

Regional Haze State Implementation Plan for the 2nd Planning Period



State of Idaho
Department of Environmental Quality



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Prepared by

Idaho Department of Environmental Quality
Air Quality Division
1410 N. Hilton St.
Boise, ID 83706



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Abbreviations, Acronyms, and Symbols

BART	Best Available Retrofit Technology
CAA	Clean Air Act
CFR	Code of Federal Regulation
CO	carbon monoxide
CRB	crop residue burning
CRMO1	Craters of the Moon Wilderness Area
DEQ	Idaho Department of Environmental Quality
EGU	electrical generating units
EI	emission inventory
EPA	US Environmental Protection Agency
EPHA	Environmental Protection and Health Act
ESP	electrostatic precipitator
FR	Federal Register
FLM	Federal Land Manager
FSWG	Fire and Smoke Workgroup
IDAPA	numbering designation for Idaho's administrative rules
IDL	Idaho Department of Lands
IMPROVE	Interagency Monitoring of Protected Visual Environments
LCDA	lime-concentrated dual-alkali
LEC	low emission combustion
km	kilometer
Mm-1	inverse Megameter, a measurement of light absorption in the atmosphere
MOVES	Motor Vehicle Emission Simulator
NAAQS	National Ambient Air Quality Standards
NEI	National Emissions Inventory
NH ₃	ammonia
NO _x	nitrogen oxides
NPS	National Park Service
NSR	new source review
NWP	Northwest Pipeline LLC

PM	particulate matter
ppm	parts per million
PSAT	Particulate Source Apportionment Technology
PSD	prevention of significant deterioration
RHPWG	Regional Haze Planning Work Group
RICE	reciprocating internal-combustion engines
SAWT1	Sawtooth Wilderness Area
SCR	selective noncatalytic reduction
SIP	state implementation plan
SMOKE	Sparse Matrix Operator Kernel Emissions model
SO ₂	sulfur dioxide
SO _x	sulfur oxides
SULA1	Selway-Bitterroot Wilderness Area
TASCO	The Amalgamated Sugar Company
tpy	tons per year
TSS	technical support system
URP	uniform rate of progress
US	United States
USFS	US Forest Service
VOC	volatile organic compound
WEP	weighted emissions potential
WRAP	Western Regional Air Partnership

Executive Summary

The Regional Haze Rule requires Idaho to address regional haze in each mandatory federal Class I area (Class I area) located within and outside of Idaho and develop reasonable progress goals for Class I areas in Idaho to ensure they meet natural visibility conditions by 2064. Idaho is responsible for establishing reasonable progress goals and develop a long-term strategy for the Sawtooth Wilderness Area, Craters of the Moon Wilderness Area, and Selway-Bitterroot Wilderness Area. This State Implementation Plan (SIP) revision meets the requirements of Section 308 of the Regional Haze Rule (40 CFR Part 51, Subpart P, § 51.308) for the second planning period (2018-2028) as well as the progress report requirements for 2014 through 2018 (40 CFR 51.308(g)(1)–(5)).

This SIP revision includes Idaho’s demonstration of the progress made to date in visibility improvement at Idaho Class I Areas and determination of any additional emission reduction needed to achieve the reasonable progress goals during this planning period. Idaho’s long-term strategy reduces emissions that cause visibility impairment and sets reasonable progress goals that provide for an improvement in visibility for the most impaired days over the period of the implementation plan and ensure no degradation in visibility for the clearest days over the same period. This SIP revision also addresses Class I areas outside of the state that are reasonably anticipated to be affected by emissions within Idaho.

Idaho identified 9 facilities within Idaho as reasonably anticipated to contribute to visibility impairment. These facilities were evaluated for possible future controls using the four factors outlined in the Regional Haze Rule, cost of compliance, time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life. From this four-factor analysis, Idaho determined that limiting the dual-fired boiler at TASCOS – Nampa and the dual-fired and coal-fired boilers at TASCOS – Twin Falls to only natural gas are reasonable control measures for this planning period. Table A shows the emission reductions that will result due to these control measures.

Table A. Idaho anticipated reduction in emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Mobile Source OTB Reductions	-150	-39,884	-1335	-1394	-79	-17,715
Point Source OTB Reductions	0	-141	143	65	-455	0
Point Source Reasonable Emission Controls	0	-500	-68	0	-2072	0
Total	-150	-40,525	-1,260	-1,329	-2,606	-17,715

Consultation with western states determined that other states did not request Idaho facilities to adopt control measures for this planning period nor did Idaho request adoption of controls on out-of-state sources that may affect visibility in Idaho Class I Areas.

All 3 Class I areas in Idaho are estimated to be below the adjusted uniform rate of progress needed to achieve the 2064 visibility end goal and remain on track to meet the 2028 visibility goals. Tables B and C show the reasonable progress goals and anticipated net effect of emission

reductions on visibility over the second implementation period for the most impaired days and clearest days, respectively.

Table B. Reasonable progress goals and anticipated net effect of emission reductions on visibility over the second implementation period for the most impaired days.

Class I Area IMPROVE Monitor	2014–2018 IMPROVE (dv)	2028 RPG (dv) from 2028OTBa2	Improvement from 2014–2018 IMPROVE(dv)
CRMO1	8.50	7.52	0.98
SAWT1	8.61	8.30	0.31
SULA1	8.37	8.01	0.36

Table C. Anticipated net effect of emission reductions on visibility over the second implementation period for the clearest days.

Class I Area	2014–2018 Annual Average Observation IMPROVE	No Degradation Limit (dv)
CRMO1	2.7	4.3
SAWT1	2.6	4.0
SULA1	1.6	2.6

1 Introduction

In 1977, US Congress designated all wilderness areas with more than 5,000 acres and all national parks with more than 6,000 acres as mandatory federal Class I areas, subject to the visibility protection requirements in the Clean Air Act (CAA). In subsequent years, the US Environmental Protection Agency (EPA) issued regulations to address visibility impairment at these mandatory federal Class I areas. (40 CFR 51 Subpart P). These regulations are now called the Regional Haze Rule.

Regional haze is defined 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 particles and gases in the atmosphere that scatter and absorb light (i.e., extinguish), thus acting to reduce overall visibility. The primary cause of regional haze is light extinction by particulate matter (PM). For the Regional Haze Rule, light extinction is estimated from measurements of PM and its chemical components (sulfate, nitrate, organic carbon, elemental carbon, fine soil, sea salt, and coarse material), assumptions about relative humidity at the monitoring site, and the use of a commonly accepted algorithm (Pitchford et al. 2007).

1.1 Requirements for the Second Planning Period

The requirements for the regional haze second planning period are listed in Table 1. The Regional Haze Rule established the deciview haze index as the principal metric for expressing visibility on any particular day. The deciview haze index is calculated from light extinction values (in inverse Megameters, Mm^{-1}) and expresses uniform changes in the degree of haze in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy.

The 1999 Regional Haze Rule (64 FR 35714) directed states to track visibility impairment on the 20% most impaired days and 20% least impaired (or clearest) days to determine progress towards natural visibility conditions. The 1999 rule also stated that the least and most impaired days should be selected as the monitored days with the lowest and highest actual deciview levels, respectively. This requirement included both natural and anthropogenic contributions to haze. However, the CAA established a national goal of remedying existing and preventing future visibility impairment resulting from anthropogenic air pollution only.

The 2017 revisions to the Regional Haze Rule (82 FR 3078) allow states to use the same metric for the 20% clearest days; however, the 20% most impaired days haze metric must now be calculated for the 20% most impaired days with the highest fraction of anthropogenic impairment (section 3.1). EPA's 2019 final regional haze guidance recommended using the Interagency Monitoring of Protected Visual Environments (IMPROVE) network ambient data to identify the 20% most anthropogenically impaired days and the 20% clearest days.

Table 1. Regional Haze Rule second planning period requirements.

Requirement	Description	State Implementation Plan Section
40 CFR 51.302	Address reasonably attributable visibility impairment (RAVI) requirement	10
40 CFR 51.308(f)(1)	Calculate the baseline, current, and natural visibility conditions for the most impaired and clearest days; and the uniform rate of progress for the most impaired days for each of the Class I areas in Idaho.	3
40 CFR 51.308(f)(2)(i)	Evaluate and determine emission reduction measures that are necessary to make reasonable further progress	6
40 CFR 51.308(f)(2)(ii)	Consult with those States that have emissions that are reasonably anticipated to contribute to visibility impairment in mandatory federal Class I areas in Idaho.	8
40 CFR 51.308(f)(2)(iii)	Document the technical basis on which the State is relying to determine the emission reduction measures that are necessary to make reasonable further progress.	6, Appendix B
40 CFR 51.308(f)(2)(iv)	Consider the five additional factors in developing the long-term strategy	7
40 CFR 51.308(f)(3)	Establish reasonable progress goals for each Class I area.	9
40 CFR 51.308(f)(4)	Develop additional monitoring strategy, if advised by EPA or FLM that additional monitoring is needed.	1.3
40 CFR 51.308(f)(5)	Address the progress report requirements in 40 CFR 51.308.g(1) through (5)	2
40 CFR 51.308(f)(6)	Document the monitoring strategy for all Class I areas in Idaho. Summarize statewide emissions inventory and commit to update the inventory annually.	1.3, 4
40 CFR 51.308(h)	Determine the adequacy of the existing implementation plan based on the information presented in the progress report.	2
40 CFR 51.308(i)	Provide the Federal Land Manager for each Class I area in Idaho an opportunity for consultation.	11, Appendix F

Notes: State implementation plan (SIP); uniform rate of progress (URP)

1.2 Mandatory Federal Class I Areas in Idaho

Idaho has five mandatory federal Class I areas: Sawtooth Wilderness Area, Craters of the Moon Wilderness Area, Selway-Bitterroot Wilderness Area, Yellowstone National Park, and Hells Canyon Wilderness Area (Figure 1). Both Hells Canyon Wilderness Area and Yellowstone National Park have portions within Idaho, but the majority of the land mass for both of these Class I areas is in other states. For this reason, Idaho is only responsible for setting reasonable progress goals and the long-term strategy for the Sawtooth Wilderness Area, Craters of the Moon Wilderness Area, and Selway-Bitterroot Wilderness Area. Oregon is responsible for setting reasonable progress goals for Hells Canyon Wilderness Area, and Wyoming is responsible for setting reasonable progress goals for Yellowstone National Park.

The Craters of the Moon Wilderness Area is 43,243 acres on the Snake River Plain in south-central Idaho and is managed by the National Park Service (NPS). The wilderness area and preserve contain more than 25 volcanic cones and 60 distinct lava flows from the Craters of the Moon Lava Field ranging in age from 15,000 to 2,000 years old. The Craters of the Moon lava field reaches southwestward from the Pioneer Mountains and is part of the Great Rift volcanic zone that continues along the Snake River Plain.

The Sawtooth Wilderness Area occupies 216,383 acres in the western portion of the Sawtooth National Recreation Area in central Idaho and is managed by the US Forest Service (USFS). The wilderness area consists primarily of the Sawtooth Mountains, a central headwaters source that includes headwaters of the North and Middle Forks Boise River, South Fork Payette River, and Salmon River. The terrain consists of steep craggy peaks and deep valleys. Elevations range from approximately 6,000 feet where the South Fork Payette River and Middle Fork Boise River exit the wilderness on the west side, to 10,776 feet at the summit of Thompson Peak. It includes approximately 40 peaks with elevations of 10,000 feet or higher.

The Selway-Bitterroot Wilderness Area is located in the northern half of Idaho in Idaho County and extends across the Idaho-Montana border into Ravalli County, Montana. The area is the third-largest wilderness in the lower 48 states spanning 1,240,700 acres of the Bitterroot National Forest, Nez Perce National Forest, Clearwater National Forest, and Lolo National Forest. Idaho contains the largest portion of this wilderness at 988,700 acres with the remaining portion in Montana. The wilderness is characterized by rough mountainous terrain with dense forests, mountain lakes, and the Wild and Scenic Selway River and supports large populations of bears, bighorn sheep, and elk.

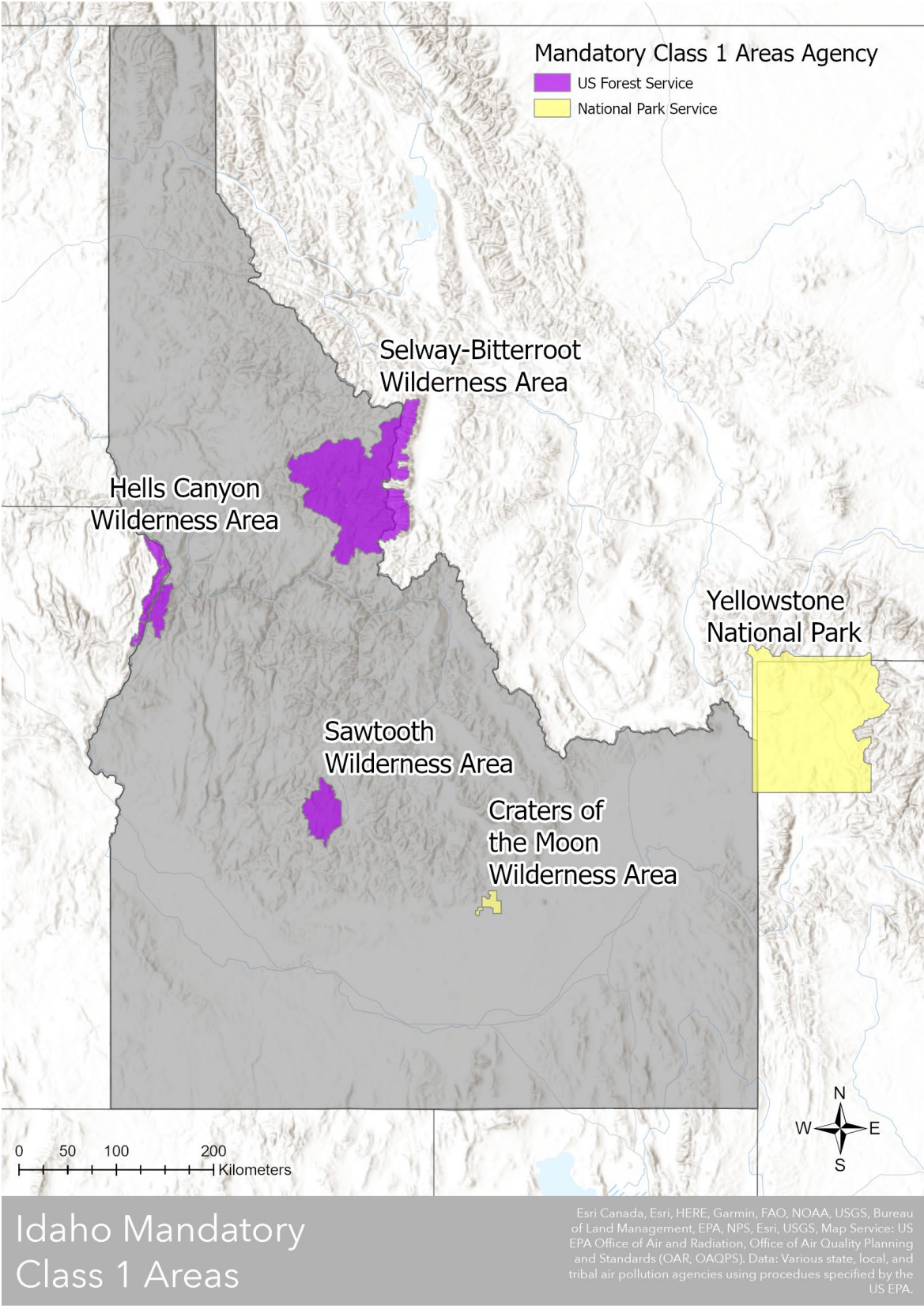


Figure 1. Mandatory federal Class I areas in Idaho.

1.3 IMPROVE Program

Under the CAA, Congress recognized that visibility is a resource to be valued and preserved now and for future generations, and set a national goal calling for “the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I federal areas which impairment results from manmade air pollution.” The Regional Haze Rule implemented this mandate by requiring monitoring in locations representative of the 156 visibility-protected Class I areas (Figure 2). The IMPROVE program was designated as the visibility monitoring network to carry out this responsibility.

IMPROVE monitors collect 24-hour samples, every 3 days. Each Class I area in Idaho has an IMPROVE monitor site located within the area: Craters of the Moon Wilderness Area (CRMO1), Sawtooth Wilderness Area (SAWT1), and Selway-Bitterroot Wilderness Area (SULA1) (located on Sula Peak in Sula, Montana).

The Regional Haze Rule requires a monitoring strategy for measuring, characterizing, and reporting regional haze visibility impairment that represents the Class I areas within Idaho (40 CFR 51.308(f)(6)).

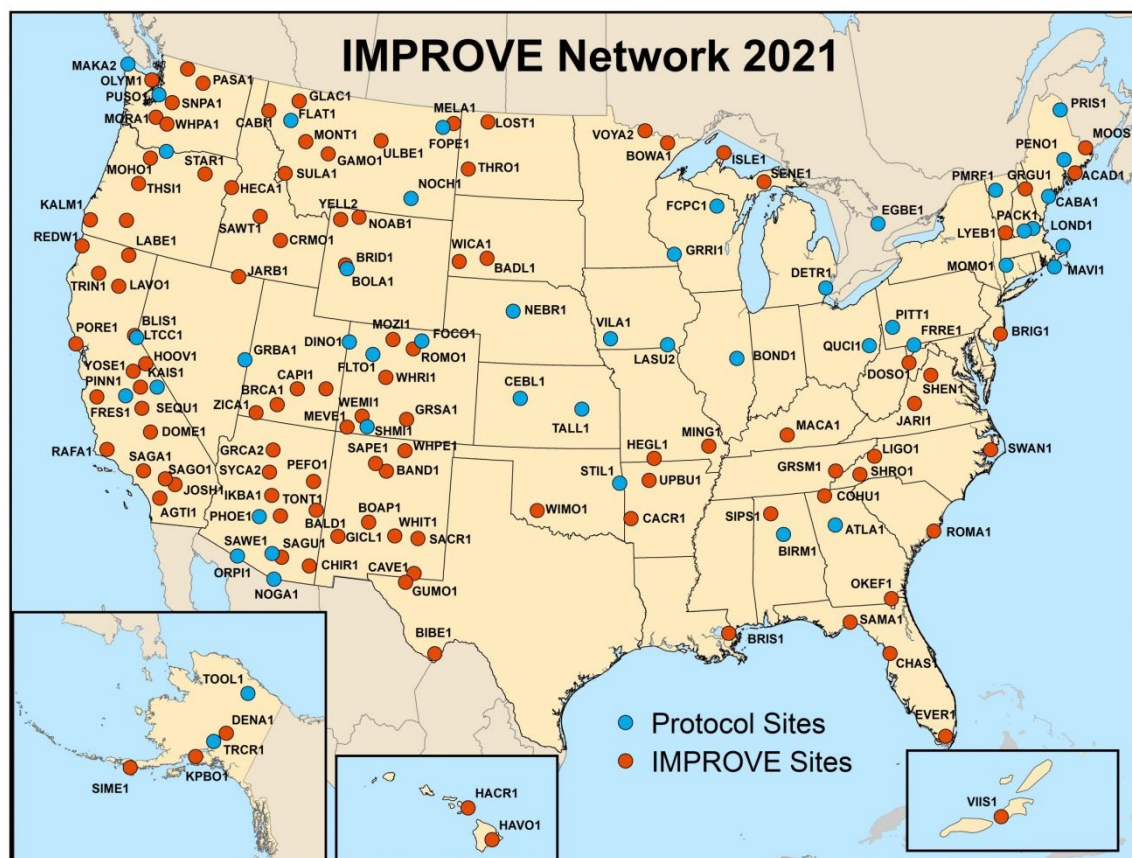


Figure 2. 2021 IMPROVE monitoring network.

A steering committee with representatives from federal, regional, and state organizations governs the program, including EPA, NPS, USFS, US Fish and Wildlife Service, Bureau of Land Management, and other entities. The IMPROVE steering committee allocates IMPROVE monitoring resources, which come from several agencies. The IMPROVE program arranges for the operation of IMPROVE monitors, analysis of samples from the monitors, and validation and internet posting of the IMPROVE data.

The IMPROVE program establishes current visibility and aerosol conditions; identifies chemical species and emission sources responsible for existing anthropogenic visibility impairment; documents long-term trends in visibility; and provides regional haze monitoring representing all visibility-protected federal Class I areas, where practical.

The Idaho Department of Environmental Quality (DEQ) is required to set reasonable progress goals for three IMPROVE monitors that measure visibility for the Class I areas in the state. Two additional Class I areas, Hells Canyon Wilderness Area (HECA1) and Yellowstone National Park (YELL2), are partially within Idaho but have IMPROVE monitors in surrounding states and those states will set reasonable progress goals for them. The IMPROVE monitors are appropriate for determining progress in reducing visibility impairment in the Idaho Class I areas based on their location.

The monitoring strategy relies on continuing IMPROVE monitoring at these sites. No additional monitoring is required or necessary for assessing visibility conditions at the five Class I areas in Idaho (40 CFR 51.308(f)(6)(i)). Idaho will continue to participate in the IMPROVE monitoring network to measure, characterize, and report aerosol monitoring data for long-term reasonable progress tracking.

DEQ deems the IMPROVE network representative of conditions in all of Idaho's Class I areas and will rely on the IMPROVE steering committee to advise states if conditions changed such that additional monitors were necessary. Idaho's continued reliance on the IMPROVE network assumes the network's maintenance by Federal Land Managers (FLMs) and other Western Regional Air Partnership (WRAP) members (i.e., states, tribes, and EPA). Idaho expects that operations and maintenance will continue to include data collection, analysis, quality assurance, and reporting. Idaho expects that FLMs will continue to make IMPROVE data available to the public through WRAP-supported web platforms.

1.4 History of Regional Haze in Idaho

Idaho submitted its initial Regional Haze State Implementation Plan (SIP) to EPA on October 25, 2010, for the first regional haze planning period ending in 2018. The Regional Haze SIP described visibility conditions for the baseline years 2000–2004 and included Idaho's strategy for improving visibility during the first planning period. Table 2 provides a timeline of Idaho's Regional Haze SIP submittals and revisions.

Table 2. Summary of Idaho's regional haze SIP submittals and EPA actions.

Idaho Submittal	Submittal Date	EPA Action
Regional Haze SIP First Implementation Period	10/25/2010	76 FR 36329—On 6/22/2011, EPA approved portions of Idaho's Regional Haze SIP revisions, including Idaho's emission inventory, determinations of baseline and natural conditions, and the BART controls and emission limits for all sources subject to BART in Idaho. 77 FR 66929—On 11/8/2012, EPA approved the remaining portion of the Regional Haze SIP submittal, including those portions addressing CAA provisions that require states to set reasonable progress goals for their Class I areas and to develop a long-term strategy to achieve these goals.
Regional Haze SIP First Implementation Period BART revisions	6/29/2012	79 FR 23273—On 4/28/2014, EPA vacated previous approval of NO _x and SO ₂ BART determinations and emission limits for the Amalgamated Sugar Company–Nampa facility and approved Idaho's 2012 Regional Haze SIP revision including a revised BART determination and emission limit for NO _x and a revised PM emission limit, and the BART alternative for SO ₂ .
Regional Haze SIP First 5-Year Progress Report Revision	6/28/2016	84 FR 33697—On 7/15/2019, EPA approved Idaho's regional haze progress and determined the existing Regional Haze SIP was adequate to meet the state's visibility goals and required no substantive revision per 40 CFR 51.308(h).

Notes: best available retrofit technology (BART); nitrogen oxides (NO_x); sulfur dioxide (SO₂)

1.5 DEQ Statutory Authority

DEQ has the statutory authority to make this Regional Haze SIP revision. Idaho's air quality laws are located in the Idaho Environmental Protection and Health Act (EPA), Idaho Code § 39-101 through § 39-130, and "Rules for the Control of Air Pollution in Idaho" (IDAPA 58.01.01).

Relevant statutes and rules are included below:

- Idaho Code § 39-105(3)(d) provides DEQ with broad power to supervise and administer a system to safeguard air quality.
- Idaho Code § 39-115 provides authority for issuing air quality permits.
- Idaho Code § 39-116 provides authority to establish compliance schedules.
- Idaho Code § 39-108 (Administrative and Civil Enforcement) provides DEQ with the authority to enforce, administratively and civilly, the EPA or any rule, permit, or order pursuant to EPA.
- Idaho Code § 39-109 contains criminal enforcement authority.
- Idaho Code § 39-112 provides for emergency orders.
- IDAPA 58.01.01.200–228 contains the procedures and requirements for permits to construct.
- IDAPA 58.01.01.667 provides for long-term strategies and the consultation process for regional haze SIPs.

1.6 Western Regional Air Partnership Engagement

WRAP is a voluntary partnership of states, tribes, FLMs, local air agencies, and EPA whose purpose is to understand current and evolving regional air quality issues in the West. Active participation in WRAP through workshops, webinars, workgroups, and discussions allowed Idaho to engage in ongoing consultation with EPA, other states, FLMs, and Indian tribes.

WRAP formed a Regional Haze Planning Work Group (RHPWG) to prepare the framework to support regional haze planning for the 15 western states and the City of Albuquerque within the Western States Air Resources Council and WRAP region. A summary of the activities conducted by the RHPWG is found on the WRAP website (WRAP 2021a). The RHPWG formed several topical subcommittees from among its members to coordinate and track work by other WRAP work groups and contractors and to address elements needed for SIP preparation:

- Emissions inventories: current and future growth projections methodologies by source categories
- Monitoring data: develop a transparent and complete monitoring data metric for planning and model projection
- Database management: includes the Technical Support System (TSS) database
- Four-factor analysis for control measures
- Regional photochemical modeling
- Assessment of *unknowns* and uncertain categories (e.g., natural conditions, international emissions, and fire and dust emission)

1.7 Technical Information and Data

Idaho relied on the WRAP TSS for the technical information presented in this SIP. The TSS technical results used a standardized regional approach that included summaries and analysis of comprehensive data sets that identified the sources and regions contributing to regional haze in the WRAP region.

The TSS also serves as a centralized source for analysis and retrieval of the technical data and regional analytical results prepared by WRAP workgroups and subcommittees to support regional haze planning in the West. The TSS specifically summarizes results and consolidates information about air quality monitoring, meteorological and receptor modeling data analyses, emissions inventories and projections, and gridded air quality/visibility regional modeling results. A major goal of the TSS is to make standard and user-specified maps, figures, and tables easily available for export, while maintaining the original source data available for verification and subsequent analysis.

2 Five-Year Progress Report

The Regional Haze Rule requires that states periodically submit to EPA a report evaluating progress towards the reasonable progress goal for each mandatory Class I area located within the state and in each mandatory Class I area located outside the state that may be affected by

emissions from within the state. Idaho submitted its first progress report on June 6, 2016 (section 1.4, Table 2). The Regional Haze Rule (40 CFR 51.308(f)(5)) requires that the second implementation period SIP revision due in 2021 also serve as a progress report addressing the period since submission of the progress report for the first implementation period. The progress report requirements are covered in the Regional Haze Rule (40 CFR 51.308(g)(1)–(5)). Table 3 identifies the sections of this SIP that address each of the progress report requirements. EPA approved Idaho’s most recent 5-year progress report in August 2019. In that progress report, Idaho reported a reduction in anthropogenic nitrate and sulfate emissions since the baseline period. However, based on the most recent data available, visibility at the Sawtooth Wilderness Area and Craters of the Moon Wilderness Area exceeded the 2018 reasonable progress goals due to smoke from episodic wildfires in the area. Since then, EPA has recalculated the visibility metrics. Idaho concludes that the current implementation plan elements and strategies are sufficient to enable Idaho to reduce the anthropogenic sources of visibility impairing pollutants for the period covered by the first implementation plan.

Table 3. regional haze progress report requirements.

Regional Haze Rule Requirement	SIP Section
40 CFR 51.308(g)(1)—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	1.4, 7.1.4
40 CFR 51.308(g)(2)—A summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1) of this section.	1.4, 4
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. The period for calculating current visibility conditions is the most recent 5-year period preceding the required date of the progress report for which data are available as of a date 6 months preceding the required date of the progress report.	3
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. Emissions changes should be identified by type of source or activity. With respect to all sources and activities, the analysis must extend at least through the most recent year for which the state has submitted emission inventory information to the Administrator in compliance with the triennial reporting requirements of subpart A of this part as of a date 6 months preceding the required date of the progress report. With respect to sources that report directly to a centralized emissions data system operated by the Administrator, the analysis must extend through the most recent year for which the Administrator has provided a State-level summary of such reported data or an internet-based tool by which the State may obtain such a summary as of a date 6 months preceding the required date of the progress report. The State is not required to backcast previously reported emissions to be consistent with more recent emissions estimation procedures and may draw attention to actual or possible inconsistencies created by changes in estimation procedures.	4
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 required under paragraph (f) of this section including whether or not these changes in anthropogenic emissions were anticipated in that most recent plan and whether they have limited or impeded progress in reducing pollutant emissions and improving visibility.	4.7
40 CFR 51.308(g)(6) An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Class I Federal areas affected by emissions from the State, to meet all established reasonable progress goals for the period covered by the most recent plan required under paragraph (f) of this section.	2

Regional Haze Rule Requirement	SIP Section
40 CFR 51.308(g)(7) For progress reports for the first implementation period only, a review of the State's visibility monitoring strategy and any modifications to the strategy as necessary.	Not Applicable
40 CFR 51.308(g)(8) For a state with a long-term strategy that includes a smoke management program for prescribed fires on wildland that conducts a periodic program assessment, a summary of the most recent periodic assessment of the smoke management program including conclusions if any that were reached in the assessment as to whether the program is meeting its goals regarding improving ecosystem health and reducing the damaging effects of catastrophic wildfires.	7.4

3 Visibility in Idaho Class I Areas

For each Class I area located within the state, 40 CFR 51.308(f)(1)(i)–(vi) states that Idaho must determine the following:

- Baseline, natural, and current visibility conditions for the most impaired days and clearest days.
- Actual progress made on the most impaired days and clearest days since the baseline period and in the previous implementation period.
- Difference between current and natural visibility conditions for the most impaired and clearest days.
- Uniform rate of progress (URP) for the most impaired days between baseline visibility conditions and natural visibility conditions.

The 2017 Regional Haze Rule defines the period for establishing baseline visibility conditions as 2000 to 2004 for the second and future implementation periods. The period for calculating current visibility conditions is the 5-year period ending with the most recently available data (2014–2018). Idaho used IMPROVE ambient data calculations from EPA (2020) to track the visibility metrics required by the Regional Haze Rule.

3.1 Most Impaired Days

The 2018 EPA guidance recommends splitting IMPROVE aerosol extinction into natural episodic extreme events and daily routine natural contributions (EPA 2018c). Because these are not directly measured, site-specific thresholds define episodic extreme events for carbonaceous species (organic matter estimated from carbon, plus elemental carbon) and crustal material (fine soil plus coarse mass), as indicators of wildfires and dust storms, respectively. The recommended threshold is the minimum of the annual 95th-percentile daily aerosol extinction values during the 15-year period, 2000–2014. Daily species extinction values greater than the 95th-percentile threshold are assigned as episodic natural in origin. Routine natural contributions are those that occur on all or most days in a year or season and are more consistent from year to year (EPA 2018c). Daily anthropogenic impairment is calculated as the difference between total extinction and natural extinction as follows (Equation 1):

$$dv_{anthropogenic} = dv_{total} - dv_{natural}$$

Equation 1. Anthropogenic visibility impairment.

With the 2017 Regional Haze Rule revisions, the most impaired days represent days with the highest anthropogenic impairment values (Equation 1). Table 4 summarized the visibility metrics required under 40 CFR 51.308(f)(1)(i)–(iv) on the 20% most impaired days at all three Class I areas in Idaho. EPA (2018) recommended calculating the site-specific natural visibility condition value from estimates of daily natural contributions (Equation 1) for the 20% most impaired days from 2000–2014.

Table 4. Visibility conditions in deciviews for most impaired days for Idaho's 3 Class I areas.

Class I Area	Improve Site	Baseline Visibility Conditions (IMPROVE 2000–2004) ^a	Current Visibility Conditions (IMPROVE 2014–2018) ^a	2018 URP ^b	Natural Visibility Conditions (2064) ^c	Progress to Date ^c	Difference between Current and Natural Conditions ^d
Craters of the Moon Wilderness Area	CRMO1	11.91	8.50	10.29	4.97	3.41	3.53
Sawtooth Wilderness Area	SAWT1	9.61	8.61	8.46	4.70	1.0	3.91
Selway-Bitterroot Wilderness Area	SULA1	10.06	8.37	8.98	5.45	1.69	2.92

a. Values taken from EPA 2020

b. WRAP TSS 2021b

c. Progress to date is the difference between the baseline and current conditions. A positive value indicates that visibility has improved.

d. A positive value indicates that current visibility has not reached natural conditions.

Since the baseline period, visibility improved at Craters of the Moon Wilderness Area in each subsequent 5-year period in the first implementation period. However, at Sawtooth Wilderness Area and Selway-Bitterroot Wilderness Area visibility on the most impaired days increased slightly in the most recent period compared to 2013–2017 (Table 5).

Table 5. Actual progress made in deciviews in the first implementation period for Idaho's Class I areas on the most impaired days.

Class I Area	Improve Site	2003–2007 IMPROVE	2008–2012 IMPROVE	2013–2017 IMPROVE	2014–2018 IMPROVE
Craters of the Moon Wilderness Area	CRMO1	11.28	10.30	9.19	8.50
Sawtooth Wilderness Area	SAWT1	9.56	9.05	8.5	8.61
Selway-Bitterroot Wilderness Area	SULA1	9.64	8.86	8.27	8.37

3.2 Clearest Days

Table 6 summarizes the required visibility metrics under 40 CFR 51.308(f)(i)–(iv) for the 20% clearest days. The 2017 Regional Haze Rule revisions introduced a new term for describing the

days with the lowest light extinction and deciview values: clearest days. Based on the 2018 EPA guidance, it is unnecessary to split the data into *natural* and *anthropogenic* fractions for the clearest days. Rather, the days are sorted for each year by total deciviews (Equation 1), and the 20% of days with the lowest deciviews are the 20% clearest days.

Table 6. Visibility conditions in deciviews for clearest days for Idaho's 3 Class I areas.

Class I Area	IMPROVE Site	Baseline Conditions (2000–2004)	Current Conditions (2014–2018)	Natural Conditions (2064)	Progress to Date ^a	Difference between Current and Natural Conditions
Craters of the Moon Wilderness Area	CRMO1	4.31	2.68	1.73	1.63	0.95
Sawtooth Wilderness Area	SAWT1	4.00	2.58	1.51	1.42	1.07
Selway-Bitterroot Wilderness Area	SULA1	2.57	1.60	1.12	0.97	0.48

a. Progress to date is the difference between the baseline and current conditions. A positive value indicates that visibility has improved.

Since the baseline period, visibility improved on the 20% clearest days at all three Idaho Class I areas in each subsequent 5-year period in the first implementation period (Table 7).

Table 7. Actual progress made in deciviews in the first implementation period for Idaho's Class I areas on the clearest days.

Class I Area	IMPROVE Site	2003–2007 IMPROVE	2008–2012 IMPROVE	2013–2017 IMPROVE	2014–2018 IMPROVE
Craters of the Moon Wilderness Area	CRMO1	3.71	2.94	2.92	2.68
Sawtooth Wilderness Area	SAWT1	3.75	3.42	2.62	2.58
Selway-Bitterroot Wilderness Area	SULA1	2.40	1.95	1.62	1.60

3.3 Uniform Rate of Progress

The Regional Haze Rule is built on the URP framework that requires a consistent rate of progress over time to attain natural visibility conditions on the 20% most impaired days by 2064. The URP, or glidepath, has units of deciviews per year or deciviews per decade. The glidepath begins with the baseline period of 2000–2004 for all implementation periods and connects with the 2064 endpoint at the estimate of natural visibility conditions. Idaho's determination of the URP needed to attain natural visibility conditions by 2064 is discussed in section 9.

