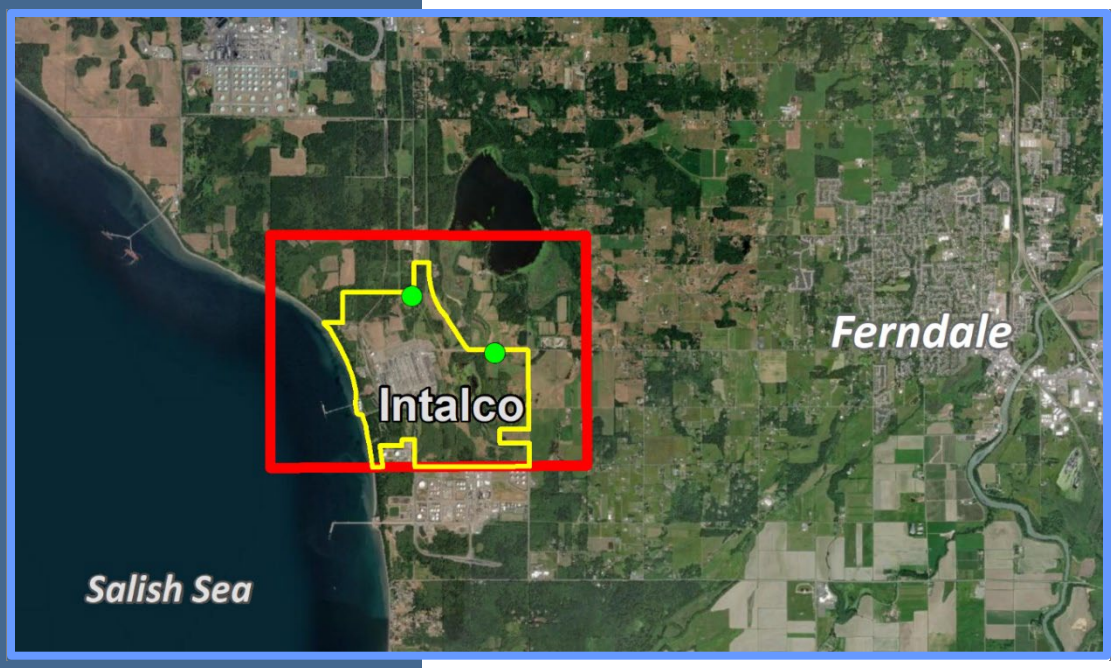

Redesignation to Attainment and First 10-Year Maintenance Plan for the Intalco-Ferndale Sulfur Dioxide Nonattainment Area

Washington Air Quality State Implementation Plan Revision

Prepared by

Anya Caudill and Agata McIntyre

For the

Air Quality Program and Northwest Clean Air Agency

Washington Department of Ecology

Olympia, Washington

March 2024, Public Review Draft

DEPARTMENT OF ECOLOGY
State of Washington

northwest Clean Air agency

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Link will be included once the document is finalized

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Related Information

- Clean-up site ID: 2280
- Facility site ID: #16
- WRIA: 1

Relevant documents

- Publication 22-02-035: Intalco Sulfur Dioxide Attainment Plan[1]
- Publication 20-02-015: Analysis of Sulfur Dioxide Monitoring Data in Whatcom County: Air Quality Technical Report[2]
- Publication 15-02-007: Analysis of Sulfur Dioxide (SO_2) Monitoring Data and Meteorology at March and Cherry Points[3]

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[1] https://apps.ecology.wa.gov/publications/summarypages/2202035.html
[2] https://apps.ecology.wa.gov/publications/SummaryPages/2002015.html
[3] https://apps.ecology.wa.gov/publications/SummaryPages/1502007.html

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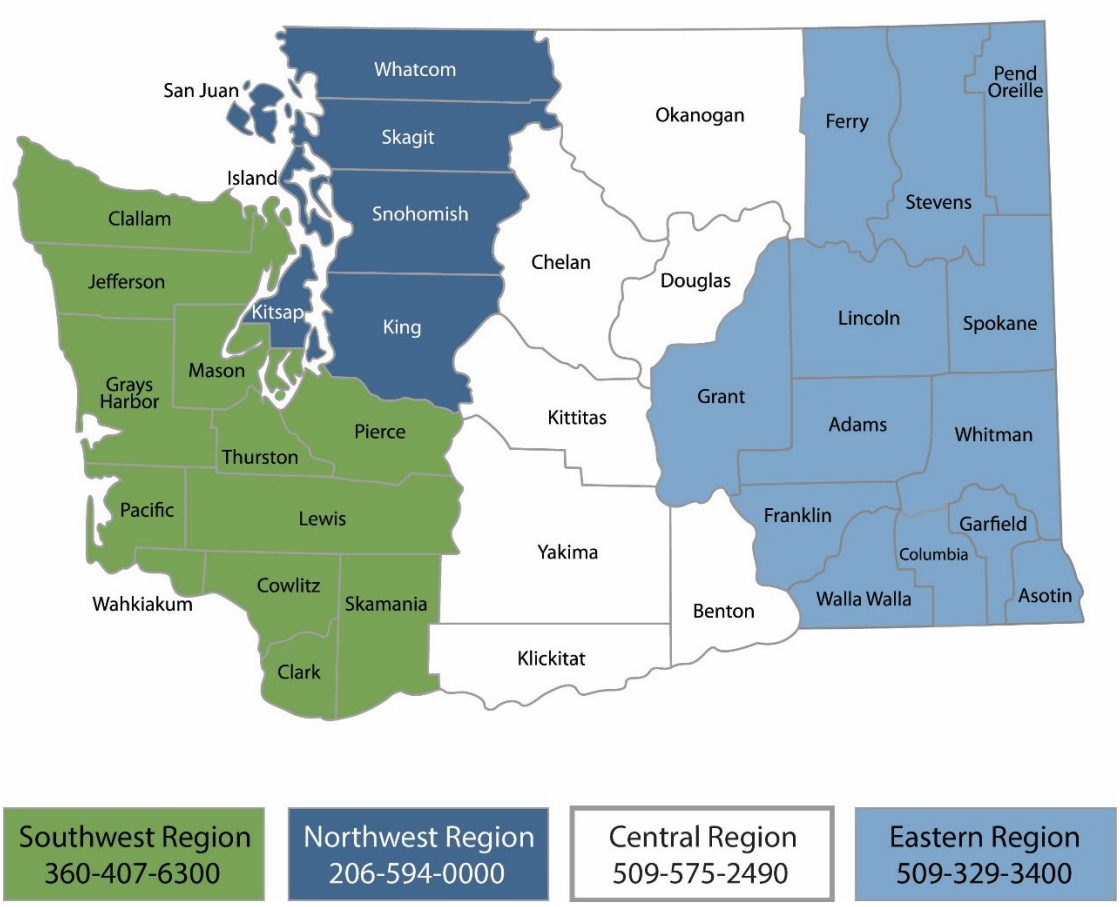
Department of Ecology's Regional Offices

