this planning period. This approach focuses efforts on the feasible and reasonable options that Oregon can implement within this planning period, while maintaining perspective on the overall goal of the RHR. We appreciate this position as it fulfills the spirit and intent of the RH provisions in the CAA.

DEQ Response NPS-7

DEQ did not make changes to the Regional Haze SIP in response to this comment.

6.4.3.2.2 Facility-specific Comments

DEQ includes NPS facility-specific comment letters in Appendix G. In Table 6.2, DEQ lists the key elements of each facility-specific comment letter and DEQ’s corresponding responses.

Table 6-2: National Park Service facility specific comments

Facility ID	Facility	NPS Comment	DEQ Response
31-0006	Boise Cascade Wood Products, LLC - Elgin Complex	Concerns with All4 analyses Assumed retrofit factor of 1.5 for every woodwaste boiler it evaluated in Oregon, while EPA CCM recommends site-specific retrofit factors greater than the 1.0 default value should be based on thorough and well-documented analysis of the individual factors involved in a project.	DEQ adjusted cost estimates for consistency among emissions units, including adjustment to current prime rate (3.25%), 30

		<p>All4 assumed a 20-year life for boilers, while for all other OR and WA woodwaste-fired boilers All4 evaluated, assumed 25-year life.</p> <p>All4 used a 2019 Chemical Engineering Plant Cost Index = 603.1; the correct CEPCI = 607.5.</p> <p>All4 used a 4.75% interest rate instead of the current bank prime rate = 3.25% as recommended by the CCM.</p> <p>All4 overestimated the operating costs of SCR (and SNCR) with substituted values for “Total operating time for the SCR (t_{op})” and “Total NOx removed per year” for the values calculated by the CCM “Design Parameters” spreadsheets.</p> <p>NPS provides explanation of correct use of “Design Parameters” and “Data Input” spreadsheets.</p> <p>All4 included property taxes in several analyses. It is our understanding that Oregon allows exemptions from property taxes for air pollution control equipment.</p> <p>NPS cites finding in New Hampshire draft Regional Haze SIP re: technical feasibility of SCR on wood-fired boilers. At Burgess BioPower, the NOx limit in the permit is 0.060 lbs NOx/MMBtu on a 30-day rolling average, based on the use of SCR technology.</p> <p><u>Conclusions</u> Addition of SCR to Power Boilers #1 & #2 would reduce NOX emissions by 153 ton/yr and be much less expensive than estimated by All4 and its cost-effectiveness is well below the Oregon threshold.</p>	<p>year lifetime, and emissions at PSEL.</p> <p>DEQ removed sales tax costs from FFA analysis as Oregon has no sales tax.</p> <p>DEQ acknowledges additional corrections that NPS recommends, such as retrofit factor, CEPCI, operating costs, reagent costs and property tax; however DEQ generally did not correct for such factors if DEQ had already concurred on the technical infeasibility of certain controls or was working with facilities to pursue alternative methods of emission reductions.</p>
15-0004	Boise Cascade Wood Products, LLC - Medford	<p>Same comments and concerns, with facility-specific examples, as Boise Cascade – Elgin.</p> <p><u>Conclusions</u> Addition of SCR to Power Boilers #1, & #3 #2 would reduce NOX emissions by 189 ton/yr and be much less expensive that estimated by All4 and its cost-effectiveness is well below the Oregon threshold.</p>	Please see DEQ Response to Boise Cascade – Elgin.

<p>21-0005</p>	<p>Georgia-Pacific – Toledo LLC</p>	<p><u>SCR at Power Boiler and Package Boiler</u> GP and its consultant (All4) have overestimated capital and operating costs of applying SCR to the Power Boiler and the Package Boiler.</p> <p>All4 overestimated capital costs: a retrofit factor of 1.5 without justification and documentation required by EPA Cost Control Manual and policy.</p> <p>All4 overestimated operating costs of SCR with substituted values for “Total operating time for the SCR (top)” and “Total NOx removed per year” for the values calculated by the CCM “Design Parameters” spreadsheets.</p> <p>All4 used a 4.75% interest rate instead of the current bank prime rate = 3.25% as recommended by the CCM.</p> <p>All4 overestimated reagent costs by more than an order of magnitude with no justification, and included costs for reheating the SCR inlet gas stream with no explanation of cost derivation.</p> <p>Instead of All4’s estimated cost-effectiveness = \$13,579/ton, we estimate a Total Annual Cost of \$1.2 million = \$12,446/ton for addition of SCR to remove 97 ton/yr of NOX.</p> <p>The cost effectiveness of adding SCR for Power Boiler #3 also exceeds the OR DEQ threshold under actual conditions, but that result is highly dependent upon the cost of reheating the SCR inlet gas stream and should be verified.</p> <p>The same issues apply to Power Boiler #1 and the Hogged Fuel Boiler #4. We applied the SCR CCM workbook to these boilers for both the PSEL and actual conditions and the cost-effectiveness of adding SCR fall below the OR DEQ threshold of \$10,000/ton for Power Boiler #1 and the Hogged Fuel Boiler #4.</p> <p><u>SNCR at Power Boiler #3</u> All4 overestimated costs:</p> <p>Interest rate too high - 4.75% versus 3.25%.</p>	<p>Please see DEQ Response to Boise Cascade – Elgin.</p>
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		<p>\$5.00/mmBtu fuel cost not justified - versus approximately \$4.00/mmBtu current industrial cost of natural gas in Oregon according to the EIA.</p> <p>Operating costs overestimated because All4 overrode/overestimated the "Total operating time for the SNCR" parameter (8531 hrs versus 5902 hrs).</p> <p><u>Conclusions</u> Addition of SCR to Power Boilers #1 and Hogged Fuel Boiler #4 is much less expensive than estimated by Georgia-Pacific and its cost-effectiveness would not exceed the OR DEQ threshold under PSEL or actual operating conditions.</p> <p>Addition of SCR to Power Boiler #3 is much less expensive than estimated by Georgia-Pacific and its cost-effectiveness relative to the OR DEQ threshold under PSEL and actual operating conditions is highly dependent upon costs to reheat the SCR inlet gas stream; this should be investigated further.</p> <p>Addition of SCR to these three boilers could reduce NOX emissions by 494 tons/yr under PSEL conditions or 393 tons/yr under actual conditions.</p> <p>Addition of SNCR to Power Boiler #3 is much less expensive than estimated by Georgia-Pacific and its cost-effectiveness would not exceed the OR DEQ threshold under PSEL or actual operating conditions.</p>	
04-0004	Georgia Pacific - Wauna Mill	<p><u>SCR at Power Boiler and Fluidized Bed Boiler</u></p> <p>GP and its consultant (All4) overestimated capital and operating costs of applying SCR to the Power Boiler and the Fluidized Bed Boiler. <i>See comments to GP Toledo.</i></p> <p>Instead of All4's estimated cost-effectiveness = \$15,069/ton, we estimate a Total Annual Cost of \$1.8 million = \$8775/ton for addition of SCR to remove 202 ton/yr of NOX.</p> <p><u>Conclusions</u> Addition of SCR to the Power Boiler and the Fluidized Bed Boiler is much less expensive than estimated by Georgia-Pacific and its</p>	Please see DEQ Response to Boise Cascade – Elgin.

		<p>cost-effectiveness would not exceed the OR DEQ threshold under PSEL or actual operating conditions.</p> <p>Addition of SCR to these two boilers could reduce NOX emissions by 732 tons/yr under PSEL conditions or 395 tons/yr under actual conditions.</p>	
22-3501	Cascade Pacific Pulp, LLC - Halsey Pulp Mill	<p>CPP and its consultant (All4) have overestimated capital and operating costs of applying SCR to the power boilers, PB#1 and #2.</p> <p>The maximum retrofit factor falls short of the justification and documentation required by the CCM and EPA policy.</p> <p>Overestimated operating costs of SCR with substituted values for “Total operating time for the SCR (t_{op})” and “Total NOx removed per year” for the values calculated by the CCM “Design Parameters” spreadsheets.</p> <p>Used a 4.75% interest rate instead of the current bank prime rate = 3.25% as recommended by the CCM.</p> <p>Overestimated reagent costs by more than an order of magnitude with no justification.</p> <p>Included costs for reheating the SCR inlet gas stream with no explanation of cost derivation.</p> <p>Instead of All4’s estimated cost-effectiveness = \$16,029/ton at PB#1; we estimate a Total Annual Cost of \$0.75 million = \$6253/ton for addition of SCR to remove 121 ton/yr of NOX.</p> <p>We applied the SCR CCM workbook to PB#1 & #2 for both the PSEL and actual conditions; the cost-effectiveness of adding SCR falls below the OR DEQ threshold of \$10,000/ton under PSEL conditions.</p> <p><u>Conclusions</u> The cost-effectiveness of adding SCR falls below the OR DEQ threshold of \$10,000/ton for the PSEL cases for both boilers.</p> <p>Addition of SCR to PB#1 under actual conditions is slightly above the OR DEQ threshold and the costs of reheating the</p>	Please see DEQ Response to Boise Cascade – Elgin.

		<p>SCR inlet gas stream should be further investigated.</p> <p>The cost effectiveness of adding SCR for PB#2 clearly exceeds the OR DEQ threshold under actual conditions.</p> <p>Addition of SCR to these two boilers could reduce NOX emissions by 189 tons/yr under PSEL conditions or 53 tons/yr under actual conditions.</p>	
208850	International Paper - Springfield	<p>IP and its consultant (All4) have overestimated capital and operating costs of applying SCR to the Power Boiler and the Package Boiler.</p> <p>All4 overestimated capital costs when it assumed a retrofit factor of 1.5 without the justification and documentation required by EPA Cost Control Manual and policy.</p> <p>Overestimated operating costs of SCR with substituted values for “Total operating time for the SCR (top)” and “Total NOx removed per year” for values calculated by the CCM “Design Parameters” spreadsheets.</p> <p>Used a 4.75% interest rate instead of current bank prime rate = 3.25% as recommended by the CCM.</p> <p>Overestimated reagent costs by more than an order of magnitude with no justification, and included costs for reheating the SCR inlet gas stream with no explanation of cost derivation.</p> <p>Instead of All4’s estimated cost-effectiveness = \$4606/ton; we estimate a Total Annual Cost of \$1.6 million = \$2010/ton for addition of SCR to remove 786 ton/yr of NOX.</p> <p><u>Conclusions</u> Addition of SCR to the Power Boiler and Package Boiler is much less expensive than estimated by IP and cost-effectiveness would not exceed the OR DEQ threshold under PSEL operating conditions or the Power Boiler under actual conditions.</p> <p>Addition of SCR to the Package Boiler would exceed the OR DEQ threshold under actual operating conditions.</p>	<p>DEQ adjusted cost estimates for consistency among emissions units, including adjustment to current prime rate (3.25%), 30 year lifetime, and emissions at PSEL.</p> <p>DEQ acknowledges additional corrections that NPS recommends, such as retrofit factor, CEPCI, operating costs, reagent costs and property tax; however DEQ generally did not correct for such factors if DEQ had already concurred on the technical infeasibility of certain controls or was working with facilities to pursue alternative methods of emission reductions.</p> <p>Unique among the emissions units DEQ reviewed in this round of regional haze, the package boiler is used very little, at about 0.5% of its potential to emit. DEQ determined that restrictions on backup fuel types and PSEL reductions would have greater impact than requiring a control device on the package boiler individually.</p>

		<p>Addition of SCR to the Power Boiler could reduce NOx emissions by 786 tons/yr under PSEL conditions or 127 tons/yr under actual conditions.</p>	<p>For the power boiler, DEQ found SCR cost-effective. DEQ deemed equivalent emission reduction could be achieved through PSEL reduction across all emission units and continuous emission monitoring on the power boiler to monitor compliance with an emission rate of 0.25 lb NOx/MMBtu on a 7-day rolling average.</p>
<p>09-0084</p>	<p>Gas Transmission Northwest LLC - Compressor Station 12</p>	<p>The company did not use the most recent 7th edition of the EPA's Cost Control Manual.</p> <p>The company assumed a 75% control efficiency. This seems low for SCR. Our analysis assumed 90% control. Based on review of most recent CAM database, we concluded that 90% NOx control by SCR is achievable in practice and reasonable to assume in the cost analysis.</p> <p>Company assumed 3% sales tax and property taxes. Does OR charge sales and property taxes for pollution control projects and equipment? The revised 7th edition of the CCM does not include sales tax in the cost analysis.</p> <p>The company assumed a cost of \$2,765,000 to \$3,712,500 for combustion controls in addition to SCR on the CTs. Are both controls needed to achieve 75% NOx reduction? What is the basis for this?</p> <p>The company assumed \$105,326 to \$143,628 in administrative charges for each CT. This seems high. When using the revised 7th Edition CCM, the estimated administrative charges are roughly \$3000/year in 2019 dollars.</p> <p>The company used a 5% interest rate and a 20-year equipment life. The current bank prime rate (3.25%) and 30-year equipment life should be assumed.</p> <p>Using PSEL assumptions, the costs to add SCR to turbines 12-A and 12-B are</p>	<p>DEQ requested that GTN justify its assumption of 75% control efficiency and DEQ used 90% SCR control efficiency in DEQ's review of the FFAs.</p> <p>DEQ removed sales tax costs from FFA analysis as Oregon has no sales tax.</p> <p>DEQ did not make changes to the administrative costs or property tax costs the facility submitted.</p> <p>DEQ did not make changes to the cost of combustion controls in addition to SCR; the facility's explanation for combustion controls was, "tempering air needed to ensure exhaust temperature <900F."</p> <p>DEQ adjusted all cost estimates for consistency among emissions units, including adjustment to current prime rate (3.25%), 30-</p>