3.4 Pollutants Impacting Visibility at Idaho's Class I Areas

The direct and precursor pollutants that can impair visibility include sulfur dioxide (SO₂), nitrogen oxides (NO_x), fine and coarse PM, volatile organic compounds (VOC), and ammonia (NH₃). NH₃ does not directly impair visibility but can be a precursor to the formation of PM in the atmosphere through a chemical reaction with SO₂ and NO_x to form a secondary aerosol. When selecting sources for analysis of control measures, a state may focus on the PM species (ammonium sulfate, ammonium nitrate, organic carbon, elemental carbon, soil, coarse mass, and sea salt) that dominate visibility impairment at their Class I areas. A state could select only sources with emissions of those dominant pollutants and their precursors. Idaho evaluated the IMPROVE data to determine the relative importance of each PM species to total light extinction for the most impaired days and evaluated the seasonality of the visibility impairment.

Changes in aerosol composition between 2000 and 2018 are a function of several factors, including US and international emissions, both anthropogenic and natural, and interannual variability in meteorology, atmospheric transport, deposition, and seasonal distribution of most impaired days.

3.4.1 Craters of the Moon Wilderness Area

From 2000 to 2018, visibility continued to improve at Craters of the Moon Wilderness Area on both the most impaired and the clearest days (Figure 3). Nitrate contributes the most to total light extinction at the CRMO1 monitor, followed by sulfate during every period. From the 2000–2004 baseline to the most recent period, light extinction from nitrate has proportionally decreased (57% to 42%), and organic carbon and coarse mass light extinction have increased (11% to 17%), with little to no change to the contributions from the remaining PM constituents. On the clearest days, sulfate contributes the most to total light extinction, followed by organic carbon and nitrate and coarse mass.

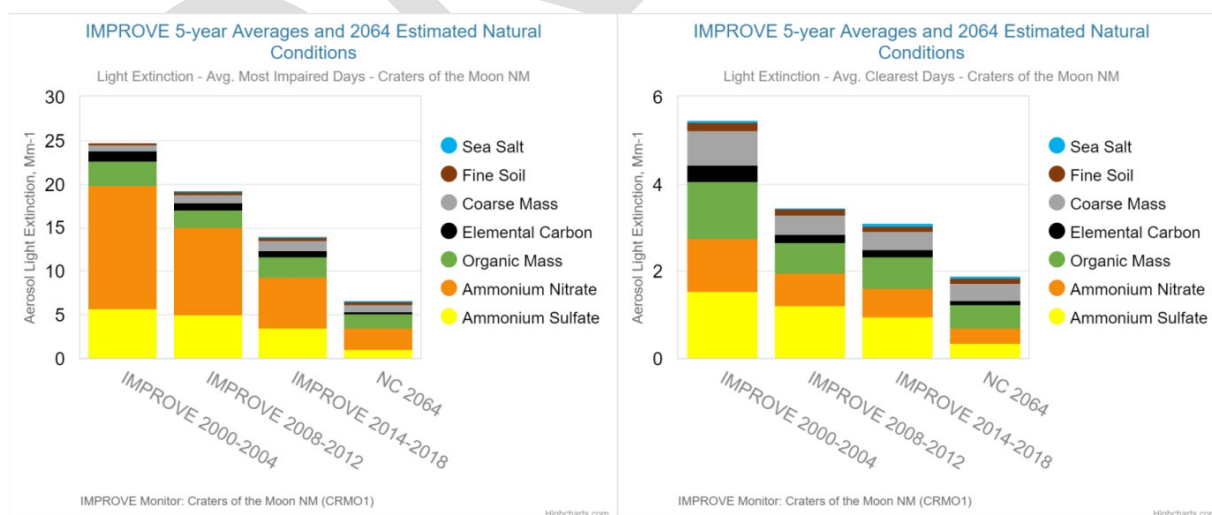


Figure 3. CRMO1 IMPROVE 5-year average ambient visibility impairment (aerosol light extinction) on the most impaired days (left) and clearest days (right) compared to natural conditions (NC 2064).

Since the baseline period, the anthropogenic fractions of nitrate and sulfate light extinction (Equation 1) have been the predominant contributors to annual haze (Figure 4). The remaining PM species have little to insignificant contribution to the anthropogenic component of haze. The overall visibility improvement observed on the most impaired days at CRMO1 is driven primarily by downward trends in nitrate, sulfate, and elemental carbon light extinction between 2000 and 2018. The sharpest drop in anthropogenic light extinction was observed for nitrate compared to the remaining haze constituents.

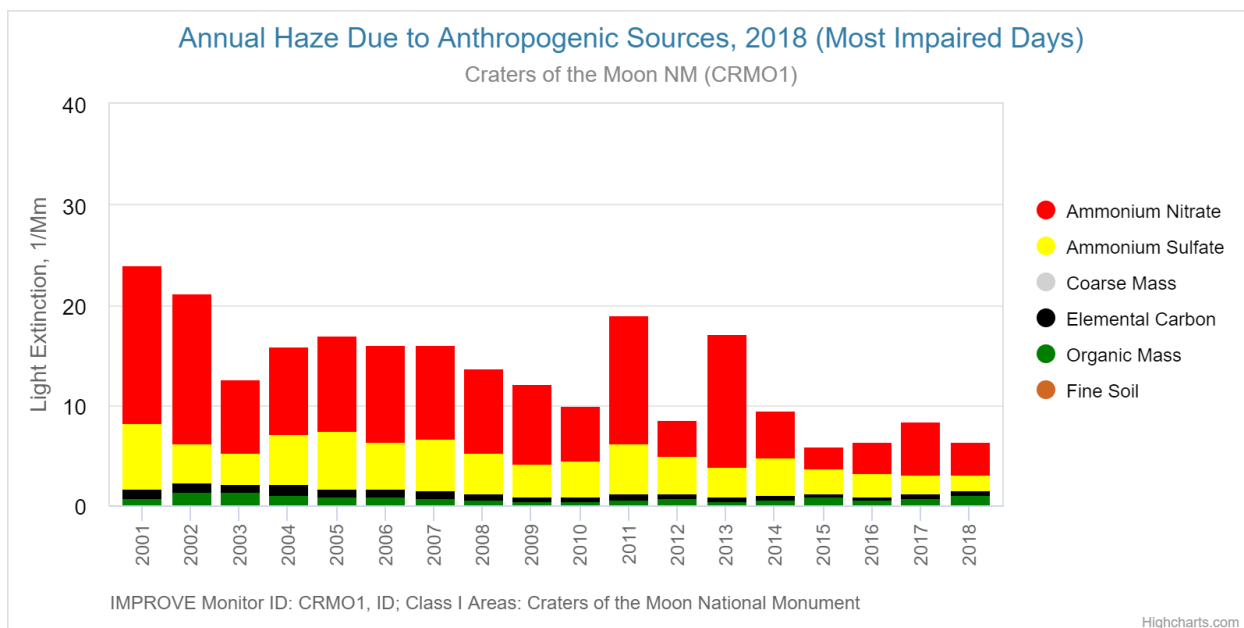


Figure 4. CRMO1 IMPROVE most recent annual haze from anthropogenic sources.

At CRMO1, the seasonal distribution of the most impaired days shifted between the 2000–2004 baseline and the most current period 2014–2018. In 2000–2004, the most impaired days occurred most frequently in the winter followed by fall, and none occurred in the summer (Figure 5). During 2014–2018, the most impaired days still occurred most frequently in winter but were equally distributed in fall and spring with just a few in summer, resulting in small changes in seasonal aerosol composition on the most impaired days. The majority of the clearest days occur in the winter and spring during the baseline period and the most current period.

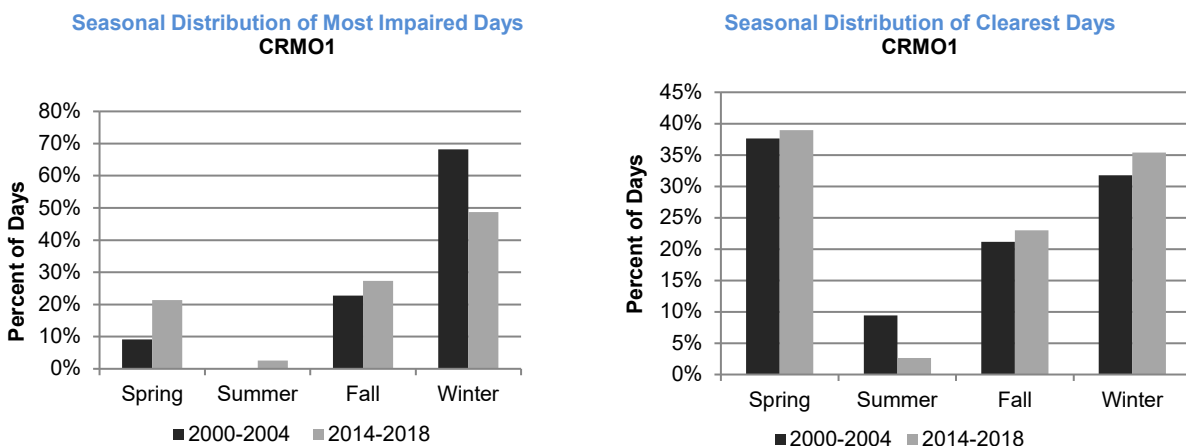


Figure 5. CRMO1 IMPROVE seasonal distribution of the 20% most impaired days (left) and clearest days (right).

On the most impaired days, nitrate light extinction was highest in the winter while sulfate light extinction was highest in the spring and fall during the baseline period. Nitrate still represents the main component of haze in the winter months in the most recent monitoring period, whereas sulfate contribution to haze is highest in spring and summer. Organic carbon contribution is now highest in the summer and fall (Figure 6).

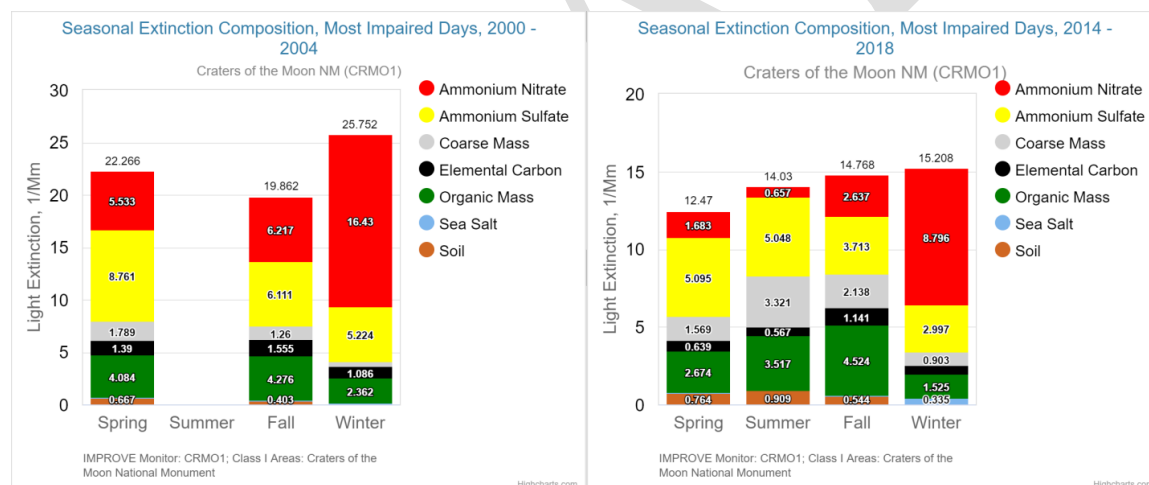


Figure 6. CRMO1 IMPROVE seasonal light extinction composition during the baseline (left) and most recent planning period (right) on the 20% most impaired days.

On the 20% clearest days, clearer days occurred more often in spring and winter during 2014–2018 than the baseline period. The seasonal extinction composition of nitrate decreasing in winter and organic carbon increasing in fall from the baseline to the most recent period help explain this shift (Figure 7). Overall, the most impaired days at CRMO1 occur mainly in the fall and winter months and are heavily impacted by nitrate and sulfate, which contribute the most to light extinction on these days.

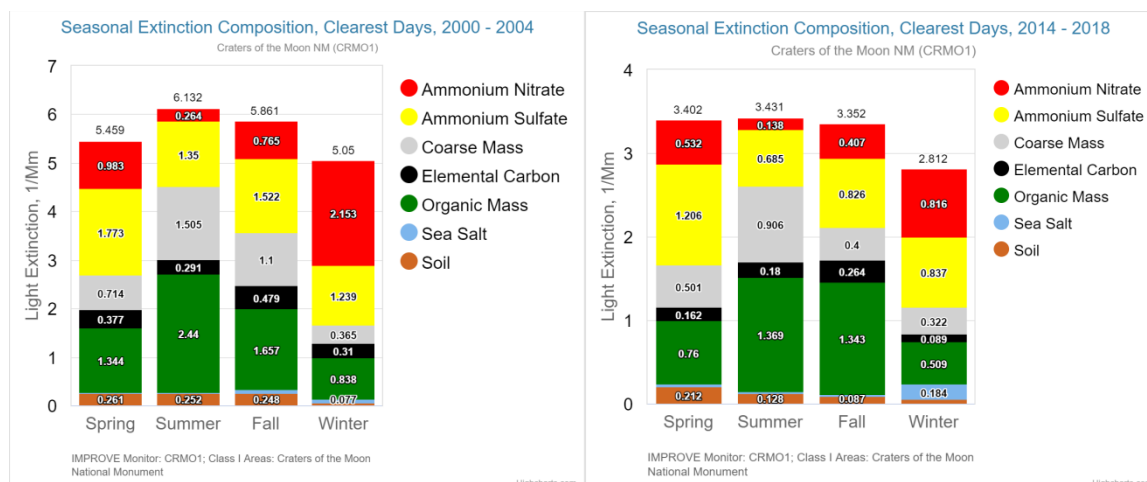


Figure 7. CRMO1 IMPROVE seasonal light extinction composition during the baseline (left) and most recent planning period (right) on the 20% clearest days.

3.4.2 Sawtooth Wilderness Area

From 2000 to 2018, visibility continued to improve at SAWT1 on both the most impaired and the clearest days. While current visibility conditions have improved during the 2014–2018 period from the baseline and previous 5-year period, organic carbon contributes the most to total light extinction at the IMPROVE monitor, followed by sulfate during every period (Figure 8). From the 2000–2004 baseline to the most recent period, light extinction from organic carbon remains essentially constant (55% to 57%), and sulfate and elemental carbon light extinction have decreased (33% to 27%), with little to no change to the remaining PM constituents. The estimated nitrate contribution to visibility at SAWT1 is negligible over all time periods with the current light extinction value observed slightly higher than that estimated for natural conditions on the most impaired days in 2064. On the clearest days, organic carbon also contributes the most to total light extinction.

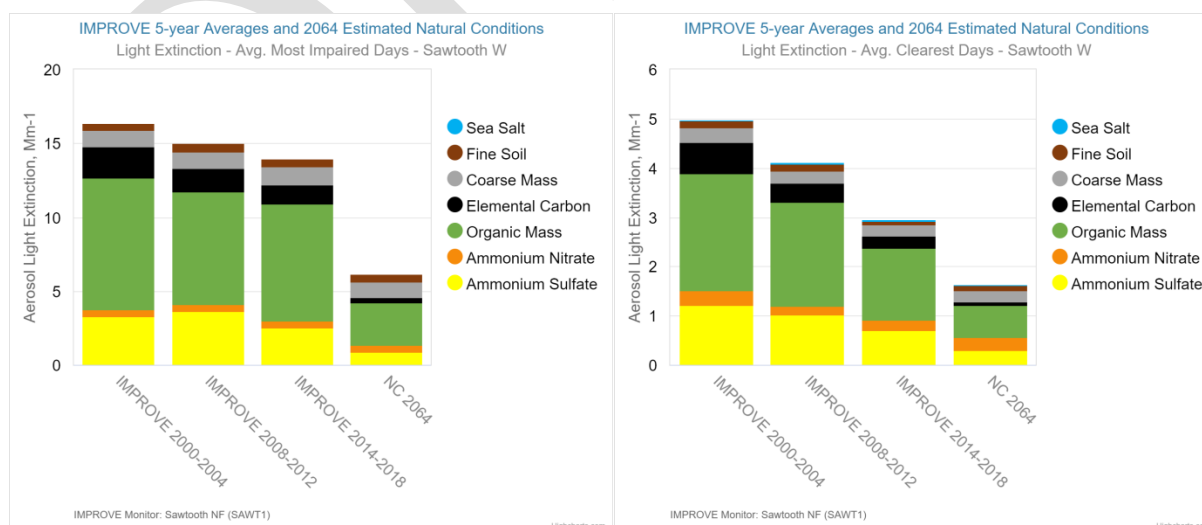


Figure 8. SAWT1 IMPROVE 5-year average ambient visibility impairment (aerosol light extinction) on the most impaired days and clearest days compared to natural conditions (NC 2064).

Since the baseline period, anthropogenic fractions of organic carbon, elemental carbon and sulfate light extinction are the predominant contributors to annual haze (Figure 9). The remaining PM species have little to insignificant contribution to the anthropogenic component of haze. The overall visibility improvement observed on the most impaired days at SAWT1 is driven by downward trends in organic carbon, sulfate, and elemental carbon light extinction between 2000 and 2018.

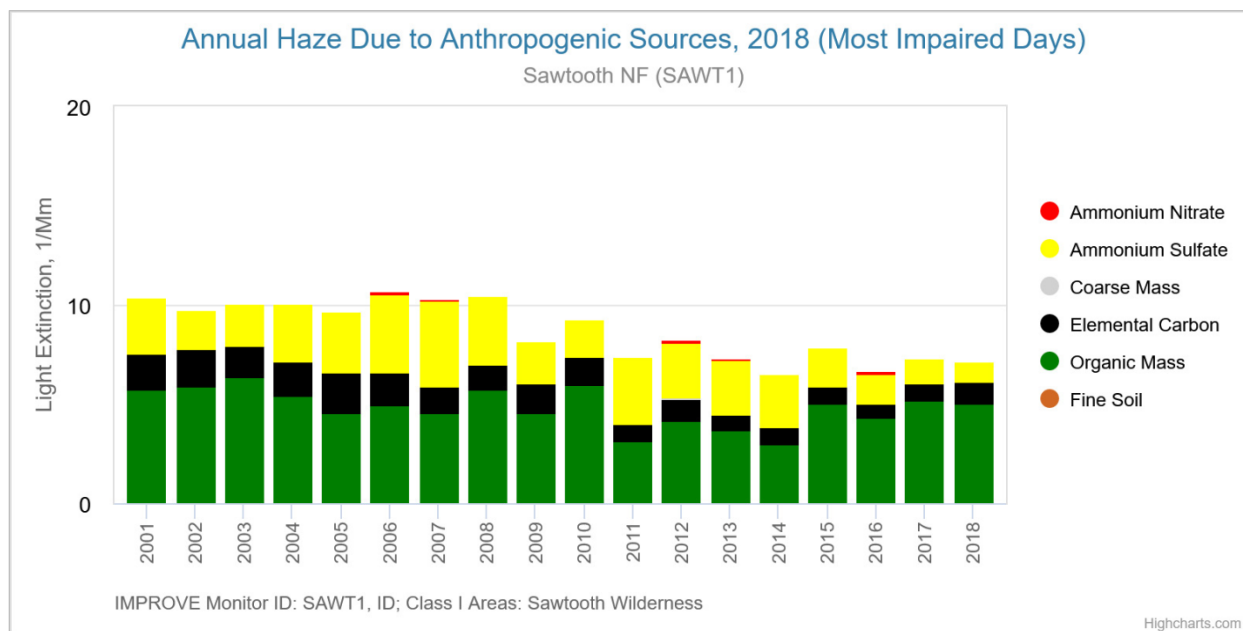


Figure 9. SAWT1 IMPROVE most recent annual haze from anthropogenic sources.

At SAWT1, the seasonal distribution of the most impaired days has shifted between the 2000–2004 baseline and the most current period 2014–2018 (Figure 10). In 2000–2004, the most impaired days occurred mostly in the summer and fall with some days distributed between spring and winter. During 2014–2018, the most impaired days still occurred most frequently in summer and fall (with more in summer) and smaller distributions in spring and winter resulting in small changes in seasonal aerosol composition on the most impaired days. The majority of the clearest days occur in the winter and spring during the baseline period and the most current period.

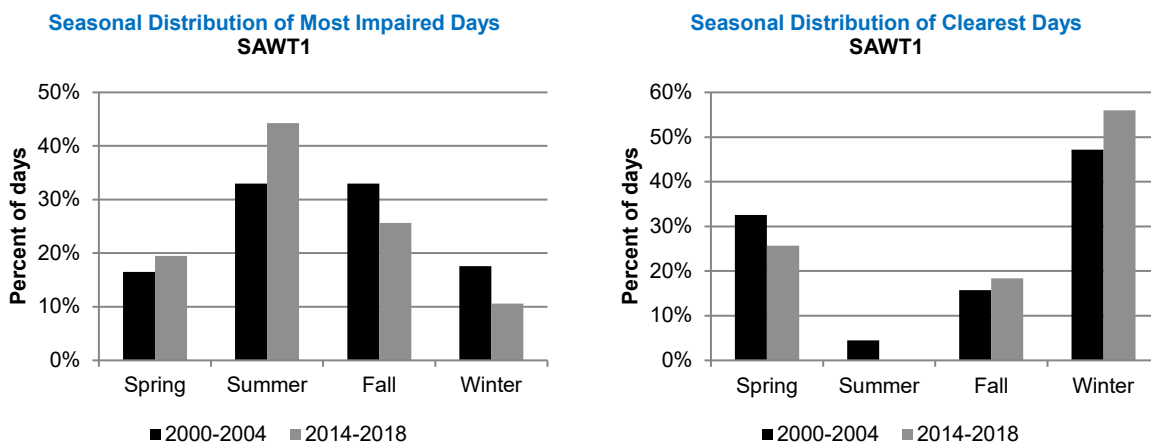


Figure 10. SAWT1 IMPROVE seasonal distribution of the 20% most impaired days (left) and clearest days (right).

On the most impaired days during the baseline period, organic carbon light extinction was highest in the summer and fall while sulfate light extinction was highest in the winter and fall (Figure 11). Organic carbon represents the main component of haze in the summer, fall, and winter months in the most recent monitoring period, whereas sulfate contribution to haze is highest in spring and fall.

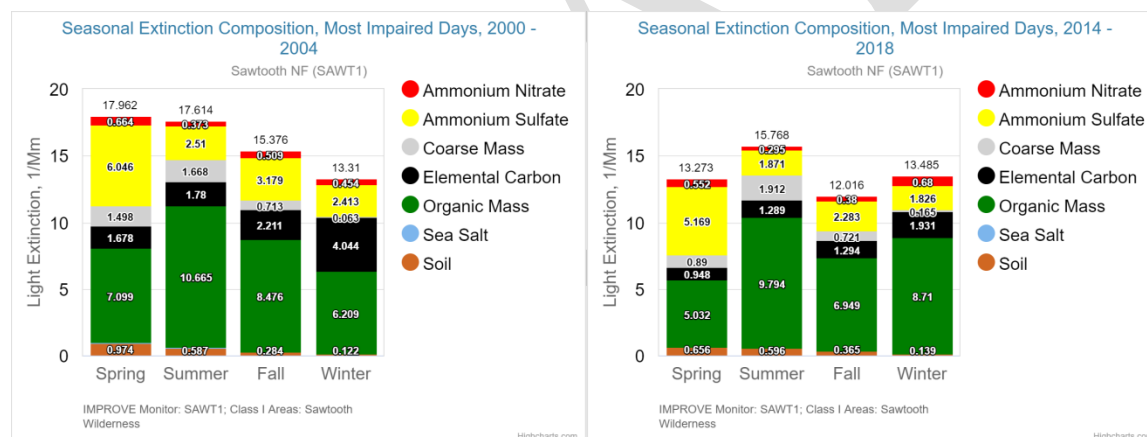


Figure 11. SAWT1 IMPROVE seasonal light extinction composition during the baseline (left) and most recent planning period (right) on the 20% most impaired days.

On the 20% clearest days, organic carbon dominates the haze causing pollutants throughout the year for the baseline and the most recent planning period (Figure 12).

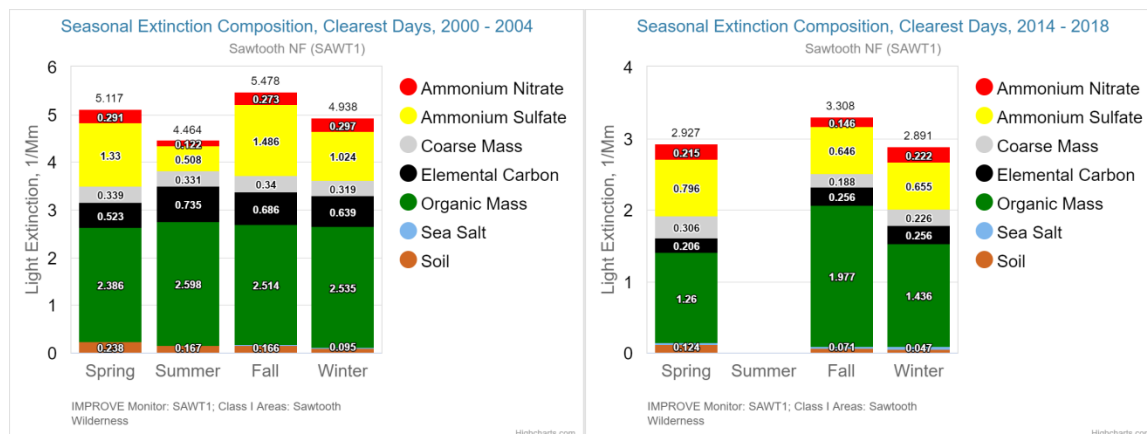


Figure 12. SAWT1 IMPROVE seasonal light extinction composition during the baseline (left) and most recent planning period (right) on the 20% clearest days.

3.4.3 Selway-Bitterroot Wilderness Area

Improvement in total visibility occurred on the most impaired days at the Selway-Bitterroot IMPROVE monitor (SULA1) from 2000–2018 (Figure 13). During the baseline period (2000–2004), average aerosol light extinction is largely from organic carbon and sulfate (40% and 32%, respectively), but lower levels of coarse mass, elemental carbon, nitrate, and fine soil are also present.

The constituents of haze during the current planning period (2014–2018) are similar to the baseline period, where organic carbon (47%) and sulfate (25%) contribute the most to haze on the most impaired days. The current planning period shows an overall reduction in the proportion of sulfate compared to the baseline (32%).

On the clearest days, organic carbon and sulfate are also the major pollutants contributing visibility impairment (32% and 36%, respectively) during the baseline period. From 2014–2018, sulfate (39%) contributes more to visibility impairment than organic carbon (24%). During the clearest days, both the total organic carbon and sulfate have been trending downward from 2000–2018.

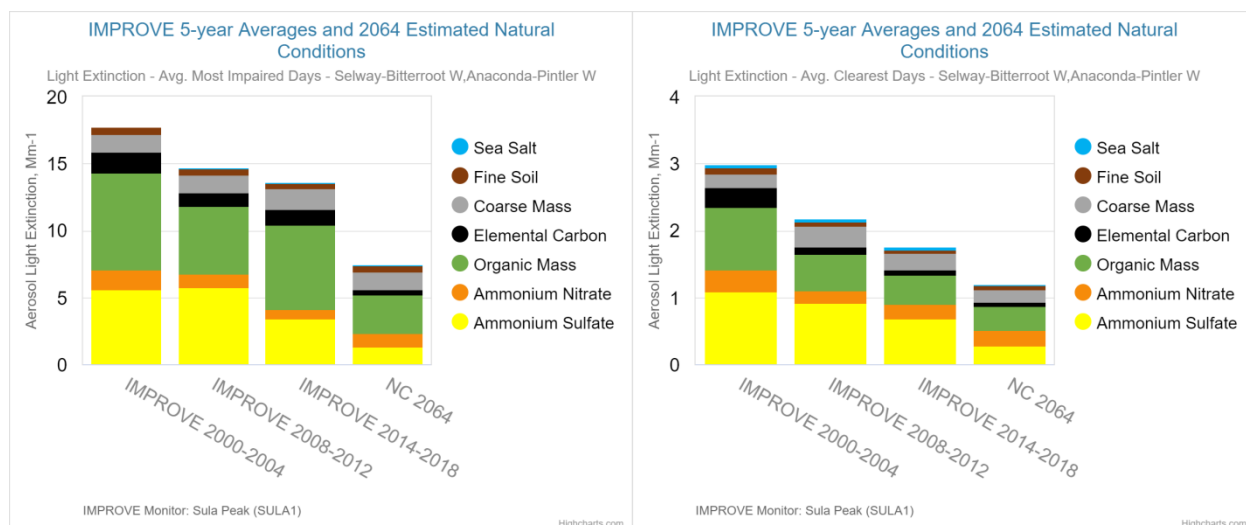


Figure 13. SULA1 IMPROVE 5-year average ambient visibility impairment (aerosol light extinction) on the most impaired days (left) and clearest days (right) compared to natural conditions (NC 2064).

The improvement in visibility on the most impaired days from 2001–2018 is driven by downward trends in anthropogenic sulfate, nitrate, and elemental carbon at SULA1 (Figure 14).

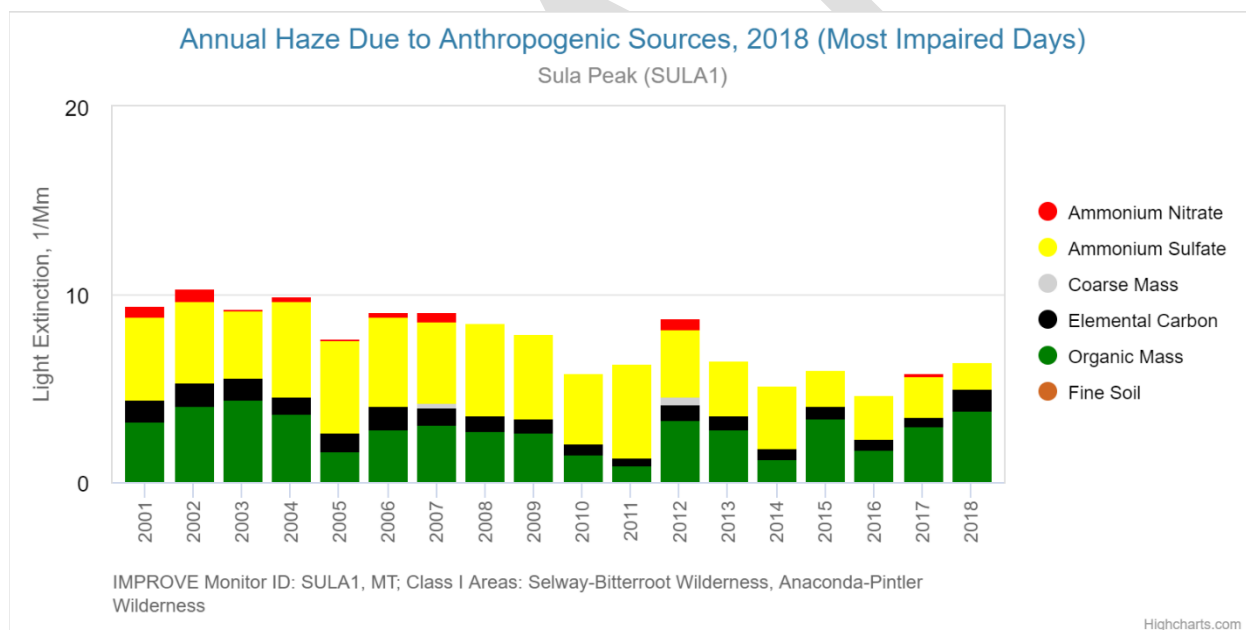


Figure 14. SULA1 IMPROVE most recent annual haze from anthropogenic sources.

The distribution of most impaired days shifted from winter and spring (2000–2004) to summer and fall in the current planning period (2014–2018) (Figure 15). In the Selway-Bitterroot Wilderness Area, the most impaired days mostly occur in the spring, summer, and fall months. During the current planning period, only 3% of the most impaired days occurred in the winter, while the greatest proportion of most impaired days occurred in the fall months (37%).

The clearest days occur the most during the winter months and are least common during the summer (Figure 15). A higher percentage of clearest days occurred in the spring during 2014–2018 (27%) compared to 2000–2004 (19%). The clearer days are less frequent during the summer, fall, and winter.

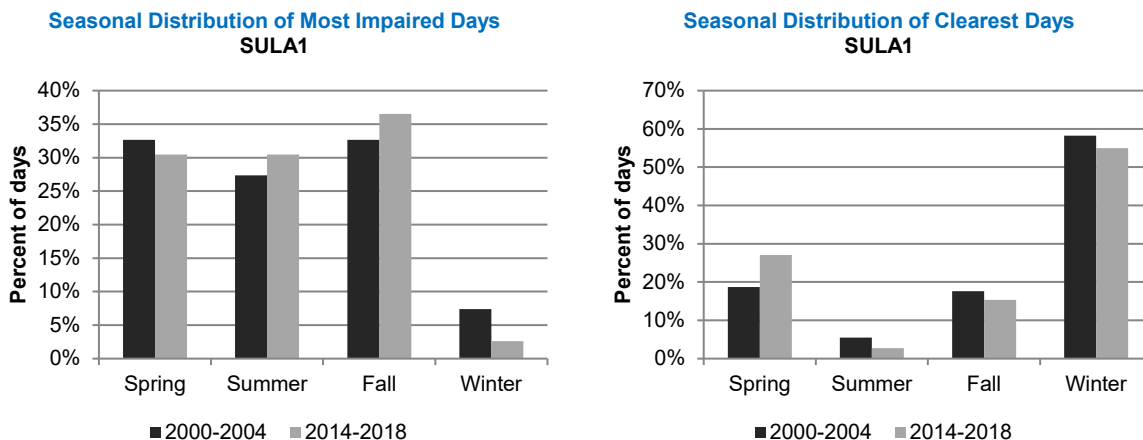


Figure 15. The seasonal distribution of percent of most impaired days at the SULA1 monitor for the baseline (black) and current planning (gray) period.

During the summer and fall, organic carbon makes up the largest proportion of visibility impairing pollutants followed by sulfate on the most impaired days. Sulfate is the largest contributor to haze at SULA1 in the winter followed by nitrate (Figure 16). The spring months at the SULA1 monitor also show sulfate as the largest contributor to light extinction; however, there is less sulfate than in winter months.

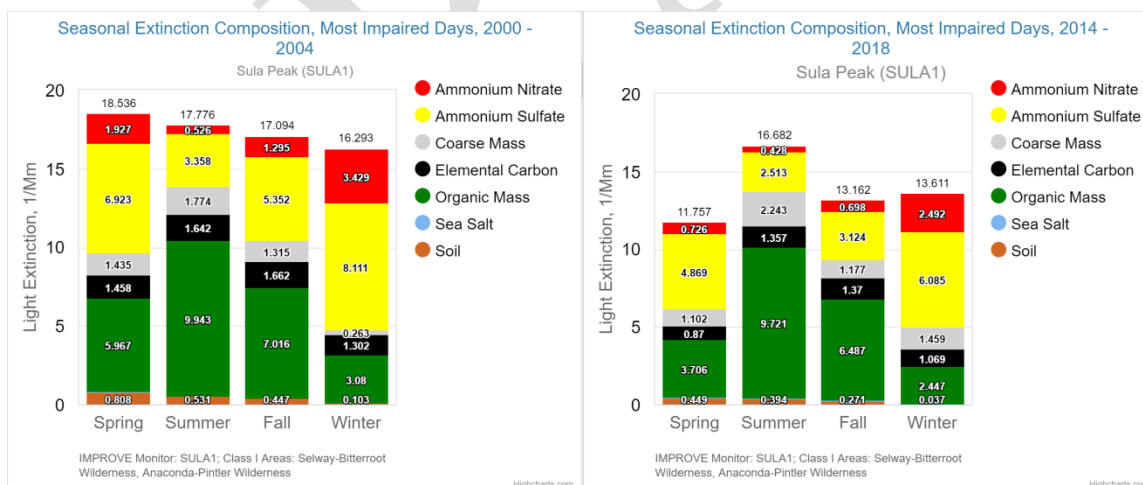


Figure 16. SULA1 IMPROVE seasonal light extinction composition during the baseline (left) and most recent planning period (right) on the 20% most impaired days.