Map of Counties Served

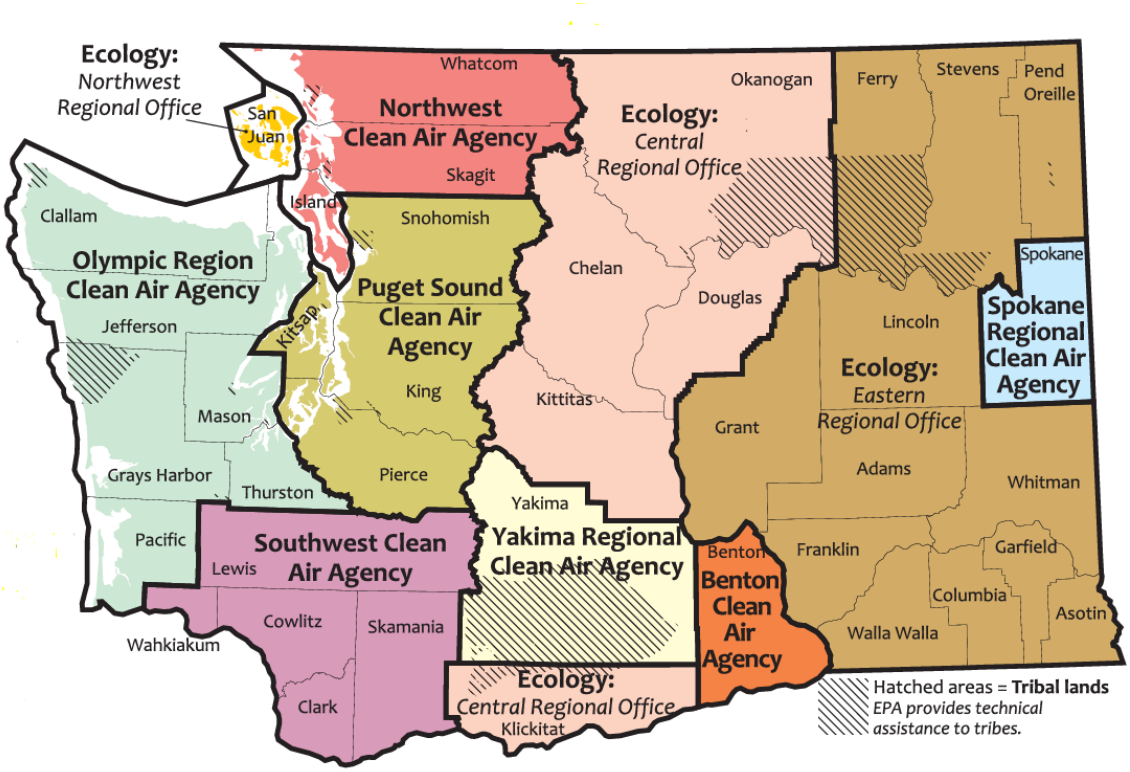


Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

Northwest Clean Air Agency

The Northwest Clean Air Agency (NWCAA) is the main governmental agency responsible for protecting the air in Island, Skagit, and Whatcom counties. The Northwest Clean Air Agency office is located at 1600 South 2nd Street, Mount Vernon, WA. For hours and contact information, visit NWCAA's website at: https://nwcleanairwa.gov/.

Map of Areas Served by Local Clean Air Agencies



Download printable map and contact list at:
https://apps.ecology.wa.gov/publications/SummaryPages/1402010.html

Redesignation to Attainment and First 10-Year Maintenance Plan for the Intalco-Ferndale Sulfur Dioxide Nonattainment Area

Washington Air Quality State Implementation Plan Revision

Air Quality Program
Washington Department of Ecology
Olympia, WA

Northwest Clean Air Agency
Mount Vernon, WA

March 2024 | Public Review Draft

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Abbreviations

AO	Agreed Order
AOP	Air Operating Permit
ATG	Attorney General Office
BART	Best Available Retrofit Technology
CAA	Federal Clean Air Act
CFR	Code of Federal Regulations
DOH	Washington Department of Health
DV	design value
Ecology	Washington Department of Ecology
EI	emissions inventory
EJ	Environmental Justice
EPA	U.S. Environmental Protection Agency
g/s	grams per second
IPP	inventory preparation plan
lb/hr	pound(s) per hour
m	meters
MOVES	Motor Vehicle Emission Simulator
NAA	nonattainment area
NAAQS	National Ambient Air Quality Standards
NEC	not elsewhere classified
NEI	National Emissions Inventory
NOC	Notice of Construction
NOMAD	EPA Nonpoint Methods Advisory Committee
NOV	Notice of Violation
NSR	New Source Review
NWCAA	Northwest Clean Air Agency
NESHAP	National Emission Standards for Hazardous Air Pollutants
$PM_{2.5}$	particulate matter less than 2.5 micrometers in diameter
ppb	parts per billion
PQAO	Primary Quality Assurance Organization

PTE	potential to emit
QA	quality assurance
QC	quality control
RACM	reasonably available control measures
RACT	reasonably available control technology
RCW	Revised Code of Washington
RFP	reasonable further progress
SCC	source classification code
SEPA	State Environmental Policy Act
SIP	State Implementation Plan
SO_2	sulfur dioxide
TCM	transportation control measures
TF	total fluorides
TPY	tons per year
UTM	Universal Transverse Mercator
WAC	Washington Administrative Code
WCAA	Washington Clean Air Act

Acknowledgments

The Washington Department of Ecology (Ecology) and the Northwest Clean Air Agency (NWCAA) have authored this State Implementation Plan (SIP) revision document.