		<p>significantly lower than DEQ's \$10,000/ton threshold at \$1,833/ton of NOx removed for unit 12-A and \$3,801/ton of NOx removed for unit 12-B.</p> <p>When using reduced operating scenarios (based on reduced fuel use assumptions), the cost of installing SCR is still below DEQ's cost threshold, down to 16% of full capacity for unit 12-A and 34% of full capacity for unit 12-B, suggesting that SCR is likely still cost effective under reduced operating scenarios.</p> <p>We concur with DEQ's determination documented in a January 21, 2021 letter to the company, that SCR is likely cost effective at units 12-A and 12-B. However, we recommend that DEQ correct some of the additional errors identified in the cost analysis (other than interest rate and equipment life), as this results in SCR being a much more cost effective option than estimated by DEQ or the company.</p>	<p>year lifetime, and emissions at PSEL.</p>
18-0096	Gas Transmission Northwest LLC - Compressor Station 13	<p>Same as comments to Compressor Station 12.</p> <p>Using PSEL assumptions, the costs to add SCR to turbines 13-C and 13-D are significantly lower than DEQ's \$10,000/ton threshold at \$4,074/ton of NOx removed for unit 13-C and \$3,887/ton of NOx removed for unit 13-D.</p> <p>When using reduced operating scenarios (based on reduced fuel use assumptions), the cost of installing SCR is still below DEQ's cost threshold, down to 37% of full capacity for unit 13-C and 35% of full capacity for unit 13-D, suggesting that SCR is likely still cost effective under reduced operating scenarios.</p> <p>We concur with DEQ's determination, documented in a January 21, 2021 letter to the company, that SCR is likely cost effective for units 13-C and 13-D. However, we recommend that DEQ correct some of the additional errors identified in the cost analysis (other than interest rate and equipment life), as this results in SCR being a much more cost effective option than estimated by DEQ or the company.</p>	<p>Please see DEQ response to GTN Compressor station 12.</p>
15-0159	Biomass One, L.P.	<p><u>April 2021 Comments</u> BiomassOne used an interest rate of 4.75% instead of the current prime rate of 3.25%</p>	<p>DEQ adjusted all cost estimates for consistency among</p>

		<p>and assumed a 20-year lifetime rather than 30 years as recommended in the EPA control cost manual.</p> <p>Using the company's calculation methods with an interest rate of 3.25% and useful life of 30 years brings the cost per ton to about \$7,000.</p> <p><u>June 2021 Comments</u> NPS agrees that that SCR is cost effective for the two boilers at BioMass One.</p> <p>Using EPA's most recent cost estimation worksheet (7th edition of the Control Cost Manual), rather than the company's methods, suggests that SCR is more cost effective than indicated by the company's analysis (\$5,000 to \$6,900 per ton).</p>	<p>emissions units, including adjustment to current prime rate (3.25%), 30-year lifetime, and emissions at PSEL.</p>
10-0025	Roseburg Forest Products - Dillard	<p><u>April 2021 Comments</u> The costs for SNCR at the Roseburg FP Dillard facility appear to be reasonable as presented in the four factor analysis.</p> <p>an interest rate of 4.75% was used, rather than the current bank prime rate of 3.25% as recommended by the control cost manual</p> <p>The analysis relied upon an old reference to calculate capital costs (USEPA Air Pollution Control Technology Fact Sheet (EPA-452/F-03-031) for selective non-catalytic reduction (SNCR), issued July 15, 2003. The capital costs should be estimated using the methods from the control cost manual. reduction (SNCR), issued July 15, 2003.</p> <p>The analysis dismisses the use of SCR for NOx emissions reduction as technically infeasible because of the potential for wood combustion byproducts to foul or plug the catalyst. However, other facilities powered by wood combustion have successfully employed tail-end SCR (e.g. Bridgewater electrical generating facility in Bridgewater, New Hampshire). Tail-end SCR is technically feasible for the Dillard facility and should be evaluated to determine if it is cost effective.</p> <p><u>June 2021 Comments</u> NPS agrees that SNCR would be cost effective on all three boilers.</p>	<p>DEQ adjusted all cost estimates for consistency among emissions units, including adjustment to current prime rate (3.25%), 30-year lifetime, and emissions at PSEL.</p> <p>DEQ generally did not correct for such factors as citations of older EPA Cost Control Manuals since DEQ had already concurred on the technical infeasibility of certain controls and the facility was pursuing alternative methods of emission reductions.</p> <p>DEQ acknowledges the information NPS provided in April and June 2021 regarding the technical feasibility and potential emissions reductions of tail-end SCR on biomass boilers, including examples of two facilities in NH employing this technology. DEQ did not evaluate tail-end SCR at RFP Dillard because in late 2020, RFP Dillard</p>

		<p>Did DEQ evaluate tail-end SCR? Other biomass boilers use tail-end SCR.</p> <p>NPS estimates for both SNCR and SCR using the EPA costing worksheets, suggest that SCR may be even more cost effective than SNCR given the greater NO_x reduction (\$2,800-\$3,500 per ton).</p>	<p>had offered PSEL reductions, NO_x emission limits, and continuous monitoring to verify compliance; DEQ continued to evaluate NO_x reduction achievable with these options throughout spring 2021 and ultimately document findings and facility requirements in a stipulated agreement and order issued on August 9, 2021.</p>
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6.5 Public Outreach

DEQ held two public information sessions about the Round 2 Regional Haze process on October 22 and December 8, 2020. The first public information session had over 100 participants, and DEQ covered the Regional Haze process up through the four factor screening process. The second public information session had over 60 participants, and reviewed the four factor analysis process.

DEQ provided public notice of the 2018 2018 Regional Haze Plan on August 27, 2021. DEQ held one public hearing on October 27, 2021. DEQ accepted written public comment on the proposed rulemaking until 4 p.m. on Nov. 1, 2021, after granting a 30-day extension from the original end date for public comment.

DEQ provided notice of the proposed rulemaking and rulemaking hearing by:

- On Aug. 27, 2021, filing notice with the Oregon Secretary of State for publication in the September 2021 Oregon Bulletin;
- Notifying the EPA via GovDelivery;
- Posting the Notice, Invitation to Comment and Draft Rules on the web page for this rulemaking, located at: [Regional Haze 2021](#);
- Emailing approximately 22,557 interested parties on the following DEQ lists through GovDelivery:
 - Rulemaking
 - DEQ Public Notices
 - Air Quality Permits
 - Regional Haze
- Emailing the following key legislators required under ORS 183.335:
 - Senate President Peter Courtney
 - Senator Lee Beyer
 - House Speaker Tina Kotek
 - Representative Pam Marsh
- Posting on the DEQ event calendar: [DEQ Calendar](#)

6.6 Public Comments and Responses

DEQ received approximately 460 written and oral comments during the public comment period and at the public hearing. Original comments are on file with DEQ and longer, more detailed comments are included in their entirety in Appendix H of this Region Haze Plan. Table 6-3, below lists people and organizations that submitted public comments about the proposed rules by the deadline. The following section presents comment summaries with cross references to the comment number.

Table 6-3: Public commenters to publicly noticed 2018 – 2018 Regional Haze Plan.

List of Commenters				
#	Name	Organization	Comment Number	Type
1	Jeff Hunt	EPA Region 10	1 - 5	Written
2	Cindy Orlando	National Park Service	6 - 9	Written
3	Rebecca Canright	self	10	Written
4	Mark Canright	self	10	Written
5	Erica Giesen	Self	11	Written
6	David Darling	American Coatings Assoc.	12	Written
7	Kelly Gates + 151	self	13	Written
8	Caryl Brown +287	self	14	Written
9	Jean Avery	self	15	Written
10	Barbara Beattie	self	16	Written
11	Colin Deverell	National Park Conservation Association	17	Hearing + Written
12	Kristina Becherer	Roseburg Forest Products	18	Written
13	William Enoch	Gas Transmission Northwest	19	Written

List of Commenters				
#	Name	Organization	Comment Number	Type
14	Greg Sotir	Cully Air Action Team	20	Written
15	Jamie Pang	Oregon Environmental Council	21	Written
16	Molly Tack-Hooper	Earthjustice	22	Hearing + Written
17	Jenna Knobloch	Oregon Prescribed Fire Council	23	Hearing + Written
18	Kurt Lumpkin	Biomass One	24	Written
19	Alicia Cohen	Woodsmoke Free Portland	25	Hearing
20	Michael Lang	Friends of the Columbia Gorge	26	Hearing
21	Samuel Taylor	Self	27	Written
22	Susie Jenkins	Self	28	Written
23	Betsy Toll	Self	29	Written
24	Kendrick Simila	Self	30	Written
25	Cathryn Chudy	Self	31	Written

Comment #1

To be practicably enforceable, a SIP provision must specify: (1) a technically accurate limitation and the portions of the source subject to the limitation; (2) the time period for the limitation (hourly, daily, monthly, and annual limits such as rolling annual limits); and (3) the method to determine compliance including appropriate monitoring, recordkeeping and reporting. In [citations], EPA made clear that both the emission limit and the provisions that make the emission limit enforceable as a practical matter must be included in the SIP: “As states consider limits, the rule also requires that additional consideration be given to ensuring that not only the limit, but also the appropriate monitoring, recordkeeping, and reporting provisions needed to make those limits practicably enforceable are included.”

DEQ Response

For each instance where EPA commented that a facility agreement lacked a sufficient emission limit, time period or method to determine compliance, DEQ either negotiated an addendum

containing the required information to an existing agreement or included the relevant sections of a facility's Title V permit in the proposed Regional Haze SIP for EPA approval.

Comment #2

Northwest Pipeline LLC, Oregon City Compressor Station – the Stipulated Agreement and Final Order (SAFO) included in Appendix E of the proposed regional haze plan states: “The Permittee shall replace two RICE that comprise EU1 at the Facility with new emissions units to reduce PSELs of round II regional haze pollutants.” However, there is no specified deadline for installation of these units. Instead, the SAFO states, “DEQ and Permittee shall meet no later than July 1, 2026, to discuss the project and determine what permitting Permittee needs for the replacement.” As currently written, this would not be practicably enforceable for inclusion in the SIP.

DEQ Response

DEQ negotiated an agreement addendum that includes a deadline of July 31, 2031 for installation of new emission units.

Comment #3

Cascade Pacific Pulp, LLC Halsey Pulp Mill – the SAFO included in Appendix E states, “Permittee shall design the low NOx burner with an objective of achieving a 33% reduction in NOx emissions from Power Boiler #1 (PBIEU).” While we understand ODEQ and the permittee would need to conduct source testing and analysis to determine a more precise emission limit, the objective as written is not enforceable as a practical matter—the source is not required to operate the low NOx Burner to achieve 33% reduction or a specific emission rate. One possible solution is for ODEQ to include in a revised SAFO an emission limit or specific emission rate derived from operation of the low NOx burners that is enforceable in the interim prior to the longer-term determination of a more precise emission limit through source testing.

DEQ Response

DEQ negotiated an agreement addendum that includes an emission limit or specific emission rate.

Comment #4

Several of the SAFOs included in Appendix E contain revised plant site emissions limits (PSELs) to reduce regional haze precursor emissions. However, the SAFOs as currently written do not contain the associated monitoring, recordkeeping, and reporting provisions needed to make those limits practicably enforceable. One possible solution is for ODEQ to include these provisions in revised SAFOs. Another solution is to supplement the existing SAFOs by submitting for approval into the SIP the specific monitoring, recordkeeping, and reporting provisions of the current Title V permits for these facilities.

DEQ Response

For facilities that agreed to reduce PSELs as a means of compliance, DEQ included those sections of permit pertaining to monitoring, record keeping or reporting in the 2018 – 2028 Regional Haze SIP for EPA approval.

Comment #5

Section 3.7.4 discusses six facilities that were evaluated by ODEQ using the regional haze four-factor analysis for which no new controls were found to be cost-effective. The proposed SIP does not include a technical demonstration that the sources' existing measures are not necessary to make reasonable progress and thus do not need to be included in the SIP. Therefore, in the absence of a robust technical demonstration, see Memo at 9-10, these existing measures, either in the form of SAFOs or relevant portions of the current Title V permits, must be included in the SIP consistent with the requirements laid out above.

DEQ Response

DEQ appreciates EPA's citation of section 4.1 of the July 8, 2021, clarification memo (Clarifications Regarding Regional Haze State Implementation Plans for the Second Implementation Period) titled, "Determining When Existing Measures are Necessary for Reasonable Progress."

DEQ does not agree that the 2018 – 2028 Regional Haze SIP (RH SIP) must include the facilities' permits or negotiated agreements to maintain existing controls for those controls to be federally enforceable for the purpose of preventing visibility impairment.

Based on the four factor analyses, DEQ agrees that existing controls at these six facilities must be maintained to prevent future visibility impairment; DEQ has revised section 3.7.4 of the proposed RH SIP to state that requirement explicitly for each of these six facilities. The controls are federally enforceable in facility permits and comply with NESHAPs and Title V.

DEQ agrees that preventing visibility impairment depends on these facilities not increasing emission rates. For each facility, DEQ has included in section 3.7.4 of the proposed RH SIP the enforceable emission limit or other enforceable requirement that demonstrates that the sources must maintain existing controls. The emission limits are set based on actual emissions. Section 4.1 of the EPA July 8, 2021 clarification memo allows, "States should also clearly identify the instrument in which the relevant limit(s) exist (by providing, e.g., the applicable permit number and where it can be found) and provide information on the specific permit provision(s) on which they are relying." For each of the six facilities, DEQ has included in section 3.7.4 of the proposed RH SIP, the relevant permit number, where that permit can be found, and the specific permit provisions on which DEQ is relying.