On the clearest days, the summer months during the baseline period had much larger soil and elemental carbon contributions (

Figure 17). Nitrate was the highest during the winter months during this period. From 2014–2018 the summer and fall months have a much larger proportion of organic carbon and coarse mass. The largest impact on visibility overall occurs during the fall months on the clearest days.

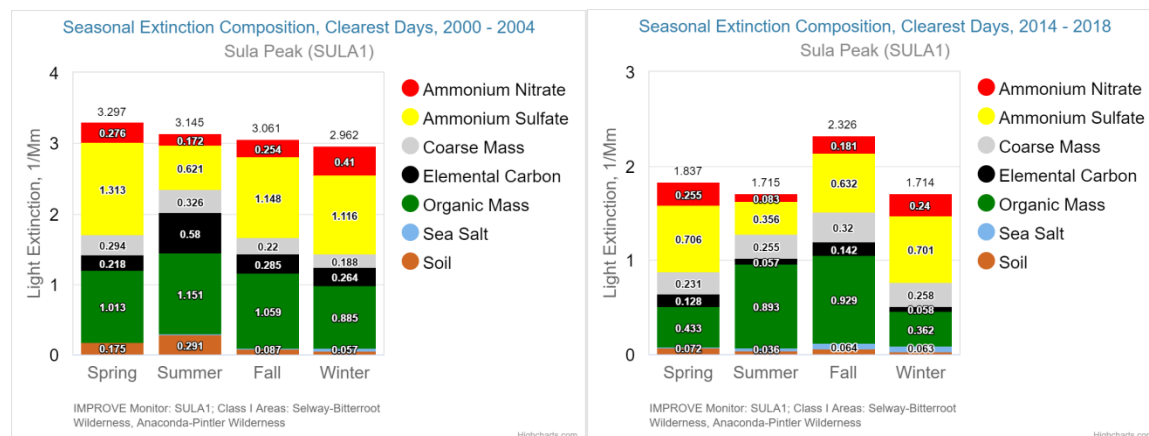


Figure 17. SULA1 IMPROVE seasonal light extinction composition during the baseline (left) and most recent planning period (right) on the 20% clearest days.

3.5 Natural Fire Impacts

The revised EPA metric was designed to remove or minimize natural sources of haze and allow states to focus on the anthropogenic haze impacts at their Class I areas. However, its effectiveness varies by Class I area and produces mixed results that interfere with states' ability to remove natural impacts from the most impaired days.

EPA (2018c) recommended the 95th-percentile metric to split IMPROVE aerosol extinction into natural episodic extreme events and daily routine natural contributions. The new metric does a reasonable job of removing extreme natural episodic wildfire events, but a comparison of the metric across sites indicates that some conditions where the EPA recommended 95th-percentile metric may not be the most appropriate way of removing episodic events. Sites with persistent, low-level wildfire impacts throughout the summer present a unique situation. In this case, the high numbers of days impacted by wildfire are not fully removed with the 95th-percentile metric. The 95th-percentile metric intends to remove extreme episodic events, and these situations may or may not qualify as extreme, since they may be the normal summer experience at certain sites. In a year with fire activity such as 2017, switching from the old metric (haziest days) removes summer and fall days when light extinction is dominated by organic carbon at the CRMO1 monitoring site from the anthropogenically impaired data set (Figure 18). However, for many days in July–September (Julian days 182–242) organic carbon remains the main contributor to light extinction, even after switching from the old (haziest day) to the new (most impaired day) metric at the SAWT1 and SULA1 monitors.



Figure 18. Comparison of the old and new EPA-recommended metrics to identify the most anthropogenically impaired days at Idaho's Class I areas.

SAWT1 and SULA1 IMPROVE monitors are located in the temperate steppe mountains division of the Bailey Ecoregion classification (Appendix A). The two monitor sites share climate and meteorological characteristics that drive the fire regime in the region.

The fire regime of the temperate steppe mountains division has a significant summertime impact on the region. During a typical period of June–September, it is expected that about 1,000 fires will burn a total area of around 500,000 acres. The maximum fire size will be about 150,000 acres. The intensity of each fire season, defined as the magnitude of the number of

fires/number of large fires/magnitude of total acres burned, is variable, but fire season occurs regularly and with increasing impacts on air quality and human health.

In contrast to the fire regime shared by the SAWT1 and SULA1 IMPROVE sites, the CRMO1 IMPROVE site has a fire regime that corresponds to the distinct geography of the temperate desert ecoregion division. The temperate desert division is characterized by hot summers, cold winters, and low precipitation that is generally received during the winter. This division is occupied by semidesert sagebrush and grassland ecosystems.

The fire regimes of CRMO1, SAWT1, and SULA1 are distinguished by their fuels, topography, and local meteorology. Temperate steppe mountains wildfires burn coarse timber fuels in complex topography where local meteorology is dominated by topographically induced flows, like mountain-valley winds. Fires burning in timber can burn long periods, sometimes lasting until the winter snows arrive. Timber fuels can also smolder for a long time. Dissimilarly, temperate desert wildfires typically burn through fine fuels, on less complex topography, and in generally hotter temperatures. Winds with a large fetch and without trees to ameliorate speeds are an important factor in rapid fire spread. Fires are large, rapidly spreading, and typically short, because the fuels are consumed quickly. Appendix A describes these ecoregions in more detail.

The dissimilarities between CRMO1, SAWT1, and SULA1 help explain the different level of success of the new EPA metric in removing wildfire influence from the most impaired data set. Organic carbon is primarily the product of the combustion of organic material. It can be inferred from the timing of these impacts at SAWT1 and SULA1 (Appendix A) that the high levels of organic carbon measured at the SAWT1 and SULA1 IMPROVE monitors in July–September have silvicultural origins, and the revised metric does not fully remove the natural episodic component of haze. The most impaired days at these two sites are still predominantly impacted by nonanthropogenic sources. In Idaho, most of these emissions are from natural wildfires, and to a lesser extent wildland prescribed fires for which the Regional Haze Rule allows a glidepath adjustment to reflect their impacts (section 9).

The CRMO1 monitor appears to be impacted mainly by sources of nitrate and sulfate. Anthropogenic NO_x emissions are generated during combustion processes from the reaction of oxygen with the nitrogen content of the fuel and at higher temperatures from the reaction of nitrogen and oxygen in the atmosphere. Anthropogenic SO₂ is formed from the combustion of fuel containing sulfur and during metal smelting and other industrial processes.

4 Emissions Inventory

The emission inventory (EI) development was coordinated by the WRAP through several subcommittees and workgroups made up of local, tribal, state, and federal members such as the Fire and Smoke and Oil and Gas workgroups. EPA's Regional Haze Rule (40 CFR 51.308(f)(6)(v)) requires "A statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I

Federal area.” The EI must include emissions from a baseline year, the most recent year that emissions data are available, and projected emissions estimates.

The WRAP workgroups determined the 2014 National Emissions Inventory (NEI) was the best available emission inventory for the baseline EI for this SIP revision because it was the most recent and complete inventory available when those activities began in late 2017 (EPA 2014a). EPA released the first full version of the 2017 NEI in April 2020 and released an update of the full 2017 NEI in January 2021. Technical work, including the photochemical modeling, was already in progress before the release of the 2017 NEI, so the baseline and projected future actual emissions were not updated from the 2014 to the 2017 NEI. However, the 2017 NEI is included to assess any significant changes between the 2014 NEI and the 2017 NEI as required by 40 CFR 51.308(g)(5) (EPA 2014a, 2017). Some revisions were made to ensure that the 2014 NEI emissions were accurate and are provided in this document

Idaho developed inventories for SO₂, NO_x, PM₁₀, PM_{2.5}, NH₃, and VOC emissions. While NH₃ emissions do not directly affect visibility impairment, NH₃ does act as an agent in the formation of secondary aerosols such as ammonium nitrate and ammonium sulfate that greatly impair visibility. The NEI groups emissions into broad categories: point, nonpoint, events (such as wildfire), and natural biogenic sources.

This SIP revision uses two main EIs; EI development is found in the WRAP TSS emissions reference (WRAP 2021d):

- **Representative Baseline:** This EI represents the 2014–2018 period and matches the monitoring baseline year for this planning period. This data set was developed based on the 2014 NEI with updates to account for the changes and variations in emissions between 2014 and 2018 for key source sectors. This EI is referred to as RepBase2 in this document.
- **2028 Projected Emissions:** WRAP developed a projected EI for 2028 following methods applied by EPA in the September 2019 technical support document for updated 2028 regional haze modeling (EPA 2019b). States updated source sectors to account for implementation by 2028 of all applicable federal and state requirements for US anthropogenic emissions. This EI is referred to as 2028OTBa2 in this document.

4.1 Point Sources

Point sources in the NEI are considered larger stationary sources at a fixed location. Point sources include industrial facilities, electric power plants, airports, and smaller industrial, nonindustrial, and commercial facilities. A small number of portable sources such as some asphalt or rock crushing operations are also included. Point sources are broken down into electrical generating units (EGUs) such as power plants, and non-EGU point sources.

Certain large stationary sources across Idaho report their emissions to DEQ through the Point Source Survey Tool according to the Air Emissions Reporting Requirements and Title V emission registration. Pollutant registration is required annually for Title V facilities. Full EIs are required for those facilities meeting the potential to emit requirements of the federal Air Emissions Reporting Requirements. DEQ used the facility emissions data submitted to this platform to

develop the statewide point source inventory. Note that the Amalgamated Sugar Company has three Title V facilities in Idaho. The company officially changed its name from The Amalgamated Sugar Company, LLC (TASCO) to Amalgamated Sugar Company in the Fall of 2021. Since most of this document was written prior to that time, these facilities are referred to their prior name's acronym "TASCO" throughout this document.

The 2017 NEI shows lower SO₂ and NO_x emissions in 2017 (Table 9) than in 2014 (Table 8). These reductions are largely due to facilities with dual fuel boilers switching voluntarily from coal to natural gas. The reductions of emissions seen by industry choosing to voluntarily burn natural gas instead of coal could change in the future if facilities return to using coal.

Table 8. Idaho revised 2014 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Electric Generating Units (EGU)	0	1,360	216	196	80	72
Industrial and Non-EGU Point	1,479	7,368	2,479	1,612	4,721	1,726
Oil and Gas - Point	0	1,198	15	15	3	76
Total	1,479	9,926	2,710	1,823	4,804	1,874

Table 9. Idaho 2017 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Electric Generating Units (EGU)	—	1,288	138	121	55	65
Industrial and Non-EGU Point	1,654	5,977	1,867	1,209	2,509	1,919
Oil and Gas - Point	—	1,131	17	17	7	34
Total	1,654	8,396	2,022	1,348	2,572	2,018

Idaho updated the revised 2014 NEI point source emissions to develop the RepBase2 EI as follows:

- Removed emissions from the J.R. Simplot Caldwell facility that is no longer operating.
- The Amalgamated Sugar Company (TASCO)-Paul 2017 emissions were best represented in the 2014–2018 period. These changes reduced 472 tons per year (tpy) of NO_x, 236 tpy of SO₂, and 297 tpy of PM₁₀ from 2014.

The total changes resulted in a reduction of 472 tpy of NO_x, 321 tpy of PM₁₀, and 263 tpy of SO₂.

These point source emissions adjustments are not identical to the Sparse Matrix Operator Kernel Emissions (SMOKE) model outputs shown in Table 10 and Table 11 due to grid cell boundaries; however, these changes were accounted for accurately in the model.

The industrial and non-EGU source category dominates the point source category for Idaho. Emissions from SO₂ are produced largely from fossil fuel combustion by large industrial facilities (Table 10).

Table 10. Idaho RepBase2 emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Electric Generating Units (EGU)	0	1,434	212	192	81	41
Industrial and Non-EGU Point	1,652	7,045	2,300	1,585	4,463	1935
Oil and Gas - Point	0	1,405	20	20	7	81
Total	1,652	9,884	2,532	1,797	4,551	2057

Idaho updated the RepBase2 point source emissions for the 2028OTBa2 EI as follows (Table 11):

- TASCO-Paul facility retired a boiler and replaced it with the new natural gas-burning boiler in 2018. A full year of actual emissions for the natural gas boiler was not available; DEQ used the potential to emit emissions estimates in place of actual emissions (DEQ 2020). The 2014 emissions from the pulp dryers (primarily coal) were retained from the 2014 NEI because either fuel may be combusted. This change resulted in an increase in the RepBase2 of 106 tpy of SO₂ and 23 tpy of NO_x.
- TASCO-Nampa facility's EI was updated to account for the two dual-firing B&W Boilers being required to only burn natural gas beginning in 2016 as a condition of the BART-alternative determination from the regional haze first implementation period (79 FR 23273). This change resulted in a reduction in the RepBase2 of 561 tpy of SO₂, 164 tpy of NO_x and 46 tpy of PM₁₀.

The total changes resulted in a reduction of 141 tpy of NO_x, and 455 tpy of SO₂ and an increase in 144 tpy of PM₁₀.

Table 11. Idaho 2028OTBa2 emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Electric Generating Units (EGU)	0	1,434	212	192	81	41
Industrial and Non-EGU Point	1,652	6,904	2,443	1,650	4,008	1,935
Oil and Gas - Point	0	1,405	20	20	7	81
Total	1,652	9,743	2,675	1,862	4,096	2,057

4.2 Nonpoint Sources

There are many nonpoint emission source categories such as agricultural activities, fugitive dust, residential fuel combustion, commercial and consumer solvent use, and consumer activities. Nonpoint sources are emissions sources that are too small, widespread, or numerous to be inventoried individually. Emissions are estimated using aggregate activity data such as population, employment, and statewide fuel use (after accounting for the fuel used by point sources). Idaho updated the 2014 NEI residential wood combustion emissions for the revised 2014v2 inventory based on the updated EPA residential wood combustion tool for completeness (EPA 2018a).

The 2017 NEI shows that there have been reductions in SO₂ (Table 13) emissions since 2014 (Table 12). Other pollutants in this category have increased since the 2014 NEI likely due to population growth. Agricultural sources, such as livestock and fertilizer application, directly

emit NH₃ into the atmosphere. Increasing agricultural activities have also contributed to increases in NH₃ production.

Table 12. Idaho revised 2014 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Agriculture	67,298	—	—	—	—	5,738
Fugitive dust	—	—	148,397	19,475	—	—
Oil and Gas - Nonpoint	—	5	—	—	1	14
Residential Wood Combustion	100	201	1,795	1,795	36	1,889
Remaining Nonpoint	930	4,595	4,649	3,836	476	35,512
Total	68,328	4,801	154,841	25,106	513	43,153

Table 13. Idaho 2017 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Agriculture	86,300	—	—	—	—	3,745
Fugitive dust	—	—	148,397 ^a	19,475	—	—
Oil and Gas - Nonpoint	—	9	0	0	0	178
Residential Wood Combustion	86	187	1,665	1,665	38	1,796
Remaining Nonpoint	996	4,832	4,741	4,020	245	40,880
Total	87,382	5,029	154,803	25,160	283	46,599

a. The emissions for fugitive dust in the 2017 NEI available at the time of this document did not include an adjustment for meteorology that the 2014 NEI emissions had. As such, fugitive dust emissions were not comparable across NEIs and the 2014 NEI emissions were used in place of the 2017 NEI emissions.

Fugitive dust is the largest source category followed by wildfire and prescribed fire for PM₁₀ in Idaho. Common sources of fugitive dust include unpaved roads, agricultural tilling operations, aggregate storage piles, and heavy construction operations. Nonpoint emissions from the revised 2014 NEI were deemed representative and used for the RepBase2 and the 2028OTBa2 inventories.

4.3 Mobile Sources

Mobile sources include on-road, nonroad, commercial marine vessels, and rail. The emissions for these sources are generated using EPA's Motor Vehicle Emission Simulator (MOVES) that uses information supplemented by the states such as vehicle types and vehicle miles traveled. In the 2014 NEI, DEQ used MOVES2014a to calculate the on-road and nonroad mobile emissions for Idaho, updating default inputs with local data.

On-road mobile sources include emissions from passenger cars, motorcycles, minivans, sport-utility vehicles, light-duty trucks, heavy-duty trucks, and buses. Idaho used the 2014 NEI emissions for the on-road sector and did not make any changes for the representative baseline.

Nonroad mobile sources include vehicles and equipment that are not designed to operate on roadways, such as aircraft support equipment, marine shipping, rail, construction equipment,

recreational vehicles, and lawn and garden equipment. Aircraft emissions from take-off and landings at airports are categorized as point sources and estimated by EPA (EPA 2014b).

The main pollutant emitted from mobile sources is NO_x. The 2017 NEI (Table 15) mobile emissions have decreased considerably since the 2014 NEI (Table 14). These reductions are largely due to more stringent federal emissions standards for on-road mobile sources and people trading in older vehicle for newer less polluting vehicles (section 7.1.2).

Table 14. Idaho revised 2014 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Nonroad Mobile	18	10,885	1,224	1,162	25	16,518
On-Road Mobile	677	48,314	2,238	1,427	156	22,258
Rail	4	7,429	236	217	4	378
Total	699	66,628	3,698	2,806	185	39,154

Table 15. Idaho 2017 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Nonroad Mobile	14	7,451	827	784	16	10,713
On-Road Mobile	653	34,219	1,829	1,038	129	17,944
Rail	4	6,432	189	183	4	297
Total	671	48,103	2,845	2,005	150	28,954

WRAP projected mobile source emissions uses WRAP 2014v2 for the RepBase2 (Table 16).

Table 16. Idaho representative baseline emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Nonroad Mobile	14	7,805	869	825	17	11,418
On-Road Mobile	677	48,314	2,238	1,427	156	22,258
Rail	4	7,429	236	217	4	378
Total	695	63,548	3,343	2,469	177	34,054

The 2028 model-ready emissions for on-road mobile, nonroad, rail, airports and commercial marine sources will be generated for the 12WUS2 domain (WRAP-2028-Mobile) for use in the 2028OTBa2 scenario (Table 17). The 2028 EI that reflects existing regulations and controls in place shows a 63% reduction in NO_x from on-road mobile sources. The projections take into account on-the-books on-road and nonroad regulations that improve vehicle design, fuel standards, and fuel efficiency. Federal motor vehicle emissions standards are expected to decrease the amount of NO_x allowed from vehicles by 2028 based on these regulations (WRAP 2020b, section 7.1.2).

Table 17. Idaho emissions for 2028OTBa2.

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Commercial Marine	0	0	0	0	0	0
Nonroad Mobile	15	4,449	456	428	11	7,409
On-Road Mobile	526	14,401	1,427	526	83	8,728
Rail	4	4,814	125	121	4	202
Total	545	23,664	2,008	1,075	98	16,339

4.4 Fire Sources

Emissions from fires (wildfire, prescribed, and agricultural) are significant sources of PM and VOC emissions in Idaho and many western states. Wildfire is considered a natural source, where prescribed fire is considered an anthropogenic source of pollution. Agricultural fire is an anthropogenic source used by farmers to remove crop residue from their field after harvest. Smoke from wildfire impacts visibility greatly across all of the western states every summer and are a natural source of emissions that is out of human control.

In Idaho, DEQ implemented a crop residue burning (CRB) program on all land outside reservation boundaries. Through this program, DEQ tracks the location, number of acres, and type of residue that is burned throughout the year. DEQ uses this data to calculate the emissions from agricultural fires for the NEI. EPA calculates the emissions from wildfire and prescribed fire using satellite data, fire models, and activity information from the state, local, and tribal air or forestry agencies. Idaho provides EPA with activity data through the Montana-Idaho Airshed Group.

In Idaho, wildfire contributes more emissions than the agricultural and prescribed fire combined. The emissions from wildfires were much greater in 2017 (Table 19) than in 2014 (Table 18). In high wildfire years, prescribed fire activity tends to decrease to minimize smoke impacts on communities, and prescribed fire emissions were lower in 2017 than in 2014. Agricultural fire is similar across both years.

Table 18. Idaho revised 2014 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Agricultural Fire	1,755	417	2,437	1,709	86	656
Wildfire	6,661	5,112	40,889	34,652	2,921	85,238
Prescribed Fire	3,723	2,480	22,562	9,120	1,519	47,725
Total	12,139	8,009	65,888	55,481	4,526	133,619

Table 19. Idaho 2017 NEI emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Agricultural Fire	1,842	407	1,907	1,310	72	1,740
Wildfire	25,708	19,175	157,620	133,576	11,108	369,556
Prescribed Fire	2,154	1,685	13,268	11,244	954	30,963
Total	29,705	21,268	172,794	146,130	12,134	402,259

Natural and anthropogenic fire emissions are expected to increase in both intensity and duration for a variety of reasons, including accumulated fuels, climate change, and drought. Estimating and tracking fire emissions will improve the understanding of the role of fire and smoke in regional haze planning. Developing a range of future fire emissions will help understand future impacts from this sector.

WRAP formed the Fire and Smoke Workgroup (FSWG) to examine methods used to incorporate fire into the regional haze planning process (Air Sciences Inc 2020). A primary goal was to evaluate and develop methods for building a representative single-year fire EI to be used for planning purposes, based on the *typical* activity observed during the baseline period (2014–2018). Wildfire activity across the United States varies greatly from year to year in terms of location, size, and occurrence. Developing a single-year, composite EI data set that captures the *average* wildfire activity over the multiyear baseline period is difficult. The WRAP FSWG developed a *virtual year* to include in the RepBase2 inventory.

Prescribed and agricultural fire activity is representative for the planning period baseline so the 2014 NEI was used without changes for the RepBase2. After consulting with the FSWG and various stakeholders, it was concluded that the interannual variations in activity for these two sources were not large enough to warrant exploring alterations. In contrast to wildfires, prescribed and agricultural burns are planned and lit intentionally and vary according to annual weather patterns (i.e., opportunities to burn), policy, and available resources. All fire emissions in the RepBase2 inventory were used for the 2028OTBa2 inventory (Table 20).

Table 20. Idaho emissions for RepBase2 and 2028OTBa2 (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Agricultural Fire	1,754	417	2,436	1,708	87	655
Wildfire	6,623	3,614	46,254	40,131	2,989	132,774
Wildland Prescribed Fire	4,531	1,995	31,161	27,494	2,024	91,219
Total	12,908	6,026	79,851	69,333	5,100	224,648

4.5 Natural and Biogenic Sources

Biogenic emissions (decomposition processes, soil, and vegetation), volcanic eruptions, lightning NO_x, and sea salt are natural sources. EPA estimates these emissions using spatial data on vegetation, land use, and environmental factors (e.g., temperature and solar radiation). Individual states do not report these emissions. The NEI version 2 Technical Support Document (EPA 2018a) provides details on EPA’s methodology for this category. Table 21 shows the EPA calculated biogenic emissions from soil and vegetation in the 2014 NEI and 2017 NEI.

Table 21. Idaho biogenic emissions (tpy) for the 2014 and 2017 NEI.

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
2014 NEI Biogenic	—	23,016	—	—	—	676,665
2017 NEI Biogenic	—	30,308	—	—	—	572,094

4.6 Emissions Summary

The anthropogenic emissions (excluding biogenic and wildfire emissions) from the 2014 NEI and the most recent 2017 NEI are summarized in Figure 19 through Figure 24.

Anthropogenic sources of emissions from NO_x are predominantly attributed to the combustion of fossil fuels. The mobile source sector is the largest contributor for NO_x across both inventories, followed by the point source sector. The 2017 NEI shows a decrease in NO_x mobile emissions since the 2014 NEI, largely due to more stringent federal emissions standards for on-road mobile sources (section 4.3). On-road mobile sources contribute nearly 60% of anthropogenic NO_x for the RepBase2 period. The mobile sector in 2028OTB2a is projected to have 63% lower emissions than RepBase2. Improvements in the mobile sector PM_{2.5} emissions from on-road and nonroad mobile sources and rail together account for a 2.3% decrease by 2028 (Figure 23). The largest projected reductions in emissions are attributed to on-the-book regulations for vehicles and engines and more stringent federal fuel standards for the mobile sector.

Point sources are the largest anthropogenic source of SO₂ in Idaho, and Figure 20 shows lower emissions in 2017. These reductions are largely attributed to lower natural gas prices and facilities switching to natural gas when able to use multiple fuels. Wildfire accounts for 29% of Idaho’s statewide SO₂ emissions, and prescribed fires contribute to an additional 15% of these emissions. The RepBase2 anthropogenic SO₂ emissions in Idaho are dominated by non-EGU

industrial point sources and prescribed fire, 43%, and 20%, respectively. Anticipated decreasing SO₂ emissions are from the point source sector for the 2028OTBa2 scenario.

Nonpoint sources from agriculture dominates 87% of statewide anthropogenic emissions from NH₃ in Idaho, most of which are attributed to livestock production. Increases in agricultural activities contributed to increases in the NH₃ emissions in the 2017 NEI (Figure 21).

PM₁₀ emissions are mostly from nonpoint sources such as fugitive dust. There are some additional increases in the fire category for this pollutant from the 2014 NEI to the 2028OTBa2. PM₁₀ has decreased emissions from the mobile sector since the 2014 NEI scenario. Emissions from PM_{2.5} have similar trends to PM₁₀ with the largest increases coming from the fire category.

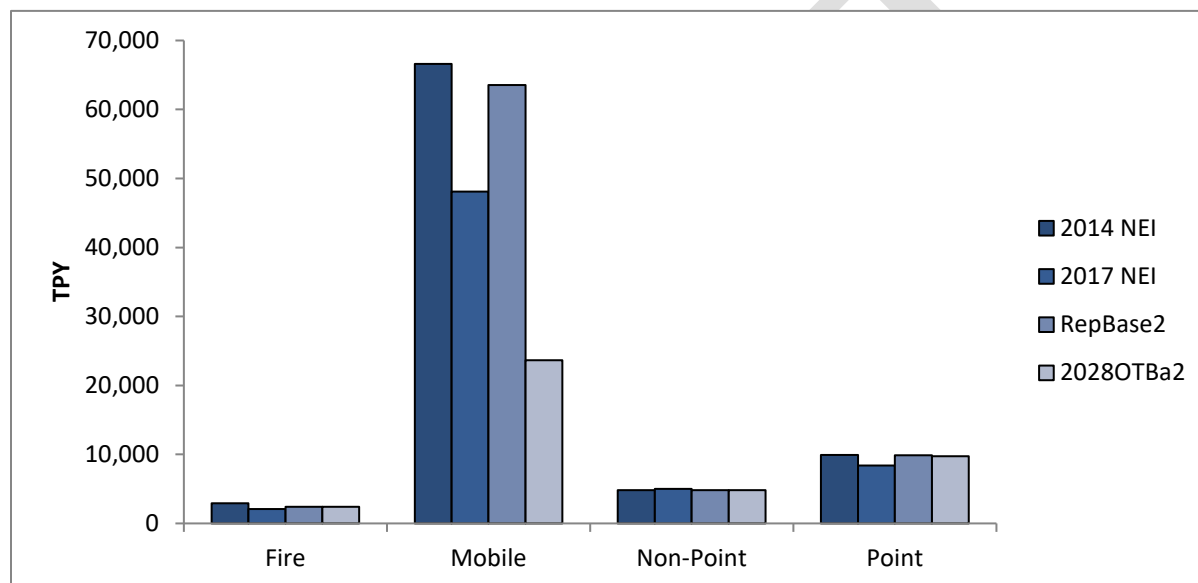


Figure 19. Anthropogenic NO_x emissions source summary.

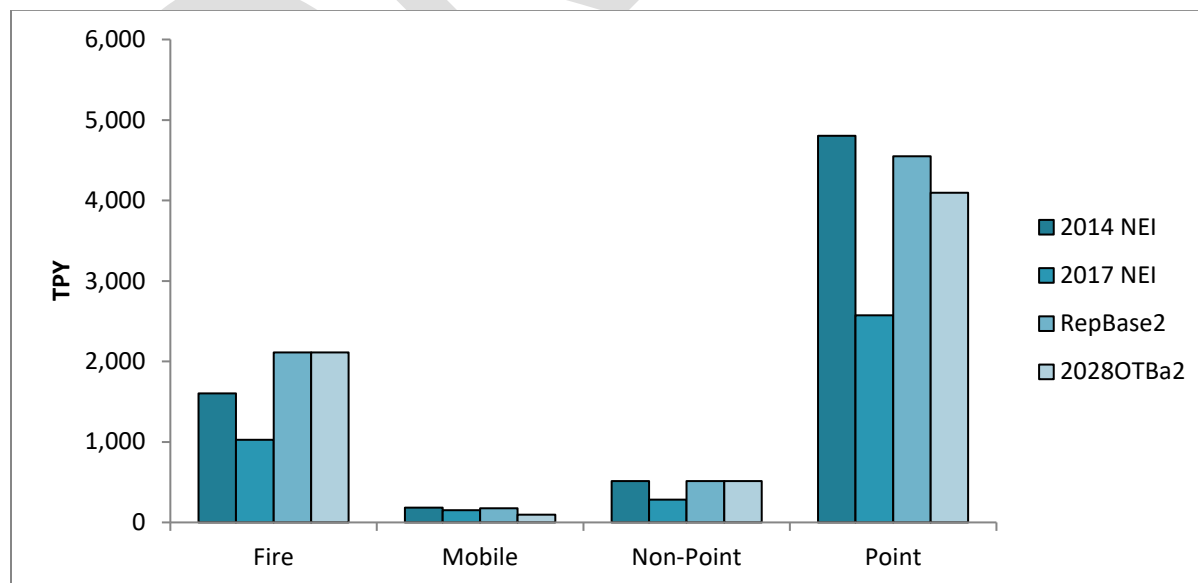


Figure 20. Anthropogenic SO₂ emissions source summary.

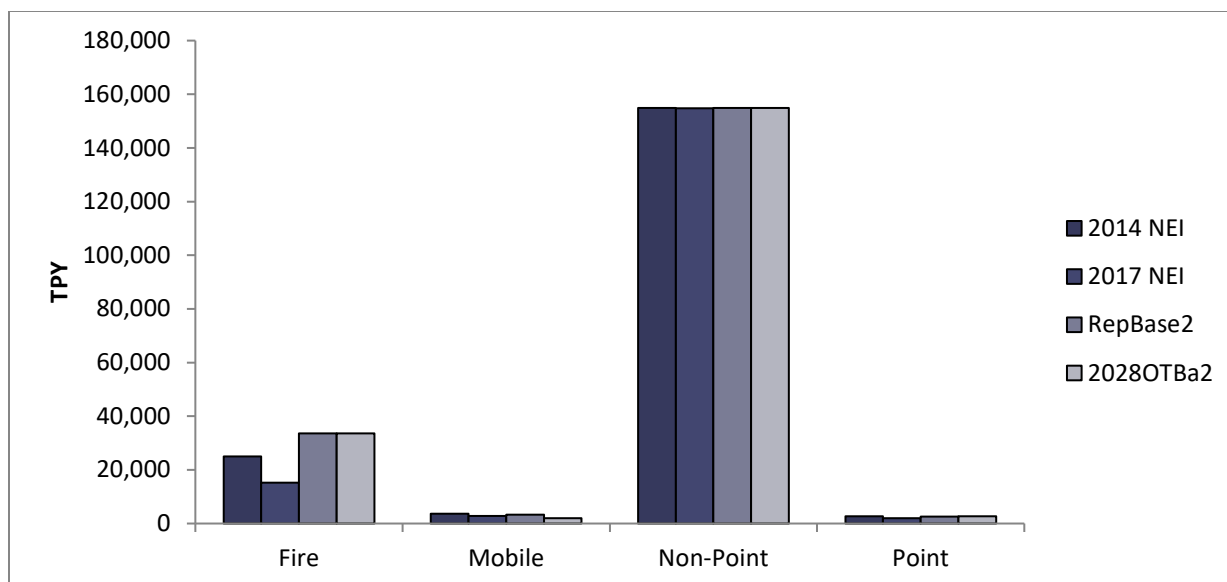


Figure 21. Anthropogenic PM₁₀ emissions source summary.

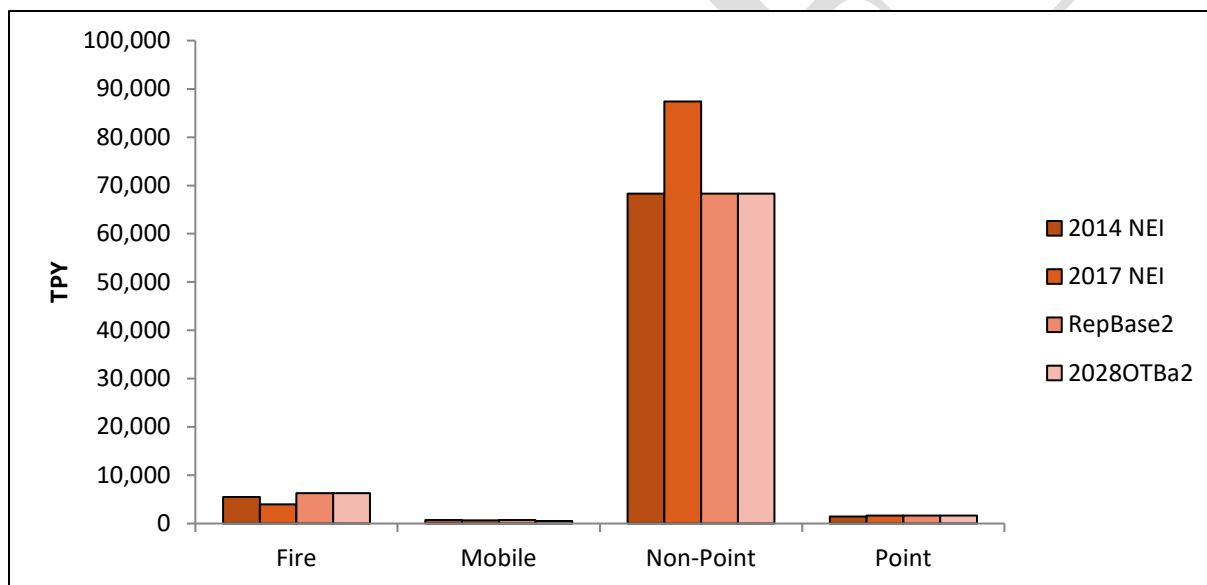


Figure 22. Anthropogenic NH₃ emissions sources summary.

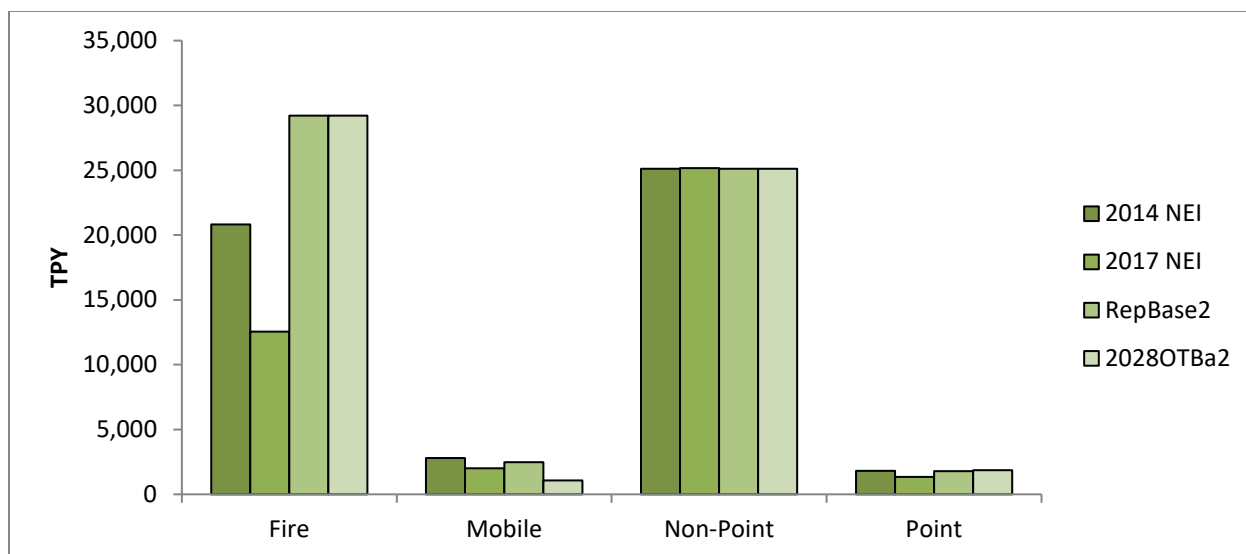


Figure 23. Anthropogenic PM_{2.5} emissions source summary.