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We would like to thank the following state, local, and federal staff for their technical guidance, regulatory expertise, thoughtful reviews, and significant contributions to the project:

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Executive Summary

The Washington Department of Ecology (Ecology) and the Northwest Clean Air Agency (NWCAA) prepared this report showing that an area in Whatcom County has attained the 2010 National Ambient Air Quality Standard (NAAQS) for sulfur dioxide (SO_2). The U.S. Environmental Protection Agency (EPA) designated this small area in the northwest corner of Washington as a nonattainment area in December 2020 after reviewing 2017-2019 air quality data. "Nonattainment" means not meeting or complying with the standard. SO_2 is a common air pollutant that can cause health impacts during short-term elevated concentrations.

With this report, Washington is requesting EPA to:

- Find that the area is attaining the federal air quality standard for SO_2.
- Redesignate this area to attainment.
- Approve 1st 10-year air quality maintenance plan ensuring ongoing attainment.

The designated area is a 5.5-square-mile portion of the Cherry Point industrial area and the waters of the Strait of Georgia on the western shores of Whatcom County. The area encompasses the site of a now-defunct aluminum smelter, Intalco Aluminum LLC (Intalco), and closely adjacent areas including some shoreline and the ocean. The Intalco smelter curtailed its operations in 2020 and permanently closed in 2023, eliminating the SO_2 emissions. Before 2021, SO_2 emissions from the smelter's processes caused the violation of the standard.

Ecology is the permitting agency for the smelters in Washington. NWCAA is responsible for regulating other industrial sources of emissions located in Cherry Point. Now that the Intalco smelter has ceased operating, NWCAA is the lead agency for the area and will lead the implementation of the maintenance plan (MP) and contingency measures. The 10-year MP includes commitments for ongoing verification of attainment should new SO_2 sources request to operate in the area. NWCAA will regularly review any changes to the emissions in the area, implement and enforce the New Source Review (NSR) permitting program, require air dispersion modeling for certain permits, and conduct cumulative air dispersion modeling as needed. If the modeling shows levels of SO_2 at or above 50 percent of the standard, NWCAA will install a monitoring site near the area of the modeled highest impact. Given the stringent permitting regulations in place for any new facility that might begin operating in the area, the area is at very low risk for elevated SO_2 concentrations in the future.

EPA's Environmental Justice Screen and environmental health disparities data from the Washington Department of Health (DOH) did not show communities of color, low-income populations, or other vulnerable populations within the maintenance area. Improved air quality in the area is expected to benefit communities in the broader area, including the Lummi Nation Reservation, located half a mile south of the maintenance area border.

We will update this document following the public review period and develop a response to public comments. The Director of Ecology, as the Governor's Designee for the State Implementation Plan (SIP) matters, will decide whether to submit the changes to the EPA for adoption in the Washington SIP. Once approved by EPA, the measures in the MP will become federally enforceable.

Chapter 1. Background

Sulfur dioxide national ambient air quality standard

The Clean Air Act (CAA), last amended in 1990, requires the EPA to set NAAQS for pollutants considered ubiquitous and, at certain concentrations, harmful to public health and the environment. SO_2 is one of these pollutants.

EPA first established a NAAQS for oxides of sulfur, as measured by SO_2 in 1971, and retained it without changes after review in 1996. In 2010, following a multi-year scientific review of the available health, toxicological, and epidemiologic data, EPA added a new short-term (one-hour) standard.

EPA summarized their health impact findings in the Integrated Science Assessment for Oxides of Sulfur-Health Criteria (ISA)[4] and related documents. EPA found the most significant causal connection between short-term (5 minutes to 24 hours) exposure to levels of SO_2 as low as 200-300 parts per billion (ppb) and the appearance of adverse respiratory effects like bronchoconstriction, especially in vulnerable populations. For example, 5–10 minute controlled human SO_2 exposure studies demonstrated decrements in lung function and/or respiratory symptoms in exercising asthmatics.[5]

EPA identified the following populations being at particular risk for experiencing adverse reactions to the short-term spikes in the SO_2 air concentrations:

- persons with pre-existing respiratory disease
- children and older adults
- persons who spend increased time outdoors or at elevated ventilation rates
- persons with lower socioeconomic status (SES)
- persons with certain genetic factors

Based on the ISA's findings and public review, effective on August 23, 2010, EPA revised the primary NAAQS and notified the public via the Federal Register (FR) at 75 FR 35520.[6] The standard is codified in the Code of Federal Regulations (CFR) at 40 CFR Part 50. When we refer to the "SO_2 standard" in this document, it means this 2010 1-hour SO_2 NAAQS.

The 1-hour standard of 75 ppb ensures the protection of public health with an adequate margin of safety from the effects of short-term exposures to concentrations above 75 ppb. When a monitoring site records one one-hour concentration above 75 ppb – it is called an exceedance.

[4] U.S. EPA. Integrated Science Assessment (ISA) for Sulfur Oxides – Health Criteria (Final Report, Dec 2017), U.S. Environmental Protection Agency, Washington, DC, EPA/600/R-17/451, 2017, available at: https://cfpub.epa.gov/ncea/isa/recordisplay.cfm?deid=338596#:~:text=The%20Integrated%20Science%20Assessment%20for,under%20the%20Clean%20Air%20Act.

[5] ISA, Section 5.2.

[6] https://www.epa.gov/so2-pollution/primary-national-ambient-air-quality-standard-naaqs-sulfur-dioxide

An exceedance is not an automatic violation of the standard. To confirm the area is attaining the standard, EPA requires three years of monitoring or modeling data analysis based on actual emissions and meteorology. The area is considered in violation of the standard when a 3-year average of the annual 99th percentile (usually the fourth highest) of daily maximum 1-hour concentrations recorded at a monitoring site, or modeled at the receptor, exceeds 75 ppb. This calculated number is called the Design Value (DV). If the DV is equal to or less than 75 ppb, the monitoring site or modeled receptor is in attainment of the 2010 SO_2 NAAQS.