Comment #6

Significant opportunities for emission reductions are available that could further improve the draft SIP. Specifically, we recommend Oregon require the most significant pollution reductions found to be technically feasible and cost-effective for facilities reviewed.

The draft SIP would be strengthened by including a thorough technical justification for compliance strategies that achieve fewer emission reductions than originally proposed. See Enclosure 1 for detailed technical comments. We have also included Enclosure 2, a zipped file of calculation worksheets supporting NPS cost-effectiveness analyses.

We recommend that control determinations be based on the results of four-factor analysis, rather than adjustments that allow facilities to retroactively avoid selection.

We encourage Oregon to fully document its rationale for control decisions and to take every opportunity to reduce haze-causing emissions. The cumulative benefits of emission reductions from many sources are necessary to achieve the Clean Air Act and Regional Haze Rule goal to

“prevent future and remedy existing visibility impairment” in Class I areas. Oregon analyses have identified additional emission reductions that would make further progress toward this goal. Oregon has an opportunity to improve the effectiveness of their Regional Haze SIP by choosing to require these cost-effective emission controls identified using the four statutory factors. These incremental steps will contribute towards aligning Crater Lake National Park and other NPS Class I areas in the region with reasonable progress goals.

DEQ Response

DEQ appreciates NPS recommendations and shares the goal to reduce haze-forming emissions as much as possible. For the Round 2 implementation period, DEQ achieved agreements with 16 facilities to continue to make reasonable progress towards natural visibility conditions by 2064. In total, these agreements assure plant site emission limit reductions of 11,000 tons/year; continuous emission monitoring at 6 facilities, pollution control device installation at 6 or more facilities, and emission unit replacement at one or more facilities.

DEQ carried out the agency's Round 2 Regional Haze Rule responsibilities that pertain to stationary sources under the authority of Oregon Administrative Rules Chapter 340 Division 223. Division 223 rules establish the Round 2 screening process that determines which facilities are subject to analysis of pollution controls based on the four factors (cost, time to install, remaining useful life, non-air and energy impacts). DEQ followed EPA guidance and consulted with other states before establishing the screening threshold of $Q/d = 5.00$, which captures 80% of Oregon facilities' haze-forming emissions.

Division 223 rules require that screened-in facilities undergo four factor analysis and that DEQ may request additional information and analysis until DEQ deems the information sufficient, adequate and accurate. For Round 2, DEQ required that 23 facilities undergo four factor analysis. DEQ reviewed and adjusted for consistency the four factor analyses, resulting in 17 facilities at which DEQ deemed pollution controls cost-effective at less than \$10,000/ton. DEQ communicated the agency's determination to facilities in January 2021. After the January 2021 communication, two of those facilities agreed to lower plant site emission limits such that $Q/d < 5.00$ and consistent with the Round 2 regional haze screening threshold, were no longer subject to pollution control requirements.

PSEL reduction is one of the compliance options provided in Division 223 if DEQ determines that round 2 regional haze pollutant reduction is cost-effective, based on the four factors. For facilities where DEQ agreed that monitoring, equipment replacement, PSEL reduction or operational changes could achieve emission reductions consistent with reasonable progress, DEQ did not require control installation identified in January 2021 communications to facilities.

DEQ agreed in some cases that controls deemed cost effective in the January 2021 letters to sources were not technically feasible or that equivalent emissions could be achieved through other means (e.g. more efficient operations, furnace shut down) or that controls would be installed by a time certain if a source found they could not achieve agreed-upon emission reductions by other means.

Facilities have agreed to either an emission rate or percent reduction. Emission reductions are verifiable and enforceable through facilities' Title V permits, the stipulated agreements and orders, and by incorporation into the proposed RH SIP.

Comment #8

On page 100 of the draft SIP, regarding responses to NPS comments, the NPS is quoted as saying:

“The analysis relied upon an old reference to calculate capital costs (USEPA Air Pollution Control Technology Fact Sheet (EPA- 452/F-03-031) for selective non-catalytic The capital costs should be estimated using the methods from the control cost manual. reduction (selective non-catalytic reduction, or SNCR), issued July 15, 2003.”

The NPS comment, in fact, read:

“The analysis relied upon an old reference to calculate capital costs (USEPA Air Pollution Control Technology Fact Sheet (EPA- 452/F-03-031) for selective non-catalytic reduction (SNCR), issued July 15, 2003. The capital costs should be estimated using the methods from the control cost manual.”

DEQ Response

DEQ regrets the error and has made the correction.

Comment #8

- **Boise Cascade Wood Products, LLC - Elgin Complex**
- **Georgia Pacific - Wauna Mill**
- **Cascade Pacific Pulp, LLC - Halsey Pulp Mill**
- **Boise Cascade Wood Products, LLC - Medford**
- **International Paper - Springfield**
- **Georgia-Pacific – Toledo LLC**

The four-factor analyses for the facilities highlighted in bold type share many similarities identified in feedback from NPS to ODEQ; these facilities are further discussed below.

We note that ODEQ may have overlooked a response to our comments on IP-Springfield on page 97 of the draft SIP.

ODEQ conclusions about the NPS’s recommendations for additional NOx controls (selective catalytic reduction, or SCR) should be explained in greater detail, this would strengthen the draft SIP.

ODEQ has applied one set of circumstances to all of the boilers at these facilities. The only facilities with woodwaste-fired boilers are the two Boise Cascade veneer mills and the fluidized bed boiler at GP’s Wauna mill. It is likely that addition of SCR to these boilers would require location downstream of the particulate controls and a method to reheat the gas stream. The other eight power boilers at these facilities are all fired with natural gas and there is no technical concern regarding direct addition of SCR.

If ODEQ identifies “alternative methods of emission reductions,” these methods should be at least as effective at reducing NOx emissions as the cost-effective applications of SCR. We recommend that ODEQ fully document how the alternatives contained in the draft SIP meet this test.

In summary, we shared with ODEQ the following early engagement feedback regarding four factor analyses of wood product facilities:

- In ODEQ's review of the power boilers at Georgia Pacific's (GP's) Toledo mill, ODEQ changed GP's 1.5 retrofit factor "to 1 because there is no vendor data" consistent with EPA's Control Cost Manual (CCM) spreadsheet which advises "You must document why a retrofit factor of (>1.0) is appropriate for the proposed project."
- We generally agree with ODEQ's decision for GP-Toledo. Acceptance of the 1.5 retrofit factor should also be justified for the other facilities with documentation of cost-effectiveness analysis. Application of an un-documented retrofit factor significantly inflates the capital cost of SCR.
- A 20-year life for the Boise Cascade boilers was assumed, in contrast a 25-year life was assumed for all other OR and WA woodwaste-fired boilers. This difference should be explained.
- For the Boise Cascade boilers, a 2019 Chemical Engineering Plant Cost Index (CEPCI) = 603.1 was used; the correct CEPCI = 607.5.
- A 4.75% interest rate was applied instead of the current bank prime rate of 3.25% as recommended by the CCM.
- The operating times calculated by the CCM spreadsheets were over-ridden by the paper mills and higher values were substituted. This resulted in significant overestimation of operating costs that are based upon hours of operation.
- The reagent (ammonia) cost/gallon used by the paper mills in their SCR spreadsheets is an order of magnitude greater than the default value contained in the CCM SCR spreadsheet. The higher reagent cost should be documented or revised to be consistent with the CCM default cost/gallon.
- The paper mills included costs for reheating the boiler outlet gas streams to facilitate application of SCR. While reheat may be necessary if the SCR is applied downstream of emission control devices that reduce the temperature of the gas stream, it would not be necessary for SCR applied to the natural gas-fired power boilers common to these mills. Where reheat is appropriate, e.g., for a biomass-fired boiler with particulate controls, the amount of natural gas needed to reheat the gas stream should be explained and justified. It is our understanding that the only biomass-fired boilers were the Fluidized Bed Boiler at GP-Wauna and the boilers at the Boise Cascade facilities. Analyses would benefit from an explanation of the reheat costs.
- Property taxes were included in several analyses. It is our understanding that Oregon allows exemptions from property taxes for air pollution control equipment.

We appreciate the work ODEQ has done to improve the four factor analyses for individual facilities. A more rigorous demonstration of SCR's technical infeasibility would substantiate the decision to move away from requiring this control technology where that was done. Barring such a demonstration, we recommend the application of SCR to reduce NOx emissions should be required.

DEQ Response

DEQ regrets the oversight. DEQ has included a response to NPS comments on IP Springfield on page 97 of the SIP.

As in the early engagement and consultation, DEQ appreciates the corrections that NPS recommended that DEQ make to the four factor analyses for the wood products facilities. As DEQ responded in the originally publicly noticed RH SIP, DEQ did not make those corrections if DEQ and the facilities were no longer considering SCR or SNCR as a means to reduce emissions. DEQ used the four factors to identify sources at which DEQ deemed it cost-effective for the facility to reduce Round 2 regional haze pollutants, using a threshold of \$10,000/ton.

DEQ adjusted several factors for consistency and in several cases, required facilities to submit more precise information, such as vendor quotes, to justify their cost-effectiveness calculations. Once DEQ deemed the information sufficient to assess cost effectiveness relative to the threshold, DEQ did not require or perform a more detailed financial analysis or additional corrections to attain greater precision or certainty beyond that required by the regional haze rule.

However, DEQ agrees that in cases where DEQ agreed that SCR or SNCR was not technically feasible, that DEQ should have provided a more detailed explanation for that conclusion. DEQ has included additional explanations in section 3.7 of the proposed RH SIP for facilities where DEQ agreed SCR or SNCR were not technically feasible, as well as additional explanations for DEQ's agreements to alternative compliance.

Comment #9

NPS feedback attachment to letter: facility specific feedback.

DEQ Response

Because of the detail contained in the NPS 10/29 letter and additional feedback, DEQ includes NPS 10/29 comment letter and feedback in Appendix G of this Regional Haze Plan. The response to comment 8 is also DEQ's response to the facility-specific comments.

Comment #10

The draft rule does not address the need for emission controls for all major sources contributing to haze in the National Scenic Area, including one of the largest Concentrated Animal Feeding Operations (CAFO) in the country located in Boardman, Oregon. This CAFO is responsible for emitting large amounts of ammonium nitrate. The DEQ has determined that "over 50% of visibility impairment in the Columbia River Gorge can be attributed to ammonium nitrate." This CAFO should be included in the list of facilities required to develop pollution control plans for round 2 of the Regional Haze Program.

DEQ Response

DEQ received a similar comment during the June 2021 public comment period held for revision to the Division 223, state Regional Haze Rules which establish provisions for stationary sources that contribute to visibility impairment from NO_x, SO₂ and PM₁₀. DEQ does regulate the facility the commenters refer to through a Title V permit for electric power generation from biogas combustion, but the combined permitted Round 2 regional haze pollutants from that facility total 92 tons/year. Based on those total emissions and the distance to the nearest Class I wilderness areas (Mount Hood, ~140 km; Eagle Cap, ~160 km, Hells Canyon, ~241 km), the Q/d ratio would be less than 5 and the Division 223 rules would not require the facility to conduct four factor analysis, reduce emissions or install controls. The air emissions from the agricultural operations at the facility are not covered under the source's stationary source permit, as the EQC is prohibited from regulating most emissions from agricultural operations.

DEQ agrees with commenters that area emissions from agricultural operations contribute to regional haze in the Columbia River Gorge National Scenic Area and Class 1 areas in Oregon. DEQ has included strategies to reduce haze-forming emissions from agricultural sources in the proposed RH SIP Long-term Strategy (Section 4 of the proposed RH SIP). One strategy is to work with the OR Dept. of Agriculture to implement recommendations from the 2018 Dairy Air Quality Task Force. DEQ has twice sought funding from the Oregon Legislature to begin implementing those recommendations but was denied both times.

Comment #11

I'm writing in strong support of the proposed revised Regional Haze rulemaking. Down in southern Oregon we have had what we are all calling a '5th' season of smoke down here for close to the 5th year in a row due to climate change-fueled wildfires and we do not need any airborne industrial pollutants to further degrade our air quality.

I urge you to adopt the proposed revised Regional Haze rules and to vigorously enforce them to protect Oregon's natural resources as much as possible.

DEQ Response

DEQ considered this comment and thanks the commenter.

Comment #12

I noticed that DEQ mentioned a possible architectural and industrial maintenance (AIM) in the future – could I please request DEQ consider the Ozone Transport Commission (OTC) Phase I rulemaking as a first step since this is reasonable as opposed to adopting a more stringent rule.

DEQ Response

DEQ considered this comment and thanks the commenter.

Comment #13

Today, air pollution remains one of the most serious threats facing national parks, threatening the health of park visitors, wildlife, watersheds and Oregon communities. Despite the great strides that have been made to-date, I am concerned Oregon DEQ has proposed a regional haze plan that does not do enough to actually reduce and control facility emissions that degrade Crater Lake views and harms Oregon communities, especially the communities disproportionately affected by cumulative environmental exposures such as air pollution.

While I greatly appreciate Oregon DEQ's excellent initial job of considering environmental justice concerns in this plan, I'm reaching out today to call on Oregon DEQ to fulfill its Regional Haze obligations under the Clean Air Act and ensure those communities and our protected public lands actually get the benefit of cleaner air. Please revise the regional haze plan to ensure installation of pollution controls at 17 facilities to achieve meaningful emissions reductions during this planning period. The sooner the clean-up starts, the sooner the benefits!

DEQ Response

For the Round 2 implementation period, DEQ achieved agreements with 16 facilities to continue to make reasonable progress towards natural visibility by 2064. In total, these agreements assure plant site emission limit reductions of 11,000 tons/year; continuous emission monitoring at 6 facilities, pollution control device installation at 6 or more facilities, and emission unit replacement at one or more facilities.