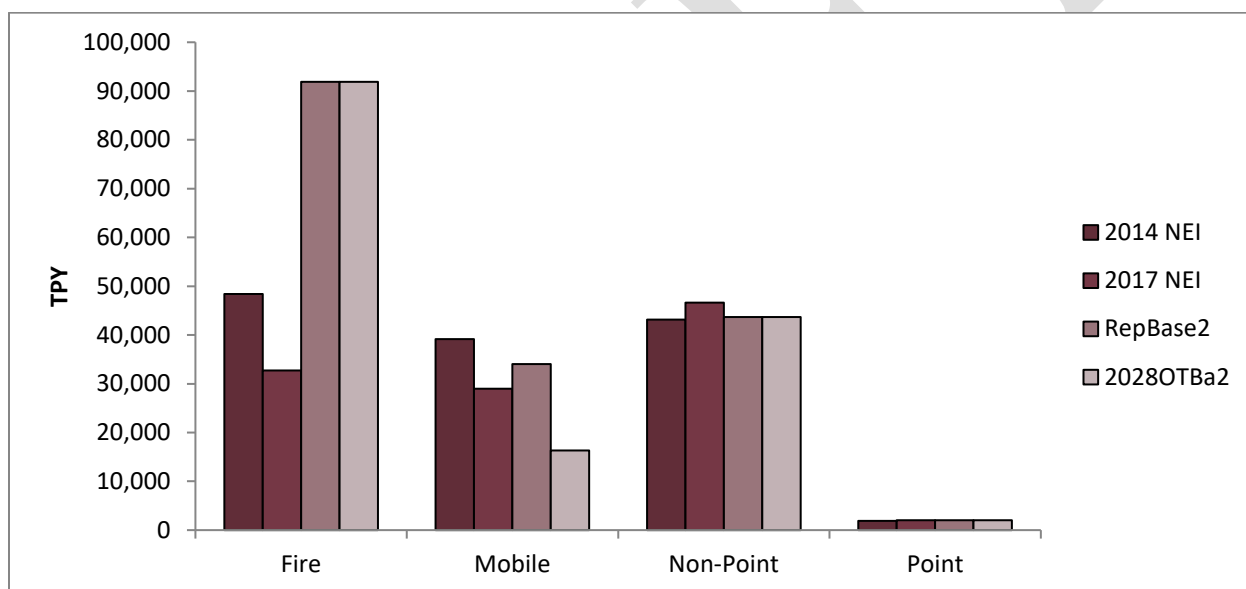


Figure 24. Anthropogenic VOC emissions source summary.

4.7 US Anthropogenic Emission Trend

The Regional Haze Rule requires states to assess changes in emissions contributing to visibility impairment over time (40 CFR 51.308(g)(4)). The methods for estimating emissions in previous NEIs have undergone many changes prior to 2014. These differences in methods do not allow for a clear comparison of emissions over time. To overcome this, WRAP conducted a dynamic evaluation to test the model's ability to project changes in ambient aerosol visibility extinction in response to changes in US anthropogenic emissions. To conduct the dynamic model evaluation, a scenario representing US anthropogenic emissions for 2002 (2002 Hindcast) was run using the CAMx-Particulate Source Apportionment Technology (PSAT) photochemical grid model platform with 2014 meteorology (WRAP 2021e). Natural and non-US emissions were held the same as RepBase2 so that

all changes in aerosol concentrations and visibility were attributable to changes in US anthropogenic emissions. The 2002 US anthropogenic emissions were back cast from the revised 2014 NEI using the current inventory and 2002 activity data.

Figure 25 through Figure 27 present the modeled light extinction from US anthropogenic sources from the 2002, RepBase2, and 2028OTBa2 modeling scenarios holding all of the other sources constant. Anthropogenic source contributions have decreased at all three of Idaho's Class I areas since 2002 and through 2028. For CRMO1, projected visibility improvement is primarily due to decreasing sulfate light extinction from 2002 to RepBase2 to 2028OTBa2 (Figure 25). The SAWT1 monitor shows 67% reduction in sulfate and 38% reduction in organic carbon contributions from 2002 to the RepBase2 (Figure 26). From the RepBase2 to 2028OTBa2 nitrate light extinction decreased by 43%. Similar emission reductions occurred at the SULA1 monitor. Visibility improved from 2002 to RepBase2a due to decreasing sulfate contribution to light extinction. Further projected visibility improvement in 2028OTBa2 is driven by reductions in nitrate from the ReBase2a period (Figure 27). From 2002 to 2028, CRMO1, SAWT1, and SULA1 are projected to see 70%, 76%, and 79% overall visibility improvement in sulfate contributions and 47%, 56%, 70% in nitrate contributions to visibility, respectively.

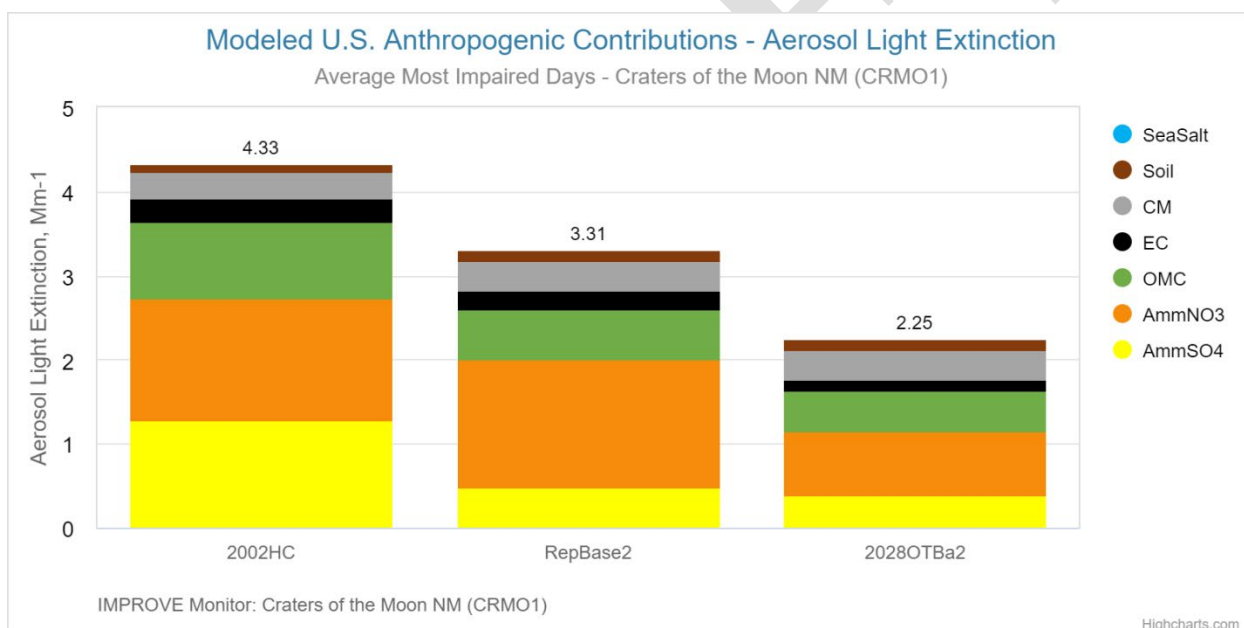


Figure 25. The 2028 US anthropogenic contributions to speciated aerosol light extinction for the 2002 Hindcast, RepBase2, and 2028OTBa2 model scenarios for most impaired days at Craters of the Moon Wilderness Area.

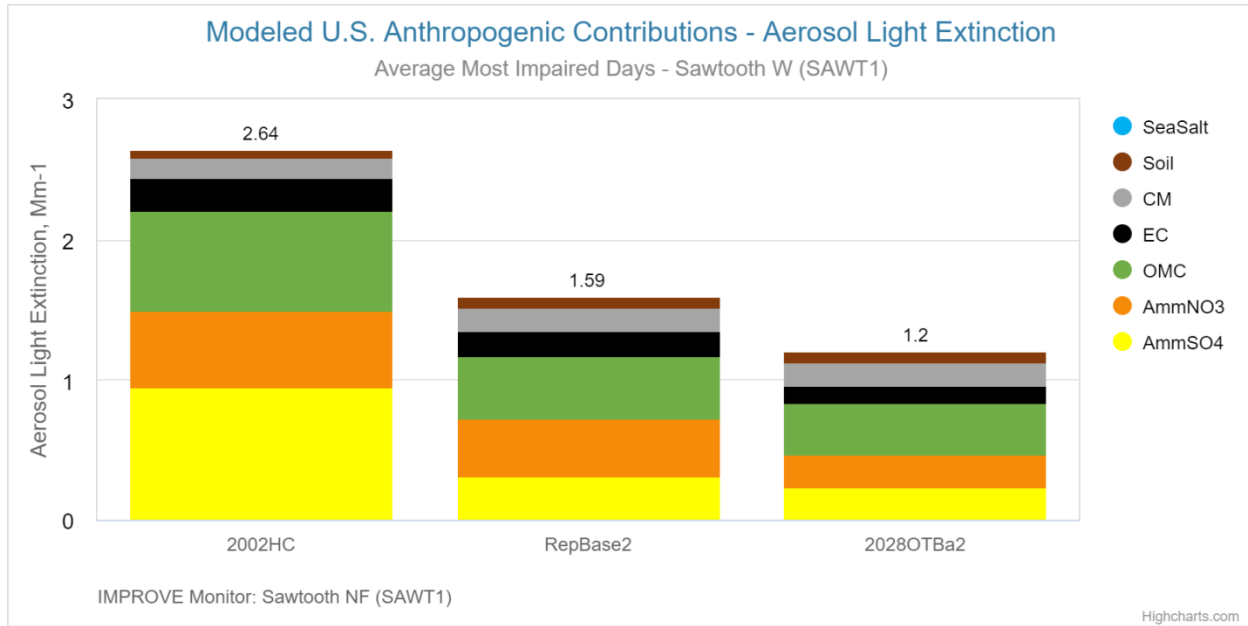


Figure 26. The 2028 US anthropogenic contributions to speciated aerosol light extinction for the 2002 Hindcast, RepBase2, and 2028OTBa2 model scenarios for most impaired days at the Sawtooth Wilderness Area.

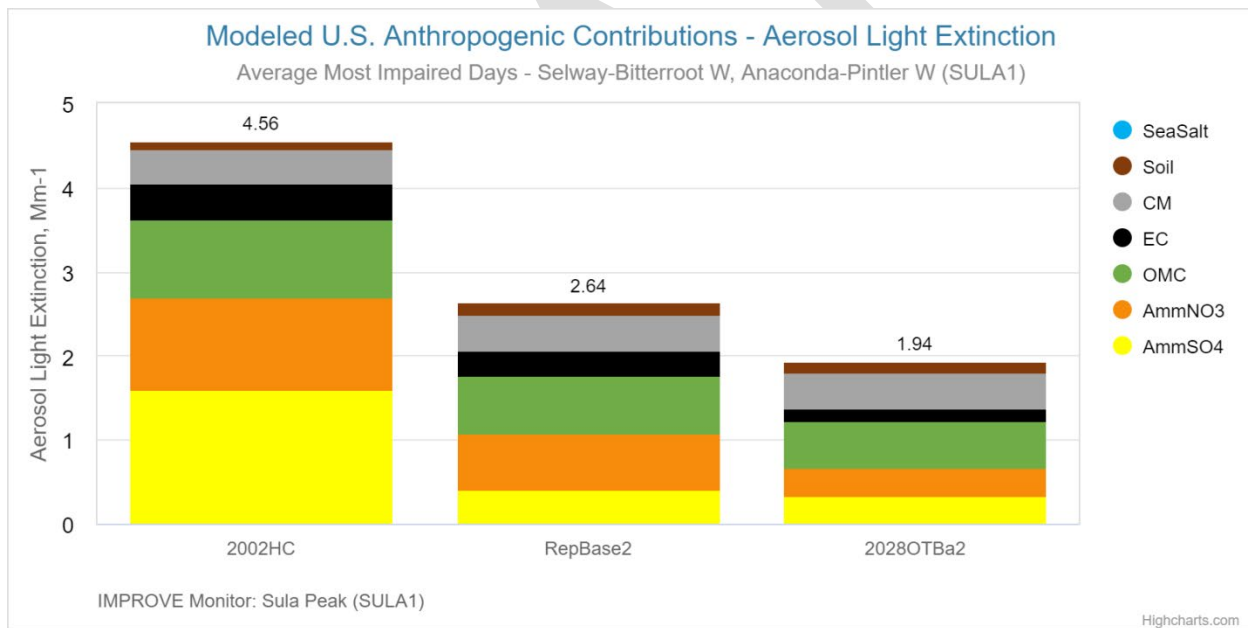


Figure 27. The 2028 US anthropogenic contributions to speciated aerosol light extinction for the 2002 Hindcast, RepBase2, and 2028OTBa2 model scenarios for most impaired days at Selway-Bitterroot Wilderness Area.

5 Modeled Source Contribution to Visibility Impairment

The Regional Haze Rule requires that states determine their apportionment of emission reduction obligation necessary for achieving reasonable progress in each Class I area. To

determine the significant sources contributing to haze in Idaho's mandatory Class I areas, DEQ relied upon WRAP's CAMx simulations using the PSAT tool for this Regional Haze SIP. CAMx simulations were used to project visibility levels at individual Class I areas and to estimate national emissions sector contributions to PM concentrations and visibility. The projected PM concentrations were converted to light extinction coefficients and then to deciviews and used to evaluate visibility progress in 2028 (WRAP 2021d).

PSAT modeling was conducted for the RepBase2 emissions scenario to obtain separate contributions of US and international anthropogenic emissions, fires, and natural emissions at rural and Class I area monitoring sites to the PM concentrations from which light extinction can be calculated. The 2028OTBa2 source apportionment modeling was performed consistently to obtain the same source sector US and international anthropogenic emission contributions as the RepBase2 source apportionment run. The 2028 emissions scenario was further apportioned to also obtain contributions from individual WRAP states by source sectors (WRAP 2021c). PSAT results are useful in estimating anthropogenic contributions to visibility impairment at Class I areas from individual state sectors, as well as estimating international and US anthropogenic contributions.

5.1 Craters of the Moon Wilderness Area

Figure 28 compares the PSAT attribution results from the current planning period (RepBase2) and projected 2028OTBa2 model runs. Total light extinction slightly decreases from RepBase2 to 2028OTBa2. US anthropogenic emissions sources contribute to 37% (RepBase2) and 29% (2028OTBa2) of the total light extinction. Boundary conditions, both natural and international anthropogenic emissions represent the most influential source groups at around 50% to 60% of total light extinction in both model scenarios. The next most influential source group is US prescribed fires at 8% to 9% of the total light extinction at CRMO1.

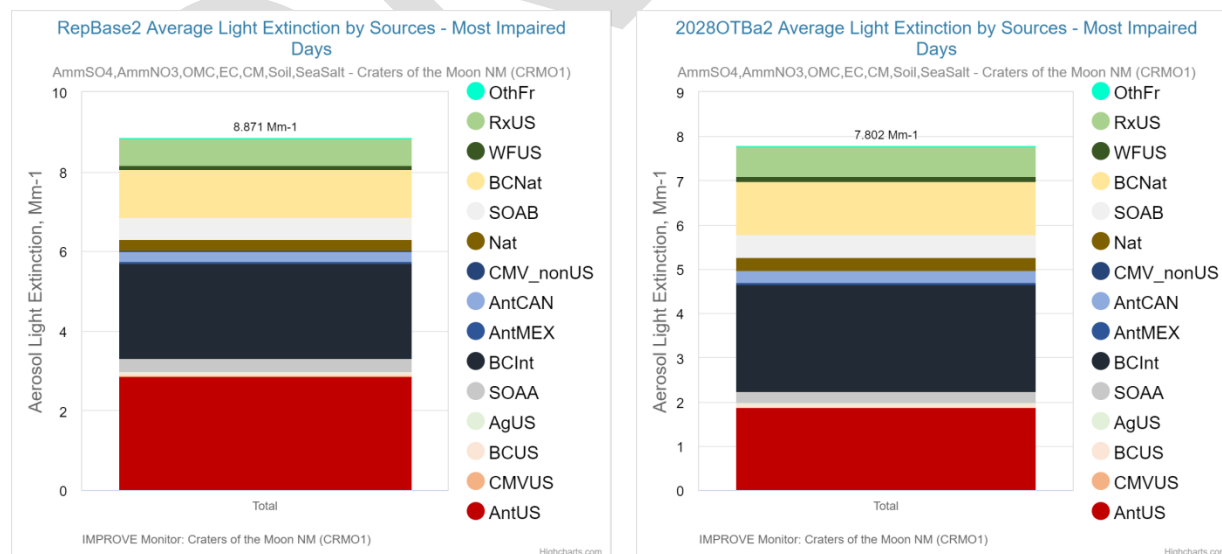


Figure 28. Modeled concentrations on the most impaired days at Craters of the Moon Wilderness Area for RepBase2 (left) and 2028OTBa2 (right).

Figure 29 and Figure 30 illustrate the RepBase2 and 2028OTBa2 modeled source contributions from six source categories at CRMO1 for the average of the most impaired days. Sulfate, nitrate, and organic carbon are the pollutants that overwhelmingly impact visibility at the Craters of the Moon Wilderness Area. Sulfate is the top contributor to visibility impairment on the most impaired days at around 43% of the total light extinction in both modeled scenarios, followed by nitrate and organic carbon. The sharpest decrease in light extinction between RepBase2 and 2028OTBa2 is associated with a decrease in nitrate light extinction (0.8 Mm^{-1}).

Anthropogenic sources vary in their modeled contributions to light extinction for the different PM species. International anthropogenic light extinction accounts for nearly 60% of the total sulfate light extinction followed by natural light extinction (27%) and US anthropogenic light extinction (14%) at CRMO1 on the most impaired days in the RepBase2 scenario. This pattern remains relatively unchanged when looking at the 2028OTBa2 model results (Figure 29 and Figure 30). In contrast, US anthropogenic light extinction accounts for 63% of the total nitrate light extinction on the most impaired days in the RepBase2 scenario but decreases to 46% in the 2028OTBa2 scenario. International anthropogenic emissions followed by natural sources are the next largest contributors to total nitrate light extinction, and their contributions slightly increase from RepBase2 to 2028OTBa2 (Figure 29 and Figure 30).

Natural light extinction accounts for 32% of the total light extinction associated with organic carbon. Next, US anthropogenic and prescribed fires contribute equally (around 25%) to total light extinction due to organic carbon in RepBase2 and 2028OTBa2 results averaged across the most impaired days.

Overall at CRMO1, modeled light extinction results from impacts mainly due to US anthropogenic emissions for nitrate, coarse mass, and fine soil. Sulfate impacts are mainly attributed to international and natural emissions, which are sources that Idaho does not have the authority to regulate. Nitrate light extinction, specifically its US anthropogenic component, is projected to decrease in 2028, while the other PM constituents and their relative impact sources remain effectively unchanged.

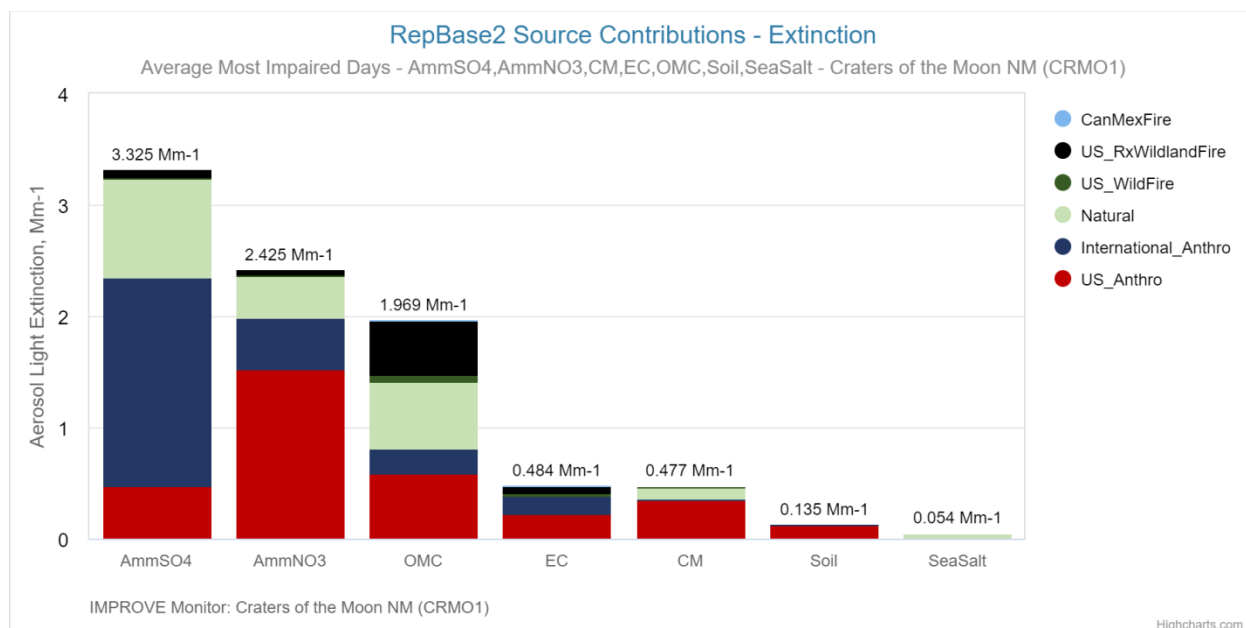


Figure 29. Modeled source contributions for the representative baseline to visibility impairment at Craters of the Moon Wilderness Area.

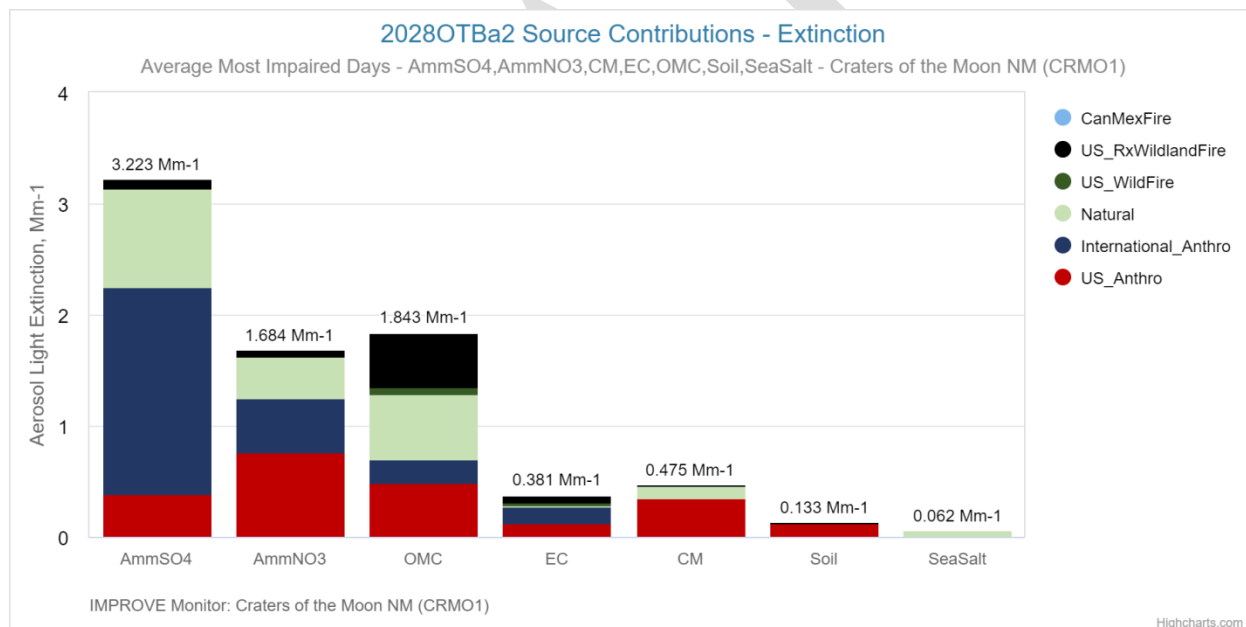


Figure 30. Modeled source contributions for the 2028OTBa2 to visibility impairment at Craters of the Moon Wilderness Area.

The US anthropogenic portions of the nitrate (0.77 Mm⁻¹) and sulfate (0.39 Mm⁻¹) light extinction from the 2028OTBa2 scenario were further apportioned by state and source categories (Figure 30). Idaho NO_x emissions contribute to over half of the US anthropogenic nitrate light extinction (0.4 Mm⁻¹ or 56%) at CRMO1 (Figure 31). Mobile sources (58%) constitute the main contributors whereas non-EGU (19%) and area sources (18%) make up the remaining impact sectors.

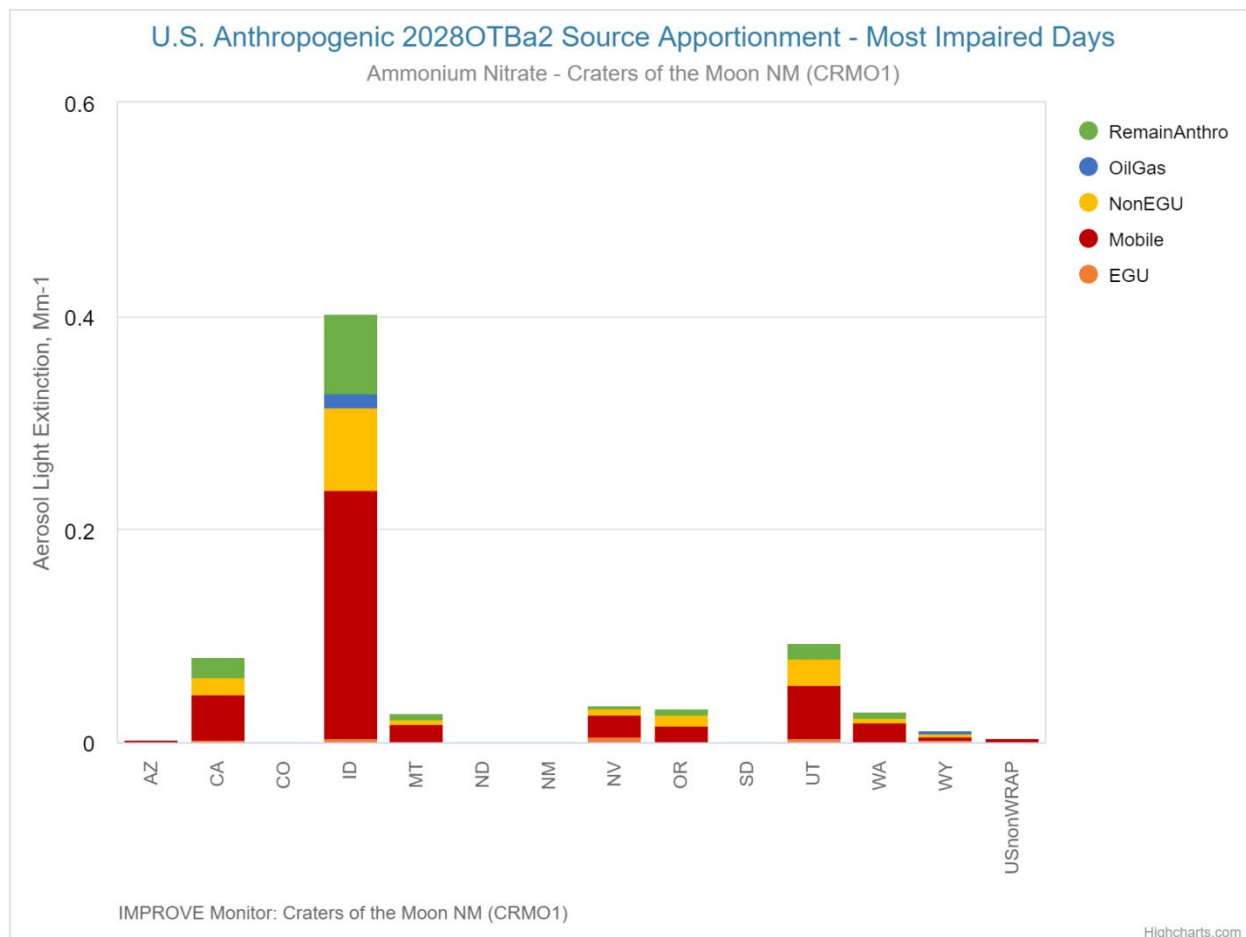


Figure 31. State and source sector contributions to 2028OTBa2 visibility impairment attributed to ammonium nitrate (AmmNO₄) at CRMO1. Model values are not normalized to IMPROVE monitoring data.

Forty-one percent of the US anthropogenic sulfate light extinction (0.14 Mm⁻¹) is attributed to sulfate emission sources from within Idaho (Figure 32). The non-EGU sector (75%) combined with area sources (20%) largely account for most of the projected sulfate impacts.

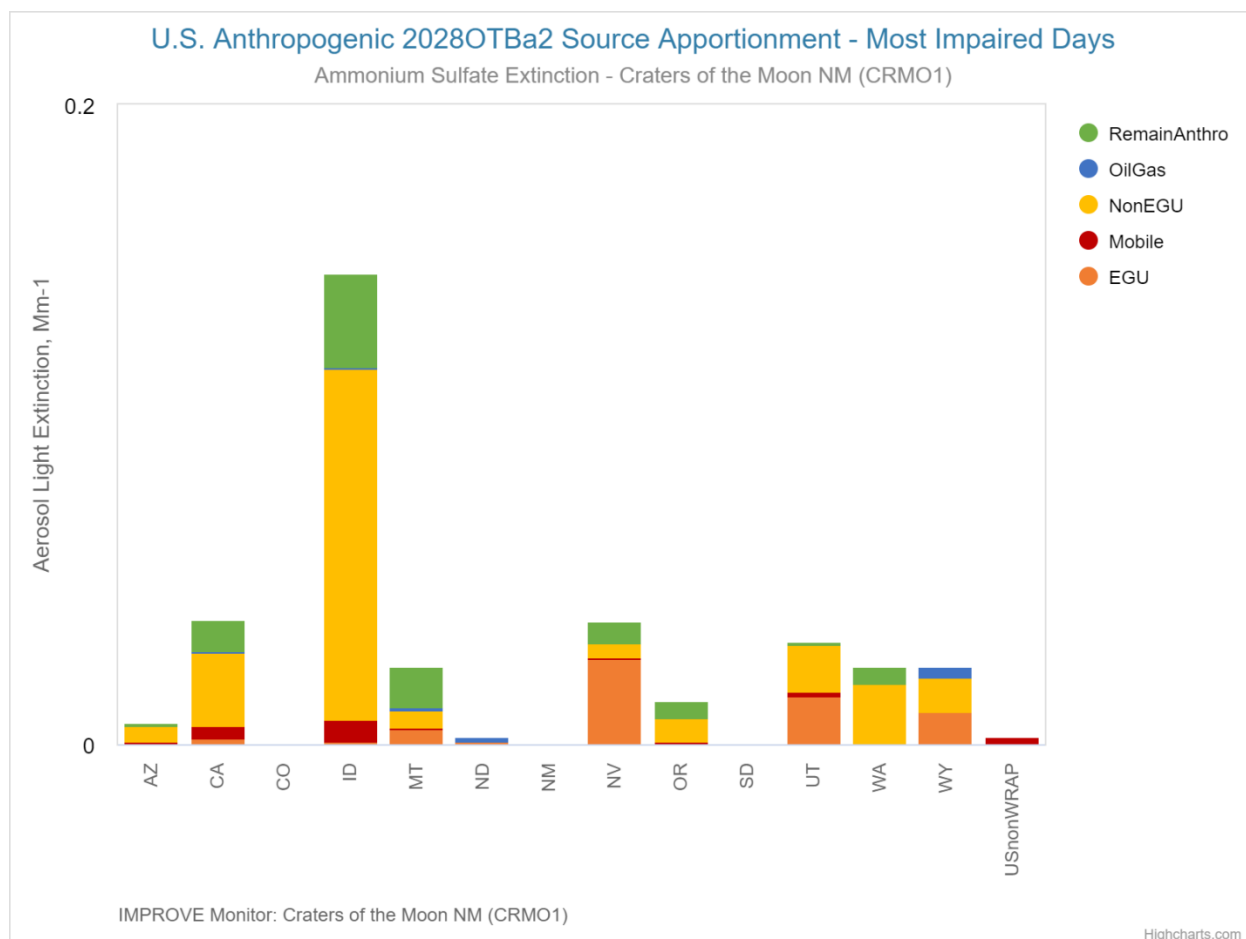


Figure 32. State and source sector contributions to 2028OTBa2 visibility impairment attributed to ammonium sulfate (AmmSO₄) at CRMO1. Model values are not normalized to IMPROVE monitoring data.

5.2 Sawtooth Wilderness Area

Figure 33 compares the regional source apportionment results from the current planning period (RepBase2) and projected 2028OTBa2 model runs at SAWT1. The anthropogenic contribution to haze at SAWT1 (shown in red) is a minor component for both the RepBase2 and 2028OTBa2 modeling runs. The anthropogenic contribution to haze decreases from roughly 12% to 9% going from the RepBase2 to the 2028OTBa2 scenarios. The largest contributors to haze at SAWT1 are from sources that are not subject to control like wildfires, international emissions, and natural or biogenic emissions.

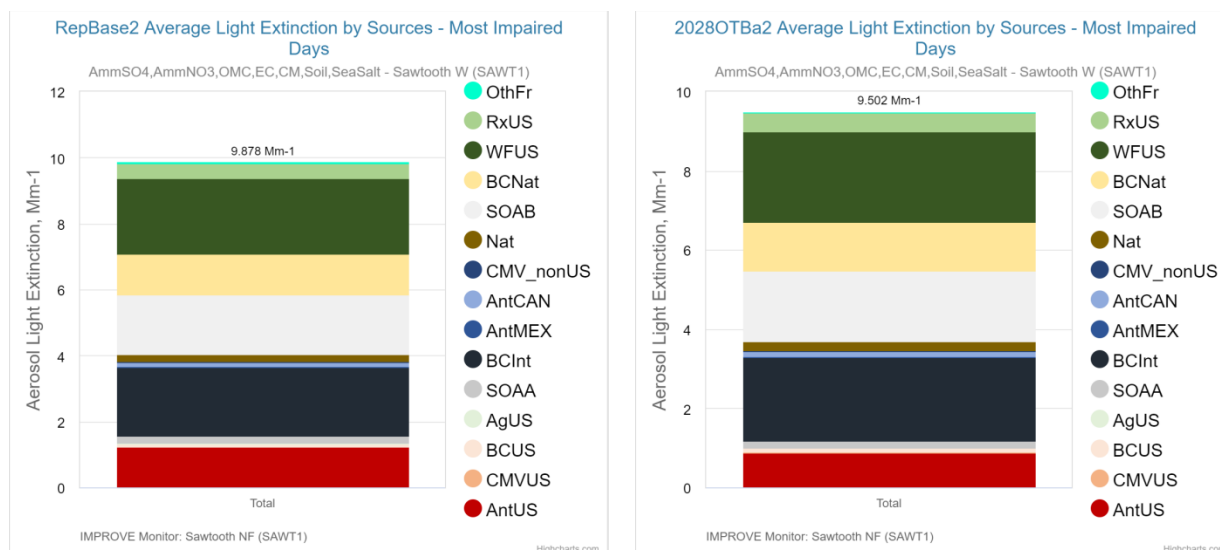


Figure 33. Modeled concentrations by source category on the most impaired days at SAWT1 for RepBase2 (left) and 2028OTBa2 (right). Model values are not normalized to IMPROVE monitoring data.