Area designations

When EPA establishes a new NAAQS or revises an existing NAAQS, it triggers a comprehensive evaluation of air quality throughout the country. A state's governor, or a designee, must submit recommendations for area designations and boundaries to EPA within the one year of the effective date of the standard. Section 107(d)(1) of the CAA requires that EPA designates areas as ''nonattainment,'' "attainment," or ''unclassifiable'' within two years of establishing a new or revising an existing standard.

In 2011, a year after the new standard was established, Washington, like most other states across the nation, did not have sufficient SO_2 monitoring or modeling data to evaluate the areas with SO_2 sources for attainment. For this reason, we recommended that all areas in the state be designated as "unclassifiable."

In response to the lack of data, EPA delayed the designation process and, instead, developed the Data Requirements Rule (DRR). The rule outlined a phased-in approach providing states with time and directions on how to use air quality dispersion modeling and where to place SO_2 monitors during the initial designation phase. The rule's development was complicated due to certain unique characteristics of SO_2.

SO_2 pollution is source-specific and dissipates quickly when traveling away from the source. Yet, source emissions of SO_2 are not perfectly correlated with the concentrations that impact nearby receptors. Meteorology, geography, stack configuration, and the rate of emissions affect the ambient concentrations of SO_2 in the air and can vary, sometimes significantly, every hour. These challenges made the traditional approach for regional-level monitoring, like the one used for ozone or particulate pollution, not appropriate. It was also not feasible to install monitoring sites every few miles from each other around each of the SO_2 sources in the country or conduct an air dispersion modeling for every one of them. Thus, EPA selected the 2,000 tons per year (TPY) threshold to identify which areas the states must focus on. EPA recognized that there were no health studies, modeling, or case studies to support or reject the 2,000 TPY threshold as protective of the NAAQS. However, this threshold captured a sufficiently large (85-90 percent) portion of the overall national inventory for SO_2 emissions to be evaluated for compliance with the new standard.

In accordance with previous attainment evaluations, EPA required at least one monitoring site to be placed in the area with the expected highest concentrations identified with the use of an air dispersion modeling. Additionally, EPA recognized an excellent correlation between SO_2-specific air quality dispersion modeling results and monitoring data. EPA allowed the use of

approved air dispersion modeling in lieu of the usual ambient monitoring, where states chose, to conduct the attainment evaluation and ongoing verification of attainment. For the areas where the state chose to rely on modeling for evaluations, the modeled receptors covered areas along the entire perimeter of the source. (The area inside the perimeter was not considered to be ambient air per EPA guidance, and hence the receptors within it were not modeled.) As data from the evaluations became available, EPA issued four rounds of designations.

Washington installed ambient air monitors to evaluate SO_2 levels in two areas where two aluminum smelters were located and emitted over 2,000 TPY of SO_2 each: one on the border between Chelan and Douglas counties, and another one in Whatcom County. After modeling the areas to identify "hot spots" and thus the appropriate locations for monitor siting, we began monitoring SO_2 in both areas on January 1, 2017. EPA used the monitoring data collected from 2017 through 2019, to complete the 4th round of designations. In December 2020, EPA designated:

- A small area in Whatcom County – the Intalco Aluminum LLC (Intalco) aluminum smelter and the area around it – as "nonattainment."
- The rest of Whatcom County as "attainment/unclassifiable."
- Douglas and Chelan counties as "attainment/unclassifiable."

The round 4 designations were signed by EPA Administrator, Andrew Wheeler, on December 21, 2020, as required by the court-ordered deadline of December 31, 2020. For administrative purposes only during the transition of the Administration, and in compliance with the requirements of the Office of the Federal Register, Acting Administrator Jane Nishida re-signed the same action on March 10, 2021, for publication in the FR. The effective date of the designation was thus April 30, 2021. This means that the area designated as nonattainment must demonstrate attainment of the standard within five years of the effective date of the designation, or no later than April 30, 2026.

About Washington SIP

The nonattainment designation by EPA starts a formal process that requires each state to submit an attainment plan within two years. The controls included in the attainment plan must improve air quality in the area within five years of the effective designation date. This attainment plan and subsequently, maintenance plan (MP), must be submitted to EPA, on behalf of the Governor. Once EPA approves the submitted plans, they become a part of the overarching Washington SIP[7] for air quality, meaning they become federally enforceable in the federal court under the Citizen Suit Provision of the CAA.

The SIP is a compilation of regulations and programs that state and local agencies develop to carry out their responsibilities under the CAA. In 1980, Governor Ray designated the Director of

[7] https://ecology.wa.gov/Regulations-Permits/Plans-policies/State-implementation-plans

Ecology as the Governor's Designee for SIP matters. Since then, the Air Quality Program within Ecology has been responsible for representing state and local agencies in this formal process. Each agency has its obligations to comply with the NAAQS and submit relevant regulations and plans to Ecology and EPA. Ecology hosts the public review process and adopts the revisions into the SIP. This decision is made by Ecology's Director on behalf of the Governor. Ecology then submits adopted changes to the SIP to EPA for review and federal public review process and approval. These SIP revisions include regulations and programs needed for the attainment, maintenance, and enforcement of the NAAQS.

EPA's approval of the SIP is an additional federal layer of oversight and enforcement of the state and local air quality regulations. The U.S. Congress added this additional requirement in 1971 and asserted and amended it in 1990. The U.S. Congress also required that EPA imposed mandatory sanctions if the state had failed to address a nonattainment designation and submit a timely SIP revision. Some of the mandatory sanctions may result in withdrawal of the federal highway funding for some areas of the state.

For the SO_2 areas designated as nonattainment on December 30, 2020, with an effective date of April 30, 2021, attainment SIP revisions were due by October 2022. Ecology prepared the required attainment plan and submitted it to EPA in December 2022. Even before the submittal and without any planned controls, the area's SO_2 levels decreased due to the Intalco facility curtailing its operations early in 2020. After the facility's permanent shutdown in 2023, the area has attained the standard and the new controls proposed in the attainment plan are no longer applicable. Thus, Ecology is submitting this request to redesignate the area back to attainment and approve maintenance measures in lieu of the attainment plan.