DEQ carried out the agency's Round 2 Regional Haze Rule responsibilities that pertain to stationary sources under the authority of Oregon Administrative Rules Chapter 340 Division 223. Division 223 rules establish the Round 2 screening process that determines which facilities are subject to analysis of pollution controls based on the four factors (cost, time to install, remaining useful life, non-air and energy impacts).

Division 223 rules provide compliance options for facilities subject to regional haze regulation. DEQ accepted information from facilities through August 9, 2021, regarding the technical feasibility of installing cost-effective pollution controls and operational changes with the potential

to achieve equivalent emission reductions. For facilities where DEQ agreed that monitoring, equipment replacement, PSEL reduction or operational changes could achieve emission reductions consistent with reasonable progress, DEQ did not require control installation identified in January 2021 communications to facilities. In alignment with Division 223 rules and to maintain regulatory consistency, facilities agreeing to make changes such that $Q/d < 5.00$ were no longer subject to control installation.

DEQ has added information in Section 3.7 of the proposed RH SIP that describes how DEQ deemed alternative compliance to be capable of providing equivalent emission reductions to controls identified in the four factor analysis process.

Comment #14

Oregon's Regional Haze Rule is an incredibly important tool in protecting air quality and visibility in the Columbia River Gorge National Scenic Area, Crater Lake National Park, and wilderness areas throughout the state. The regional haze program also reduces air pollution in Oregon communities and benefits human health by reducing emissions that cause lung and heart disease.

Unfortunately, the Oregon Department of Environmental Quality's (DEQ) Draft Regional Haze Plan fails to meet the requirements of the Clean Air Act and the Regional Haze Rule. I am very concerned that the draft plan does not require pollution reductions from major sources that DEQ identified as contributing to regional haze in Oregon. Instead, the draft plan allows polluters to reduce maximum pollution levels in their permits without having to reduce actual pollution levels through cost-effective controls. The way the plan is drafted, industries could increase pollution above current levels resulting in no reductions of haze-causing pollutants. This could undermine Oregon's entire strategy for reducing haze-causing pollution.

DEQ has also excluded one of the largest Concentrated Animal Feeding Operations (CAFO) in the country from the draft plan. Three Mile Canyon Farms, located in Boardman, Oregon, is responsible for emitting huge amounts of ammonium nitrate. DEQ has determined that "over 50% of visibility impairment in the Columbia River Gorge can be attributed to ammonium nitrate" (Oregon Department of Environmental Quality: Screening Sources for Four Factor Analysis). This CAFO should have been included in the list of facilities required to develop pollution control plans for round 2 of the Regional Haze Program.

Finally, when DEQ proposed exempting major polluters from installing pollution controls, was there any outreach to communities directly affected by these polluters? It appears that the draft plan lets polluters off the hook while surrounding communities and special places like the Columbia River Gorge continue to be subjected to air pollution.

I urge DEQ to require emission controls for all major sources contributing to haze in Oregon's only national park, its wilderness areas, and the Columbia River Gorge National Scenic Area.

DEQ Response

In developing regional haze rules that allow sources to comply by lowering Plant Site Emission Limits, DEQ acknowledges that emissions prevented in the future are different from current emissions reduced in the short-term. Still, in the context of the regional haze program requirements to attain natural visibility in Class 1 areas by 2064, DEQ asserts that long-term planning to prevent emission increases is an appropriate and effective means of reaching natural visibility targets. DEQ followed a conservative approach ($Q/d \geq 5.00$, based on PSELs) to capture the sources likely to be the greatest contributors to visibility impairment now and into

the future. DEQ followed that conservative screening procedure with a conservative cost-effectiveness threshold of \$10,000/ton, also based on PSEL, to evaluate pollution controls. As opposed to an approach based on actual emissions, this PSEL-based approach brought in more sources required to undergo four factor analyses and resulted in more sources being required to lower their emissions based on DEQ deeming controls cost-effective.

DEQ carried out the agency's Round 2 Regional Haze Rule responsibilities that pertain to stationary sources under the authority of Oregon Administrative Rules Chapter 340 Division 223. Division 223 rules establish the Round 2 screening process that determines which facilities are subject to analysis of pollution controls based on the four factors (cost, time to install, remaining useful life, non-air and energy impacts). PSEL reduction is one of the compliance options provided in Division 223 if DEQ determines that round 2 regional haze pollutant reduction is cost-effective, based on the four factors.

DEQ agreed in some cases that controls deemed cost effective in the January 2021 letters to sources were not technically feasible or that equivalent emissions could be achieved through other means (e.g. more efficient operations, furnace shut down) or that controls would be installed by a time certain if a source found they could not achieve agreed-upon emission reductions by other means. For facilities where DEQ agreed that monitoring, equipment replacement, PSEL reduction or operational changes could achieve emission reductions consistent with reasonable progress, DEQ did not require control installation identified in January 2021 communications to facilities. Still, through the SAFOs, facilities are held to either an emission rate or percent reduction. Emission reductions are verifiable and enforceable through facilities' Title V permits, the stipulated agreements and orders, and by incorporation into the proposed RH SIP.

DEQ does regulate Three Mile Canyon Farms through a Title V permit for electric power generation from biogas combustion, but the combined permitted Round 2 regional haze pollutants from that facility total 92 tons/year. Based on those total emissions and the distance to the nearest Class I wilderness areas (Mount Hood, ~140 km; Eagle Cap, ~160 km, Hells Canyon, ~241 km), the Q/d ratio would be less than 5 and the Division 223 rules would not require the facility to conduct four factor analysis, reduce emissions or install controls. The air emissions from the agricultural operations at the facility are not covered under the source's stationary source permit, as the EQC is prohibited from regulating most emissions from agricultural operations. DEQ has included strategies to reduce haze-forming emissions from agricultural sources in the proposed RH SIP Long-term Strategy (Section 4 of the RH SIP).

Negotiation of the Stipulated Agreements and Final Orders with facilities did not include direct outreach to communities near the sources. The orders negotiated, however, were part of the publicly noticed 2018 – 2028 Regional Haze Plan. DEQ did renegotiate revised or additions to agreements in response to comments received during the public comment period.

Comment #15

Please protect the air quality in the Columbia River Gorge. This national scenic area must be protected for all to enjoy -- now and in the future.

DEQ Response

DEQ considered this comment and thanks the commenter.

Comment #16

Please stop the smoke emissions from logging and orchards burning their trimmings and slash piles. The fires from large clear cut slash piles and small orchards all contribute carbon to the atmosphere and increase haze in the gorge. It is antiquated thinking to say “we have always done it this way.” Protecting the scenic value of the gorge is important. More important, every step we take to reduce carbon emissions will help slow global warming.

There are local alternatives to dispose of the debris to reduce carbon emissions and recapture carbon to the soil. Chipping and composting are better alternatives than burning. Creative minds can solve global warming, taking a strong stand against burning is your charge.

DEQ Response

Three elements of the Regional Haze Long-term Strategy address slash burning and pursuit of alternatives to burning. EPA recently approved updates to Oregon's Smoke Management Plan, which is incorporated into the State Implementation Plan and the means by which DEQ and the OR Dept. of Forestry track occurrences and effects of prescribed burning. DEQ intends to continue to rely on the Smoke Management Plan to minimize visibility impacts from slash burning and work with adjacent states to encourage smoke management policies as robust as Oregon's. The Regional Haze Long-term Strategy also describes DEQ's commitment to resourcing a biomass utilization workgroup that will make recommendations and inform future policy by identifying barriers to and opportunities to alternatives to burning, such as composting. DEQ is also committed to revising Oregon's Open Burning rules to clarify responsibilities and jurisdictions among multiple state agencies, counties and fire districts.

Comment #17

The State of Oregon has proposed a regional haze plan that does not require enough pollution reductions to make reasonable progress toward clean air goals for our parks and to support healthy air for directly affected communities close to haze-polluting facilities.

NPCA supports Oregon's State Implementation Plan (SIP) source selection process, and we were pleased with the chosen cost-effectiveness threshold of \$10,000/ton. We were also pleased with DEQ's initial consideration of environmental justice concerns related to haze pollution.

However, Oregon has improperly used the four-factor pollution control analyses to allow 17 facilities the option to apply for plant site emission limits (PSEL). This approach is not consistent with the requirements of the Regional Haze Rule as they allow for short-term air pollution spikes that problematically contribute to localized air pollution in communities and hazy skies in parks.

With this proposed plan, Oregon will allow major paper mills such as Boise Cascade's Elgin Complex (Medford), Georgia Pacific's Wauna Mill (Clatskanie), and Roseburg Forest Products, as well as facilities in large urban neighborhoods like the Owens-Brockway Glass Plant (Portland) and Gas Transmission Northwest compressor stations, to continue to emit thousands of tons of controllable pollution, ignoring opportunities for cost-effective haze controls. The intent of the regional haze program is to select the highest level of control that meets four-factor analysis. Oregon's approach does not satisfy this intent.

Furthermore, cleaning up facilities like Owens-Brockway will not only restore air quality for national parks and public lands, but will reduce air pollution harms on people of color and low-income families. Residents of East and Northeast Portland have disproportionately shouldered

the burden of industry for too long and Owens-Brockway should be required to cut emissions through pollution reducing control devices.

We urge you to revise this regional haze plan to ensure that it reduces air pollution through verifiable emission controls.

DEQ Response

In Section 5 of the proposed RH SIP, DEQ demonstrates that Reasonable Progress Goals for 2028 will meet a Uniform Rate of Progress toward natural visibility goals by 2064 in each Oregon Class 1 Area – the so called glidepath. This demonstration is based on Western Region Air Partnership regional scale modeling to which DEQ contributed Oregon emissions data. Where 2028 RPGs are slightly above the glidepath, DEQ has demonstrated through the required analysis of the four factors in Section 3.4 of the proposed RH SIP, that Oregon’s Round 2 regional haze Long-term Strategy contains all “emission reduction measures for anthropogenic sources or groups of sources in the State that may reasonably be anticipated to contribute to visibility impairment in the Class I area that would be reasonable to include in the long-term strategy” [40 CFR 51.308(f)(3)(ii)(A)].

DEQ carried out the agency's Round 2 Regional Haze Rule responsibilities that pertain to stationary sources under the authority of Oregon Administrative Rules Chapter 340 Division 223. Division 223 rules establish the Round 2 screening process that determines which facilities are subject to analysis of pollution controls based on the four factors (cost, time to install, remaining useful life, non-air and energy impacts). PSEL reduction is one of the compliance options provided in Division 223 if DEQ determines that Round 2 regional haze pollutant reduction is cost-effective, based on the four factors. For facilities where DEQ agreed that monitoring, equipment replacement, PSEL reduction or operational changes could achieve emission reductions consistent with reasonable progress, DEQ did not require control installation identified in January 2021 communications to facilities. Furnace shut down, as in the case of Owens Brockway, was also an allowed compliance option.

DEQ agreed in some cases that controls deemed cost effective in the January 2021 letters to sources were not technically feasible or that equivalent emissions could be achieved through other means (e.g. more efficient operations, furnace shut down) or that controls would be installed by a time certain if a source found they could not achieve agreed-upon emission reductions by other means.

Facilities have agreed to either an emission rate or percent reduction. Emission reductions are verifiable and enforceable through facilities' Title V permits, the stipulated agreements and orders, and by incorporation into the proposed RH SIP.

Comment #18

I would like to respectfully bring to your attention an error in the public posting of Appendix E to the rulemaking materials for the Oregon Regional Haze 2018-2028 State Implementation Plan (Modified: 9/3/21). Table 3-6 of the proposed Regional Haze SIP identifies DEQ’s regional haze program findings for the sources that initially screened into review. Appendix E consists of documentation related to those determinations. One of those facilities included in Table 3-6 is Roseburg Forest Products-Riddle Plywood (Facility No. 10-0078). However, that facility is not correctly represented in Appendix E.

The PDF in Appendix E titled “10-0078-TV-01_PM_2019” opens up to the incorrect Roseburg Forest Products Co. (Roseburg) facility permit. The PDF included in the rulemaking materials is

of Roseburg's Riddle Engineered Wood Facility, Title V Permit# 10-0013-TV-01; the correct PDF should consist of Roseburg's Riddle Plywood Facility, Title V Permit# 10-0078-TV-01.

DEQ Response

DEQ regrets the error and has now omitted the wrong permit from Appendix E of the proposed RH SIP and added a reference to the correct permit in section 3.7.3.5 of the proposed RH SIP.

Comment #19

DEQ Should Reconsider Measuring "Reasonable Progress" Via PSEL Reductions. DEQ viewed a Q/d (based on PSELS) as some of "the strongest evidence that emissions from facilities contribute to visibility impairment." But actual emissions, not PSELS, are more accurate both in (1) measuring a source's current contribution to regional haze and (2) evaluating whether reductions will result in "reasonable progress" as required by EPA regulations. EPA's guidance does not support using PSELS to calculate Q/d.

A Q/d calculated using actual emissions would allow DEQ to more accurately identify the key contributors to regional haze and prioritize emissions reductions from these sources. Tracking each facility's change in Q/d (based on actuals) over time would allow DEQ to more accurately measure true visibility improvement progress.

Measuring emissions by relying on reductions in PSELS may artificially represent "reasonable progress" because a source's actual emissions may not change upon a PSEL reduction.

DEQ's Use of PSEL in Its Screening Analysis Was Inconsistent. Certain emission sources, such as GTN's compressor stations, were precluded from reducing their PSELS in order to account for worst-case natural gas demand scenarios as required by the Federal Energy Regulatory Commission ("FERC") certification process. DEQ should clarify whether it evaluated other methods or opportunities for facilities to screen out of the requirement of completing four-factor analyses. Aside from allowing PSEL reductions to initially screen out such that a facility's Q/d was below 5.00 (and a four-factor analysis was therefore not required), DEQ never permitted a facility to reduce PSEL as part of its four-factor analysis or in subsequent analysis (e.g. evaluating a control technology's cost effectiveness).