The modeling results also provide further refined estimates of the anthropogenic portion of haze. Of particular interest are anthropogenic nitrate and sulfate as the pollutants were the primary focus of the four-factor analyses (section 6.3). The estimated percent contribution to total haze at SAWT1 from US anthropogenic nitrate and sulfate are very low (Figure 34 and Figure 35). Both are less than 5% for the representative baseline and even lower for the 2028OTBa2 run with a total combined contribution of less than 5%. The anthropogenic contributions for sulfate and nitrate can be contrasted with organic carbon and to a lesser extent elemental carbon (tracers for fire impacts). Combined they contribute slightly more than 50% of the total haze at the Sawtooth Wilderness Area.

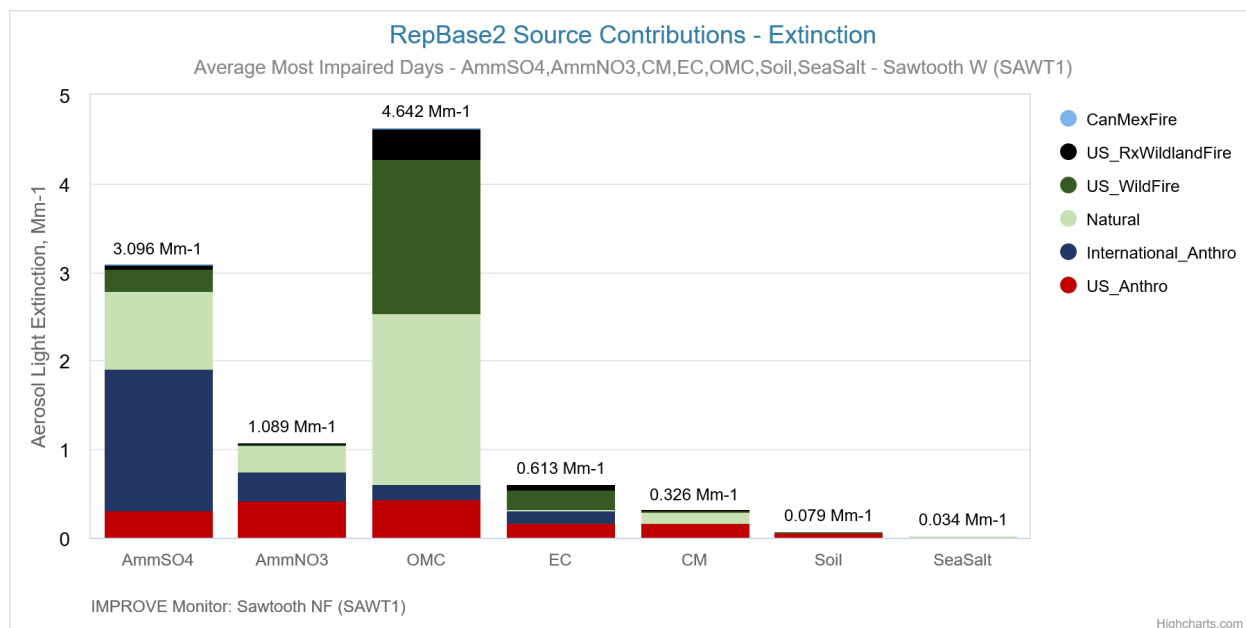


Figure 34. Modeled source contributions for the representative baseline from 6 sources and 15 source groups to visibility impairment (light extinction) at SAWT1. Model values are not normalized to IMPROVE monitoring data.

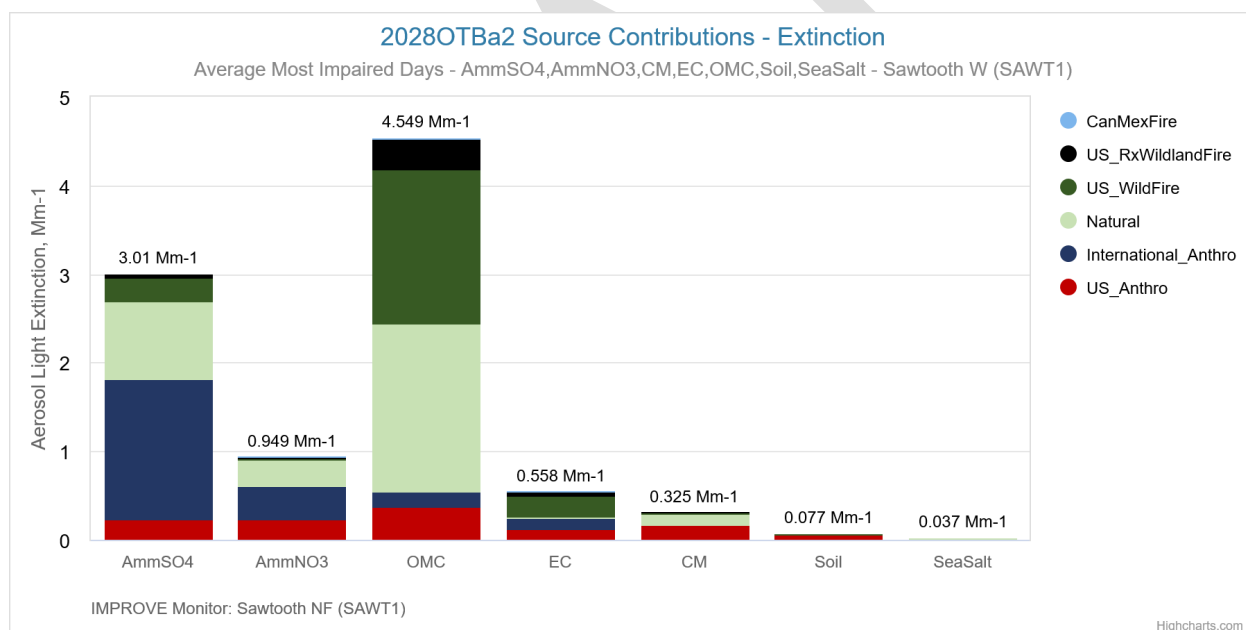


Figure 35. Modeled source contributions for the 2028OTBa2 from 6 sources and 15 source groups to visibility impairment (light extinction) at SAWT1. Model values are not normalized to IMPROVE monitoring data.

Figure 36 illustrates state and source sector contributions to 2028OTBa2 visibility impairment from nitrate at SAWT1. As discussed above, the US anthropogenic nitrate contribution at SAWT1 is negligible. Of the very small portion that is observed, most can be contributed to mobile source emissions from Idaho, Oregon, and Washington.

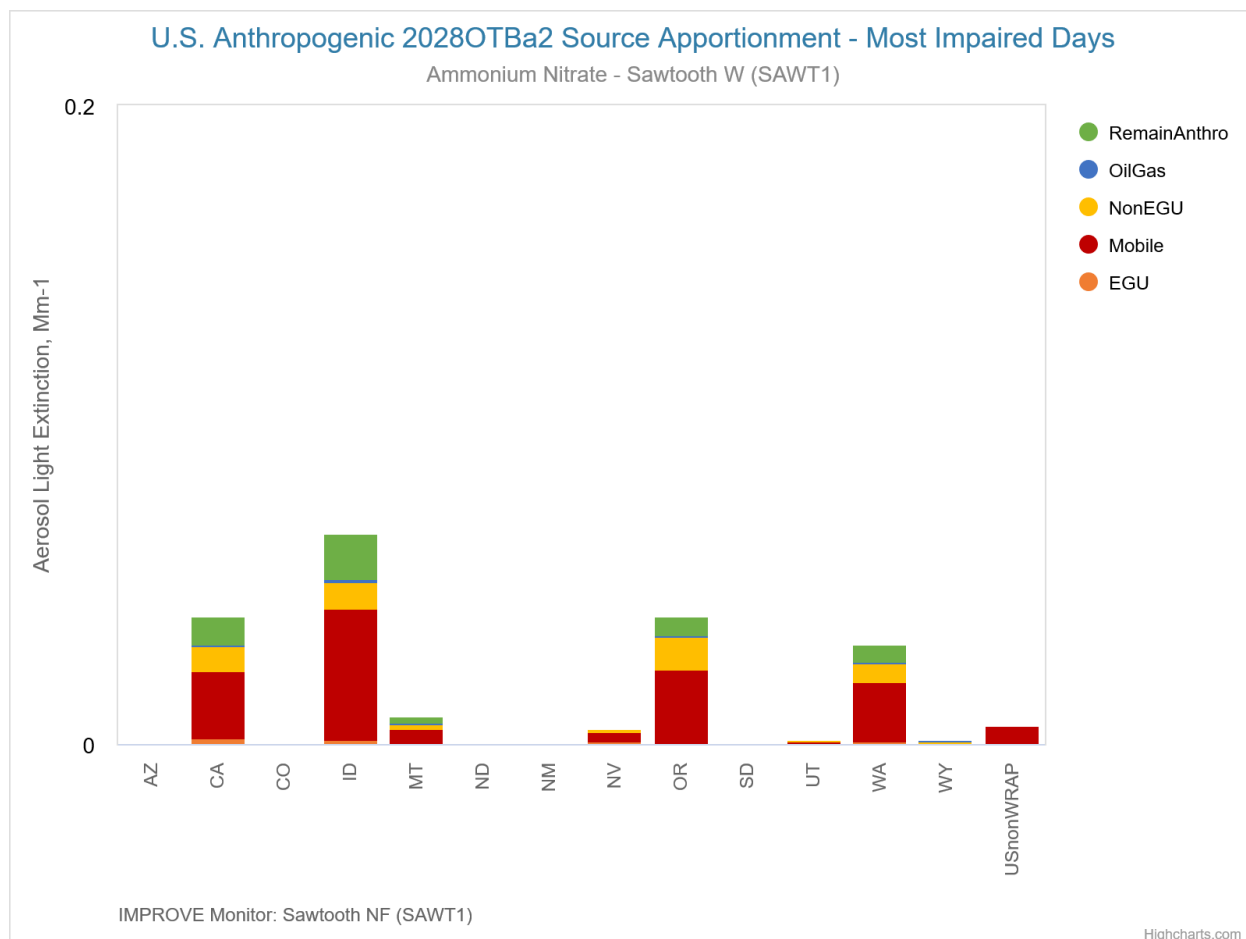


Figure 36. Ammonium nitrate state level source apportionment for SAWT1. Model values are not normalized to IMPROVE monitoring data.

Figure 37 illustrates the state and source sector contributions to 2028OTBa2 visibility impairment from sulfate at SAWT1 are negligible. Of the small portion that is modeled, most can be contributed to non-EGU point source emissions from Idaho, Oregon, California, and Washington.

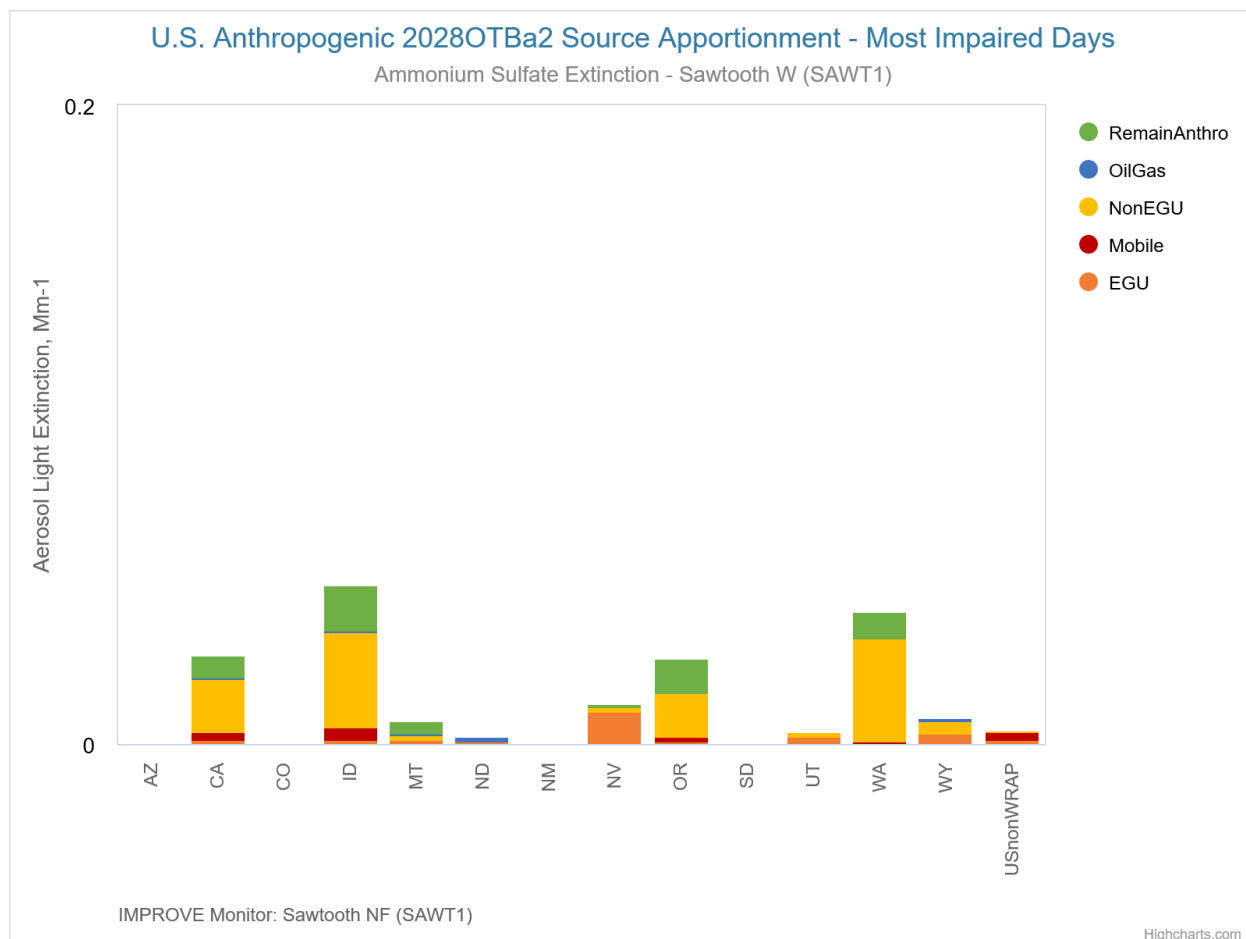


Figure 37. Ammonium sulfate state level source apportionment for SAWT1. Model values are not normalized to IMPROVE monitoring data.

5.3 Selway-Bitterroot Wilderness Area

The PSAT results showed an overall reduction in a total light extinction predicted in the Selway-Bitterroot Wilderness Area from the RepBase2 to 2028OTBa2. US wildfire is the largest source contributing to light extinction on the most impaired days at Selway-Bitterroot Wilderness Area for the RepBase2 scenario (31%) and 2028OTBa2 (32%) (Figure 38). International emissions, including US boundary conditions, and anthropogenic and natural sources emissions are 28% and 29% of total haze for Repbase2 and 2028OTba2, respectively. Natural biogenic emissions within the US contribute to 14% of the total light extinction for 2014–2018 and 2028. These natural and international emissions are not within the states' control.

Controllable emissions are the focus for this implementation period and anthropogenic and prescribed fire emissions within the US contribute to 14% and 12%, respectively, of the light extinction in the current planning period. In 2028, the anthropogenic emissions are modeled to contribute to 10% of the light extinction and prescribed fire is 13%. The 2028 source apportionment shows 26.5% reduction in light extinction from US anthropogenic sources in 2028OTBa2 scenario compared to the RepBase scenario.

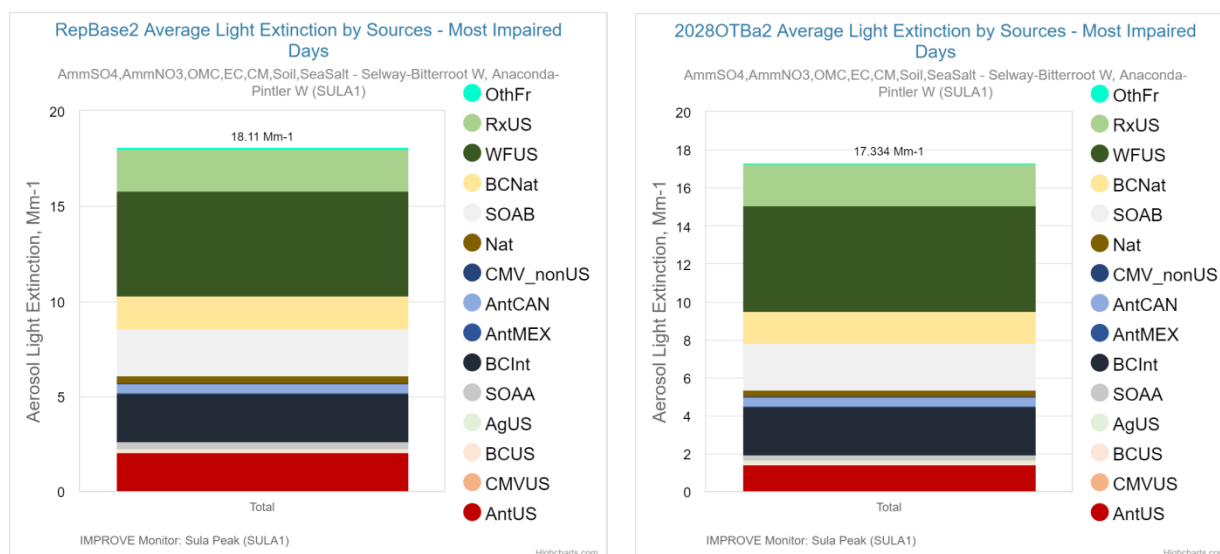


Figure 38. Total average light extinction by sources on the most impaired days for the RepBase2 (left) and 2028OTBa2 (right) modeling scenarios at SULA1. Model values are not normalized to IMPROVE monitoring data.

At the SULA1 monitor, the organic carbon stems from wildfire, prescribed fire and natural sources and a smaller anthropogenic impact in RepBase2 (Figure 39). International anthropogenic emissions (52% and 53%) and natural emissions (29% and 30%) make up the majority of the sulfate composition at this site for the Repbase2 and 2028OTBa2 scenarios (Figure 39 and Figure 40). US anthropogenic emissions are 10% of the light extinction for ammonium sulfate for this planning period and modeled to be 8% by 2028. US (38%) and international (33%) anthropogenic emissions are the largest sources of ammonium nitrate for the current planning period. By 2028, the US anthropogenic contributions are modeled to decrease to 23% of the total light extinction while international anthropogenic sources would account for 41%. Coarse mass emissions are also mostly from US anthropogenic sources (62%).

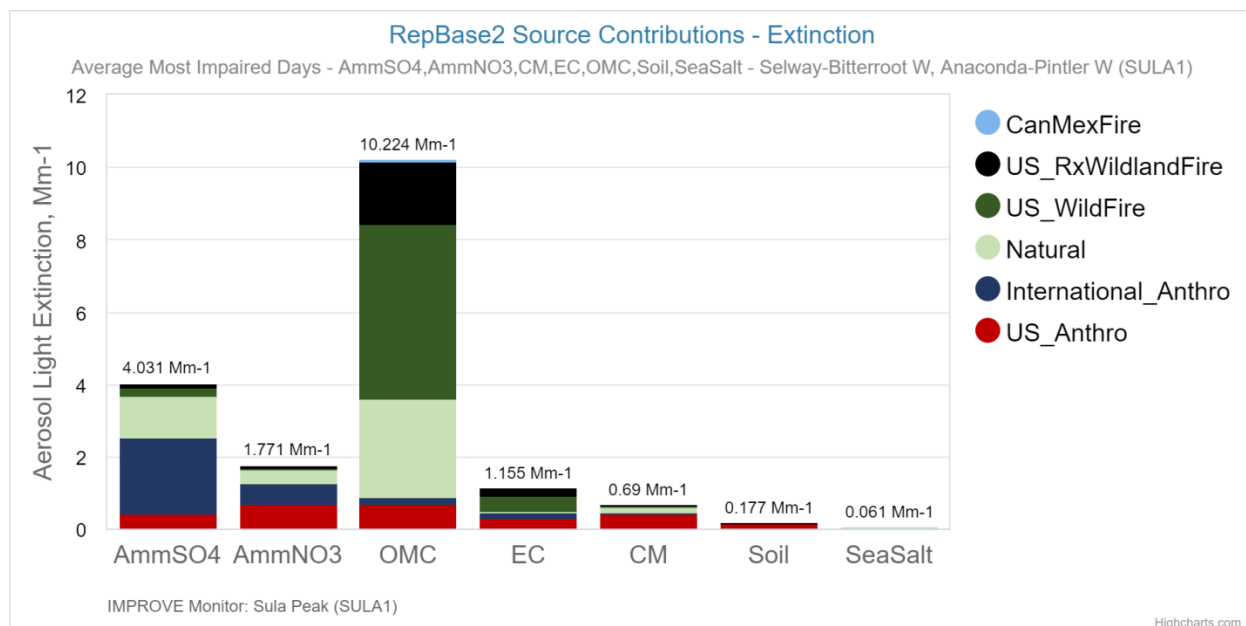


Figure 39. Modeled source contributions for the representative baseline from the six major source groups to visibility impairment (light extinction) at SULA1. Model values are not normalized to IMPROVE monitoring data.

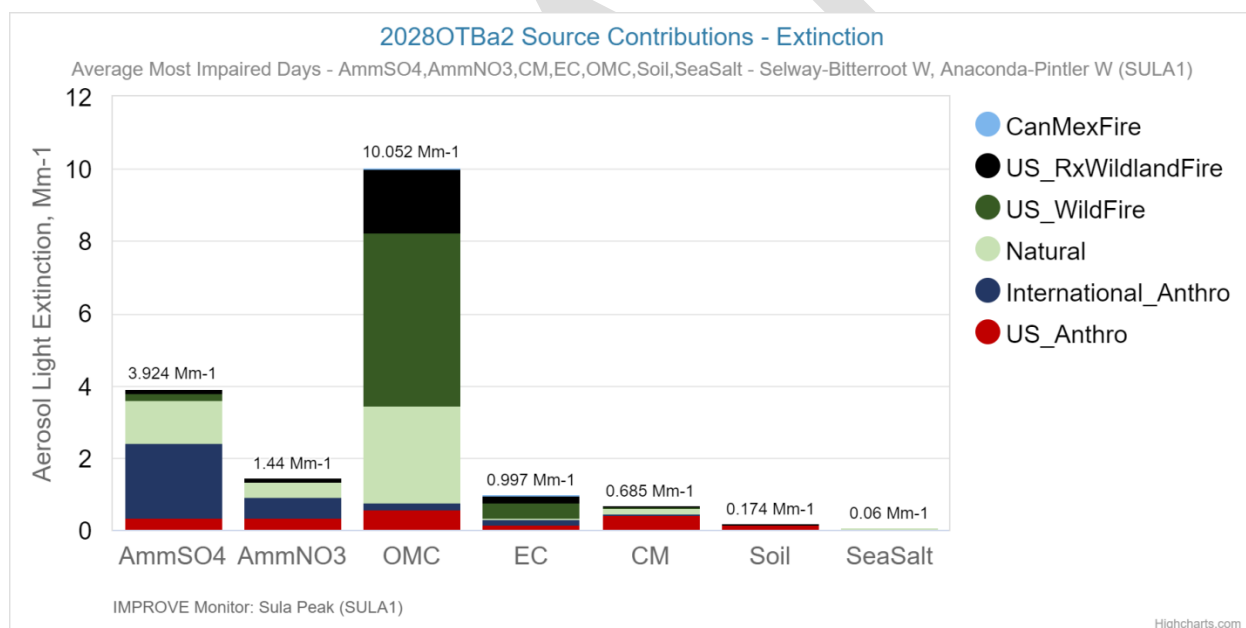


Figure 40. Modeled source contributions for the 2020OTBa2 from the six major source groups to visibility impairment (light extinction) at SULA1. Model values are not normalized to IMPROVE monitoring data.

Further apportionment of the US anthropogenic category, the state-level source apportionment results show the modeled contribution from surrounding states at the SULA1 monitor.

Washington emissions are predicted to have the greatest impact of all the states on anthropogenic light extinction, particularly mobile emissions for nitrate and non-EGU emissions for sulfate (Figure 41 and Figure 42). After Washington, Idaho non-EGU sources have the next

largest sulfate contribution compared to other western states. The remaining anthropogenic emissions from nonpoint sources in Montana are the next greatest source of nitrate and sulfate light extinction modeled for 2028.

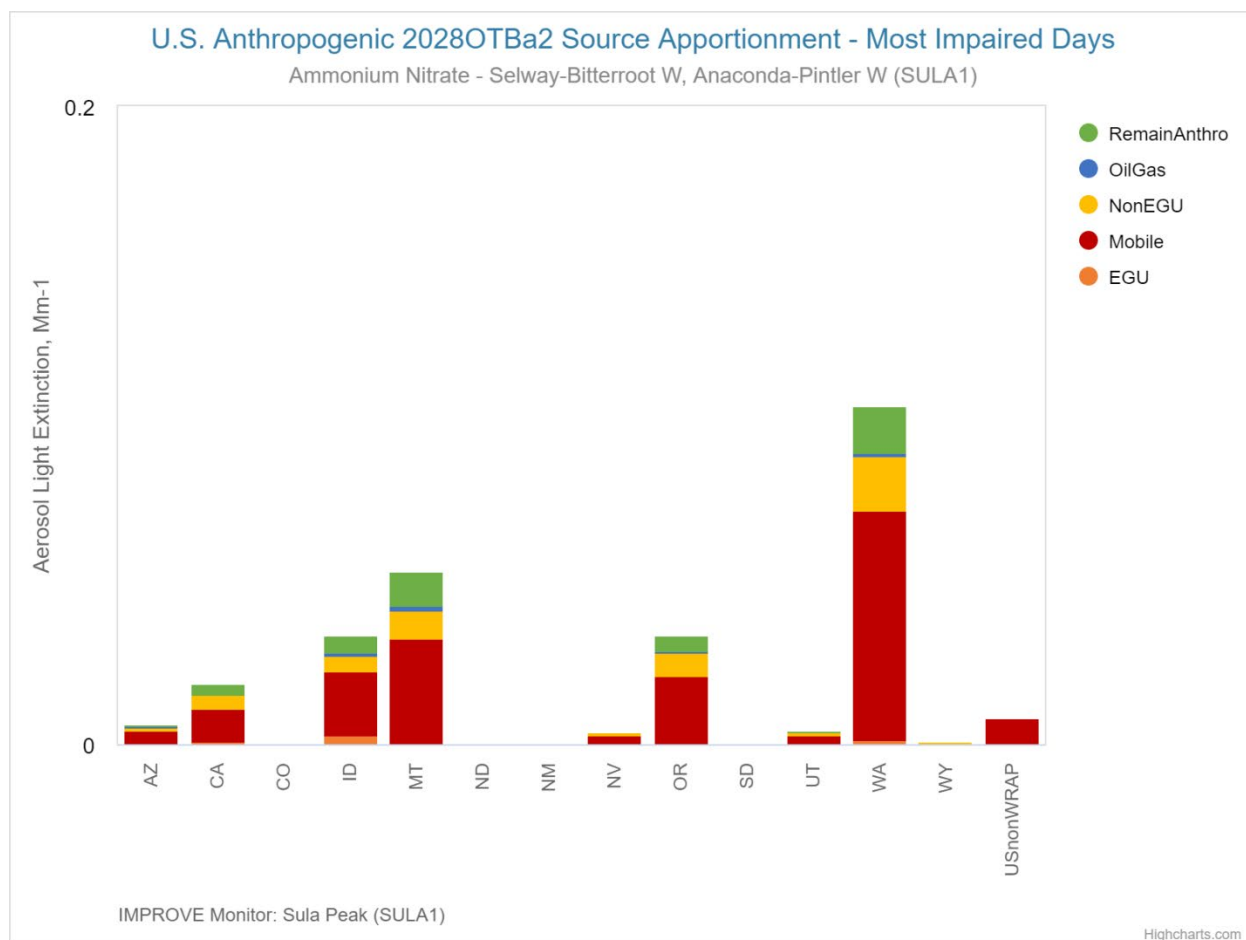


Figure 41. State-level modeled source apportionment for ammonium nitrate in 2028 at SULA1. Model values are not normalized to IMPROVE monitoring data.

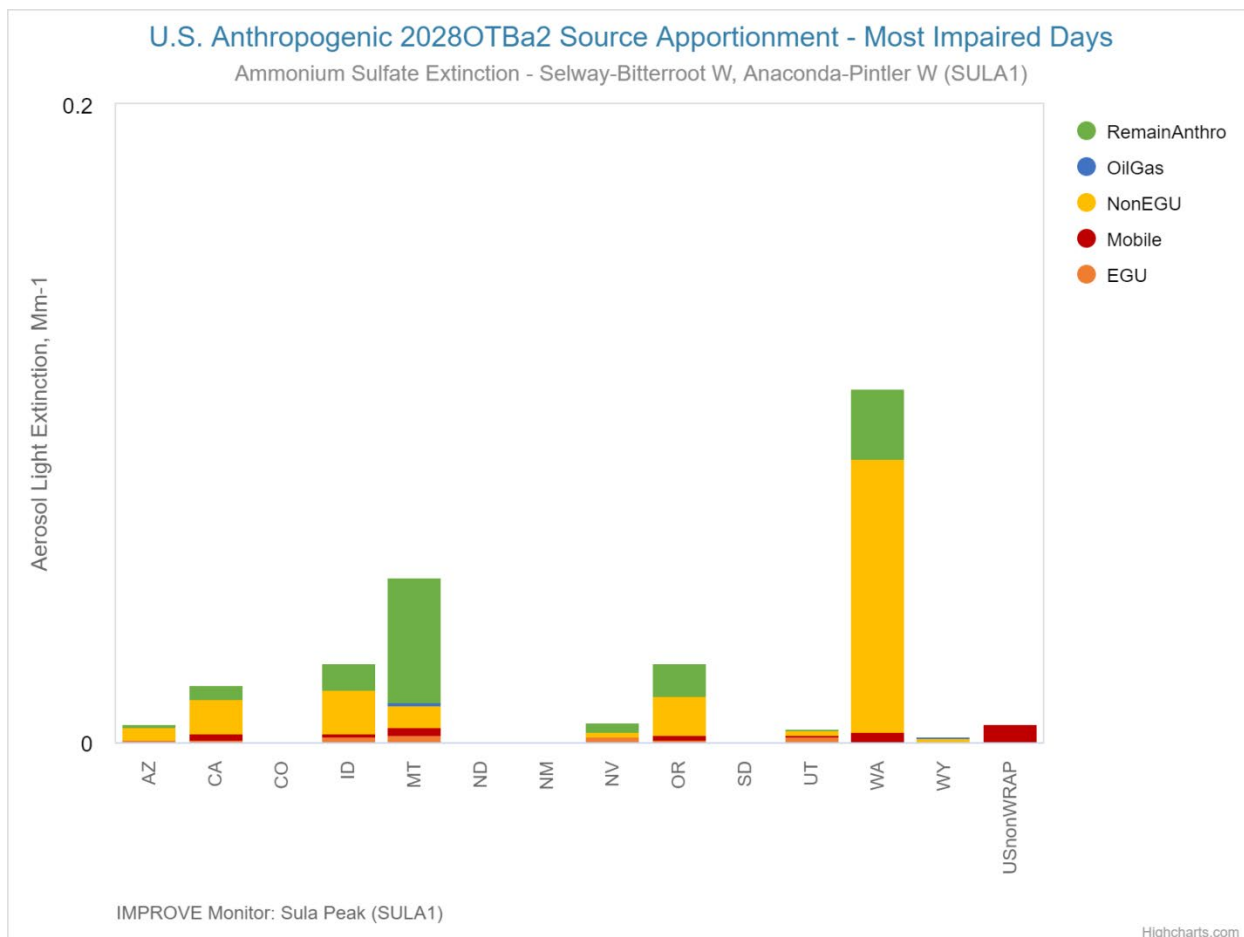


Figure 42. State-level modeled source apportionment for ammonium sulfate in 2028 at SULA1. Model values are not normalized to IMPROVE monitoring data.

6 Emissions Control Analysis

Section 51.308(f)(2)(i) of the Regional Haze Rule states that “the State must include in its implementation plan a description of the criteria it used to determine which sources or groups of sources it evaluated and how the four factors were taken into consideration in selecting the measures for inclusion in its long-term strategy.” This section outlines the criteria used to determine which sources would be evaluated further.

DEQ first examined the IMPROVE monitoring data for Class I areas in Idaho and nearby states. Reviewing speciation data revealed the relative importance of each PM species to total light extinction and focused the evaluation on those potential contributing sources that emit the dominant pollutants for each Class I area. The dominant anthropogenic pollutants contributing to haze at Class I Areas in Idaho are clearly illustrated in Figure 4, Figure 9 and Figure 14. Overall, the most impaired days at CRMO1 occur mainly in the fall and winter when nitrate and sulfate contribute the most to light extinction. In contrast, the most impaired days are clustered in summer and fall at SAWT1, and summer followed by spring and fall at SULA1. SAWT1 and SULA1 also have significant organic mass extinction attributable to fires. Nitrate contributions

to SAWT1 and SULA1 are negligible; visibility impairment at these 2 sites is mostly attributed to organic carbon and to a much lesser extent, sulfate.

As mentioned in Section 3.4, the primary precursors of nitrates and sulfates are emissions of NO_x and SO₂. In Section 4, identified anthropogenic sources of visibility impairing pollutants and their precursors. Section 5 identified the source categories of visibility impairing pollutants from the modeled source apportionment. Major source categories contributing to aerosol light extinction were identified and confirmed the importance of nitrate and sulfate aerosols to anthropogenic visibility impairment. Using this information, Idaho conducted a screening process to prioritize source categories and individual sources for evaluation to make reasonable progress towards improving visibility. This process began with a broad evaluation of statewide emissions to identify the largest source categories, followed by an evaluation of emissions and distance to the nearest Class I area to identify specific sources.

The 2014 NEI was the most recent EI that was available when Idaho started to evaluate source selection. Idaho reviewed the total statewide emissions for PM₁₀, NO_x, and SO₂ from the 2014 NEI described in section 4. Natural sources of pollution, such as wildfire, biogenic, and fugitive dust sources were omitted. Figure 43, Figure 44, and Figure 45 show the relative percentage of total statewide anthropogenic emission by source category for the 2014 NEI for SO₂, NO_x, and PM₁₀, respectively. Industrial and non-EGU point sources are the largest contributor to anthropogenic SO₂ emissions followed by prescribed fire. Mobile sources, such as on-road, nonroad, and rail, emit the most NO_x of all source categories followed by Industrial and non-EGU point sources (Figure 44). Mobile sources are federally regulated and are excluded from the source selection process. Prescribed fire contributed the most anthropogenic PM₁₀ emissions, followed by nonpoint and industrial point sources (Figure 45). The nonpoint data category is the cumulative emissions from many small sources of emissions in Idaho. Emissions from these small sources are often calculated at the county level using data such as population and are difficult to identify specific source groups to analyze for visibility impacts.

For these reasons, point sources and prescribed fire were identified as the source categories for further screening. The Regional Haze Rule requires States to consider basic smoke management practices for prescribed fire when they develop the long-term strategy; however, the 2019 Regional Haze Guidance states, “There are many ways that a state can consider basic smoke management practices and smoke management programs. A state does not need to shoehorn prescribed fire, basic smoke management practices, and smoke management programs into a formal source selection analysis or a formal analysis of control measures.” Section 7.4 includes a discussion of basic smoke management practices for prescribed fire in Idaho.

The 2019 regional haze guidance also allows states with substantial prescribed fire impacts the option of adjusting the URP glidepath to account for prescribed fire impacts. Idaho’s consideration of this adjustment is discussed in section 9.2.