Legal authority

The federal CAA requires states to demonstrate to EPA their legal authority and means to enforce, implement, attain, and maintain the new or revised NAAQS and develop a SIP. In 2019, Washington submitted "Washington State Implementation Plan (SIP) Revision: Infrastructure SIP for 2015 Ozone and 2010 Sulfur Dioxide"[8] to EPA which demonstrated Washington's authority and means to implement the 2010 SO_2 NAAQS. EPA approved the revision in 2021 (86 FR 10022[9]).

Washington has a complex infrastructure of agencies responsible for air quality and compliance with the NAAQS as set in the Washington Clean Air Act (WCAA). Washington's legislature enacted WCAA in 1967, as Title 70.94 of the Revised Code of Washington (RCW), and after the 2020 recodification effort, as Title 70A RCW "Environmental Health and Safety."[10] WCAA established the authority for state and local agencies to implement, attain, maintain, and enforce the NAAQS.

[8] https://apps.ecology.wa.gov/publications/SummaryPages/1902019.html
[9] https://www.govinfo.gov/content/pkg/FR-2021-02-18/pdf/2021-03034.pdf#page=1
[10] References to Chapter 70.94 RCW in the rules remain valid as if they were references to Chapter 70A.15 RCW.

The state agencies include:

- Washington Department of Ecology (Ecology)
- Energy Facilities Site Evaluation Council (EFSEC)
- Department of Natural Resources (DNR)

Seven local clean air agencies (LCAAs) operate in 21 of 39 Washington counties, covering about 90 percent of the state's population. They are:

- Benton Clean Air Agency (BCAA)
- Northwest Clean Air Agency (NWCAA)
- Olympic Region Clean Air Agency (ORCAA)
- Puget Sound Clean Air Agency (PSCAA)
- Spokane Region Clean Air Agency (SRCAA)
- Southwest Clean Air Agency (SWCAA)
- Yakima Region Clean Air Agency (YRCAA)

The following sections of the WCAA give state agencies and the LCAAs rulemaking authority:

- RCW 70A.15.2040 (formerly 70.94.141), "Air pollution control authority – Powers and duties of activated authority," authorizes the LCAAs, to adopt their own rules and regulations and to issue orders as necessary to implement and enforce Washington's C AA.
- RCW 70A.15.3000 (formerly 70.94.331), "Powers and duties of department," authorizes Ecology to adopt rules, air quality objectives, and emission standards to meet CAA requirements.
- RCW 70A.15.3080 (formerly 70.94.395), "Air contaminant sources—Regulation by department; authorities may be more stringent—Hearing—Standards," authorizes Ecology to adopt and enforce rules that would apply to a particular type or class of air contaminant sources statewide, regardless of the source's location within the state.

When permitting stationary sources of air pollution, the legislative intent reflected in the WCAA is that Ecology, EFSEC, DNR, and the LCAAs are primarily responsible for implementing programs and rules to control air pollution within their respective jurisdictions and specific to certain source categories. As directed by the WCAA, Ecology established regulations for source categories such as kraft pulp mills, sulfite pulping mills, and primary aluminum plants.

In maintaining the air quality in the Intalco nonattainment (maintenance) area, when redesignated to attainment, Washington will continue to rely on the existing authorities. The lead agency for the area is the NWCAA.

Federal requirements for maintenance areas

The conditions that must be met for EPA to redesignate the area from nonattainment to attainment are found in the last paragraph of Section 107(d)(3)(E) of the CAA. We listed Section 107(d)(3)(E) requirements below and summarized how we addressed them in the document.

1. **The area has attained the NAAQS.**

   In this report, we provide SO_2 monitoring data analysis from the two SO_2 monitoring sites in the nonattainment area demonstrating the area reached attainment.

2. **EPA has fully approved the applicable implementation plan for the area under §110(k) of the CAA ("Completeness criteria").**

   EPA approved "Washington State Implementation Plan (SIP) Revision: Infrastructure SIP for 2015 Ozone and 2010 Sulfur Dioxide,"[11] NWCAA regulations, and regulations specific to primary aluminum plants under Chapter 173-415 WAC[12] (Washington Administrative Code) in the SIP. Washington's agencies' authority and means to implement the 2010 SO_2 NAAQS as described earlier in the chapter.

3. **EPA determines that the improvement in air quality is due to permanent and enforceable emissions reductions.**

   On March 16, 2023, Alcoa Corporation publicly announced their plans to permanently close the Intalco facility, a subsidiary of Alcoa (see Appendix A, March 16, 2023, Alcoa Press Release[13]). Ecology issued a notice of the intent to revoke the associated minor NSR and Title V Operating Permits on November 30, 2023 (see Appendix A, November 2023, from James DeMay to Tia Daulph, "Termination of Title V Air Operating Permit No. 0002950 and various Notice of Construction Orders, Compliance Orders, and Agreed Orders"). Revocation becomes effective 30 days from receipt of the notice or earlier upon Intalco's written notification that they don't object to the permit termination. The revocation deadline has now passed. Therefore, according to the applicable requirements of RCW and WAC, Intalco cannot operate the facility without first obtaining a new Title V operating permit and applicable NSR permits, including a demonstration of area compliance with the 2010 SO_2 NAAQS.

   Intalco's permanent closure resulted in a permanent and enforceable improvement in air quality, and post-closure monitoring data demonstrates attainment of the SO_2 NAAQS. This meets the requirement for an "improvement in air quality that is due to permanent and enforceable emissions reductions."

4. **EPA has fully approved an MP for the area as meeting the requirements of CAA Section 175A.**

[11] https://apps.ecology.wa.gov/publications/SummaryPages/1902019.html
[12] https://app.leg.wa.gov/WAC/default.aspx?cite=173-415
[13] Link to Alcoa's closure press release: Alcoa Announces Closure of Intalco Smelter and Prepares Site for Redevelopment | Alcoa Corporation

Washington's MP for the area, including a description of the regulations that will continue to apply in the area, is included in this submittal. It is supported by technical analysis, contingency measures, and regulatory framework necessary for the 10-year MP to ensure ongoing, permanent, and enforceable, attainment. It provides necessary evidence about the air quality construction permit, baseline and projected emissions inventories, and a method for ongoing verification of attainment. A contingency plan is included to help prevent, and if necessary, to promptly correct, any violation of the SO_2 NAAQS that occurs after the area is redesignated to attainment.