DEQ Should Provide Greater Clarity in the "Criteria" It Used to Measure Cost Effectiveness. DEQ did not provide adequate documentation of its process in creating criteria and evaluating entities' cost-effectiveness analyses. DEQ should:

(1) Clarify whether it also consulted with EPA at this step; (2) Clarify what criteria were identified; (3) Clarify how those criteria were applied; (4) Clarify what "presumed cost-effectiveness" means, and how "presumed cost effectiveness" was developed and applied.

DEQ Should Provide Greater Clarity on How It "Adjusted" Cost-Effectiveness Analyses. DEQ adjusted parties' cost-effectiveness analyses, but provided limited to no information regarding how it adjusted these analyses. It is unclear whether PSEL, interest rate, and useful life represents an exhaustive list or whether DEQ adjusted parties' submittals for other factors. However, based upon DEQ records, it appears that adjustments were not so limited and that DEQ staff were given the green light to make "additional adjustments . . . over and above the 'basic adjustments.'" DEQ should clarify the scope of adjustments DEQ staff were permitted to make, ideally by identifying the entire spectrum of cost categories that DEQ staff adjusted.

The draft SIP does not indicate what deference, if any, DEQ gave to parties' facility specific estimates (e.g., vendor quotes) for certain costs or factors in their cost-effectiveness analyses and in DEQ's adjustment of those costs. DEQ should clarify how it evaluated these facility-specific cost estimates and state whether it developed criteria for evaluating parties' facility-specific information.

DEQ should clarify subsequent reviews. As evidenced between parties' submittals and DEQ's decisions, DEQ also adjusted parties' cost-effectiveness submittals in this second review. DEQ should clarify its process for revising parties' submittals—e.g., whether it developed criteria for revisions and, if so, DEQ should provide information regarding those criteria. Lastly, DEQ should clarify the level of deference it gave, if any, to parties' facility specific estimates for certain cost items or factors in this second review. DEQ should also clarify whether it developed criteria for evaluating parties' facility-specific information in this second review.

DEQ Should Correct Certain Mischaracterizations of GTN in the Draft SIP. Certain references to GTN in the draft SIP, in comments submitted by the National Park Service ("NPS"), are inconsistent and erroneous.

DEQ Response

DEQ has included the entire comment letter from commenter 13 in Appendix H of the 2018-2028 Regional Haze Plan. DEQ responds to the key elements of Comment 19 here.

DEQ should reconsider measuring reasonable progress with PSEL reductions

DEQ did not use PSELs to measure reasonable progress. DEQ relied on the regional modeling performed by WRAP to project reasonable progress by 2028, discussed in Section 5 of the proposed RH SIP. The 2028 Potential Additional Controls scenario was modeled based on emission reductions from actual emissions, not PSELs. The purpose of the initial screening was to assess the potential for facilities to have visibility impacts on nearby Class I areas now and in the future. For this initial screening, DEQ continues to assert that PSELs are the appropriate measurement to use. DEQ recommended this approach to the EQC as part of the regional haze rules (OAR 340-223) because the Regional Haze program requires planning and strategies for the long-term: attaining natural visibility by 2064. The EQC adopted those rules in July 2021. PSEL's are long-term planning tools and give regulated facilities flexibility and regulatory certainty to accommodate facilities' growth.

DEQ's use of PSEL in its screening analysis was inconsistent

$Q/d < 5.00$ (based on PSELs) was the only method DEQ used to screen sources in or out of the requirement to conduct a four factor analysis. DEQ did not employ any other applicability screens. DEQ also used PSELs when evaluating the cost-effectiveness of controls, one element of the four factor analysis, for the same long-term planning reasons stated above. DEQ allowed sources to reduce PSELs as a compliance option at any point in the process - from initial screening through final agreements.

DEQ Should Provide Greater Clarity in the "Criteria" It Used to Measure Cost Effectiveness

DEQ used a cost/ton of pollution reduced, based on PSELs, as the only criteria to assess cost effectiveness. In assessing cost effectiveness, DEQ relied on information facilities supplied as part of the four factor analysis, any additional information (e.g. vendor quotes) that DEQ requested, and technical expertise of DEQ's engineers and permit writers.

DEQ Should Provide Greater Clarity on How It “Adjusted” Cost-Effectiveness Analyses. DEQ adjusted the interest rate and remaining useful life to be consistent among all the facilities that underwent FFA. DEQ also exercised the professional judgment of its technical staff in adjusting the assumed efficiency that a pollution control could achieve. DEQ met several times with each facility subject to regional haze regulation and provided explanations and documentation of its calculations.

DEQ should correct certain mischaracterizations.

Comments submitted from the National Park Service are part of the public record, as are comments submitted by GTN, LLC and DEQ has included both comment letters in their entirety in Appendix H of the proposed RH SIP. DEQ does not deem it appropriate or necessary to respond to areas of disagreement among commenters.

Comment #20

Over the last few decades the Owens-Brockway facility (9710 NE Glass Plant Road Portland OR 97220) and OI-Glass parent has manipulated, and lied to, the DEQ frequently while subjecting the people of the local community to increased asthma; lead, arsenic, hexavalent Chromium (Cr VI) exposures; GHG releases (SO₂, NO_x, CO₂); and toxic environmental releases into the local watershed.

The Owens-Brockway facility has no filtration devices, no scrubbers, has never been required to install them, and now, has little incentive to install any as long as the device of ‘back room deals’ with DEQ regulators remains a point of decision making. The fact that the facility shut down a furnace and moved the pollution across the river to Washington state is not a remedy for Regional Haze, as DEQ seems to want to believe, but a capitulation because the polluter is not being held responsible for continuing emissions from their other on-site furnaces. The community, via CAAT, still insists on representation, and we want the State to force the company to use filters. CAAT has even identified a filter-product remedy (ceramic catalyst filters) for the air pollution releases by the facility. These filters would address SO₂ and NO_x as well as Arsenic, Lead, and toxic air releases.

We now understand that the States capitulation regarding Regional Haze implementations may very well have happened as a result of a closed, non-inclusive, back room meeting with the polluter. It is not too far a stretch to say that the same may have happened for the other 17 facilities under the Regional Haze Implementation process.

CAAT is therefore asking the EQC to rescind any and all agreements that DEQ has made with the 16 facilities who, due to those backroom meetings and other informal, non-inclusive communications, will be allowed to continue fouling the air and harming the health of Oregonians, and revisit how to improve air quality and decrease regional haze here immediately.

DEQ Response

Owens-Brockway completed a four factor analysis, as Division 223 rules require, when total emissions of round 2 regional haze pollutants (SO₂, NO_x and PM₁₀), Q, divided by distance to the nearest Class 1 area, d, exceed 5.00. From that four-factor analysis, DEQ deemed ceramic catalytic filters a cost-effective pollution control of Round 2 regional haze pollutants, as documented in DEQ's September 2020 letter to Owens-Brockway. Division 223 rules permit options for facilities to comply with Regional Haze requirements and one of those options is reducing Plant Site Emission Limits at any point in the process to a level such that total Q/d is less than 5.00. In alignment with Division 223 rules and to maintain regulatory consistency, DEQ

did not require facilities agreeing to make changes such that $Q/d < 5.00$ to install controls. The agreements DEQ reached with all facilities, including Owens-Brockway, contain enforceable emission limits, as the federal Regional Haze Rule requires, and enforceable emission reductions over the 2018-2028 implementation period and beyond.

This facility is also regulated by other programs at DEQ. Through Cleaner Air Oregon, Owens-Brockway is required to complete a risk assessment to identify toxic air contaminant (TAC) emissions from their facility. Owens-Brockway completed multiple source testing events to quantify specific TAC emissions from their onsite furnaces and is in the process of completing a Level 4 Risk Assessment to determine whether any actions must be taken to reduce risk from their facility.

For criteria pollutants (federal, health-based standards), the facility is required to model emissions from Furnace D, which are evaluated relative to the 1-hour, health-based National Ambient Air Quality Standards. If the modeled concentrations are equal to or greater than the NAAQS, OB would be required to install controls or reduce production levels.

Also, under an enforcement Mutual Agreement and Order, Owens-Brockway is required to install Particulate Matter controls or shut down by June 2022. The MAO also contains an interim opacity limit with stipulated penalties of \$18,000 per violation.

Comment #21

On behalf of the undersigned groups and Multnomah County, we respectfully submit these comments. As to the industrial facilities and their impacts on Class I areas, we incorporate by reference the comments authored by Earthjustice, National Park Conservation Association and others submitted on November 1, 2021. Our comments here are intended to provide a specific focus on the Department of Environmental Quality (DEQ)'s draft State Implementation Plan (SIP) and its address of prescribed burning and residential biomass/woodsmoke which are not addressed in the other written coalition comments.

The current draft SIP is insufficient in its proposed rules to reduce emissions from biomass burning/residential woodsmoke. Residential wood smoke may have a particularly pronounced effect in the Columbia River Gorge National Scenic Area due to geography, residential land use in the gorge, and proximity to population centers where residential wood combustion is common.

Amongst the 5 factors for long-term strategy are emissions reductions due to: ongoing air pollution control programs, basic smoke management practices for prescribed fire, and the anticipated 'net effect' on visibility due to projected changes in point, area, and mobile source emissions.

Section 4.6.2 of the SIP, which covers residential wood burning sources, does not adequately address biomass emissions. We would like DEQ to recognize the insufficiency of the HeatSmart Program as a main approach to reduce emissions. Numerous peer reviewed scientific studies show that woodstove changeouts that upgrade old stoves to "cleaner" woodstoves (like HeatSmart) do not meaningfully decrease pollution.

The current SIP fails to consider the 'net effect' of all indoor and outdoor residential burning on air quality and visibility within a region, nor all ways to mitigate it.

The draft SIP fails to mention the statewide woodstove changeout program which allots specific counties grant amounts to help their residents change out their woodstoves and the existing locally-backed education and woodsmoke curtailment programs in each County.

It also fails to mention federal ARPA funding- which has been allotted in the amount of \$500,000 for woodsmoke changeouts in Multnomah County for the next biennium.

The SIP could be strengthened if it incorporated the recognition of additional grant funding needed to continue woodstove changeouts towards non-biomass devices, other policies mentioned in DEQ's 2016 report to the legislature, and the policy proposals from the Multnomah County 2021 woodsmoke working group.

This includes but is not limited to:

- Additional grant funding dedicated to providing woodstove changeouts for heat pumps or other non-biomass burning devices.
- More DEQ funding for locally run woodsmoke curtailment programs and public education programs
- Increased statewide education and outreach is needed because increasing awareness of the harms of woodsmoke is essential for emissions reduction
- enhanced coordination with other agencies to focus on air quality from wood burning.
- Tax credits, perhaps through clean energy initiatives.
- complete a statewide woodsmoke combustion inventory
- consider a permitting scheme for future commercial businesses who use a chiminea, chimney, or woodstove.

Smoke Management and Prescribed Burning

DEQ and Department of Forestry would need to consider the rules that allow burning of biomass debris, forest waste on private and public lands and consider volume restrictions. Agencies should limit all unnecessary pile burning and agricultural burning in Oregon. Education and no-burn alternatives should be encouraged and clarified- not in the next few years as stated in the SIP- but almost immediately. All permitted burning should provide scientifically supported data that shows its efficacy in preventing wildfire or providing ecological benefit (prescribed burning). Burning in lieu of forest, domestic or agricultural clean-up practices such as composting should be minimized and limited. We realize that woodburning and biomass is only one piece of the puzzle contributing to haze. But we urge you to flesh out your long-term strategy and enforceable rules to mitigate emissions.

DEQ Response

DEQ has included the entire comment letter from commenter 15 in Appendix G of the proposed RH SIP. DEQ responds to the key elements of Comment 21 here.

DEQ agrees with commenter that woodsmoke - from residential wood burning, biomass burning, and prescribed burning - is a substantial contributor to regional haze, as well detrimental to public health. DEQ conveys the extent of visibility impairment from woodsmoke and biomass burning in sections 2.3, 2.4 and 2.5 of the proposed RH SIP, generally by showing results of the WRAP modeling, analysis of IMPROVE monitoring, and modeled source apportionment. DEQ recognizes, though, that often woodsmoke is grouped in with larger categories - such as area sources - and it is not obvious what proportion is attributed to woodsmoke.

The current draft SIP is insufficient in its proposed rules to reduce emissions from biomass burning and residential woodsmoke

To draw more attention to strategies that address woodsmoke, prescribed fire and biomass burning, DEQ has reorganized Section 4 - the Long-term Strategy section of the proposed RH SIP based on the organization of the additional five factors in 51.308(f)(2)(iv)(A) - (E) (construction, smoke management, on-going programs, source retirement, and point, area, mobile sources). Strategies to address prescribed burning and forestry biomass burning are now under, "Smoke Management and Prescribed Burning for Wildland Vegetation Management." Strategies to address agricultural/non-forestry open burning are under "Area Source Strategy: Agricultural Open Burning." And strategies to address residential wood burning are under, "Area Source Strategy: Residential Wood Heating."

DEQ has mentioned the importance of several elements from the reports and proposals the commenter suggests in the Long-term Strategy (Section 4 of the proposed RH SIP) to reduce woodsmoke emissions. DEQ has also elaborated on the scope of future rulemaking in the Heat Smart and Open Burning programs.