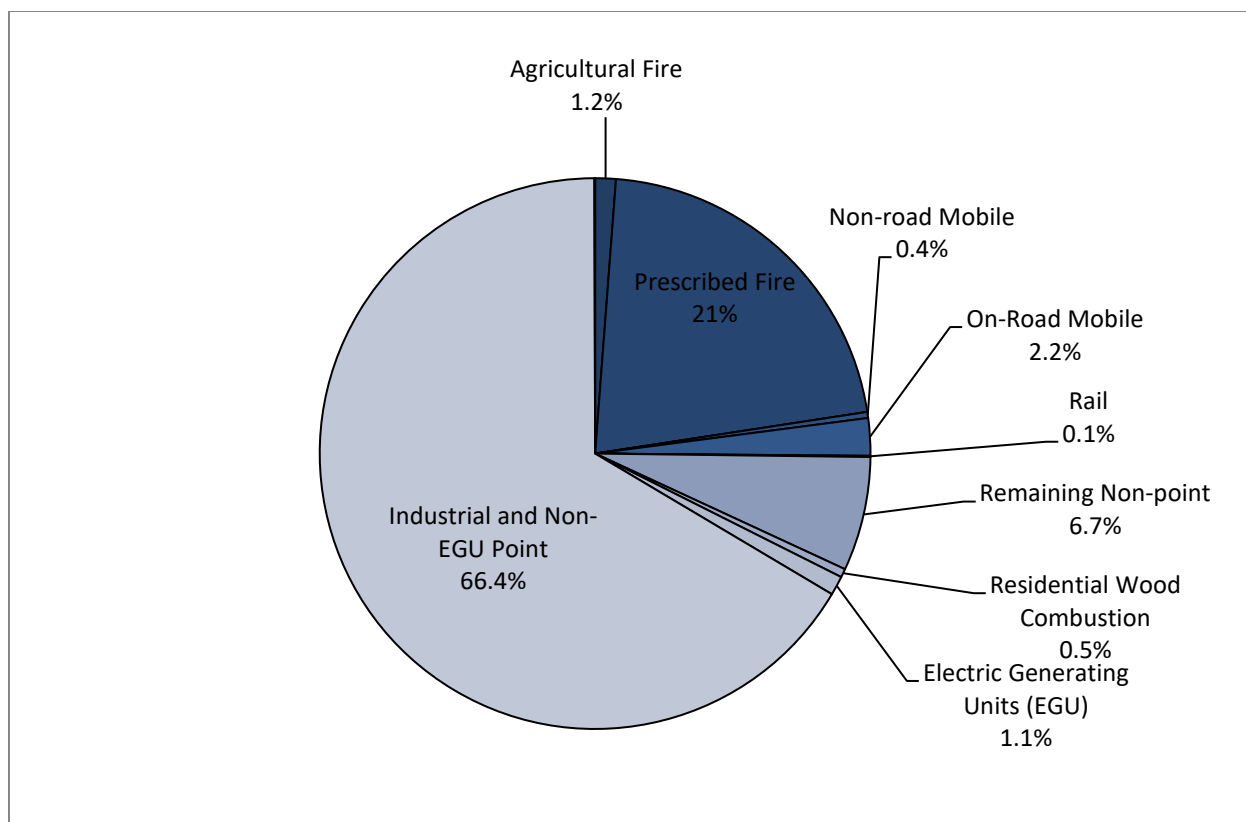


Figure 43. The 2014 NEI statewide anthropogenic SO₂ emissions.

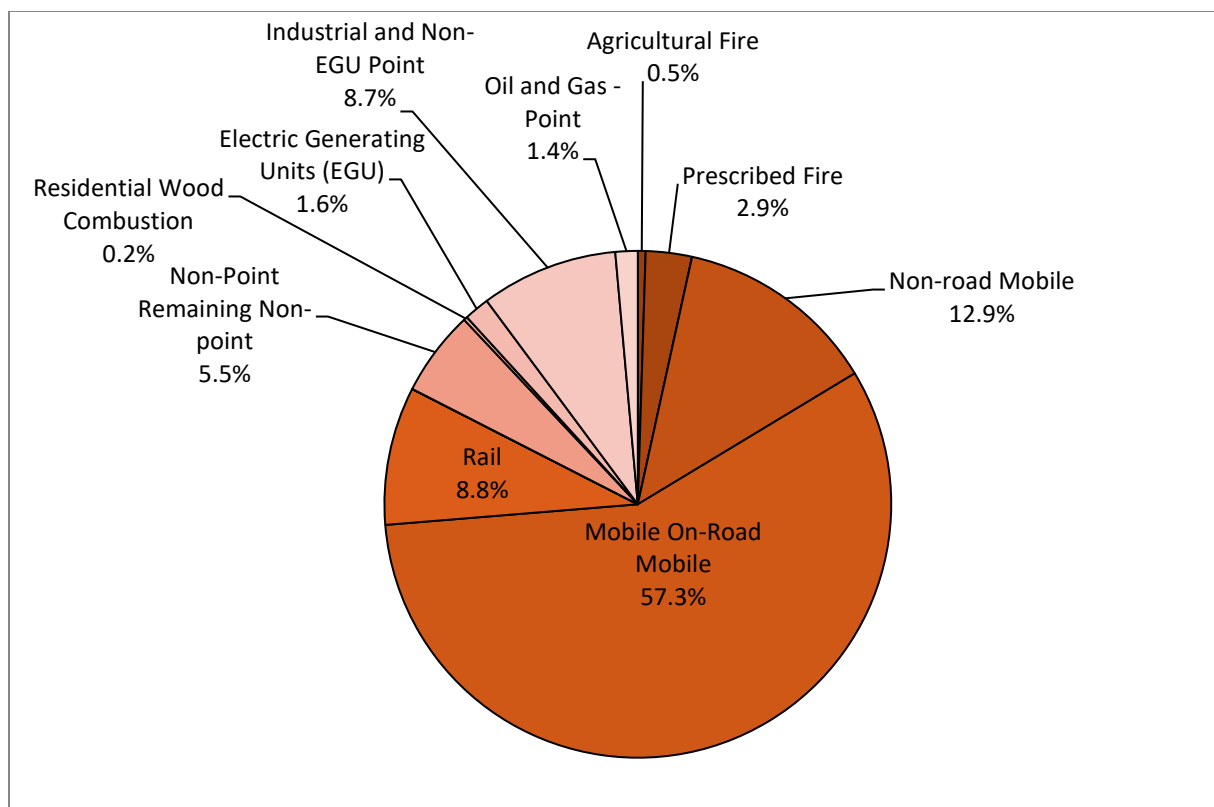


Figure 44. The 2014 NEI statewide anthropogenic NO_x emissions.

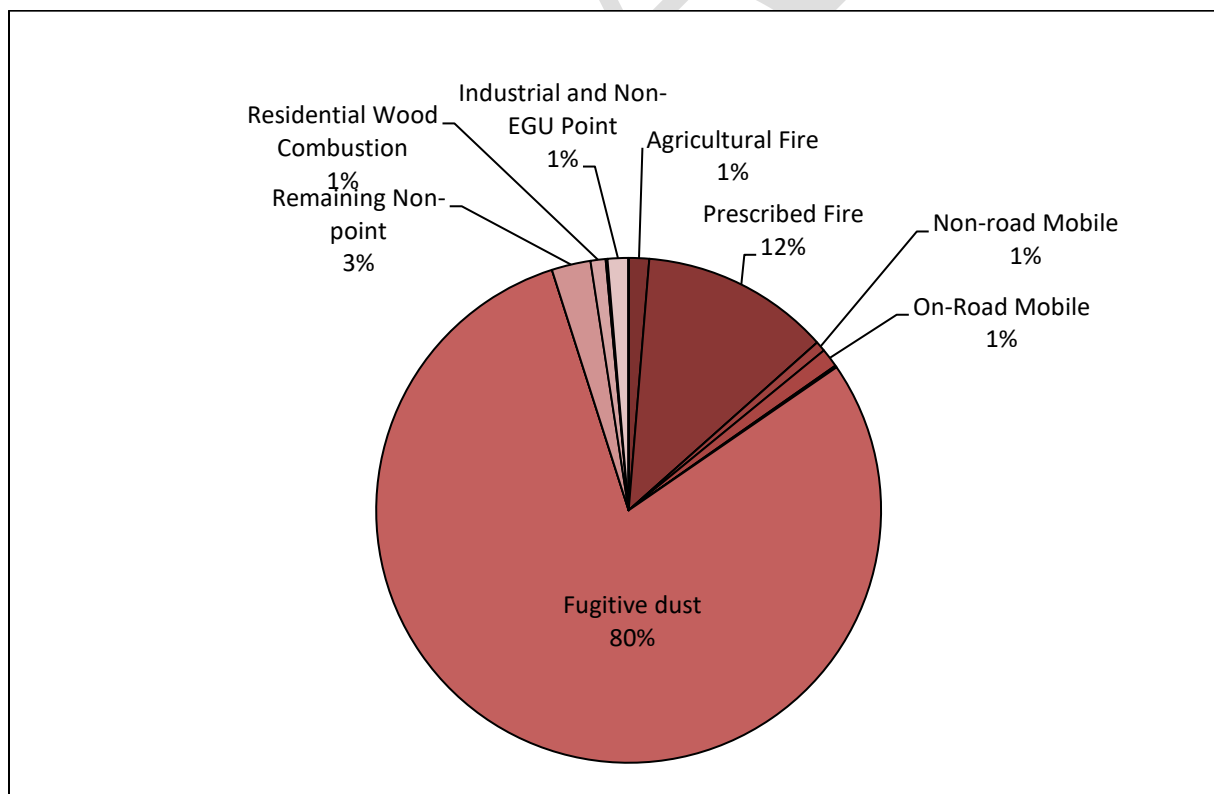


Figure 45. The 2014 NEI statewide anthropogenic PM₁₀ emissions.

6.1 Point Source Facility Screening and Selection

Idaho examined all anthropogenic sources of visibility impairing pollutants in the state before applying any screening metrics and thresholds to prioritize those sources with the greatest visibility impacts for further analysis. DEQ worked closely with WRAP to standardize the methodology used by the western states for point source facility screening and selection. WRAP developed an approach for western states to select sources for further analysis. This approach used the Q/d method, where Q is the sum of visibility impairing pollutants (PM₁₀, NO_x, and SO₂), and d is the distance (kilometers [km]) to the boundary of the nearest Class I area. DEQ used the WRAP guidance, and WRAP recommended the Q/d screening tool to identify facilities that are contributing the most to visibility impairing pollutants. The WRAP Q/d screening tool included all point sources from various source categories such as non-EGU, EGU and oil and gas facilities. This process included the following steps:

1. In the 2014 NEI, identify those facilities with total facility-wide emissions of visibility impairing pollutants (PM₁₀, NO_x, and SO₂) greater than 25 tpy.
2. Calculate the distance from each facility identified in Step 1 to the nearest Class I area boundary (including those in other states) in kilometers. Facilities greater than 400 km from the nearest Class I area were considered to have minimal impact on visibility and were excluded.
3. Identify those facilities with a Q/d greater than a state defined threshold. Idaho used a Q/d threshold of 2. Idaho calculated a Q/d threshold that captured a reasonable portion of all Idaho point sources. Draft EPA guidance recommended states choose a Q/d threshold that captured a reasonable number of sources, and for western states, 80% of point source emissions was considered a reasonable number of sources. A Q/d threshold of 2 captured 70% to 80% of Idaho point sources contributing to haze for each Class I area.
4. Refine the Q/d analysis using more recent 2017 NEI data to screen out sources that have a Q/d less than 2 for 2017 emissions.

Table 22. Comparison of Q/d screening with 2014 and 2017 emissions.

Facility	Nearest Class I Area	Distance (km) ^a	2014 Total Emissions (tpy) ^b	2017 Total Emissions (tpy) ^c	2014 Q/d ^d	2017 Q/d ^d
Clearwater Paper Corp–Pulp and Paper and Consumer Products (Clearwater Paper)	Hells Canyon Wilderness	70.9	1506.0	1434.3	21.3	20.2
Itafos Conda LLC (Itafos)	Grand Teton National Park	104.0	441.2	477.7	4.2	4.6
J.R. Simplot Company–Don Siding Pocatello (Simplot)	Craters of the Moon Wilderness	86.1	1016.2	876.3	11.8	10.2
Northwest Pipeline LLC–Soda Springs (NWP)	Grand Teton National Park	122.2	457.6	579.8	3.8	4.7
P4 Production LLC (TV Facility) (P4)	Grand Teton National Park	111.9	3594.4	2938.4	32.1	26.3
Tamarack Mill, LLC DbA Evergreen Forest and Tamarack Energy Partnership (Tamarack Mills)	Hells Canyon Wilderness	25.5	170.2	69.1	6.7	2.7
The Amalgamated Sugar Company LLC–Nampa (TASCO–Nampa)	Sawtooth Wilderness	114.6	2786.8	534.6	24.3	4.7
The Amalgamated Sugar Company LLC–Paul (TASCO–Paul)	Craters of the Moon Wilderness	78.0	1391.3	386.9	17.8	5.0
The Amalgamated Sugar Company LLC–Twin Falls (TASCO–Twin Falls)	Jarbridge Wilderness	95.6	2107.0	1297.7	22.0	13.6
Idaho Forest Group LLC– Riley Creek–Moyie Springs	Cabinet Mountains	44.4	117.0	75.4	2.6	1.7
Plummer Forest Group, Inc– Post Falls	Cabinet Mountains	98.1	228.5	175.2	2.3	1.8
Rexburg Facility of Basic American Foods, a Division of Basic American, Inc.	Yellowstone NP	63.5	140.0	81.2	2.2	1.3
Boise Air Terminal	Sawtooth Wilderness	90.5	319.6	293.2	3.5	3.2
Northwest Pipeline LLC– Mountain Home	Sawtooth Wilderness	87.7	232.5	202	2.7	2.3

a. Distance in kilometers from the facility to the nearest Class I area boundary

b. Total facility-wide emissions for PM₁₀, NO_x, and SO₂ in 2014.

c. Total facility-wide emissions for PM₁₀, NO_x, and SO₂ in 2017.

d. Total emissions divided by distance to nearest Class I area boundary.

As seen in Table 22 above, the initial Q/d screening using 2014 emissions identified 14 facilities in Idaho with Q/d greater than 2. Updating the emissions to 2017 emissions reduced the number of facilities to 11, with Idaho Forest Group LLC–Riley Creek–Moyie Springs, Plummer Forest Group, Inc–Post Falls, and Rexburg Facility of Basic American Foods being removed with a Q/d less than 2. This list was further refined by focusing on anthropogenic emissions under Idaho’s regulatory authority.

Emissions from airports are mainly associated with take-offs, landings and nonroad and onroad mobile sources. These emission sources are federally regulated under federal fuel and motor vehicle standards. Therefore, the Boise Airport was removed from the four-factor analysis facility list. Northwest Pipeline—Mountain Home primarily emits NO_x and IMPROVE monitoring data show that anthropogenic contributions to NO_x at SAWT1 are negligible (Figure 11). Since the focus of the Regional Haze Rule is on the anthropogenic pollutants that contribute to visibility impairment, Northwest Pipeline—Mountain Home was removed from consideration since its only predicted impact would be from NO_x at SAWT1. This refinement resulted in a list of 9 Idaho facilities having a Q/d greater than 2.

The Regional Haze Rule requires states to identify Class I Areas in other states that may be affected by emissions from within the state and include control measures in the long-term strategy necessary to make reasonable progress in those Class I Areas. Table 23 through

Table 28 identify all Class I areas in Idaho and surrounding states with possible impacts from Idaho facilities using a Q/d threshold of 2 and the 2017 NEI emissions. In addition to the 3 Class I areas in Idaho, this screening identified 27 Class I areas in 5 neighboring states that may be affected by emissions from sources within Idaho. This analysis of the additional 27 Class I areas did not result in any additional Idaho facilities being selected for four-factor analysis. Therefore, Idaho selected the 9 facilities in Table 22 with a Q/d greater than 2 using 2017 emissions for the four-factor analysis.

Table 23. Class I areas in Idaho possibly impacted by Idaho facilities using a Q/d threshold of 2.

Class I area	Idaho Facility	2017 Q/d
Craters of the Moon Wilderness	P4 Production, LLC	21.77
	The Amalgamated Sugar Company – Twin Falls	19.57
	The Amalgamated Sugar Company – Paul	17.83
	J R Simplot Company-Don Siding Plant	11.80
	The Amalgamated Sugar Company – Nampa	11.71
	Itafos Conda, LLC	2.67
	Northwest Pipeline – Soda Springs	2.48
Sawtooth Wilderness	The Amalgamated Sugar Company – Nampa	24.32
	The Amalgamated Sugar Company – Twin Falls	14.46
	P4 Production, LLC	11.95
	The Amalgamated Sugar Company – Paul	8.41
	Clearwater Paper Corp – Pulp and Paper Division	5.28
	J R Simplot Company-Don Siding	4.58
	Boise Air Terminal	3.53
Selway-Bitterroot Wilderness	Northwest Pipeline Mtn Home	2.65
	Clearwater Paper Corp – Pulp and Paper Division	12.31
	The Amalgamated Sugar Company – Nampa	10.70
	The Amalgamated Sugar Company – Twin Falls	6.11

Table 24. Class I areas in Montana possibly impacted by Idaho facilities using a Q/d threshold of 2.

Class I area	Idaho Facility	2017 Q/d
Anaconda Pintler Wilderness	Clearwater Paper Corp-Pulp and Paper Division	5.63
	JR Simplot Company- Don Siding Plant	2.62
	P4 Production, LLC	7.71
	The Amalgamated Sugar Company – Twin Falls	3.53
Bob Marshall Wilderness	Clearwater Paper Corp-Pulp and Paper Division	5.06
Cabinet Mountains Wilderness	Clearwater Paper Corp-Pulp and Paper Division	7.16
Gates of the Mountains Wilderness	Clearwater Paper Corp-Pulp and Paper Division	3.68
Glacier NP	Clearwater Paper Corp-Pulp and Paper Division	4.57
Mission Mountains Wilderness	Clearwater Paper Corp-Pulp and Paper Division	5.66
	JR Simplot Company- Don Siding Plant	4.52
	Northwest Pipeline- Soda Springs	2.55
Red Rock Lakes Wilderness	Itafos Conda, LLC	2.37
	P4 Production, LLC	14.05
	The Amalgamated Sugar Company – Twin Falls	4.22
Scapegoat Wilderness	Clearwater Paper Corp-Pulp and Paper Division	4.65

Table 25. Class I areas in Nevada possibly impacted by Idaho facilities using a Q/d threshold of 2.

Class I area	Idaho Facility	2017 Q/d
Jarvis Wilderness	JR Simplot Company- Don Siding Plant	3.56
	P4 Production, LLC	9.49
	The Amalgamated Sugar Company – Nampa	2.51
	The Amalgamated Sugar Company – Paul	2.71
	The Amalgamated Sugar Company – Twin Falls	13.57

Table 26. Class I areas in Oregon possibly impacted by Idaho facilities using a Q/d threshold of 2.

Class I area	Idaho Facility	2017 Q/d
Eagle Cap Wilderness	Clearwater Paper Corp-Pulp and Paper Division	12.48
	The Amalgamated Sugar Company – Nampa	3.26
	The Amalgamated Sugar Company – Twin Falls	3.68
Hells Canyon Wilderness*	Clearwater Paper Corp-Pulp and Paper Division	20.24
	Tamarack Mill, LLC	2.71
	The Amalgamated Sugar Company – Nampa	3.21
	The Amalgamated Sugar Company – Twin Falls	3.85
Mount Hood Wilderness	Clearwater Paper Corp-Pulp and Paper Division	3.81
	Clearwater Paper Corp-Pulp and Paper Division	5.39
Strawberry Mountain Wilderness	The Amalgamated Sugar Company – Nampa	3.05
	The Amalgamated Sugar Company – Twin Falls	3.37

*Shared with Idaho

Table 27. Class I areas in Washington possibly impacted by Idaho facilities using a Q/d threshold of 2.

Class I area	Idaho Facility	2017 Q/d
Alpine Lakes Wilderness	Clearwater Paper Corp-Pulp and Paper Division	4.71
Glacier Peak Wilderness	Clearwater Paper Corp-Pulp and Paper Division	4.34
Goat Rocks Wilderness	Clearwater Paper Corp-Pulp and Paper Division	4.35
Mount Adams Wilderness	Clearwater Paper Corp-Pulp and Paper Division	4.14
Mount Rainier NP	Clearwater Paper Corp-Pulp and Paper Division	4.15
North Cascades NP	Clearwater Paper Corp-Pulp and Paper Division	4.01
Pasayten Wilderness	Clearwater Paper Corp-Pulp and Paper Division	4.10

Table 28. Class I areas in Wyoming possibly impacted by Idaho facilities using a Q/d threshold of 2.

Class I area	Idaho Facility	2017 Q/d
Bridger Wilderness	JR Simplot Company-Don Siding Plant	4.15
	Northwest Pipeline- Soda Springs	4.25
	Itafos Conda, LLC	3.52
	P4 Production, LLC	20.83
	The Amalgamated Sugar Company – Twin Falls	3.49
Fitzpatrick Wilderness	JR Simplot Company-Don Siding Plant	3.83
	Northwest Pipeline- Soda Springs	3.62
	Itafos Conda, LLC	3.01
	P4 Production, LLC	17.80
	The Amalgamated Sugar Company – Twin Falls	3.32
Grand Teton NP	JR Simplot Company-Don Siding Plant	5.86
	Northwest Pipeline- Soda Springs	4.74
	Itafos Conda, LLC	4.59
	P4 Production, LLC	26.25
	The Amalgamated Sugar Company – Twin Falls	4.22
North Absaroka Wilderness	JR Simplot Company-Don Siding Plant	3.37
	P4 Production, LLC	12.80
Teton Wilderness	JR Simplot Company-Don Siding Plant	4.57
	Northwest Pipeline- Soda Springs	3.46
	Itafos Conda, LLC	3.19
	P4 Production, LLC	18.62
	The Amalgamated Sugar Company – Twin Falls	3.75
Washakie Wilderness	JR Simplot Company-Don Siding Plant	3.67
	Northwest Pipeline- Soda Springs	3.07
	Itafos Conda, LLC	2.66
	P4 Production, LLC	15.72
	The Amalgamated Sugar Company – Twin Falls	3.25
Yellowstone NP*	JR Simplot Company-Don Siding Plant	4.92
	Northwest Pipeline- Soda Springs	3.25
	Itafos Conda, LLC	3.06
	P4 Production, LLC	17.91
	The Amalgamated Sugar Company – Twin Falls	4.01

*Shared with Idaho

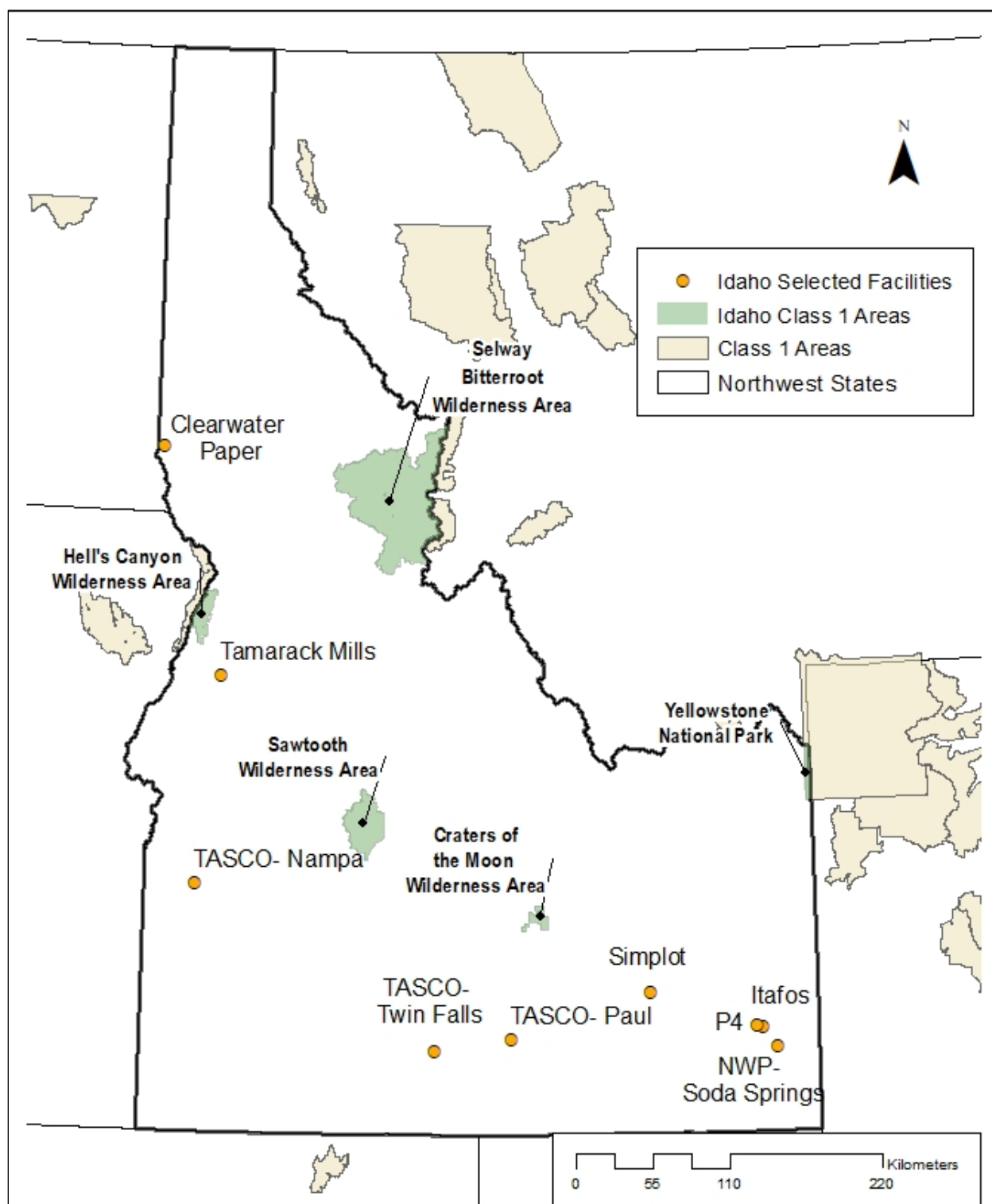


Figure 46. Idaho facilities selected for four-factor analysis using a Q/d threshold of 2.

The Q/d analysis was the primary tool used to identify the facilities selected for four-factor analysis. The WRAP weighted emissions potential (WEP) and rank point analyses were used to

confirm the selected sources, but they were not available until the four-factor analyses were well underway. The WEP is a screening tool used to identify those sources contributing to visibility impairment in the 2014–2018 planning period and still operating in 2028 that have the potential to contribute to haze formation at Class I areas. The rank point analysis consists of facility-level 2028 emissions for NO_x or SO₂ sources overlaid with the corresponding extinction-weighted residence time for ammonium nitrate or ammonium sulfate (WRAP 2020a). The rank point analyses indicate that specific industrial facilities in Idaho and neighboring states potentially have higher relative impacts for nitrate and sulfate. Table 29 and Table 30 show that sulfate and nitrate emissions from Idaho facilities are potentially impacting visibility at Class I areas in surrounding states. Several of Idaho's screened facilities rank among the top ten industrial sources for multiple Class I areas. The results from the Q/d analysis combined with the WEP analysis are useful in determining contributing sources that may be controllable within Idaho and in identifying potentially controllable sources, in surrounding states.

Table 29. Rank of Idaho facilities for SO₄ emissions impacting Class I areas. The darker the cell shading indicates the larger potential impacts on visibility.

Class I Area Monitor	Class I Area State	Clearwater	Itafos	NWP	P4	Simplot	Tamarack Mill	TASCO Nampa	TASCO Paul	TASCO Twin
CRMO1	ID					1		3	5	2
SAWT1	ID					5		1		2
SULA1	ID	9				8		2		7
GLAC1	MT							8		9
MONT1	MT	10						2		6
JARB1	NV							3		2
HECA1	OR						4	1		3
BRID1	WY		6		4					10
NOAB1	WY					7				9
YELL2	WY		6		4	1				5

Table 30. Rank of Idaho facilities for NO_x emissions impacting Class I areas. The darker the cell shading indicates the larger potential impacts on visibility.

Class I Area Monitor	Class I Area State	Clearwater	Itafos	NWP	P4	Simplot	Tamarack Mill	TASCO Nampa	TASCO Paul	TASCO Twin
BRID1	WY			8	1					
CAB11	MT	1								
CRMO1	ID	7			6			5	2	1
GAMO1	MT	6								
GLAC1	MT	4								
HECA1	OR	5					1	3		6
JAB1	NV							3	10	1
MONT1	MT	2						7		
NOAB1	MT				3					
SAWT1	ID	4			8		9	2		7
STAR1	OR	5								
SULA1	ID	1								
ULBE1	MT	7								
YELL2	WY			4	1				5	6

6.2 Emission Unit and Pollutant Selection

DEQ identified the appropriate emission units at the 9 facilities identified in Section 6.1 to undergo a four-factor analysis using the following process:

1. Exclude processes or emission units that emit less than 20 tons per year of PM₁₀, NO_x, and SO₂ combined.(Appendix D)
2. Identify those processes and emission units where the summed emissions make up 70% or more of the total facility-wide emissions. (Appendix D)
3. Identify the pollutant(s) of concern for the nearest Class I area for each facility, using the IMPROVE monitoring data and the WEP ranking.

This process allowed Idaho to conduct a more efficient screening that prioritized control evaluations for the emission units and pollutants at the selected facilities with the greatest potential to improve visibility. Appendix D summarizes all the individual emissions units and processes at each facility selected for a four-factor analysis and highlights Idaho's decision process in prioritizing which emission unit and pollutants to include in the four-factor analysis.

DEQ also reviewed the most recent years of emissions data (2016-2020) for each facility selected for a four-factor analysis (Appendix D). These facility wide summaries include all emission units and processes to ensure that some low emitting emission units not screened for a four-factor analysis were not significant sources of emissions in other years.

Table 31. Emission units and pollutants selected for four-factor analysis.

Facility	Emission Unit	Pollutants
Clearwater Paper	No. 4 Power Boiler	NO _x , SO ₂ , PM ₁₀
Clearwater Paper	No. 4 Recovery Furnace	NO _x
Clearwater Paper	No. 5 Recovery Furnace	NO _x
Itafos	East Sulfuric Acid Plant	SO ₂
NWP-Soda Springs	RICE 4 (TCVA-16)	NO _x
NWP-Soda Springs	RICE 1-3 (TLA-6 Engines)	NO _x
P4	Nodulizing Kiln	PM ₁₀ , SO ₂ , NO _x
Simplot	No. 300 Sulfuric Acid Plant	PM ₁₀ , SO ₂
Simplot	No. 400 Sulfuric Acid Plant	NO _x , SO ₂
Tamarack Mills	Riley Cogeneration Boiler	NO _x , PM ₁₀
TASCO-Nampa	Riley Boiler	PM ₁₀ , SO ₂ , NO _x
TASCO-Paul	B&W Boiler	NO _x
TASCO-Paul	Rentech Boiler	NO _x
TASCO-Paul	North and South Pulp Dryers	PM ₁₀ , SO ₂ , NO _x
TASCO-Twin	Foster Wheeler	PM ₁₀ , SO ₂ , NO _x
TASCO-Twin	B&W Boiler	PM ₁₀ , SO ₂ , NO _x

6.3 Four-Factor Analyses for Point Sources

Under 40 CFR 51.308(f)(2)(i), states must consider four statutory factors to decide what emission control measures are necessary to make reasonable progress:

5. Cost of compliance
6. Time necessary for compliance
7. Energy and non-air quality environmental impacts of compliance
8. Remaining useful life of any potentially affected major or minor stationary source or group of sources

On August 2, 2019, DEQ requested the point sources in Table 31 submit an analysis addressing the four factors. To compare the costs of compliance across facilities, DEQ recalculated costs where possible, using a 3.25% interest rate (bank prime rate at the time of analysis), a 30-year equipment life, and verified that emissions represented the period. The facility submittal and associated DEQ reviews is found in Appendix B.

DEQ's review of the first implementation period's approved BART and reasonable progress controls show that a majority of controls were considered cost-effective at \$5,000/ton or less regardless of whether the modeled visibility benefit was significant. Adjusting the cost for inflation, DEQ determined that any controls having cost-effectiveness of \$6,100/ton or higher would be cost excessive and deemed not reasonable without further justification. Idaho used the Consumer Price Index (CPI) inflation calculator to escalate a \$5,000 cost threshold from January 2010 to April 2021. Neither the Regional Haze Rule nor guidance requires states to establish a specific cost threshold in determining reasonable progress. As a matter of transparency and fairness, Idaho elected to base the cost threshold on prior BART decisions made in the first regional haze implementation period. The threshold is not meant to be a direct comparison to capital project spending or industrial goods, so its validity is not tied to a specific escalation index. It allows enough latitude in determining reasonable controls for a complex mix of emission units brought forward for a four-factor analysis. It neither removes from consideration all technically feasible controls nor automatically considers all controls cost-effective.

DEQ air quality engineers reviewed each facility's four-factor analysis submittals to ensure they followed the EPA cost control manual or provided sufficient justification for their approach. DEQ worked with facilities to use site specific information when available. When facilities did not use EPA recommended values for interest rate and equipment life, DEQ adjusted the submitted cost analysis to recalculate the cost-effectiveness using the EPA recommended values. These adjusted values are included in Appendix B where applicable.

6.3.1 Clearwater Paper Corp.—Pulp and Paperboard Division

Clearwater Paper Corp.—Pulp and Paperboard Division is a large kraft pulp mill located in Lewiston, Idaho. The No. 4 Power Boiler, SO₂, and NO_x, and No. 4 and No. 5 Recovery Furnaces, NO_x and PM₁₀, were selected for four-factor analysis. There were no technically feasible controls for NO_x or PM₁₀ for the No.4 and No. 5 Recovery Furnaces. Wet gas scrubbers, lime spray dryer followed by a baghouse, and circulating dry scrubbers were identified as technically feasible SO₂ controls for the No. 4 Power Boiler. For the No. 4 Power Boiler, NO_x control, low NO_x burners, ultra-low NO_x burners, selective noncatalytic reduction, selective catalytic reduction (SCR), and low temperature oxidation technology (LoTox) were identified as technically feasible options. DEQ determined the cost of compliance for the technically feasible control options for the No. 4 Power Boiler were greater than \$6,100 and not reasonable for the current regional haze implementation period (Appendix B).

6.3.2 Itafos Conda, LLC

Itafos Conda, LLC operates a phosphate mine and fertilizer plant located in Soda Springs, Idaho. The East Sulfuric Acid Plant was selected to undergo a four-factor analysis to identify potential SO₂ controls.

Itafos identified wet flue gas desulfurization, hydrogen peroxide scrubbers, and dry sorbent injection as technically feasible controls for the East Sulfuric Acid Plant. Based on the 2019

Itafos submittal, DEQ determined the three technically feasible controls were cost effective. However, since the original analysis was conducted in late 2019, Itafos submitted an updated cost of compliance analysis that was more representative of their actual operation and present-day costs.

Based on this updated analysis, DEQ determined the cost of compliance for the technically feasible control options for the East Sulfuric Acid Plant were greater than \$6,100 and, therefore, not reasonable for the current regional haze implementation period (Appendix B).

6.3.3 J.R. Simplot Company—Don Siding Plant

The J.R. Simplot Company owns and operates a phosphate fertilizer manufacturing plant, in Pocatello, Idaho. The No. 300 Sulfuric Acid Plant was initially selected to complete a four-factor analysis for PM₁₀ and SO₂, and the No. 400 Sulfuric Acid Plant was initially selected for NO_x and SO₂. EPA issued a Consent Decree on December 2, 2015, which established best available control technology (BACT) equivalent limits for SO₂ from both the No. 300 and No. 400 Sulfuric Acid Plants. These limits were incorporated into the Tier I Operating Permit T1-2017.0024 issued April 3, 2020. Based on the 2019 Regional Haze guidance, new, reconstructed, or modified emission units that went through BACT review under the prevention of significant deterioration (PSD) program or lowest achievable emission rate (LAER) review under the nonattainment new source review program for major sources and received a construction permit on or after July 31, 2013, on a pollutant-specific basis may be considered to already have effective emission control technology in place. DEQ determined it reasonable to restrict the scope of the analysis for these emission units and requested that Simplot's four-factor analysis only address PM₁₀ emissions from the No. 300 Sulfuric Acid Plant and NO_x emissions from the No. 400 Sulfuric Acid Plant (Appendix B).