Therefore, Washington believes that the included MP meets the requirements of CAA §175A and provides for attainment of the 2010 1-hour SO_2 NAAQS during the required minimum planning horizon of 10 years.

5. The state has met all requirements applicable to the area under Section 110 and Part D of the CAA.

Ecology and NWCAA reviewed all applicable SIP-approved regulations that will apply to any new facility in the area and assert that we have the regulatory infrastructure compliant with the CAA requirements. The MP addresses requirements in Section 110 and Part D requirements (CAA Section 107(d)(3)(E)(v)).

Guidance

EPA issued two guidance documents that help clarify the CAA and EPA expectations regarding redesignation requests and maintenance plans. The most recent document is the April 23, 2014, "Guidance for 1-Hour SO_2 Nonattainment Area SIP Submissions," memorandum from Stephen Page, Director, Office of Air Quality Planning and Standards (the "2014 Page" memo or "2014 guidance"). The other document is the September 4, 1992, EPA memorandum "Procedures for Requests to Redesignate Areas to Attainment," from John Calcagni, Director, Air Quality Management Division (the "1992 Calcagni" memo). Ecology and NWCAA consulted these documents and met with EPA Region 10 staff during the development of this submittal.

Chapter 2. Intalco – Ferndale SO_2 Nonattainment Area

On December 30, 2020, EPA designated a small area – 5.5 square miles – near the city of Ferndale in Whatcom County in the northwest corner of Washington as a nonattainment area for the 2010 1-hour SO_2 NAAQS. The designation was based on the elevated SO_2 concentrations at one of the two SO_2 monitoring sites in the area. This site was established in 2017 near the Intalco Primary Works aluminum smelter (Intalco). The map below shows the boundary of the nonattainment area.[14]

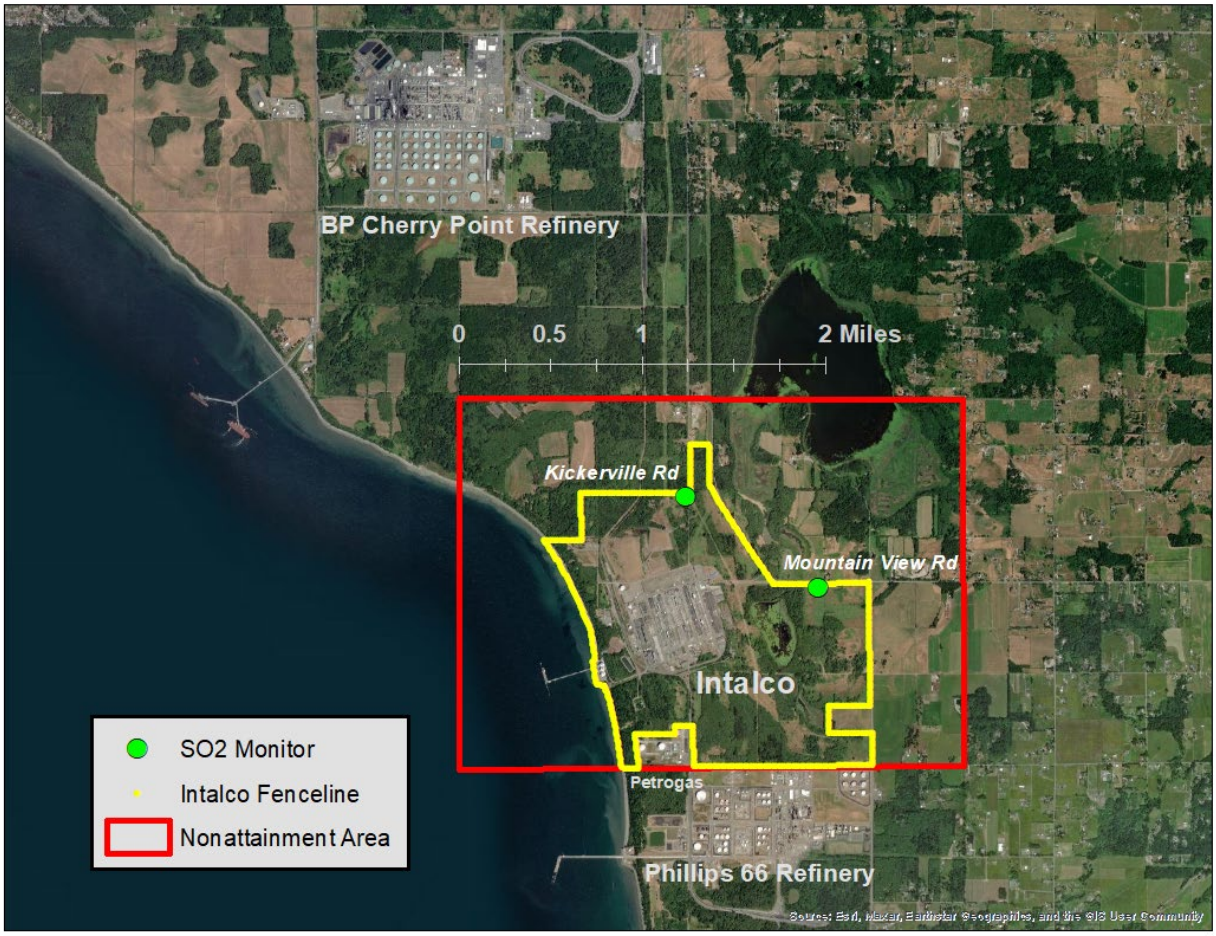

Figure 1. Intalco SO_2 nonattainment area boundary, SO_2 monitoring sites, and Intalco fence line

Ecology's analysis of the SO_2 monitoring data from 2017-2019 showed the DV at one of the monitoring locations near the aluminum smelter had reached 106 ppb (the standard is 75 ppb).