DEQ agrees with commenter on the urgency of educating communities and encouraging alternatives to burning. Prescribed burning is governed by the recently updated and SIP-approved Smoke Management Plan and DEQ does not expect to revise this plan in the near future. However, DEQ is actively pursuing solutions and identifying barriers to alternatives to open burning, both within the agency - such as permitting air curtain incinerators, and across agencies - such as the Biomass Utilization Work Group. The work is underway, including work such as education, outreach and collaboration with research institutions. Some of this work has been made possible by the passage of Senate Bill 762 - the omnibus wildfire bill -- and DEQ has elaborated upon this work in the LTS section to a greater extent than in the publicly noticed RH SIP.

Comment #22

Oregon's proposed rules to implement the Regional Haze program gave DEQ powerful tools to reduce pollution. Many of the undersigned organizations submitted comments in support of these strong rules. The Q/d screening mechanism resulted in 32 of Oregon's biggest polluters performing four-factor analyses, and the \$10,000 cost-effectiveness threshold laid the groundwork for DEQ to be able to order 17 of these sources to install controls that would have improved visibility and protected public health. DEQ sent these facilities "control letters" reflecting DEQ's decision as to which cost-effective control they would likely be required to install, based on the agency's four-factor analysis.

Division 223 rules

However, after comments on the Division 223 rules were closed, DEQ fundamentally altered its approach without engaging in any kind of public process and without consulting stakeholders other than the regulated entities. Instead of ordering all 17 facilities to implement the reasonable progress controls identified through four-factor analyses, DEQ inexplicably chose to extend offers that allowed all but one of these facilities to exit the program or comply with the program without investing in the highly effective pollution-reducing technology that DEQ could—and should—have required these facilities to install to meet the state's obligations under the regional haze program.

Nothing in Oregon's rules allows DEQ to offer alternative compliance options that result in less effective emissions reduction measures, and nothing requires the agency to offer alternative compliance options at all.

Nothing in SIP reflects any determinations by DEQ that the reduced PSELs or other pollution-controlling operations steps in the Stipulated Agreements and Final Orders would “provide for equivalent reductions to those identified in its review and adjustment of the four-factor analysis.” OAR 340-223-0110(2)(b)(C)–(E).

Alternative Compliance: Lowering Plant Site Emission Limits

Ultimately, DEQ only unilaterally ordered one of the 32 facilities that completed four-factor analyses to install reasonable progress controls. One facility voluntarily agreed to implement the reasonable progress control identified in DEQ’s control letter. For the other 15 facilities that identified cost-effective controls, DEQ allowed them to voluntarily reduce their Plant Site Emission Limits (PSELs)—the high pollution limits contained in Oregon’s air permits—or voluntarily take other less effective emissions-reducing steps instead of installing the reasonable progress controls DEQ indicated it would require them to install based on their four-factor analyses.

The only rationale DEQ offered for this choice is that the agency offered these off-ramps to facilities with actual emissions that would exclude them from the program if the threshold for inclusion in the program were based on the facility’s actual 2017 emissions rather than their 2017 permitted emissions limits. See SIP at 35. This appears to be an after-the-fact attempt to rewrite the rules to change the screening threshold for inclusion in the Regional Haze program from a threshold based on permit limits—a threshold that brought 32 facilities into the program—to one based on actual emissions—a threshold that would have left out 18 of those facilities—without undergoing public scrutiny and comment on this approach. Eight of the facilities to which DEQ offered alternative compliance would still have been included in the program even if the threshold were based on their actual emissions rather than permit limits. DEQ’s rationale for this choice simply does not explain DEQ’s actions.

All but one of the off-ramp agreements with defined new PSELs allow facilities to continue emitting at levels above their 2017 emissions, which DEQ used as a baseline. In other words, those agreements will not result in any reductions from the baseline emissions level.

Equivalent Emission Reductions - Lack of demonstration

Nothing in the SIP suggests that DEQ analyzed whether the “alternative compliance” agreements that required emissions reduction measures different from the ones identified in DEQ’s control letters provide equivalent reductions or studied the impact of these agreements on Oregon’s Regional Haze strategy. Nothing in the SIP attempts to justify the off-ramping of 15 facilities by reference to any requirements of the Regional Haze program.

Section I(B) contains a table comparing the emissions reductions that would have resulted from ordering facilities to install cost-effective controls identified in their four-factor analyses versus those that will result (if any) from the measures in the “alternative compliance” agreements. The table does not reflect a perfect one to one comparison because of the variability in the conditions contained in the agreements. For example, some of the agreements lack defined PSELs and some contain multiple possible compliance options, such as installing a control device, changing a fuel source, reducing actual emissions by a certain percentage, ceasing operations, or accepting a reduced PSEL, or some combination thereof.

The “alternative compliance” options that DEQ extended to 15 of the 17 facilities that identified cost-effective controls all result in far fewer emissions reductions than would be achieved if those sources were required to install the reasonable progress controls identified in their four-

factor analyses. Of the agreements with reduced PSEs, all but one allow sources to continue emitting at levels above their 2017 actual emissions levels, which DEQ used as the baseline for the SIP. In other words, the agreements for the sources with agreements containing defined PSEs will not result in any emissions reductions—and could even result in increased emissions—from the 2017 baseline DEQ used to develop the SIP.

Clean Air Act and Regional Haze Rule violations/Lack of Four Factor Analysis justification

DEQ's decision to allow some of Oregon's largest stationary sources of haze-forming pollution to reduce the overhead in their air permits instead of installing pollution controls that satisfy a four-factor reasonable progress analysis violates the Clean Air Act and federal Regional Haze rules.

The Clean Air Act requires states to determine what emission limitations, compliance schedules and other measures are necessary to make reasonable progress by considering the four factors. States may not subsequently reject measures they previously deemed reasonable.

DEQ's decision to reject reasonable progress controls and instead enter agreements not based on a four-factor analysis violates the Regional Haze Rules regardless of whether Oregon can still stay on the glidepath.

Oregon has failed to adequately justify its decision. Oregon's modeling to demonstrate how the SIP relates to Oregon's reasonable progress goals is based on the assumption that facilities would install and operate the specific controls identified in DEQ's control letters based on the facilities' four-factor analyses. DEQ cannot satisfy the Regional Haze program's requirements without analyzing the effect of these back-room agreements and comparing the emissions reductions from the agreements to the emissions reductions from reasonable progress controls. Oregon has not used an appropriate framework for exempting facilities from the requirement to install reasonable progress controls and instead selected the measures in the alternative agreements that in most cases reflected business as usual.

A state's SIP must be supported by a reasoned analysis and include a description of the criteria the state used to determine which sources or groups of sources it evaluated and how the four statutory factors were taken into consideration in selecting the measures for inclusion in its long-term strategy. The state must document the technical basis for the SIP, and include that information in the plan when they make it available for public comment.

Oregon cannot determine the emissions reduction measures necessary to make reasonable progress without conducting the statutorily required four-factor analysis of its emissions reduction strategies.

Without analysis to support DEQ's decision to off-ramp facilities where reasonable progress controls were available or analysis of how off-ramping facilities instead of ordering them to install cost-effective controls identified in their four-factor analyses will affect Oregon's progress towards natural visibility, the SIP violates the Regional Haze rules, which require every SIP to contain a description of "how the four factors were taken into consideration in selecting the measures for inclusion in its long-term strategy."

Omitting complete cost analysis documentation from the SIP violates the requirement in the 2017 Regional Haze rules 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 area it affects” including the “cost and engineering information on which they are relying to evaluate the costs of compliance, the time necessary for compliance, the energy and non-air quality impacts of compliance and the remaining useful lives of sources.”

Not meeting Reasonable Progress Goals or Uniform Rate of Progress

The modeling in Oregon’s SIP shows that if DEQ had ordered all 17 facilities that identified cost-effective controls in their four-factor analyses to install those controls, Oregon would be on or below the glidepath for some—but not all—of the Class I areas. See SIP at 75. In other words, Oregon’s Regional Haze strategy depends on taking steps DEQ has chosen not to take, plus other emissions reductions.

DEQ’s projections for 2028 are based on the assumption that DEQ would order stationary sources to install “controls recommended from DEQ’s review of initial four factor analyses submittals[.]” SIP at 75. The projections do not account for the “alternative compliance” option that 15 of these stationary sources received and accepted. In other words, even if Oregon had ordered all 17 facilities that identified cost-effective controls to install reasonable progress controls, Oregon would not be able to achieve its reasonable progress goals for most Class I areas.

By relying on this modeling in the SIP after DEQ declined to order these facilities to install reasonable progress controls, the state has misled the public about its ability to achieve the state’s reasonable progress goals and stay below the glidepath.

Lack of Environmental Justice Consideration

By allowing 15 facilities to avoid reducing their emissions at all or to take less effective emissions reduction steps, Oregon has prioritized the interests of the regulated entities over the interests of those facilities’ neighbors whose health and well-being are threatened by NO_x, SO₂, and PM and who would have benefitted from more effective controls.

While DEQ carefully established a protocol and analyzed the environmental justice and vulnerable populations “score” of each facility with cost-effective controls identified in its four-factor analysis, it then seemingly ignored this information when making consequential decisions: in place of actual significant reductions in emissions that would be achieved through the implementation of four factor reasonable progress control analyses the agency instead established alternative compliance to these facilities regardless of the environmental justice impacts and the impacts on vulnerable populations.

Owens-Brockway

DEQ’s backroom agreement with Owens-Brockway underscores the environmental justice costs of allowing some of the state’s largest polluters to off-ramp from the Regional Haze Program without requiring actual emission reductions equivalent to what could have been achieved from requiring the facility to install reasonable progress controls. Although Owens-Brockway voluntarily shut down one of its two furnaces in June 2020 and DEQ ordered the facility to that furnace shut down in June 2021 in connection with an enforcement action, the remaining furnace still exposes neighboring communities to SO₂ and NO_x—pollutants that can adversely affect lung function and worsen asthma attacks. Modeling recently uncovered that, even when only the sole remaining furnace is running, the Owens-Brockway facility may be causing or contributing to violations of the 1-hour SO₂ and 1-hour NO_x National Ambient Air Quality Standards designed to protect public health and the environment. The new permit emission

limits in the “alternative compliance” agreement do not require Owens-Brockway to in any way change its operations, effectively resulting in no actual emission reductions on the ground.

Federal Land Manager Consultation

DEQ’s consultation with the Federal Land Managers, including National Park Service, happened before DEQ executed these back-room agreements. Given the significance of this change in direction, there is a real question as to whether DEQ has satisfied the requirement to consult with Federal Land Managers no less than 60 days prior to a public hearing or public comment opportunity.

We agree with the National Parks Service’s comments on ten facilities’ cost analyses and urge DEQ to adopt and require the reasonable progress controls identified by the Park Service in the revised SIP.

The National Park Service repeatedly notified DEQ of errors in the cost analyses for 10 facilities, including incorrect equipment life, interest rate, retrofit factors, and assorted errors to inputs to SCR and other cost algorithms. See SIP at App’x G. Making these corrections often drastically improves the cost-effectiveness of controls at many facilities. It is unclear whether DEQ adequately revised its analysis to correct errors and omissions. Some facilities failed to provide adequate documentation to support their cost analyses, including full vendor information, but nothing in the SIP indicates whether DEQ ever obtained this information to confirm the facilities’ cost analyses.

Conclusions

For all of the foregoing reasons, we urge DEQ and EQC to revise Oregon’s State Implementation Plan. The proposed Plan violates federal law, and will not achieve the emissions reductions necessary to protect visibility in Oregon’s Class I areas. The proposed SIP misses the opportunity to protect the health of environmental justice communities in Oregon and evades the Regional Haze requirements that obligate the state to undertake actions in keeping with this objective.

To comply with the Regional Haze rules, DEQ must vacate its “alternative compliance” agreements, which are plainly contrary to the requirements of the Clean Air Act and Regional Haze rules and instead require these facilities to install and operate the most effective reasonable progress controls. Oregon’s SIP must demonstrate that DEQ selected and ordered reasonable progress controls for 17 facilities based on a proper four-factor analysis, taking into account environmental justice, and that any orders or agreements deliver emissions reductions at least equivalent to those that would be obtained through the installation of the reasonable progress controls identified in DEQ’s control letters.

DEQ Response

DEQ has included Comment 22 in its entirety in Appendix G of this Regional Haze Plan. DEQ responds to key elements of the comment here.

Division 223 Rules

DEQ proposed Division 223 Regional Haze Rules, which EQC adopted in July 2021, to give DEQ the authority to issue orders to facilities based on visibility standards and to codify the process by which DEQ screened in sources for potential regulation and analyzed potential control of the sources’ haze-forming emissions. Div. 223 rules allow DEQ to offer alternative compliance to sources where DEQ has deemed pollution control to be cost-effective based on a four factor analysis. DEQ, as a matter of regulatory consistency, made alternative compliance

options available to all sources. DEQ sought to reach agreement with as many facilities as possible to secure enforceable agreements for emission reductions and include them in the publicly noticed RH SIP.

DEQ acknowledges that Section 3.7 of the original publicly noticed RH SIP, Facility Specific Findings and Results, contained minimal explanation of how DEQ evaluated alternative compliance options relative to the potential emission reductions from cost effective controls. DEQ has added more explanation to Section 3.7 of the proposed RH SIP.