There were no technically feasible controls identified for the No. 400 Sulfuric Acid Plant for NO_x. Wet electrostatic precipitator (ESP) was identified as a technically feasible control option for PM₁₀ on the No. 300 Sulfuric Acid Plant. DEQ determined that the cost of compliance for wet was greater than \$6,100/ton and, therefore, not reasonable for the current Regional Haze implementation period.

6.3.4 Northwest Pipeline—Soda Springs

Northwest Pipeline—Soda Springs (NWP) is a natural gas compression station located in Georgetown, near Soda Springs, Idaho. The facility has four natural gas-fired lean-burn reciprocating internal-combustion engines (RICE). The Soda Springs Compressor Station operates remotely and is used to compress and transmit natural gas along their natural gas transmission pipeline. The 3 TLA-6 and the 1 TCVA-16 emission units were selected for four-factor analysis for NO_x.

A low emission combustion (LEC) retrofit was determined to be a technically feasible control for NO_x for all four RICE emission units at the NWP compressor station. DEQ determined that the cost of compliance for LEC retrofit was greater than \$6,100/ton and, therefore, not reasonable for the current Regional Haze implementation period.

6.3.5 Tamarack Mill, LLC dba Evergreen Forest and Tamarack Energy Partnership

The Tamarack Mill, LLC dba Evergreen Forest and Tamarack Energy Partnership, is a manufacturer of dry kiln lumber and cogenerator of energy located in New Meadows, Idaho. The Riley Cogeneration Boiler was selected to complete a four-factor analysis for NO_x and PM₁₀. (Appendix B).

Tamarack identified selective noncatalytic reduction as a technically feasible control for NO_x and an ESP for PM₁₀ on the Riley Cogeneration Boiler. Tamarack has an existing multiclone and wet scrubber installed for PM₁₀ control that is more effective than the proposed ESP control. DEQ determined that the cost of compliance for the technically feasible controls options were greater than \$6,100/ton and, therefore, not reasonable for the current Regional Haze implementation period.

6.3.6 The Amalgamated Sugar Company—Nampa

The TASCO-Nampa facility operates a beet sugar manufacturing plant that processes sugar beets into refined sugar located in Nampa, Idaho. The dual-fueled Riley Boiler was selected to undergo a four-factor analysis for PM₁₀, SO₂, and NO_x (Appendix B).

DEQ determined that the most effective PM control device (a fabric filter baghouse) was being employed on the Riley Boiler. DEQ also determined the cost of compliance for the several technically feasible SO₂ and NO_x control options, in Table 32, for the Riley Boiler were less than \$6,100 and, therefore, may be reasonable for the current Regional Haze implementation period (Appendix B).

On June 2, 2022, TASCO-Nampa submitted a letter where they commit to transition to the use of natural gas only and to discontinue the use of coal in the Riley boiler at the Nampa facility by June 2027. The Riley boiler switch to combusting only natural gas represented the greatest reduction in emissions (1,171.5 tons per year of combined NO_x, SO₂, and PM₁₀) among all the cost-effective control options evaluated. Therefore, DEQ determined this change on the Riley Boiler met the Reasonable Progress requirement under the Regional Haze Rule for this facility. Thus, it is not reasonable to require additional controls for the Riley boiler and pollutants identified above for the current regional haze planning period.

Table 32. Control technologies identified as cost-effective for the Riley Boiler.

Pollutant	Control Option	Annual Emission Reduction (tpy)	Cost-Effectiveness (\$/ton)
SO ₂	Low sulfur coal	135.7	1,430
SO ₂	DSI ^a	508.3	3,350
SO ₂	DFGD ^b	965.6	3,810
SO ₂	WFGD ^c	989.5	3,910
NO _x	SCR ^d	311.6	5,970
NO _x	LNB (NG) ^e	135	3,031
NO _x , SO ₂ , PM ₁₀	Existing Primary Fuel Replacement	1,171.5	1,408

a. DSI- dry sorbent injection

b. DFGD- dry flue gas desulfurization

c. WFGD- wet flue gas desulfurization

d. SCR- selective catalytic reduction

e. LNB (NG)- low NO_x burners while using natural gas

6.3.7 The Amalgamated Sugar Company—Paul

The TASCO-Paul facility produces refined sugar and animal feed products from sugar beets. The natural gas-fired Rentech Boiler, and the dual-fired B&W boiler, and the North and South Pulp Dryers were selected for four-factor analysis for NO_x, SO₂, and PM₁₀ (Appendix B).

DEQ determined the cost of compliance for all technically feasible control options for the B&W Boiler were greater than \$6,100 and, therefore, not reasonable for the current Regional Haze implementation period (Appendix B). DEQ also determined the cost of compliance for several technically feasible control options, in Table 33, for the south pulp dryer, north pulp dryer, and Rentech Boiler were less than \$6,100 and, therefore, may be reasonable for the current regional haze implementation period.

Table 33. Control technologies Identified as cost-effective for TASCO-Paul.

Emission Unit	Pollutant	Control Option	Annual Emission Reduction (tpy)	Cost-Effectiveness (\$/ton)
South Pulp Dryer	SO ₂	DFGD	4.2	5,910
South Pulp Dryer	NO _x	LNB coal	47.7	3,050
South Pulp Dryer	NO _x , SO ₂ , PM ₁₀	Existing Primary Fuel Replacement	125.96	2,099
North Pulp Dryer	NO _x	LNB coal ^a	69.3	2,320
North Pulp Dryer	NO _x , SO ₂ , PM ₁₀	Existing Primary Fuel Replacement	159.42	1,903
Rentech Boiler	NO _x	ULNB ^b	48.1	1,090

a. LNB- low NO_x burner when using coal

b. ULNB- Ultra low NO_x burner when using natural gas

6.3.8 The Amalgamated Sugar Company—Twin Falls

The TASCO-Twin Falls facility produces refined sugar from sugar beets. In addition to processing sugar beets into sugar, TASCO-Twin Falls produces animal feed products such as pulp and

betaine. The Foster Wheeler (coal-fired) and B&W Boilers (coal and natural gas-fired) were both selected for four-factor analysis for NO_x, SO₂, and PM₁₀ (Appendix B). DEQ determined the cost of compliance for several technically feasible control options, in Table 34, for the Foster Wheeler and B&W Boilers were less than \$6,100 and, therefore, may be reasonable for the current regional haze implementation period.

On March 5, 2020, DEQ requested TASCO – Twin Falls evaluate the technical feasibility and cost effectiveness of removing coal as an allowable fuel for the B&W Boiler as a control option. While DEQ was finishing the review of TASCO – Twin Falls' submittal, DEQ received a permit application that impacted that review. On June 23, 2021, DEQ received an application for a Tier I administrative amendment to remove coal as an allowable fuel for the B&W Boiler. DEQ issued the Tier I amendment for this fuel change on July 22, 2021.

Table 34. Control technologies Identified as cost-effective for TASCO-Twin Falls.

Emission Unit	Pollutant	Control Option	Annual Emission Reduction (tpy)	Cost-Effectiveness (\$/ton)
Foster Wheeler boiler	SO ₂	Dry FGD	250.2	5,420
Foster Wheeler boiler	NO _x	SNCR	90.8	5,420
B&W boiler	NO _x	LNB natural gas ^a	196	2,900
B&W boiler	NO _x	SCR	202.1	4,580
B&W boiler	SO ₂	Low Sulfur Bituminous Coal	135.7	625
B&W boiler	SO ₂	Dry Sorbent Injection	278.3	4,580
B&W boiler	SO ₂	Wet FGD LSO	540	5,270
B&W boiler	SO ₂	Dry FGD LSD	528.8	5,040
B&W boiler	NO _x , SO ₂ , PM ₁₀	Existing Primary Fuel Replacement	693.9	1,128

The B&W boiler switch to combusting only natural gas represented the greatest reduction in emissions (694 tons per year of combined NO_x, SO₂, and PM₁₀) among all the cost-effective control options evaluated. DEQ determined that the most effective particulate matter control device (a fabric filter baghouse) was being employed on both the Foster Wheeler and B&W Boilers. Therefore, DEQ determined this change on the B&W Boiler met the Reasonable Progress requirement under the Regional Haze Rule for this facility. Thus, not reasonable to require additional controls for TASCO-Twin Fall's emission units and pollutants identified above for the current regional haze planning period.

After DEQ made the determination above regarding reasonable progress controls for the Twin Falls facility, DEQ received an application from TASCO – Twin Falls to convert the Foster Wheeler boiler from only coal to only natural gas by January 1, 2023. DEQ issued a Tier 1 amendment to make this change federally enforceable on February 7, 2022. This change will result in a reduction of 775.85 tons per year of NO_x, PM₁₀, and SO₂.

6.3.9 P4 Production LLC

P4 Production LLC (P4) owns and operates an elemental phosphorus manufacturing facility located in Soda Springs, Idaho. The nodulizing kiln was selected for four-factor analyses for NO_x, PM₁₀, and SO₂ as a result of the source screening process (Appendix B).

The facility concluded that there were no technically feasible controls for NO_x. PM₁₀ is controlled by the currently installed Venturi scrubbing system with the attached cyclone that achieves similar control effectiveness of the wet ESPs and wet scrubbers that were identified as potentially feasible controls. Additional SO₂ controls were found to be technically infeasible. P4 concluded that the facility already utilizes the most effective SO₂ control, a Lime Concentrate Dual Alkali system. No cost analysis was completed since no additional controls were found to be technically feasible or more effective than the ones currently installed.

6.4 Determination of Reasonable Point Source Controls

The four-factor analysis process resulted in 3 facilities, TASCO – Paul, TASCO – Twin Falls, and TASCO – Nampa, where the cost of compliance for several technically feasible control options were less than \$6,100, and therefore, may be reasonable for the current regional haze implementation period. As stated in Sections 6.3.6 and 6.3.8, DEQ determined the following control options meet reasonable progress control requirements for the Nampa and Twin Falls facilities:

- Remove coal as an allowable fuel for the Riley Boiler by June 2027 at the TASCO– Nampa facility.
- Remove coal as an allowable fuel for the B&W Boiler at the TASCO– Twin Falls facility. This emission reduction is considered federally enforceable as amended in TASCO– Twin Falls’ Tier I permit issued on Nov. 5, 2021 (T1-2016.0017).

TASCO also made the following emission reductions, considered above and beyond reasonable progress controls, at their Twin Falls facility:

- Convert the Foster Wheeler Boiler from only coal to only natural gas with LNB no later than January 1, 2023. This emission reduction is considered permanent and federally enforceable as amended in TASCO–Twin Falls’ Tier I permit issued on Nov. 5, 2021 (T1-2016.0017).

The conversion of the Foster Wheeler boiler from coal to natural gas at the Twin Falls facility will result in 775.85 tons per year of NO_x, PM₁₀, and SO₂. This emission reduction is much larger than the NO_x and SO₂ cost-effective controls in Table 33 which would have resulted in only 454.68 tons per year of NO_x and SO₂. This represents an overcontrol of 321.17 tons per year of NO_x, PM₁₀, and SO₂ at the Twin Falls facility.

The TASCO – Paul facility cost-effective control options with the greatest emission reductions, eliminating coal for the N. and S. Pulp dryers and ULNB for the Rentech boiler, would only account for a total of 333.48 tons per year of NO_x, PM₁₀, and SO₂.

Overall, the conversion of the Foster Wheeler boiler is an over control of 19.42 tons per year of NO_x, PM₁₀, and SO₂ over the cost-effective controls with the greatest emission reductions shown in Tables 33 and 34 above.

The TASCO—Twin Falls is located within 38 miles WSW of TASCO—Paul. Therefore, both of these facilities impact the same Class I areas. Based on the rank point from the WEP analysis, TASCO—Twin Falls impacts visibility at more Class I areas in the region and causes greater impairment, particularly from sulfate precursors (Table 23 and 24).

Based on the information presented above and in Appendix B, DEQ has determined that limiting the Riley Boiler to only natural gas by June 2027 at the TASCO – Nampa facility and B&W and Foster Wheeler boilers to only natural gas at TASCO – Twin Falls are reasonable controls for this implementation period. DEQ has also determined that no additional controls are required at the TASCO – Paul facility for this planning period due to the over control of the Foster Wheeler boiler at the Twin Falls facility. Idaho’s Class I areas are currently below the adjusted uniform rate of progress needed to achieve the 2064 visibility end goal and are projected to remain below the rate of progress through 2028. Idaho will continue to monitor visibility at its Class I Areas and will reevaluate whether additional controls are needed with the next progress report or next implementation period.

Table 35 summarizes the reasonable progress for the TASCO facilities. Overall, TASCO will reduce a total of 2,641.25 tons per year of NO_x, PM₁₀, and SO₂ not already accounted for in the RepBase2 or 2028OTBa2 point source EI.

Table 35. Reasonable progress controls for the second implementation period.

Emission Unit	Control Option	Pollutant	PM10, NOx, and SO2 Emissions (tons/year)		
			Actual	Future	Reduction
TASCO - Nampa					
Riley Boiler	Convert from duel-fired coal/NG to only NG	NO _x	386.04 ^b	255.01 ^d	131.03
Riley Boiler	Convert from duel-fired coal/NG to only NG	PM ₁₀	31.86 ^b	7.05 ^d	24.63
Riley Boiler	Convert from duel-fired coal/NG to only NG	SO ₂	1016.4 ^b	0.56 ^d	1015.84
Total reduction in emissions for Riley Boiler			1,171.5		
TASCO – Twin Falls					
Foster Wheeler Boiler	Convert from coal fired to NG with LNBs	NO _x	302.59 ^a	59.3 ^c	243.29
Foster Wheeler Boiler	Convert from coal fired to NG with LNBs	PM ₁₀	38.15 ^a	5.5 ^c	32.65
Foster Wheeler Boiler	Convert from coal fired to NG with LNBs	SO ₂	500.4 ^a	0.5 ^c	499.91
Total reduction in emissions for Foster Wheeler Boiler			775.85		
B&W Boiler	Convert from duel-fired coal/NG to only NG	NO _x	251.23 ^b	124.84 ^d	126.39
B&W Boiler	Convert from duel-fired coal/NG to only NG	PM ₁₀	17.86 ^b	6.78 ^d	11.08
B&W Boiler	Convert from duel-fired coal/NG to only NG	SO ₂	556.97 ^b	0.54 ^d	556.43
Total reduction in emissions for B&W Boiler			693.90		

a. 2014 NEI v2

b. TASCO – Twin Falls and Nampa February 28, 2020 submittal, based on 2014 actual fuel use

c. TASCO – Twin Falls PTC Exemption Concurrence Request on October 26, 2021

d. DEQ analysis of Existing Primary Fuel Replacement Control Option (Appendix B)

7 Long-Term Strategy

The long-term strategy is one of the core components of the regional haze state implementation plan. The CAA § 169A(b)(2)(B) requires a Regional Haze SIP to include a long-term strategy for making reasonable progress toward the national goal of remedying any existing visibility impairment in Class I areas that results from human-caused air pollution and preventing future visibility impairment.

The long-term strategy requirements to evaluate and determine the emission reduction measures that are necessary to make reasonable progress by considering the costs of compliance, the time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected anthropogenic source of visibility impairment are met in Sections 6.3 and 6.4 (40 CFR 51.308(f)(2)(i). Idaho's coordinated emissions strategy is described in Section 8 (40 CFR 51.308(f)(2)(ii)(A)-(C). Idaho relied on the WRAP TSS for the technical information presented in this SIP, including

monitoring, emissions information, and source apportionment modeling to determine the emission reduction measures that are necessary to make reasonable progress in each Class I area it affects (40 CFR 51.308(f)(2)(iii)). Lastly, the regional haze rule requires that states consider the following factors in developing their long-term strategy (40 CFR 51.308(f)(2)(iv)):

- 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. Basic 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.

DEQ's long-term strategy incorporates the results of federally mandated controls applicable to out-of-state sources of emissions, as well as vehicles, that contribute to visibility impairment in Idaho's Class I areas and the measures identified by the four-factor analysis to meet the reasonable progress goals in section 9. DEQ's emissions control authority only applies to sources and pollutants within Idaho's regulatory jurisdiction. Emission sources that contribute to visibility impairment in Idaho but are outside of DEQ's regulatory jurisdiction include wildfires and transportation. This section describes Idaho's long-term strategy for visibility improvement for the second implementation period including the existing regulatory mechanisms that help achieve the reasonable progress goals. Idaho's long-term strategy for making reasonable progress also includes projected improvement of implementing many other CAA requirements, including non-SIP based requirements that address visibility impairment, e.g., existing and on-the-books/on-the-way measures identified pursuant to the five additional factors in 40 CFR 51.308(f)(2)(iv).

7.1 Emission Reductions Due to Ongoing Air Pollution Programs

40 CFR 51.308(f)(2)(iv)(A) requires Idaho to consider emission reductions due to ongoing air pollution control programs. The following sections describe programs and regulations in Idaho that directly protect visibility or can be expected to improve visibility in Idaho's Class I areas as a co-benefit, by reducing emissions from sources of visibility-impairing pollutants in general.

7.1.1 Prevention of Significant Deterioration and Nonattainment New Source Review Programs

Idaho's PSD and Nonattainment New Source Review (NNSR) Programs are the primary tools for future protection of visibility at Idaho's Class I areas from major point source emissions. These programs require new major sources and major modifications at existing major sources install the BACT in attainment and unclassifiable areas and LAER in nonattainment areas. The Idaho PSD and NNSR permitting programs are described at IDAPA 58.01.01.200-228 and are EPA approved.

7.1.2 Federal Mobile Source Regulations

NO_x emissions from the mobile sector remain the dominant anthropogenic source of visibility impairment at Idaho's Class I areas (section 5). Federal fuel and engine rules are of special importance to our reasonable progress goals because they have resulted in large reductions in mobile source air pollution during the last 30 years. The 2028 emissions projection show a significant decrease in NO_x emissions from the mobile sector (section 4.6) that indicates improvement in nitrate light extinction at all three Idaho's Class I areas (section 5). This decrease is due to improvements in vehicle and engine design and cleaner, higher-quality fuels (even with more miles driven and more power equipment used every year) under the following federal emission standards for on-road and nonroad vehicles and engines, and related fuel sulfur standards (EPA 2021):

- Light-Duty Vehicles and Trucks and Motorcycles Emission Standards
- Heavy-Duty Highway Engines and Vehicles Emission Standards
- Nonroad Engines and Vehicles Emission Standards
- Fuel Sulfur Standards

7.1.3 Programs for Maintaining National Ambient Air Quality Standards

Idaho currently has several areas that were classified as nonattainment; they have all been redesignated to attainment, and EPA approved a maintenance plan for each of those areas.

7.1.3.1 Northern Ada County Carbon Monoxide Limited Maintenance Plan and PM₁₀ Maintenance Plan

Northern Ada County was designated nonattainment for CO under the provisions of the 1977 CAA amendments. EPA approved the CO maintenance plan and redesignation request on October 28, 2002, which contained the following control measures (67 FR 65713:

- Local ordinances that ban residential woodstoves and open burning when high air quality concentrations occur.
- Voluntary transit control measures to increase ridership of alternative transportation
- Voluntary oxygenated fuel with a tax incentive that reduced the tax by 2.5% per gallon if the fuel contained 10% by volume ethanol
- Replacement of diesel commuter buses with compressed natural gas buses by the City of Boise

In 2003, EPA took final action to approve the PM₁₀ maintenance plan for the Ada County/Boise area as a SIP revision and redesignated the area to attainment for PM₁₀ (63 FR 61106). This plan included the following control measures:

- Local ordinances that ban residential woodstoves and open burning when high air quality concentrations occur.
- EPA approved air quality permitting program

These two maintenance plans reduce both CO and PM emissions in the surrounding Class I areas, including the Sawtooth Wilderness, Craters of the Moon Wilderness, Eagle Cap Wilderness (Oregon), and Hells Canyon Wilderness.

7.1.3.2 Portneuf Valley PM₁₀ Maintenance Plan

On July 13, 2006, EPA approved a PM₁₀ maintenance plan submitted by Idaho and redesignated the area back to the attainment of the PM₁₀ NAAQS (71 FR 39574). The plan contains several voluntary and enforceable control measures:

- Residential woodstove education program and local ordinances that require all new stoves to be EPA certified.
- Local ordinances that ban residential woodstoves and open burning when high air quality concentrations occur.
- Voluntary woodstove buyout program.
- Road-sanding program that reduced sanding materials between 15% and 35%; in addition, all of the communities within the maintenance area use regenerative air street sweepers to clean up sanding material as soon as possible.
- Consent order requiring reasonable available control technology controls on the only major industrial source.
- SIP requirement that transportation adheres to a motor vehicle emissions budget.

Reductions from these control measures affect visibility at Craters of the Moon Wilderness, Yellowstone National Park, and other nearby Class I areas.

7.1.3.3 Sandpoint PM₁₀ Limited Maintenance Plan

On April 3, 2013, EPA approved the Sandpoint PM₁₀ Limited Maintenance Plan (78 FR 20001) and redesignated the area to attainment for PM₁₀ that includes the following controls:

- Residential woodstove program with both education and local ordinances that only allow the sale of new, EPA-certified stoves
- Woodstove program that changed out 150 uncertified woodstoves
- Voluntary woodstove curtailment program
- Local ordinance that sets specific standards for the amount of *fines* (dust in the sand) in the antiskid material applied to roads as a means to reduce fugitive dust
- Street sweeping program in Sandpoint to remove road-sanding material as soon as possible
- Local ordinance that prohibits open burning and the use of noncertified woodstoves and fireplaces based on the Air Quality Index

This plan reduces PM in northern Idaho. The nearest Class I areas are Cabinet Mountains Wilderness, Mission Mountains Wilderness, and Selway-Bitterroot Wilderness.

7.1.3.4 Pinehurst PM₁₀ Limited Maintenance Plan

EPA approved the redesignation request and limited maintenance plan for the City of Pinehurst PM₁₀ nonattainment area and the Pinehurst PM₁₀ expansion nonattainment area in 2018

(83 FR 45830). The plan demonstrated a reduction in PM pollution from an implemented home weatherization program, multiple woodstove replacement programs over the years as funding was available, and road dust control.

7.1.3.5 Logan UT-ID PM_{2.5} 24-Hour Maintenance Plan

On May 19, 2021, EPA approved and redesignated the Idaho side of the Logan UT/ID nonattainment area to attainment for the 2006 PM_{2.5} 24-hour NAAQS (86 FR 27035). The maintenance plan included the following control measures:

- Reduced the amount of road sanding material and increased the amount of liquid deicer.
- Implemented residential woodstove combustion and open burning ordinances by the cities and Franklin County to control burning during air quality alerts.
- Instituted the DEQ Air Quality Index program for the Idaho side of Cache Valley as an education and information tool for the public.
- Provided incentives to replace outdated woodstoves with energy and emission efficient EPA-certified woodstoves.

Emissions reductions in this area affect visibility impacts from PM and CO at Craters of the Moon Wilderness and Class I areas in surrounding states.

7.1.3.6 West Silver Valley PM_{2.5} Maintenance Plan

On November 16, 2021, EPA approved the maintenance plan and redesignation request for the West Silver Valley PM_{2.5} nonattainment area (86 FR 63315). In addition to the 2015 New Source Performance Standards (NSPS) Subpart AAA that strengthened emissions standards for residential wood heaters and the more stringent federal regulations for fuel, on-road, and nonroad sources, the maintenance plan documented a well-funded woodstove changeout program that incentivized replacing over 180 woodstoves in the area.

7.1.4 Best Available Retrofit Technologies

When developing the original Regional Haze SIP, two Idaho facilities were identified as subject to BART. The first facility, P4 Production (formerly Monsanto) had recently undergone a BACT review and installed a LCDA scrubber to control sulfur oxides (SO_x) emissions in 2005. The review of the control technologies determined the LCDA scrubber met the BART requirements, and there were no technically feasible emission controls for NO_x. Considering the 2002 SO_x emissions from all point sources in the state were roughly 18,000 tpy, the 11,000 tpy reduction from the LCDA scrubbers was substantial. DEQ concluded, and EPA concurred, that existing controls were BART for the NO_x and PM emissions from the #5 Rotary Kiln (76 FR 36329).

DEQ identified one emission unit, Riley Boiler, at the second facility, TASCO-Nampa. DEQ determined that flue gas desulfurization and low NO_x burners with over-fire air on the Riley Boiler were determined to be effective control technologies. This measure was approved as part of the Regional Haze SIP approval on May 22, 2012 (77 FR 30248). Following EPA approval, TASCO-Nampa requested a BART alternative, which included putting low NO_x burners for coal on the Riley Boiler and both B&W Boilers or switching to natural gas for these boilers and

permanently shutting down the pulp dryers. The BART alternative changes equated to a 651.6 pound per hour reduction in NO_x and PM₁₀ over the previous BART determination. EPA approved the BART alternative on April 28, 2014 (79 FR 23278).

TASCO-Nampa is currently implementing the approved BART alternative. In January 2017, the B&W Boilers began firing natural gas only, and the Riley Boiler has been firing natural gas. LNBs for coal are not yet operational on the Riley Boiler. Emissions at the TASCO-Nampa facility have declined due to compliance with the BART alternative requirements; reductions include 221 tpy of NO_x, 20.6 tpy of SO₂, and 113 tpy of PM (78 FR 38872).

7.2 Measures to Mitigate the Impacts of Construction Activities

The Regional Haze Rule (40 CFR 51.308(f)(2)(iv)(B)) requires states to consider measures to mitigate the impacts of construction activities. Fugitive and windblown dust are the major source of PM associated with construction activities. IDAPA 58.01.01.651 and 652 address control of fugitive dust from activities such as construction by requiring all reasonable precautions to be taken to prevent PM from becoming airborne. In determining what is reasonable, the rule specifically identifies activities and "the proximity to mandatory Class I Federal Areas" as a factor to be considered. The types of control measures listed in the rule include using water or chemicals, applying dust suppressants, using control equipment, covering truckloads, paving roads, and promptly removing materials.

7.3 Source Retirement and Replacement Schedules

The Regional Haze Rule (40 CFR 51.308(f)(2)(iv)(C)) requires states to consider emissions source retirement and replacement schedules. At this time, DEQ is not aware of any sources expecting to shut down or any scheduled replacements. If shutdowns or replacements do occur, they will be included as part of future projections.

7.4 Basic Smoke Management Practices

The Regional Haze Rule (40 CFR 51.308(f)(2)(iv)(D)) requires that all states consider, in a reasonable way, basic smoke management practices (BSMPs) for prescribed fire used for agricultural and wildland vegetation management purposes.

Idaho's current open burning rules (IDAPA 58.01.01.600–624) regulate all open burning on lands other than the five Indian reservations in Idaho. These rules include both agricultural burning and prescribed fire used for managing wildland vegetation. The purpose of these open burning rules is to protect human health and the environment from air pollutants resulting from open burning, as well as, to reduce the visibility impairment in mandatory Class I federal areas per the state's regional haze long-term strategy.

As described in the regional haze guidance (EPA 2019a), one reasonable way to address smoke management requirements is to identify and explain how basic smoke management practices

are required by state law or are promoted as voluntary measures. Idaho exceeds these guidance criteria through the rules and efforts highlighted in the following sections.

7.4.1 Agriculture Residue Prescribed Burning

IDAPA 58.01.01.617–624 addresses the burning of agricultural crop residue in Idaho. Idaho regulates all crop residue burning (CRB), outside the five Reservation boundaries, with a permit-by-rule. Idaho’s CRB program meets all the BSMPs listed in Table 1 to 40 CFR 50.14; as well as, meeting all the requirements for a state-certified smoke management plan. DEQ has successfully implemented the CRB program throughout the state since 2008 and publishes an [annual report on crop residue burning](#).

7.4.2 Wildland Prescribed Fire

DEQ regulates all wildland prescribed burning, outside the five Reservation boundaries, under IDAPA 58.01.01.614. DEQ’s prescribed fire rules are designed to protect public health by ensuring smoke management considerations are included in all burning.

Currently, several large private industrial landowners, IDL, USFS, BLM, NPS, and the USFW are voluntarily participating in the Montana-Idaho Airshed group (MIAG 2010). Becoming a member of this group commits the member to adhere to an operations guide that includes a burn request, approval process, and other basic smoke management techniques.

DEQ is currently undertaking a rulemaking to update the prescribed fire rules and is working closely with IDL to evaluate both agencies’ existing guidance, policies, rules, and statutes that apply to all prescribed fire. IDL and DEQ will use this evaluation to make recommendations for an appropriate smoke management approach for Idaho.

With the expected increase in prescribed fire activity to minimize the increasing severity of wildfires, prescribed fire smoke management is becoming a critical concern in Idaho. DEQ and IDL continue to focus efforts on developing and implementing a smoke management program that aligns prescribed fire activity with the BSMP requirements included in Table 1 to 40 CFR 50.14.

7.5 Anticipated Net Effect on Visibility

The Regional Haze Rule (40 CFR 51.308(f)(2)(iv)(E)) requires states show 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 (See Section 4.6).

7.5.1 Future Emission Reductions

The four statutory factors identified two reasonable progress emission reduction measures at the TASCO–Twin Falls facility and one at the TASCO–Nampa that reduce a total of 2,641.25 tons per year of NO_x, PM₁₀, and SO₂ (Section 6.4). Idaho is ensuring these emission reductions are federally enforceable as follows:

TASCO—Twin Falls’ Tier I Permit, T1-2016.0017, issued on November 5, 2021 (Appendix E)

- Foster Wheeler Boiler – permit condition 4.9
- B&W Boiler – permit condition 5.2

TASCO—Nampa

- The elimination of the coal will be made federally enforceable through a permit action and will be submitted to EPA as an amendment to this SIP no later than August 1, 2023.

Table 36 shows the total emission reductions expected to improve visibility during this implementation period. The anticipated changes in visibility are described in Section 9.2.

Table 36. Idaho anticipated reduction in emissions (tpy).

Source Category	NH ₃	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC
Mobile Source OTB Reductions	-150	-39,884	-1335	-1394	-79	-17,715
Point Source OTB Reductions	0	-141	143	65	-455	0
Point Source Reasonable Emission Controls	0	-500	-68	0	-2072	0
Total	-150	-40,525	-1,260	-1,329	-2,606	-17,715

7.5.2 Existing Effective Controls

The results of the four-factor analysis for several facilities showed that either 1) the emission units currently have existing controls that are considered the most effective and therefore, a full four-factor analysis was not completed for the applicable emission unit and pollutant, or 2) no new controls were identified for the specific emission unit and pollutant that were technically feasible and cost-effective. These existing effective controls or current emission rates contribute to meeting Idaho’s reasonable progress goals (RPGs) at its Class I areas. DEQ determined that none of these existing controls and emission rates needed to be included in the SIP as follows:

7.5.2.1 Clearwater Paper Corp.—Pulp and Paperboard Division

Table 37 shows the actual emissions for the emission units and pollutants selected for four-factor analysis.

Table 37. Clearwater Paper Corp – PPD 2014 – 2020 annual emissions (Appendix D).

Pollutant	2014	2015	2016	2017	2018	2019	2020
No. 4 Power Boiler							
NO _x	446.00	494.07	494.00	498.45	380.05	379.93	385.94
SO ₂	34.00	43.05	43.00	43.03	43.98	43.95	27.02
No. 4 Recovery Furnace							
NO _x	169.5	154.85	148.99	177.92	186.58	174.32	183.45
PM ₁₀	19.7	18.00	17.32	19.68	20.96	20.34	11.54
No. 5 Recovery Furnace							
NO _x	421.96	411.74	404.25	429.11	467.17	422.48	470.06
PM ₁₀	19.37	18.90	18.56	17.81	19.46	20.38	23.26

- No. 4 Power Boiler
 - SO₂— The current emission limits, 0.80 lb/MMBtu, incorporated into the Tier I Operating Permit T1-2020.0024 issued November 26, 2021 are to comply with 40 CFR Part 60 Subpart D – Standards of Performance for Fossil-Fuel Fired Steam Generators. Table 37 shows that the SO₂ emissions have remained consistent since 2014, except for 2020 which is lower and therefore are not likely to increase. Since the emission limits incorporated into the Tier I Operating Permit are established to comply with a federal regulation and the annual emissions are not likely to increase over 2014 emissions, SO₂ emission limits for this emission unit do not need to be included in this SIP.
 - NO_x— The current emission limits, 0.2lb/MMBtu when firing gas and wood and 0.3 lb/MMBtu when firing oil and wood, incorporated into the Tier I Operating Permit T1-2020.0024 issued November 26, 2021 are to comply with 40 CFR Part 60 Subpart D – Standards of Performance for Fossil-Fuel Fired Steam Generators. Table 37 shows that the NO_x emissions for 2015-2017 are consistent and 2018-2020 are consistent and lower than the 2015-2017 emissions. Therefore, NO_x emissions are not likely to increase over 2014 levels, which were used in the 2028OTBa2 projection. Since the emission limits incorporated into the Tier I Operating Permit are established to comply with a federal regulation and the annual emissions are not likely to increase over 2014 emissions, NO_x emission limits for this emission unit do not need to be included in this SIP.
- No. 4 recovery furnace
 - PM₁₀—currently equipped with an ESP to control PM emissions to comply with 40 CFR Part 63 Subpart MM, National Emission Standards for Hazardous Air Pollutants; Idaho requirements for fuel burning PM limits (IDAPA 58.01.01.675); and Idaho process weight rate requirements (IDAPA 58.01.01.700). This unit has a PM emission limit of 0.04 at 8% oxygen that is incorporated into the Tier I Operating Permit T1-2020.0024 issued November 26, 2021. The original underlying permit for this PM emission limit (permit number 13-1140-0001-03) is approved into Idaho's SIP (40

CFR 52.670(d), EPA Approved Idaho Source-Specific Requirements). Therefore, the use of the ESP and resulting emission limits are federally enforceable and already included in Idaho's SIP.

- NO_x—Table 37 shows that the NO_x emissions, which were used in the 2028OTBa2 projection, have been consistent since 2014 and therefore not likely to increase. Therefore, NO_x emission limits for this emission unit do not need to be included in this SIP.
- No. 5 recovery furnace
 - PM₁₀— currently equipped with an ESP to control PM emissions to comply with 40 CFR Part 63 Subpart MM, National Emission Standards for Hazardous Air Pollutants; Idaho requirements for fuel burning PM limits (IDAPA 58.01.01.675); and Idaho process weight rate requirements (IDAPA 58.01.01.700). This unit has PM emission limits of 0.044 gr/dscf at 8% oxygen, and 0.03 gr/dscf or 58 lb/hr that are incorporated into the Tier I Operating Permit T1-2020.0024 issued November 26, 2021. Table 37 shows that the PM₁₀ emissions, which were used in the 2028OTBa2 projection have remained consistent since 2014 and therefore not likely to increase. The Idaho requirements for fuel burning equipment for PM (IDAPA 58.01.01.675 – 681) are already incorporated into Idaho's approved SIP (40CFR 52.670(c)). Since the emission limits are established to comply with a SIP approved rule, incorporated into the Tier I Operating Permit, are used to comply with a federal regulation and the annual emissions have been consistent since 2014, PM₁₀ emission limits for this emission unit do not need to be included in this SIP.
 - NO_x— The current emission limits of 160 lb/hr or 700 t/yr or 100 ppm are incorporated into the Tier I Operating Permit T1-2020.0024 issued November 26, 2021. Table 37 shows that the NO_x emissions, which were used in the 2028OTBa2, have remained consistent since 2014, and therefore not likely to increase. Therefore, NO_x emission limits for this emission unit do not need to be included in this SIP.