[14] A copy of the EPA's designation decision and technical support documents: https://www.epa.gov/sulfur-dioxide-designations/epa-completes-fourth-round-sulfur-dioxide-designation

In June 2020, Ecology and NWCAA published a detailed technical report[15] on the SO_2 monitoring data, location of the industrial sources, emissions, meteorology, and other relevant factors for this area. In that report, we demonstrated that the Intalco aluminum smelter was the sole contributor to the violation of the SO_2 NAAQS. Other industrial sources of SO_2 located in the area did not cause or contribute to the documented violation of the SO_2 NAAQS. EPA reviewed the report as part of their area designation decision.

Building downwash effects[16] caused by emissions released at building height, have been identified as the primary cause of impaired dispersion which resulted in the elevated ground-level SO_2 concentrations near the facility. Thus, the areas impacted by the elevated levels of SO_2 were very close to the facility's fence line and did not reach the nearby city of Ferndale. This was additionally confirmed by NWCAA which deployed mobile SO_2 monitoring at a school in Ferndale located in the direction of oceanic winds and downwind from the facility.

After careful consideration and a public review process in the fall of 2020, EPA delineated a small rectangular area as being in nonattainment. It encompasses the Intalco aluminum smelter and adjacent areas impacted by elevated SO_2 levels. Lines connecting the following UTM Coordinates (Zone 10) bound the Intalco-Ferndale SO_2 nonattainment area:

- Northwest Corner: 519671, 5412272
- Northeast Corner: 524091, 5412261
- Southwest Corner: 519671, 5409010
- Southeast Corner: 524111, 5409044

The designated area is under the jurisdiction of the local clean air authority (NWCAA); however, due to state law, the Industrial Section within Ecology regulated air quality emissions from the aluminum smelter. Following the nonattainment designation, Intalco and the regulatory agencies developed a plan to install a scrubber and modify other air quality control equipment to reduce the problematic levels of SO_2 emissions before the facility restarted its operations. This plan was submitted to EPA in December 2022. The federal law and court order did not allow to delay such plans even if the facility was curtailed.

In the spring of 2023, following extended curtailment, the facility announced a permanent shutdown of its operations and the desire to terminate its air permits. Thus, the source of SO_2 emissions that were causing the violation of the SO_2 standard is no longer present in the area and the plan to install the scrubber and other controls is now obsolete. The 3-year average of the 4th highest annual hourly levels of SO_2 levels in the area for 2020-2022 showed attainment of the federal standard. The area continues to attain the standard.

[15] "Analysis of Sulfur Dioxide Monitoring Data in Whatcom County: Air Quality Technical Report" (PDF, 57 pages, 1503KB) available at: https://apps.ecology.wa.gov/publications/SummaryPages/2002015.html

[16] Building downwash effect arises from the interaction of an atmospheric boundary layer with an obstacle. This often results in an elevated plume being brought to the ground rapidly and is referred to as building downwash effect.

Chapter 3. Closure of the Intalco Primary Aluminum Smelter

About Intalco's primary aluminum smelter

The Intalco smelter was located at 4050 Mountain View Road, Ferndale, WA 98248. The Intalco facility was built in 1965 and began operations as Intalco Aluminum Corporation in 1966, under the ownership of Alumax, Pechiney, and Howmet. In 1988, Alcoa Inc. and Alumax merged, creating Alcoa Intalco Works. By 2006, Alcoa had bought out its remaining partners. Intalco has been the owner and operator of the facility since operations began in 1966. This facility curtailed its operations in 2020 and announced the permanent closure of the Intalco facility on March 16, 2023.

Figure 2. A bird's eye view of Intalco looking northeast across the facility toward Lake Terrell[17]

Curtailment is a temporary shutdown where the facility ceases production but maintains its permits to preserve the ability to restart operations. Intalco's most recent curtailment started in 2020. During this time, Intalco continued to monitor pollutants in its treated sanitary and secondary wastewaters and stormwater (sent to the Strait of Georgia) and operated ambient

[17] Source: https://nwcitizen.com/

air quality monitors which measure meteorological data and SO_2 levels. On March 16, 2023, Alcoa announced the permanent closure of the Intalco facility. Intalco began decommissioning the site during the summer of 2023. Ecology notified Intalco of the intent to revoke their Title V Air Operating Permit (AOP) and associated minor NSR permits on November 30, 2023 (Appendix A). Intalco notified Ecology by letter on December 7, 2023, that they did not object to the immediate revocation of the AOP and associated minor NSR permits. The facility is now permanently closed and in the process of being dismantled.

In developing the Attainment Plan, submitted to EPA in December 2022, Ecology and Intalco negotiated an Agreed Order (AO) No. 21310 to identify required facility modifications and controls needed for attainment purposes should the facility restart. The AO expressly applied to Intalco and its successor(s) in interest. Accordingly, the requirements set forth in the AO would continue to apply in the event another company purchased and restarted the facility as an aluminum smelter. However, given Alcoa's announcement of the permanent closure of the Intalco facility and Ecology's termination of Intalco's Title V AOP and associated NSR permits, Ecology has also terminated AO No. 21310, effective on the same date of the AOP termination. Any future industrial operations at the site with air emissions will require new NSR permits before construction, including a demonstration of compliance with the 1-hour SO_2 NAAQS.

Primary aluminum production at Intalco

When operating, Intalco turned alumina ore into aluminum metal. At full production, Intalco was capable of making 307,000 tons of aluminum metal each year. A small portion of their overall production came from scrap aluminum where they remelted purchased scrap aluminum.

Feedstock for primary, or molten, aluminum is a sedimentary rock called bauxite. It is mined and processed into aluminum oxide, Al_2O_3, (alumina) near the mining site, typically in Australia, using a caustic process. About four pounds of bauxite result in approximately two pounds of alumina that, in turn, produces roughly one pound of aluminum.

Alumina does not contain sulfur in significant quantities and is not a source of SO_2. However, the process of reducing alumina to aluminum is very energy-intensive and requires the use of electrical anodes. Intalco made their carbon anodes onsite using calcined petroleum coke and coal tar pitch. Intalco's now terminated Title V AOP limited the sulfur content of the calcined petroleum coke to three percent sulfur by weight. The sulfur in the calcined petroleum coke oxidized to form the primary source of SO_2 emissions from the facility.

Sulfur dioxide emissions are directly proportional to sulfur content in the carbon anodes. Since the anodes are consumed in the process at a fixed rate, reducing the concentration of sulfur in the anodes results in less sulfur dioxide being generated onsite. Alternately, emissions control devices, such as wet scrubbers, can reduce emissions after they are generated.