Alternative Compliance: Lowering PSELs

Plant site emission limits are enforceable upper limits; PSELs give sources regulatory certainty and flexibility to grow operations without requiring permit modifications. With that flexibility comes a trade-off: sources must accept the regulatory consequences of the highest allowable emission, not simply their actual current emissions. In developing regional haze rules that allow sources to comply by lowering PSELs, DEQ acknowledges that emissions prevented in the future are different from current emissions reduced in the short-term. Still, in the context of the regional haze program requirements to attain natural visibility in Class 1 areas by 2064, DEQ asserts that long-term planning to prevent emission increases is an appropriate and effective means of reaching natural visibility targets. DEQ followed a conservative approach ($Q/d \geq 5.00$, based on PSELs) to capture the sources likely to be the greatest contributors to visibility impairment now and into the future. DEQ followed that conservative screening procedure with a conservative cost-effectiveness threshold of \$10,000/ton, also based on PSEL, to evaluate pollution controls. As opposed to an approach based on actual emissions, this PSEL-based approach brought in more sources required to undergo four factor analyses and resulted in more sources being required to lower their emissions based on DEQ deeming controls cost-effective.

The commenter points out that DEQ also considered a facility's actual emissions in the initial Q/d screening; the commenter is correct that DEQ allowed facilities whose actual Q/d was less than 5.00 to agree to lower their PSEL so that PSEL Q/d was less than 5.00 and thereby screen out from the requirement for four factor analysis. But this allowance was available to all sources at any time from the beginning of the Round 2 regional haze process; DEQ did not allow this screening out only after EQC adopted the Division 223 rules, as the commenter seems to assert. If a facility that went through FFA later decided to lower PSEL so $Q/d < 5.00$, DEQ was consistent in not requiring that facility to install controls that DEQ had deemed cost-effective. Had the facility agreed to lower PSELs to $Q/d < 5.00$ at the beginning of the process, that facility would not have been required to conduct an FFA and no cost effective controls would have been identified. In response to commenters assertion that DEQ allowed sources to exit the regional haze program, DEQ wishes to make clear that PSEL reductions are in no way an "off ramp" or an exemption from regional haze rule requirements. PSEL reduction is a permanent requirement in order to comply with the regional haze rule and is enforceable through the proposed RH SIP and through facilities' Title V permits.

Emission Reduction Equivalency Demonstration

For each source opting for alternative compliance, DEQ deemed that alternative compliance could "provide for equivalent reductions to those identified in its review and adjustment of the four-factor analysis." DEQ deemed alternatives to be capable of achieving equivalent reductions by considering, for example:

- Difference in potential emissions (PSELs) between the two scenarios (4FA vs SAFO)
- Difference in expected actual emissions (at the production levels at which the facility normally operates) between the two scenarios (4FA vs SAFO)

- Level of uncertainty about technical feasibility of the 4FA controls
- Level of uncertainty about the costs of the 4FA controls

DEQ appreciates the detailed calculations the commenter provided to compare potential reductions from control installation with reductions achievable through the Stipulated Agreements and Final Orders. As the commenter points out, it is challenging to precisely quantify potential reductions from the SAFOs because of several factors unknown at this time. That is in part why DEQ included measurement and monitoring requirements as well as contingencies, such as SCR installation if emissions reductions cannot be achieved by other means, in the SAFOs.

In response to this and other comments, DEQ has negotiated and included SAFO addenda and has incorporated permit conditions by reference into the proposed RH SIP, where EPA in their comments had deemed emission rate, measuring, monitoring and reporting information lacking. The proposed RH SIP incorporating by reference the monitoring, record keeping and reporting requirements of the Title V permits makes those compliance requirements doubly federally enforceable.

Clean Air Act/Regional Haze Rule/Four Factor Analyses Requirements

DEQ agrees with the commenter that the Regional Haze Rule requires DEQ to "evaluate and determine emission reduction measures necessary to make reasonable progress by considering" the four statutory factors: cost of compliance, time to install, energy and non-air environmental effects, and remaining useful life of the emission source [CFR 51.308 (f)(2)(i)]. DEQ does not agree that once DEQ has deemed that pollution control is cost-effective (which DEQ did based on a conservative threshold of \$10,000/ton) that alternative compliance - other means to achieve emission reductions, such as operational changes or emission unit replacement - must undergo its own four factor analysis, as the commenter seems to suggest.

The commenter recommends that the FFAs and January 2021 letters to facilities be included in the proposed RH SIP, as well as technical information, such as DEQ's FFA reviews and adjustments, to demonstrate the technical basis on which DEQ relied to determine emission reduction measures necessary to make reasonable progress toward natural visibility in Class 1 areas. DEQ's response below (Reasonable Progress Goals/Uniform Rate of Progress Demonstration) refers to the sections of the proposed RH SIP in which DEQ has detailed the technical information on which the agency relied, but DEQ does not agree that details of all reviews, adjustments and calculations must be included in the proposed RH SIP to document the technical basis for decisions.

DEQ's preference is to include in the proposed RH SIP only those elements required by the Regional Haze Rule and for which DEQ is seeking EPA's approval and does not agree that the information the commenter recommends is required. Still, the FFAs and facility correspondence are posted on DEQ's regional haze webpage and will remain part of the permanent public record of the Round 2 regional haze process. In addition, all written communication and information exchanged between facilities and internally among DEQ staff are public information and available for inspection upon request.

Reasonable Progress Goals/Uniform Rate of Progress Demonstration

DEQ has documented in several sections of the proposed RH SIP the technical basis, including modeling, monitoring, cost, engineering, and emissions information, on which DEQ relied to determine the emission reduction measures that are necessary to make reasonable progress: Sections 2.1 and 2.2 (Visibility Impairment based on IMPROVE data; Section 2.3 (Emissions

Inventory Analysis), Section 2.4 (Pollutant Components of Visibility Impairment based on IMPROVE data); Section 2.5 (Source Apportionment of Visibility Impairment); Section 3.1 (Q/d screening process), Section 3.4 (Four Factor Analysis); Section 3.7 (Facility-specific Findings and Results). DEQ summarizes the technical basis for Long-term Strategy in Section 4.1 of the proposed RH SIP. In addition to internal DEQ staff expertise and professional judgment, DEQ relied to a large extent on the regional model (developed through the Western Regional Air Partnership) and the analysis of data collected through the IMPROVE monitoring network.

DEQ acknowledges and confirms the commenter's point that Potential Additional Control information that DEQ submitted to WRAP in September 2020 was input for the modeling of 2028 reasonable progress goals for each Class 1 area. DEQ also confirms that the Potential Additional Controls were those evaluated in the four factor analysis process. DEQ wishes to point out that the RPGs are 2028 visibility projections from a complex, regional scale model which reflects potential emission reductions, particularly those from point source controls (i.e. potential additional controls) and also regional emission reductions (e.g. marine fuel replacement). DEQ has deemed alternative compliance controls and PSEL reductions capable of achieving equivalent emission reductions to the controls evaluated through a four factor analysis and therefore commits to attaining these RPGs. DEQ also recognizes that meeting visibility goals in 2028 and beyond will also require implementation of all elements in the Long-term Strategy - including policies to reduce emissions from area and mobile sources.

Environmental Justice Considerations

DEQ acknowledges that communities living near stationary air pollution sources are at higher risk for exposure to air contaminants, as well as resultant short-term illness and increased morbidity in the long-term. DEQ also acknowledges that these communities are often of lower income and wealth, may be linguistically isolated, and residents of these communities are more likely to be people of color. And DEQ acknowledges that words on paper and websites are insufficient responses to the inequitable pollution burden these communities have borne and continue to bear. Establishing a vulnerable population score was how DEQ chose to consider the fourth factor – non-air environmental effects - and this informed DEQ's decisions throughout the entire regional haze process.

Owens-Brockway

Owens-Brockway completed a four factor analysis, as Division 223 rules require, when total emissions of Round 2 regional haze pollutants (SO_2 , NO_x and PM_{10}), Q, divided by distance to the nearest Class 1 area, d, exceed 5.00. As previously written, Division 223 rules permit options for facilities to comply with Regional Haze requirements and one of those options is reducing Plant Site Emission Limits at any point in the process to a level such that total Q/d is less than 5.00. In alignment with Division 223 rules and to maintain regulatory consistency, DEQ did not require facilities agreeing to make changes such that $Q/d < 5.00$ to install controls. The agreements DEQ reached with all facilities, including Owens-Brockway, contain enforceable emission limits, as the federal Regional Haze Rule requires, and enforceable emission reductions over the 2018-2028 implementation period and beyond.

Regarding NO_x , SO_2 and PM emissions from Furnace D: the facility is required to model emissions from Furnace D, which are evaluated relative to the 1-hour, health-based National Ambient Air Quality Standards. If the modeled concentrations are equal to or greater than the NAAQS, OB would be required to install controls or reduce production levels. Also, under an enforcement Mutual Agreement and Order, Owens-Brockway is required to install Particulate Matter controls or shut down by June 2022. The MAO also contains an interim opacity limit with stipulated penalties of \$18,000 per violation.

Federal Land Manager Consultation

DEQ responded to NPS comments sent during the consultation period and those responses were in the publicly noticed RH SIP (August 2021). In those responses, DEQ described the changes and adjustments it made to FFAs to assure consistent reviews. DEQ also explained the reasons why DEQ did not make other corrections (e.g. property tax, retrofit factors) once DEQ determined that controls were cost effective, at or below the \$10,000/ton threshold. The purpose of the FFA was to identify that controls were cost effective, based on a conservative threshold of \$10,000/ton, not to complete a precise cost analysis of controls.

DEQ valued and considered all input received from the National Park Service. DEQ consulted with NPS on these occasions: January 28, 2020; September 25, 2020; February 19, 2021; May 27, 2021; June 30, 2021, and July 15, 2021. At the July 15 meeting with NPS, DEQ presented a spreadsheet that summarized DEQ's findings for each of the 32 facilities subject to four factor analysis and any tentative agreements with facilities if they had been reached. On July 23, 2021, DEQ provided agency files and documents related to DEQ's full cost analyses and pollution control determinations for each facility. In addition, NPS submitted written comment on these occasions: April 2, 2021; June 3; July 1; July 7; July 15 and August 2, 2021. Each of these interactions provided NPS opportunities to meaningfully inform DEQ's decisions on the long-term strategy, as the Regional Haze Rule requires.

Comment #23

The proposed Regional Haze Implementation Plan does not adequately account for the substantial health and safety risks from wildfire caused by limiting the use of prescribed fire.

It is within the discretion of DEQ to increase the projected emissions from prescribed fire to account for these tradeoffs, allowing for more use of prescribed fire in the state. We request that DEQ use the endpoint adjustment in the uniform rate of progress glidepath toward reduced visibility impairment in Class 1 Areas as authorized under 40 CFR 51.308(f)(1)(vi)(B) in the Proposed Regional Haze Implementation Plan to include existing and projected increases in levels of prescribed burning.

Prescribed fire is the most effective method for reducing surface fuels to moderate fire behavior. Smoke management regulations remain a major limiting factor for increasing use of prescribed fire on Federal and private lands alike.

While we are supportive of efforts to boost the economic viability and adoption of other fuel management tools that have lower smoke impacts, such as biomass utilization, it is not realistic for DEQ to expect them to be deployed at scale or in rugged locations. Prescribed fire often only costs a few hundred dollars an acre, while chipping, specialized kilns, and other options cost thousands per acre. Mechanical thinning is effective, but not as effective as prescribed fire, and in some cases can make fire risk worse if not followed with prescribed fire because of surface fuels. Regulatory decisions should be based on the opportunities and challenges of fuel reduction tools as they are used today, not on optimistic predictions. Additionally, these other options often don't have the same ecological benefits of prescribed fire.

Holding the level of prescribed fire constant runs contrary to the actions of other state and Federal agencies to address the impacts of wildfire. Federal and state land management agencies have been building programs to increase the scale, pace, and quality of forest restoration across all ownerships. Every appropriations package under consideration in Congress right now directs an unprecedented increase in funding for fuels management,

including prescribed fire. The Governor's Wildfire Council recommends increased use of prescribed fire, and several provisions of 2021 SB 762 (Governor's Omnibus Wildfire Bill) aimed to facilitate this through both funding of fuels projects and the creation of new programs to support prescribed fire capacity in the state. In contrast, Implementation Plan states that the two main objectives of the Smoke Management Plan are to minimize smoke emissions from prescribed burning and promote development of techniques that minimize or reduce emissions, such as utilization of forestland biomass.

Smoke from prescribed fire should be considered in the context of the dangerous conditions in Oregon forests. We strongly urge you to adjust the glidepath of uniform rate of progress toward reduction of visibility in Class 1 Areas to accommodate more acres of prescribed fire in the state.

DEQ Response

DEQ acknowledges that prescribed burning is an accepted and effective practice to minimize the risks from catastrophic wildfires. DEQ will continue to regulate prescribed burning through the Smoke Management Plan and in partnership with the OR Dept. of Forestry, US Forest Service, local governments and fire districts. Implementation of the regional haze long-term strategy does not include limiting or reducing the use of prescribed burning as a management tool. The long-term strategy will, however, include research, cross agency collaboration, and eventually rulemaking to identify and remove barriers to other biomass utilization techniques; pursuit of alternatives to burning does not require active discouragement or reduction of prescribed burning when that is the most appropriate management tool. DEQ acknowledges the likelihood that prescribed burning will increase in the coming years but remains unconvinced that redefining "natural conditions" by adjusting the glidepath to accommodate prescribed fire use is in line with the statutory construct or goals. Smoke from prescribed fire contributes to visibility impairment and is controllable, unlike wildfire; for that reason, DEQ continues to find it most appropriate to compare visibility goals to a glidepath that is not adjusted to remove effects from prescribed fire.

Comment #24

We are a biomass fueled power plant. Power plants sell their power to a utility that uses it to power to the grid. The contract dealing with this is called a Power Purchase Agreement (or PPA for short). The pricing paid for the power is therefore fixed in the PP A. The PP A for Biomass One LP ends on December 31, 2026. Producing power from waste wood is one of the most expensive methods of power production. In essence we are waste reduction facility the makes electricity and Biochar as byproducts. Given the current projected power prices beginning in 2026 we will not be able to afford to continue operating as the projected price of the fuel would force us to operate at a loss.