7.5.2.2 J.R. Simplot Company—Don Siding Plant

- No. 300 Sulfuric Acid Plants
 - SO₂— EPA issued a Consent Decree on December 2, 2015, which established best available control technology (BACT) equivalent limits for SO₂ from both the No. 300 and No. 400 Sulfuric Acid Plants. These emission limits were incorporated into the Tier I Operating Permit T1-2017.0024 issued June 10, 2022 and are therefore federally enforceable.
 - PM₁₀— currently equipped with mist eliminators and wet scrubbers to control to comply with RACT emission limits, 11.4 lb/hr based on 24-hour average and 49.8 t/yr based on any consecutive 12-month period, for the Portneuf Valley PM₁₀

Maintenance Area. The original underlying permit for this PM₁₀ emission limit (permit number T1-9507-114-1) is approved into Idaho's SIP (40CFR 52.670(d)), EPA Approved Idaho Source-Specific Requirements). Therefore, PM₁₀ emission limits are federally enforceable and already included in Idaho's SIP.

- No.400 Sulfuric Acid Plants
 - SO₂—EPA issued a Consent Decree on December 2, 2015, which established best available control technology (BACT) equivalent limits for SO₂ from both the No. 300 and No. 400 Sulfuric Acid Plants. These emission limits were incorporated into the Tier I Operating Permit T1-2017.0024 issued June 10, 2022 and are therefore federally enforceable.
 - NO_x— RACT emission limits, 10.1 lb/hr based on 24-hour average and 42.1 t/yr based on any consecutive 12-month period, established to comply with the Portneuf Valley PM₁₀ Nonattainment Area State Implementation Plan, Maintenance Plan, and Redesignation Request, are incorporated into the current Tier I Operating Permit (T1-2017.0024) issued on June 10, 2022. The original underlying permit for these NO_x emission limits (permit number T1-9507-114-1) is approved into Idaho's SIP (40 CFR 52.670(d)), EPA Approved Idaho Source-Specific Requirements). Therefore, NO_x emission limits are federally enforceable and already included in Idaho's SIP.

7.5.2.3 The Amalgamated Sugar Company—Paul

Table 38 shows the actual emissions for the emission units and pollutants selected for four-factor analysis.

Table 38. Amalgamated Sugar Company – Paul 2014 – 2020 annual emissions (Appendix D).

Pollutant	2014	2015	2016	2017	2018	2019	2020
North Pulp Dryer							
NO _x	111.81	70.39	53.05	56.84	49.77	67.85	99.12
PM ₁₀	69.81	69.16	65.97	71.84	76.13	70.21	70.16
SO ₂	57.55	16.87	0.11	0.12	0.11	1.50	3.72
South Pulp Dryer							
NO _x	112.76	65.08	45.21	48.42	42.41	56.27	80.46
PM ₁₀	67.70	67.07	63.97	69.61	73.76	68.02	67.98
SO ₂	49.02	14.37	0.10	0.10	0.09	1.23	3.04
B&W Boiler							
NO _x	356.76	184.03	142.01	55.0	3.40	39.52	38.66
Rentech Boiler							
NO _x	N/A	N/A	N/A	N/A	N/A	8.00	35.50

- B&W Boiler
 - NO_x—currently equipped with low NO_x burners and FGR to comply with 40 CFR Part 63 Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial-Commercial-Institutional Steam Generating Units (Boiler MACT). This unit has a NO_x emission limit of 0.10 lb/MMBtu that is incorporated into the Tier I Operating Permit T1-2019.0020 issued November 5, 2021. Table 38 shows that the NO_x emissions have remained consistent since 2019, when the boiler was limited to only natural gas, and therefore not likely to increase. Since the emission limits incorporated into the Tier I Operating Permit are used to comply with a federal regulation and the annual emissions have been consistent since eliminating coal as a fuel, NO_x emission limits for this emission unit do not need to be included in this SIP.
- Rentech Boiler
 - NO_x— currently equipped with low NO_x burners and FGR to comply with 40 CFR Part 60 Subpart Db – Standard of Performance for Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60.44b(a). This unit has NO_x emission limits of 0.10 lb/MMBtu that are incorporated into the Tier I Operating Permit T1-2019.0020 issued November 5, 2021. Table 38 shows the emissions for this boiler since it was installed mid-2019. Since the emission limits incorporated into the Tier I Operating Permit are used to comply with a federal regulation and the annual emissions have been consistent since eliminating coal as a fuel, NO_x emission limits for this emission unit do not need to be included in this SIP.
- North and South Pulp dryers
 - PM₁₀— currently equipped with wet scrubbers and mechanical collectors to control PM emissions to comply with the Idaho process weight rules at IDAPA 58.01.01.703. These emission limits are incorporated into the Tier I Operating Permit T1-2019.0020 issued November 5, 2021. The Idaho process weight rate rules (IDAPA 58.01.01.700 – 703) are already incorporated into Idaho’s approved SIP ((40CFR 52.670(c)). Table 38 shows the emissions from the dryers, which were used in the 2028OTBa2 projection, have remained consistent since 2014 and therefore not likely to increase above the 2014 emissions. Since the emission limits are established to comply with a SIP approved rule, incorporated into the Tier I Operating Permit, and the annual emissions have been consistent since 2014, PM₁₀ emission limits for this emission unit do not need to be included in this SIP.
 - NO_x—Table 38 shows that the NO_x emissions have been consistently lower than the 2014 emissions, which were used in the 2028OTBa2 projection and therefore not likely to increase above the 2014 emissions. Therefore, NO_x emission limits for this emission unit do not need to be included in this SIP.
 - SO₂—Table 38 shows that the SO₂ emissions have been consistently lower than the 2014 emissions, which were used in the 2028OTBa2 and therefore not likely to

increase above the 2014 emissions. Therefore, SO₂ emission limits for this emission unit do not need to be included in this SIP.

7.5.2.4 P4 Production LLC

Table 39 shows the actual NO_x emissions for the nodulizing kiln.

Table 39. P4 Production – Nodulizing Kiln 2014 – 2020 annual emissions (Appendix D).

Pollutant	2014	2015	2016	2017	2018	2019	2020
NO _x	2705.06	2627.92	2563.11	2373.74	2505.73	2389.39	1489.66

- Nodulizing kiln –
 - PM₁₀— currently equipped with a Hydro-Sonic© high energy venture scrubbers with attached cyclone to control PM. These four Hydro-Sonic Scrubbing units are primarily used to control Polonium-210 emissions to comply with 40 CFR Part 61, Subpart K, National Emission Standards for Radionuclide Emissions from Elemental Phosphorus Plants as well as being required as part of BART for the initial Regional Haze SIP. However, these scrubbers are also effective for controlling PM emissions. The use of the four Hydro-Sonic Scrubbing units is federally enforceable through BART requirements (40CFR 52.670(d)). This requirement is also incorporated into the Tier I Operating Permit T1-2020-0029 issued December 23, 2021. Therefore, the use of these controls and resulting emission limits are federally enforceable and already included in Idaho’s SIP.
 - SO₂—currently equipped with a Hydro-Sonic© high energy venture scrubbers and LCDA SO₂ scrubbing system to comply with BART for the initial Regional Haze SIP. The use of these controls is federally enforceable through BART requirements (40CFR 52.670(d)). This requirement is also incorporated into the Tier I Operating Permit T1-2020-0029 issued December 23, 2021. Therefore, the use of these controls and resulting emission limits are federally enforceable and already included in Idaho’s SIP.
 - NO_x—Table 39 shows that the NO_x emissions, which were used in the 2028OTBa2 projection, have consistently decreased since 2014, and therefore not likely to increase. Therefore, NO_x emission limits for this emission unit do not need to be included in this SIP.

7.5.2.5 Itafos Conda LLC

Table 40 shows actual SO₂ emissions for the east sulfuric acid plant.

Table 40. Itafos Conda LLC – East Sulfuric Acid Plant 2014 – 2020 annual emissions (Appendix D).

Pollutant	2014	2015	2016	2017	2018	2019	2020
SO ₂	332.00	438.00	364.00	386.90	379.80	319.98	427.91

- East Sulfuric Acid Plant
 - SO₂—currently equipped with dual absorption contact process, vertical tube mist eliminator, and cesium catalyst in the 4th bed of the converter to comply with 40 CFR Part 60 Subpart H Standards of Performance for Sulfuric Acid Plants. This emission unit has the following emission limits: 258 lb/hr and 735.5 T/yr of SO₂; and 4 lb SO₂ per ton of 100% sulfuric acid. These emission limits are incorporated into the Tier I Operating Permit T1-2016.0015 issued March 2, 2022. Table 40 shows that the SO₂ emissions, which were used in the 2028OTBa2 projection, have remained consistent since 2014 and therefore not likely to increase. Since the emission limits incorporated into the Tier I Operating Permit are used to comply with a federal regulation and the annual emissions have been consistent since 2014 emission limits for this emission unit do not need to be included in this SIP.

7.5.2.6 Tamarack Mill, LLC dba Evergreen Forest and Tamarack Energy Partnership

Table 41 shows the actual emissions for the Riley Cogeneration Boiler for the pollutants selected for four-factor analysis.

Table 41. Tamarack Mill, Riley Cogeneration Boiler 2014 – 2020 annual emissions (Appendix D).

Pollutant	2014	2015	2016	2017	2018	2019	2020
PM ₁₀	52.15	49.80	47.40	23.64	28.20	16.60	24.96
NO _x	85.82	82.00	78.00	38.91	78.00	40.70	79.71

- Riley Cogeneration Boiler
 - PM₁₀ —currently equipped with a multiclone and wet scrubber to control PM₁₀ emissions to comply with Idaho requirements for fuel burning PM limits (IDAPA 58.01.01.676). This unit has PM/PM₁₀ emission limits of 0.080 gr/dscf at 8% oxygen, 432 lb/day, and 77.4 t/yr that are incorporated into the Tier I Operating Permit T1-2020.0024 issued November 26, 2021. The Idaho requirements for fuel burning equipment for PM (IDAPA 58.01.01.675 – 681) are already incorporated into Idaho’s approved SIP ((40CFR 52.670(c). Table 41 shows that PM₁₀ emissions have consistently been lower than 2014 levels, which were used in the 2028OTBa2 projection, and therefore not likely to increase above the 2014 emissions. Since the emission limits are established to comply with a SIP approved rule, incorporated into the Tier I Operating Permit, and the annual emissions have been consistently lower than 2014 emissions, PM₁₀ emission limits for this emission unit do not need to be included in this SIP.
 - NO_x— Table 41 shows that the NO_x emissions, which were used in the 2028OTBa2 projection, have consistently decreased since 2014, and therefore not likely to increase. Therefore, NO_x emission limits for this emission unit do not need to be included in this SIP.

7.5.2.7 Northwest Pipeline – Soda Springs

Table 42 shows actual NO_x emissions for all 4 emission units selected for four-factor analysis.

Table 42. Northwest Pipeline – Soda Springs 2014 – 2020 annual NO_x emissions (Appendix D).

Pollutant	2014	2015	2016	2017	2018	2019	2020
CLARK TCVA-16							
NO _x	406.17	406.20	166.10	196.84	184.01	410.83	327.36
3 Clark TLA-6 units total							
NO _x	413.08	139.24	166.54	170.09	139.51	155.02	118.41

- 3 CLARK TCVA-16 units and Clark TCVA-16
 - NO_x—not currently equipped with any NO_x controls and there are no NO_x emission limits for this emission unit. Table 42 shows that the NO_x emissions have been consistently lower than 2014 emissions, which were used in the 2028OTBa2 projection, and therefore not likely to increase over the 2014 emissions. Therefore, NO_x emission limits for this emission unit do not need to be included in this SIP.

8 Coordinated Emission Management Strategies

The Regional Haze Rule (40 CFR 51.308(f)(2)(ii)(A)) requires Idaho to consult with states that have emissions that are reasonably anticipated to contribute to visibility impairment in its Class I areas to develop coordinated emission management strategies containing the emission reductions necessary to make reasonable progress. The rule also requires that Idaho consider the emission reduction measures identified by other states for their sources as being necessary to make reasonable progress in their Class I areas (40 CFR 51.308(f)(2)(ii)(B)).

8.1 Consultation with States Anticipated to Contribute to Impairment at Class I Areas

Under the Regional Haze Rule (40 CFR 51.308(f)(ii)(A)), Idaho must demonstrate that it has included in its implementation plan all measures (or equivalent measures) agreed to during state-to-state consultations. The details on the coordinated emission strategies with neighboring states are described in this section. No significant issues were identified during the coordinated emission strategy consultation with neighboring states, and Idaho did not receive any requests for specific SO₂ and NO_x controls for Idaho facilities.

Idaho focused on anthropogenic emissions and reviewed the WRAP weighted emissions potential (WEP) and rank point analysis results (Section 6.2) to identify contributing sources that may be controllable within Idaho and to identify potentially controllable sources, or the need for controls, in surrounding states. Specifically, Idaho focused on the top 10 facilities, in Idaho or a nearby state, and evaluated that specific facility's impact. This analysis considered each facility's WEP ranking and any additional control analysis required to be completed for

those facilities impacting Idaho's Class I areas (Table 43 and Table 44). Additionally, Idaho reviewed the 2028OTBa2 state-level source apportionment results (section 5) to estimate the relative contribution from surrounding states EGU and non-EGU sources to NO_x and SO₂ light extinction.

Idaho contacted Washington, Wyoming, Montana, Wyoming, Utah, and Nevada to request an update on the top 10 facilities identified in each state and whether four-factor analyses for SO₂ and NO_x were conducted for those facilities. Similarly, Idaho provided an update on its four-factor analyses.

When out-of-state sources contributed to impairment at Idaho Class I areas, Idaho determined that the on-the-way/on-the-books emission reduction identified in the western states 2028OTBa2 scenario provided for an improvement in visibility from the current planning period visibility conditions, and no further reasonable progress controls were necessary. Idaho did not request further emission reductions than what neighboring states originally identified through their own four-factor analyses. The 2028OTBa2 state-level source apportionment results indicated that overall, Idaho facilities had the highest impairment impact on Class I areas within Idaho.

No significant issues were identified during the coordinated emission strategy consultation with neighboring states, and Idaho did not receive any requests for specific SO₂ and NO_x controls for Idaho facilities.

Table 43. WEP area of influence ranking of top 10 facility NO_x sources from surrounding states on Idaho Class I areas.

State	Facility	CRMO1	SAWT1	SULA1
ID	Boise Air Terminal/Gowen		3	
ID	Clearwater Paper Corp - Ppd & Cpd	7	4	1
ID	Northwest Pipeline LLC Mtn Home	8	6	
ID	P4 Production LLC		8	
ID	P4 Production LLC (TV Facility)	6		
ID	Tamarack Mill, LLC		9	
ID	TASCO-Nampa	5	2	
ID	TASCO-Paul	2		
ID	TASCO-Twin Falls	1	7	
ID	US Dept of Energy-INL	3		
MT	Ash Grove Cement			2
MT	Graymont Western US Inc			9
MT	Oldcastle-Trident Plant			4
MT	Roseburg Forest Products			3
MT	Weyerhaeuser-Cfalls			8
OR	Ash Grove Cement Company	9	1	10
OR	Portland Intl		5	5
TR	Pocatello Compressor Station	4		
UT	Kennecott Utah Copper LLC- Mine & Copperton Concentrator	10		
WA	Boise Paper		10	6
WA	Weyerhaeuser NR Company			7

Table 44. WEP area of influence ranking of top 10 facility SO₂ sources from surrounding states on Idaho Class I areas.

State	Facility	CRMO1	SAWT1	SULA1
ID	Clearwater Paper Corp - PPD & CPD			9
ID	J.R. Simplot Company-Don Siding Pocatello	1	5	8
ID	TASCO-Nampa	3	1	2
ID	TASCO-Paul	5		
ID	TASCO-Twin Falls	2	2	7
MT	ASH GROVE CEMENT			6
MT	Graymont Western US INC			3
NV	North Valmy Generating Station	7		
OR	EP Minerals, LLC		6	
OR	Wauna Mill			5
UT	Kennecott Utah Copper LLC-Power Plant Lab Tailings Impoundment	4	4	
UT	Kennecott Utah Copper LLC-Smelter & Refinery	10	10	
UT	Tesoro Refining & Marketing Company LLC	6	8	
WA	Alcoa Primary Metals Wenatchee Works			4
WA	Boise Paper	8	3	1
WA	Weyerhaeuser NR Company			10
WY	Green River Works	9	7	
WY	Westvaco Facility		9	

Washington

Idaho communicated with Washington often during EPA Region 10 meetings about the progress of DEQ's four-factor analyses. Idaho did not request additional controls outside the results of Washington's four-factor analyses, which included several of the top 10 ranking sources impacting Idaho's Class I areas. Washington did not request any four-factor analyses or additional controls from Idaho during this implementation period.

Wyoming

Idaho periodically met with Wyoming to discuss Q/d and four-factor analysis during the development of the Regional Haze SIP. Idaho communicated with Wyoming to discuss potential Wyoming sources impacting Idaho's Class I areas and Idaho sources impacting Wyoming Class I areas in May 12, 2021. Neither Wyoming nor Idaho found additional reasonable controls for the selected facilities for this implementation period.

Oregon

Oregon and Idaho consulted about Oregon sources impacting the Idaho Class I areas. Idaho and Oregon share Hell's Canyon Wilderness; however, Oregon is responsible for setting the reasonable progress goals for this site. Oregon had identified Clearwater Paper as an Idaho facility impacting Hell's Canyon Wilderness Area. Idaho shared the Clearwater four-factor

analysis with Oregon showing that no additional controls were being pursued during this implementation period.

Nevada

Nevada and Idaho consulted on the rank point files and four-factor analyses several times during the Regional Haze SIP development. Nevada confirmed in an email correspondence on October 4, 2021, that neither state made requests for additional analyses or controls during the second round of regional haze.

Utah

Utah confirmed via email on November 15, 2021, that it is not requesting additional controls or analysis during this implementation period.

Montana

Idaho and Montana consulted often throughout development of the Regional Haze SIP. Idaho and Montana share the SULA1 IMPROVE monitor and Selway-Bitterroot Wilderness Area. Both states worked together to coordinate strategies for analyzing this site, with Idaho having responsibility for setting the reasonable progress goals. The area is heavily impacted by wildfire, prescribed fire, and international emissions. Neither state will request additional controls for the other's sources this implementation period.

9 Reasonable Progress Goals

The Regional Haze Rule requires states to establish RPGs for the mandatory Class I areas within the state (40 CFR 51.308(d)(1)). The RPGs, expressed in deciviews, reflect visibility improvements during the current implementation period (2018–2028) for the most impaired days and ensure no degradation in visibility on the clearest days. In establishing reasonable progress goals, the Regional Haze Rule requires states to consider both the URP shown as the glidepath needed to attain natural conditions by 2064 and the four factors required by CAA to determine reasonable progress.

International anthropogenic emissions, combined with natural emissions and US wildfires, account for between 62% and 82% of the impairment at Idaho's Class I areas and are outside of the state's regulatory control of the Regional Haze Rule. US anthropogenic emissions contribute to just a small portion of the projected total light extinction at the three Class I areas. Idaho's three Class I areas offer relatively good visibility to visitors (the highest average light extinction even on the most impaired days is under 20 Mm⁻¹) compared to many other areas in the West.

DEQ has conservatively adopted the 2028OTBa2 visibility projections as the RPGs at its Class I areas. These RPGs reflect emission reductions from on-the-book controls scheduled to come into effect by 2028 and provide for an improvement in visibility at all three Class I areas from

the baseline and the current planning period on the most impaired days and no degradation on the clearest days (Table 45 and Table 46).

The RPGs based on the 2028OTBa2 EI is considered conservative because that EI did not include the reasonable controls discussed in Section 6.4.4. Due to the timing of the deliberations surrounding the selection of controls, the anticipated net reduction in emissions expected from these controls were not included in the modeling runs to project visibility in 2028. DEQ expects to observe further visibility improvements than modeled by the 2028OTBa2 emissions scenario. The visibility improvements resulting from these controls are summarized in Table 45 and Table 46.

Table 45. Reasonable progress goals and anticipated net effect of emission reductions on visibility over the second implementation period for the most impaired days.

Class I Area IMPROVE Monitor	2014–2018 IMPROVE (dv)	2028 RPG (dv) from 2028OTBa2	Improvement from 2014–2018 IMPROVE(dv)
CRMO1	8.50	7.52	0.98
SAWT1	8.61	8.30	0.31
SULA1	8.37	8.01	0.36

Table 46. Anticipated net effect of emission reductions on visibility over the second implementation period for the clearest days.

Class I Area	2014–2018 Annual Average Observation IMPROVE	No Degradation Limit (dv)
CRMO1	2.7	4.3
SAWT1	2.6	4.0
SULA1	1.6	2.6

9.1 URP Glidepath Checks

To help assess whether a Class I area is on a path toward the long-term goal of reaching natural conditions in 2064, the trends in the most impaired days visibility impairment are compared against the URP. The URP glidepath starts with the most impaired days for the 2000–2004 5-year baseline and draws a straight line to estimated natural conditions in 2064. In the second regional haze planning period, 2064 natural conditions estimates are the same as the 15-year average of natural conditions on most impaired days or clearest days in each year from 2000–2014 (EPA 2018c). The natural conditions based on 2000–2014 ambient data were recommended for use as the default 2064 end point (NCII 2006; IMPROVE 2007). The URP is calculated according to Equation 2:

$$URP = (2000 - 2004 \text{ visibility})_{20\% \text{ most impaired}} - (\text{natural visibility})_{20\% \text{ most impaired}} / 60$$

Equation 2. Uniform rate of progress.

9.2 End-Point Adjustments

The Regional Haze Rule allows adjustments to the URP glidepath to account for contributions from international anthropogenic emissions and wildland prescribed fires. Figure 47, Figure 48, and Figure 49 illustrate the glidepath at Idaho's Class I areas and two alternative glidepath end-point projections for 2064. The two options offered are used to adjust the end of the default glidepath and the associated slope. International anthropogenic emissions are beyond the control of states preparing regional haze SIPs, so the Regional Haze Rule allows states to optionally propose an adjustment of the 2064 URP end point to account for international anthropogenic impacts, if the adjustment has been developed using scientifically valid data and methods (40 CFR 51.308(f)(1)(vi)). The Regional Haze Rule also allows for an optional adjustment to the URP relating to certain wildland prescribed fires. The glidepath can be adjusted by adding an estimate of the visibility impact of international anthropogenic sources or prescribed fire emissions to the value of 2064 natural visibility conditions end point using a combination of hemispheric scale CMAQ zero-out model runs and regional scale CAMx source apportionment modeling (WRAP 2021c).

WRAP recommended the use of the results from the CAMx 2028OTBa2 H-L SA run to obtain international emissions and prescribed fire contributions so that they are calculated in an internally consistent fashion to the 2028 projections. WRAP processed the 2028OTBa2 visibility projections using EPA's Software for Model Attainment Test Community Edition (SMAT-CE) tool. The *EPA without fire* projection uses RepBase2 and 2028OTBa2 source apportionment results to remove agricultural fire, wildland prescribed fire, and wildfire contributions on the EPA-defined most impaired days. Relative response factors are calculated after modeled fire contributions have been removed (WRAP 2020). The alternative glidepath end points are defined as follows:

- International anthropogenic contribution based on 2028 modeling results normalized to monitoring data and added to EPA-estimated natural conditions (international)
- International and wildland prescribed fire combine contributions based on 2028 modeling results normalized to monitoring data and added to EPA-estimated natural conditions (international + wildland prescribed fire)

Results of the adjusted end points by the two approaches and the resulting adjusted URP Glidepaths for the three Idaho sites are shown in Figure 47, Figure 48, and Figure 49. In these figures, the 2028 visibility projection is compared against the URP glidepath at 2028 to see whether a projected visibility condition estimate at the Class I area will be on, above, or below the glidepath to judge how well the modeled trend in visibility is tracking the straight-line rate of progress to the estimated natural conditions in 2064. The projected 2028 visibility conditions are below all the original and adjusted URP glidepath at the Craters of the Moon and Selway-Bitterroot Wilderness Areas. However, at the Sawtooth Wilderness Area, the projected 2028

visibility condition is above the original URP glidepath but below the adjusted URP glidepath accounting for both international emissions and prescribed fires.

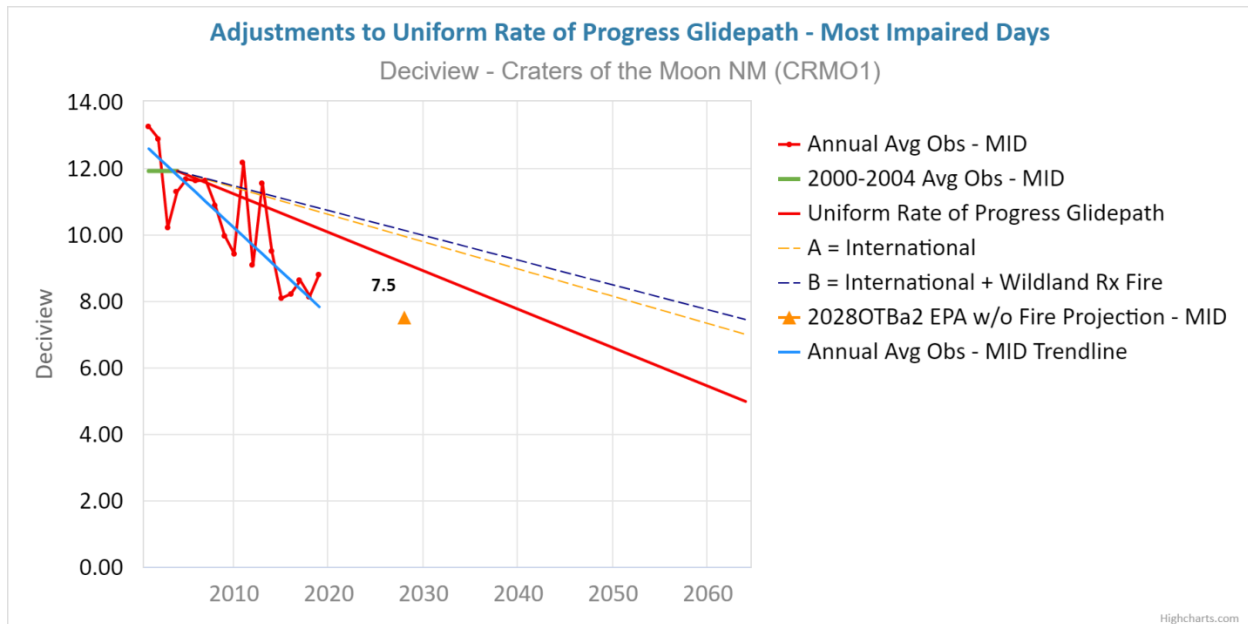


Figure 47. URP with end-point adjustments for Craters of the Moon Wilderness Area.

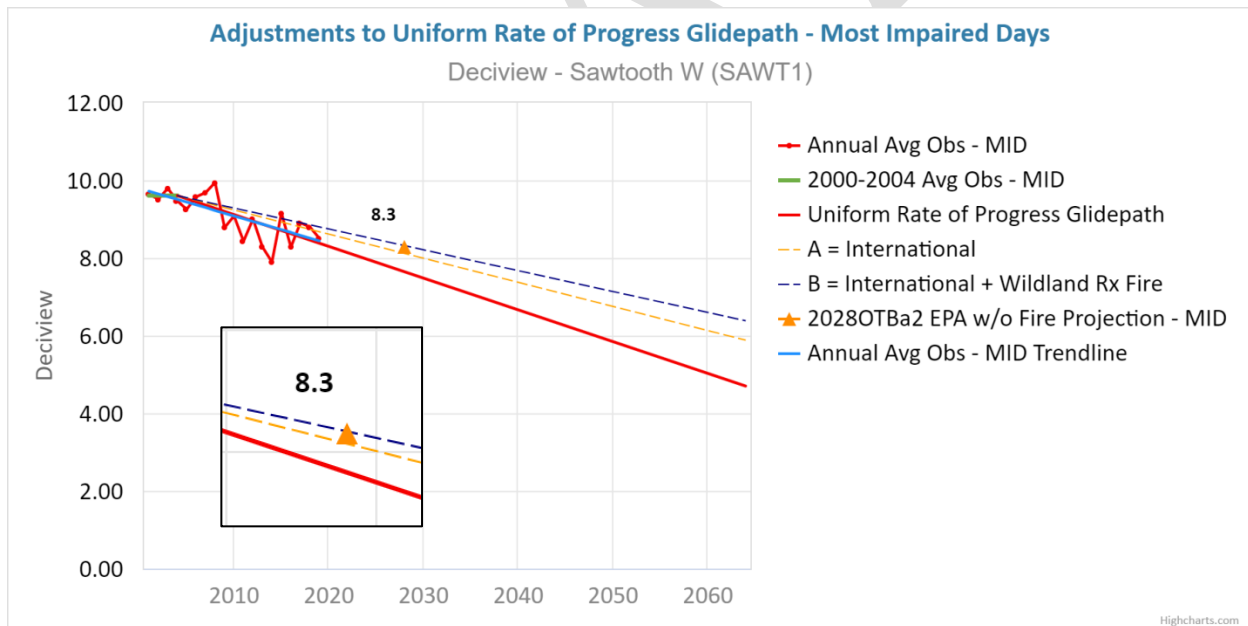


Figure 48. URP with end-point adjustments for Sawtooth Wilderness Area.

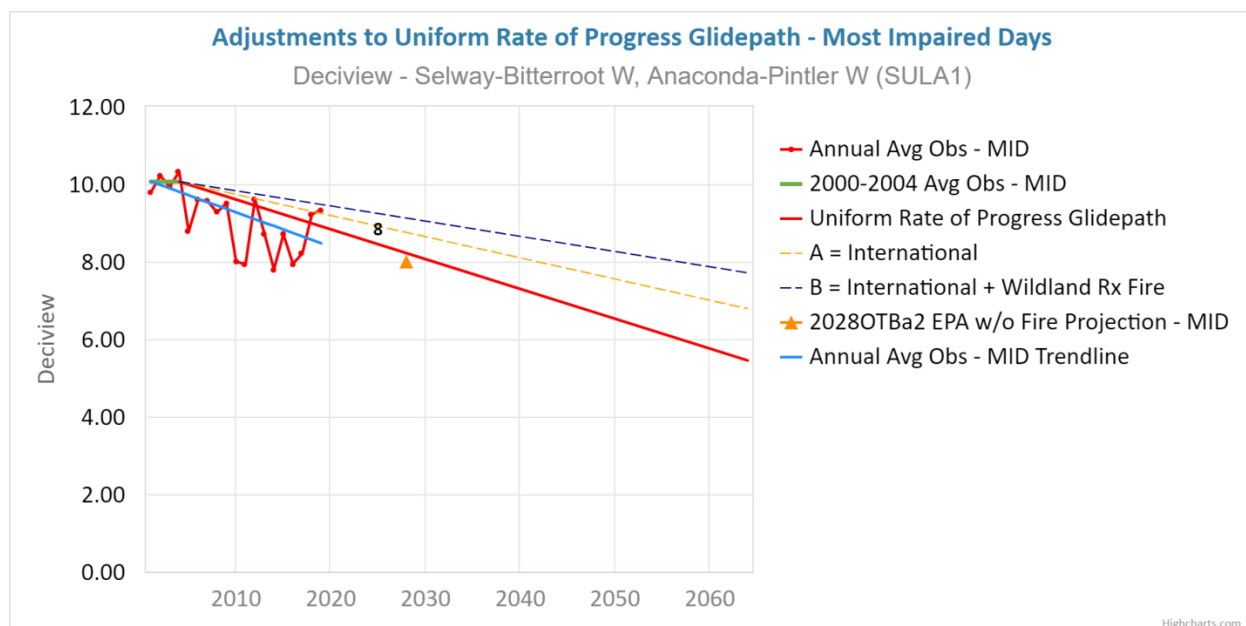


Figure 49. URP with end-point adjustments for Selway-Bitterroot Wilderness Area.

DEQ is adjusting the glidepath at all three Class I areas to more realistically reflect conditions at its sites using the international and wildland prescribed fire option. Source apportionment shows the outside influence international emissions have on impairment and all three sites have varying impacts from prescribed fire. Projected visibility at CRMO1, SAWT1, and SULA1 is below the adjusted glidepath; the improvement in visibility is on the trajectory to meet estimated natural conditions by 2064 at all three sites (Figure 47, Figure 48, and Figure 49).

Based on this analysis, Idaho is making reasonable progress in reducing visibility impairing pollutants and improving visibility at the Class I areas both in Idaho and regionally.

10 Reasonably Attributable Visibility Impairment

According to the Regional Haze Rule (40 CFR 51.308(f)(4)), if the administrator, regional administrator, or the affected FLM has advised a state of a need for additional monitoring to assess reasonably attributable visibility impairment at the mandatory Class I federal area in addition to the monitoring currently being conducted, the state must include in the plan revision an appropriate strategy for evaluating reasonably attributable visibility impairment in the mandatory Class I federal area by visual observation or other appropriate monitoring techniques.

Idaho has not been advised by the administrator, regional administrator, or any FLM of the need to conduct additional monitoring to assess reasonably attributable visibility impairment and thus complies with 40 CFR 51.308(f)(4).

11 Consultation Public Review and Commitment to Further Planning

The Regional Haze Rule requires Idaho to consult with other states and FLMs during the development of the Regional Haze SIP. The rule (40 CFR 51.308(f)(2)(ii)) requires Idaho to consult with those states that “have emissions that are reasonably anticipated to contribute to visibility impairment in the Class I Areas.” Per the provisions of 40 CFR 51.308(i)(2), Idaho consulted with FLMs at least 60 days before a public hearing or public comment opportunity for Idaho’s Regional Haze SIP revision. Appendix C summarizes DEQ’s consultation activities.

11.1 Consultation with Federal Land Managers

The NPS manages the CRMO1 and the USFS manages SAWT1 and SULA1 in Idaho. After conducting the Q/d analysis and screening facilities for four-factor analysis, DEQ held calls with the NPS and USFS in early 2020. After finalizing the reviews of four-factor analysis submittals from the facilities, DEQ shared the analyses with the NPS, USFS, and US Fish and Wildlife before completing the Regional Haze SIP submittal. In addition, the FLMs were provided the required 60-day comment opportunity before the public comment period for this proposed Regional Haze SIP revision. The USFS and NPS provided written comments which are included in Appendix F with DEQ’s responses.

11.2 Consultation with States

In addition to working with other states through WRAP committees and subcommittees, DEQ held numerous conference calls with surrounding states. Idaho participated in monthly calls with EPA and Region 10 states to discuss regional haze topics of interest. To fulfill the requirement to consult on the transport of regional haze pollutants (40 CFR 51.308(f)(2)(ii)), DEQ held conference calls with Montana, Washington, Oregon, Nevada, Utah, and Wyoming in late 2020 and early 2021. No significant interstate regional haze issues were identified (Section 8.1 and Appendix C).

11.3 Public and Stakeholder Consultation

As required by 40 CFR 51.102, a public comment period was held June 22, 2022 through July 21, 2022 with a public hearing held on July 21, 2022. Several comments were received during the comment period. Complete documentation of the public comment process is contained in Appendix G and Idaho’s response to comments is included in Appendix H. The state followed all of Idaho’s procedural requirements for this SIP submission.

11.4 Documentation of FLM Consultation and Commitment to Continuing Consultation

Section 51.308(i)(2) of the Regional Haze Rule requires that the state provide FLMs the opportunity for consultation in person and at least 60 days prior to holding any public hearing on plan revisions. Idaho provided an opportunity for consultation to FLMs from December 23, 2021 to March 1, 2022 and received comment from the National Park Service and U.S. Forest Service. Idaho commits to continuing to provide FLMs the opportunity for consultation in accordance with 40 CFR 51.308(i)(2).

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Appendix A. Fire Regime at Idaho's Class I Areas

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Appendix B. Four-Factor Analyses and Reviews

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Appendix C. Consultation Dates

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Appendix D. Emission Unit Selection for Four-Factor Analysis and 2015-2020 Emission Inventories

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Appendix E. Amalgamated Sugar Company – Twin Falls Tier I Permit (T1-2016-0017)

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Appendix F. Federal Land Managers Consultation Comments and DEQs Responses

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Appendix G. Public Comment Period

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Appendix H. DEQ Responses to Public Comments

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