There are a few areas where we disagree with the DEQ's chosen approach. The first and most important area is accounting for our regional haze pollutant emissions. While the DEQ counts all or our emissions of pollutants (both fugitive and point) we are not allowed credit for the reductions to total regional haze pollutants emitted in the State. If the emissions that were avoided by burning forest biomass in our boilers rather than open burning it (in 2020 using actual values) we fall well below the Q/d for inclusion in the program. If we average the last eight years we are actually a net reducer of regional haze pollutants.

DEQ ignored the findings by our consultant in the four factor analysis. Our consultant found that first of all we have all the technically feasible control technology for our specific situation. The DEQ has taken the position that Selective Catalyzed Reduction technology is feasible for

biomass fired power boiler even though it has never been successfully applied to a biomass fired power boiler of our size.

The second disagreement we have with them is in determining cost effectiveness. They chose a value of \$10,000 per ton of pollutant removed to be cost effective. For a small facility such as ours this is not a "reasonable" value to determine cost effectiveness. For a large lumber mill that can pass the cost along to the consumer in the form of a price increase it may be reasonable but not to a facility with a low profit margin and no real way to increase revenue to offset the cost of the technology.

DEQ chose a thirty year amortization program (at an interest rate below what our consultant believed could be found) for everyone in the program. While in some ways it makes sense to put everyone on the same amortization basis it should be rooted in reality. The longest life expectancy for any of the budgetary estimates we received was twenty years. The result of this was to make the cost artificially low compared to the \$10,000/ton threshold. Because of the short amount of time remaining on our current PPA there would be no way to acquire the amount of capital required to install the SCR technology even if we could somehow afford it.

We do want to express our appreciation to the DEQ for working with us to draft an SAFO that allows us to operate in our current configuration for the duration of our current PPA. The requirement to install SCR treatment for NOx if we get a renewal of the PP A makes it much more likely for us to have to terminate operations as it greatly increases the revenues required for the Plant to continue operations. We still feel that we should not have been included in the Program, however, we do appreciate being allowed to complete the current contract period.

DEQ Response

DEQ and Biomass One met several times in spring and summer 2021, at which times DEQ considered all information Biomass One provided. DEQ applied consistent criteria and adjustments to the four factor analyses of all facilities, regardless of industrial sector, as the Regional Haze Rule and Oregon rules, Division 223, require. DEQ acknowledges Biomass One's disagreement, but DEQ continues to deem SCR technically feasible and cost-effective. As stated in the SAFO, which Biomass One voluntarily entered, SCR will be required if Biomass One continues to operate beyond 2026.

Comment #25

I am a resident of Multnomah County and concerned about air quality and visibility in Oregon. I am particularly concerned about haze caused by air pollutants. I represent Woodsmoke Free Portland and have been working closely with Oregon Environmental Council. My comments focus on air quality problems and haze caused by residential wood burning, which appears to have minimal focus in DEQ's draft state implementation plan. Portland has some of the worst air quality in the U.S., EPA has ranked Portland worst for respiratory distress; it is well known that woodsmoke is a leading source of this air pollution. The draft plan does not thoroughly address open burning or residential biomass. It merely mentions the HeatSmart program, which requires uncertified stoves to be removed at the time of home sale. Based on research, we know that replacing wood stoves with wood stoves, even EPA certified woodstoves, does not produce improved air quality. We need other tools to reduce this significant source of haze. We need an updates statewide woodstove inventory, an emission inventory, and need to contemplate other policy ideas from the Multnomah County Woodstove Working Group - which DEQ participated in. For example, grant funding for heat pump change-outs for existing woodstoves; ensuring year-round burn ordinances to account for the now-regular summer wildfire season.

These same pollutants also fuel the climate crisis and consequences are alarming: wildfires, raised sea levels, melting glaciers at national parks across the country. The same sources of pollution causing haze disproportionately affect those living closest to the sources, most often communities living near the poverty line and communities of color.

I urge you to give more attention in your draft to biomass air pollution and ways to mitigate it. Anecdotally, on a recent drive from Otis, Oregon through Salem and on into Portland, the amount of haze in that large area was stunning: visible from the road all kinds of biomass burning, piles, residential burning, debris, forestry burning as they clean up from the wildfires. We need scientifically informed, preventative prescribed burns but we need to minimize unnecessary burning and use other methods like composting. In Multnomah County, 95% of burning is for ambiance, only 5% is for heat, and that small percent produces 50% of winter-time haze.

DEQ Response

DEQ agrees with commenter that woodsmoke - from residential wood burning, biomass burning, and prescribed burning - is a substantial contributor to regional haze, as well detrimental to public health. DEQ conveys the extent of visibility impairment from woodsmoke and biomass burning in sections 2.3, 2.4 and 2.5 of the proposed RH SIP, generally by showing results of the WRAP modeling, analysis of IMPROVE monitoring, and modeled source apportionment. DEQ recognizes, though, that often woodsmoke is grouped in with larger categories - such as area sources - and it is not obvious what proportion is attributed to woodsmoke.

To draw more attention to strategies that address woodsmoke, prescribed fire and biomass burning, DEQ has reorganized Section 4 - the Long-term Strategy section of the proposed RH SIP based on the organization of the additional five factors in 40 CFR 51.308(f)(2)(iv)(A) - (E) (construction, smoke management, on-going programs, source retirement, and together: point, area, mobile sources). Strategies to address prescribed burning and agricultural and forestry biomass burning (DEQ refers to this as open burning) are now under, "Basic smoke management practices for prescribed fire used for agricultural and wildland vegetation management purposes and smoke management programs." Strategies to address residential wood burning and non-agricultural/non-forestry open burning are under, "Projected changes in point, area, and mobile source emissions."

DEQ has mentioned the importance of several of the woodsmoke reduction policies that commenter 15, as well as this commenter, suggest, in the Long-term Strategy (Section 4 of the proposed RH SIP). DEQ has also elaborated on the scope of future rulemaking in the Heat Smart and Open Burning programs.

DEQ is actively pursuing solutions and identifying barriers to alternatives to open burning, both within the agency - such as permitting air curtain incinerators, and across agencies - such as the Biomass Utilization Work Group. DEQ has also partnered with Oregon State University to conduct a statewide survey of residential wood heating and DEQ will use the results of that survey - due the first half of 2022 - to update and enhance the statewide emissions inventory.

Comment #26

The Regional Haze Rule and plan are an important tool for protecting air quality and visibility in the Columbia River Gorge National Scenic Area and Class 1 areas in the state. The regional haze program also reduces pollution in Oregon communities and benefits human health.

Unfortunately, the draft plan falls short of the requirements of the Clean Air Act and the Regional Haze Rule. The draft plan does not appear to require actual pollution reduction from any major sources that DEQ identified as contributing to regional haze, and instead allows polluters to reduce their maximum pollution levels in their permits without having to reduce actual pollution levels through cost effective controls.

The way the plan is drafted, it appears industry can increase pollution above current levels, resulting in no reductions - it would just reduce the level of pollution allowed under the permit. This could undermine Oregon's strategy for reducing haze causing pollution. DEQ has also excluded one of the largest CAFOs in the country from the draft plan, located east of the Columbia River Gorge National Scenic Area, which contributes to haze, particularly in the winter months in the Gorge and Class 1 airsheds east of that facility. Threemile Canyon farms emits a large amount of ammonium nitrate, that DEQ has estimated results in 50% of the visibility impairment in the Columbia River Gorge. This CAFO should have been included in the list of facilities that had to develop pollution controls in Round 2 of the Regional Haze program. DEQ recognizes this as a problem but relies on this unfunded Dairy Air Quality program to reduce emissions. I'm active on the Oregon Legislature and I do lobby for good budgets and funding and have not been contacted by DEQ to inform us about opportunities to support this. Likely polluters contributing to this problem do not support funding for this program, so it would seem it's a dead end. That's why Friends has recommended several times that these sources be included in the Regional Haze program.

When DEQ proposes exempting polluters from installing pollution controls, we're curious how much outreach was done to the communities that are directly affected by these polluters- surrounding communities, many of them low-income and at-risk populations. Overall, Friends hopes the draft plan requires real pollution reduction to protect the health of our communities and protect visibility in special places like the Gorge.

DEQ Response

In developing regional haze rules that allow sources to comply by lowering PSEs, DEQ acknowledges that emissions prevented in the future are different from current emissions reduced in the short-term. Still, in the context of the regional haze program requirements to attain natural visibility in Class 1 areas by 2064, DEQ asserts that long-term planning to prevent emission increases is an appropriate and effective means of reaching natural visibility targets. DEQ followed a conservative approach ($Q/d \geq 5.00$, based on PSEs) to capture the sources likely to be the greatest contributors to visibility impairment now and into the future. DEQ followed that conservative screening procedure with a conservative cost-effectiveness threshold of \$10,000/ton, also based on PSEL, to evaluate pollution controls. As opposed to an approach based on actual emissions, this PSEL-based approach brought in more sources required to undergo four factor analyses and resulted in more sources being required to lower their emissions based on DEQ deeming controls cost-effective.

DEQ carried out the agency's Round 2 Regional Haze Rule responsibilities that pertain to stationary sources under the authority of Oregon Administrative Rules Chapter 340 Division 223. Division 223 rules establish the Round 2 screening process that determines which facilities are subject to analysis of pollution controls based on the four factors (cost, time to install, remaining useful life, non-air and energy impacts). PSEL reduction is one of the compliance options provided in Division 223 if DEQ determines that Round 2 regional haze pollutant reduction is cost-effective, based on the four factors.

DEQ agreed in some cases that controls deemed cost effective in the January 2021 letters to sources were not technically feasible or that equivalent emissions could be achieved through other means (e.g. more efficient operations, engine shut down) or that controls would be installed by a time certain if a source found they could not achieve agreed-upon emission reductions by other means. For facilities where DEQ agreed that monitoring, equipment replacement, PSEL reduction or operational changes could achieve emission reductions consistent with reasonable progress, DEQ did not require control installation identified in January 2021 communications to facilities. Still, through the SAFOs, facilities are held to either an emission rate or percent reduction. Emission reductions are verifiable and enforceable through facilities' Title V permits, the stipulated agreements and orders, and by incorporation into the proposed RH SIP.

DEQ agrees with commenter that area emissions from agricultural operations contribute to regional haze in the Columbia River Gorge National Scenic Area and Class 1 areas in Oregon. The air emissions from the agricultural operations at the facility the commenter mentions are not covered under the source's stationary source permit, as the EQC is prohibited from regulating most emissions from agricultural operations. Still, DEQ has included strategies to reduce haze-forming emissions from agricultural sources in the proposed RH SIP Long-term Strategy (Section 4 of the RH SIP), recognizing the cross-agency challenges in this area. DEQ has committed to working with the OR Dept. of Agriculture to develop policies that, at a minimum, incentivize best management practices, such as capturing ammonia area source emissions. DEQ has also committed in the long-term strategy to developing and refining the state's ammonia emission inventory and seeking EPA's assistance in that endeavor.

Comment #27

The Oregon Department of Environmental Quality's (DEQ) Draft Regional Haze Plan fails to meet the requirements of the Clean Air Act and the Regional Haze Rule. The draft plan allows polluters to reduce maximum pollution levels in their permits without having to reduce actual pollution levels through cost-effective controls. The way the plan is drafted, industries could increase pollution above current levels resulting in no reductions of haze-causing pollutants.

I am very concerned that the draft plan does not require pollution reductions from major sources that DEQ identified as contributing to regional haze in Oregon. Three Mile Canyon Farms, located in Boardman, Oregon, is responsible for emitting huge amounts of ammonium nitrate.

Burning agricultural and orchard waste is another unnecessary source of air pollution, waste that, with a little effort, could be put to useful purpose.

It appears that the draft plan lets polluters off the hook while surrounding communities and special places like the Columbia River Gorge continue to be subjected to air pollution.

DEQ Response

Please see DEQ Response to Comments 10, 13, 14 and 16.

Comment #28

I am concerned about outdoor burning each year from farming operations. The smoke generated prevents people (especially children) from enjoying the outdoors. It is a serious health concern. Instead of burning, I support farmers and others who normally burn, to use composting or burial methods instead.

DEQ Response

Please see DEQ Response to Comment 16.

Comment #29

Please. Do. your. job. Protect the air quality in Oregon and the Columbia Gorge to protect Oregonians' lives. Do NOT protect profits of polluters.

DEQ has excluded Three Mile Canyon Farms in Boardman, Oregon, from the plan. Why wasn't this miserable, monstrous cow factory included at the top of the list of facilities required to develop pollution control plans for round 2 of the Regional Haze Program?

Was there any outreach to communities directly affected by these polluters? Your draft plan appears to coddle and cuddle up to polluters while surrounding communities choke on their air pollution.

DEQ Response

Please see DEQ Response to Comments 10 and 14.

Comment #30

Shutting down the Boardman coal generating station has only minimally helped the Columbia Gorge haze problem.

DEQ Response

PGE's Boardman coal-fired facility shut down permanently in October 2020. Based on the 2017 National Emission Inventory for Morrow County, DEQ expects the Boardman shut down will eliminate more than 2,000 tons/year NO_x, more than 3,000 tons/year SO₂ and more than 400 tons/year PM₁₀.

Comment #31

It is clear that DEQ is violating its own environmental justice guidelines with regard to "fair treatment and meaningful involvement of all people..." in drafting a regional haze plan that fails to meet the requirements of the Clean Air Act and the Regional Haze Rule.

The exclusions and allowances for polluters to continue and even increase polluting comes at the expense of all but those who profit from polluting and have a favored advantage at the table.

DEQ Response

Please see DEQ's response to Comments 22 and 26.