Intalco produced molten aluminum in reduction cells (pots) using the Hall-Heroult prebake electrolytic process. The Hall-Heroult prebake electrolytic process utilizes pots made up of steel

shells with two linings, an outer insulating or refractory lining, and an inner carbon lining that acts as the cathode of the electrolytic cell. At Intalco, each cell could hold 18 prebaked anodes. A direct current of 140,000 amperes is fed in series to each pot. The current passes from the anode through the molten cryolite (bath) and alumina mixture to the cathode. The electrolytic process takes place at temperatures of 940–980 degrees Celsius and breaks the bond between the oxygen and aluminum in the alumina. The oxygen reacts with the anode to form carbon dioxide, carbon monoxide, and SO_2. The alumina is reduced to molten aluminum at the cathode where it accumulates because it is heavier than the molten bath. The anodes are used up by the electrolytic process. When Intalco was operating, approximately 0.6 inches of anode was consumed per day (approximately 0.4 lb carbon/lb Al). The used anodes (called spent anodes) were removed and replaced with a new anode approximately every 25-28 days. Intalco tapped the molten aluminum from the pots every 34 hours and transferred the molten aluminum to the casthouse where it was cast into sows, tees, slabs, and billets.

Intalco had 720 electrolytic pots in which the molten aluminum was produced. The pots were arranged in three lines called potlines. The potlines were designated as A, B, and C. Each potline had two buildings (A-1 and A-2, B-1 and B-2, and C-1 and C-2) with 120 pots per building and 240 pots per potline. The operating pots ran continuously (24 hours a day, 365 days per year). The average pot was operated for six years. After shutting down a pot, a new pot was rebuilt in its place. Production at Intalco was limited by actual production capacity and permit limit to 307,000 tons of aluminum per year.

Figure 3. Aerial views of the Intalco facility

While Intalco was operating, its operations were divided into five main process areas:

1. Green Carbon (also called the Green Mill and Paste Plant): Crushed spent anodes, calcined petroleum coke, and coal tar pitch were mixed into anode paste and formed into green anodes.
2. Baked Carbon (Bake Ovens): The green anodes were baked in one of two natural gas-fired anode bake furnaces. Anodes exiting the bake furnaces are referred to as baked anodes.
3. Anode Rodding (Rod Shop): Molten steel was poured into the baked anodes to form pins and rods that served as the connection point for the electrical current in the reduction pots.
4. Potlines: Molten aluminum was produced in the reduction pots using the Hall-Heroult prebake electrolytic process.
5. Metal Products (Casthouse): Molten aluminum was transferred to holding furnaces where it was alloyed and cast into billets, ingots, and tees.

2016 & 2020 curtailments

In November 2015, Alcoa announced that a full curtailment of the Intalco facility's potlines would begin in February 2016 with only the facility's casthouse continuing to operate. Intalco was scheduled to lay off 465 workers because of the planned curtailment. The curtailment was subsequently postponed until June 2016. On May 2, 2016, Alcoa and the Bonneville Power Administration announced a final power agreement that would allow Intalco to continue to operate through February 2018. The scheduled curtailment was canceled on June 19, 2016. However, Intalco had already offered severance packages to their employees when the curtailment was canceled, which resulted in a significant loss of trained personnel. Intalco began hiring and training replacement hourly and salary staff when the cancelation of the 2016 curtailment was announced. Because of the complexity of Intalco's operations, there is a steep learning curve and Intalco experienced high staff turnover. The new staff were not proficient in performing the potline operations, which affects pot operation and maintenance, and potentially contributes to increases in some emissions. This resulted in several permit violations.

2019 AO and 2020 curtailment

In 2018, Ecology began working with Intalco's management to develop options for preventing nonattainment, or, if not feasible, to allow for timely attainment. In 2019, Ecology's Industrial Section reached an agreement with Intalco and issued an AO (No. 16449) documenting Intalco's readiness to install one scrubber to reduce SO_2 emissions should the area be designated as nonattainment by EPA.

On April 22, 2020, Alcoa announced that it would curtail the Intalco facility's operations and stop aluminum production by July 2020. Curtailment is different from the facility permanently shutting down. A curtailed facility often maintains its permits to allow for the restart of its

operations. To preserve this ability to restart, the active permits must comply with the NAAQS and meet other applicable state and federal requirements.

On April 23, 2020, Ecology received a 30-day written "null and void" notice from the facility about AO No. 16449, in accordance with Action 4 of the Order. The Order was an enforceable agreement to address elevated SO_2 levels recorded near the smelter in recent years. Under the agreement, if EPA designated the area as nonattainment, Intalco would be required to install a piece of equipment called a wet scrubber in 2022. The wet scrubber would capture and remove SO_2 before it is released into the air. The 30-day notice that Ecology received in April 2020 explained that the Intalco facility would not be proceeding with the plan to install new air pollution control equipment in 2022 to reduce SO_2 emissions due to the curtailment.

2023 permanent closure

On March 16, 2023, Alcoa announced the permanent closure of the Intalco facility. With the permanent closure of the facility, Intalco will no longer emit SO_2. Intalco's aluminum smelting operations were the primary source of SO_2 in the nonattainment area. In response to the facility closure announcement, Ecology notified Intalco of its intent to revoke Intalco's Title V AOP and associated minor NSR permits on November 30, 2023. Intalco notified Ecology in a letter dated December 7, 2023, that they did not object to immediate revocation of the Title V AOP and associated minor NSR permits. As such, Intalco's AOP and associated minor NSR permits were terminated on December 7, 2023. Along with terminating Intalco's air permits, Ecology's notice also identified the intent to terminate AO No. 21310, which established new SO_2 limitations and required the installation and operation of an SO_2 wet scrubber. AO #21310 was also terminated on December 7, 2023. Ecology's notice identified that AO No. 13551, which requires continuous ambient SO_2 monitoring at two locations, will remain in effect until EPA grants permission to remove the monitors.

Intalco began decommissioning portions of the site during the summer of 2023 and anticipates the site-wide decommissioning process to take at least two years. The first phase of decommissioning includes the removal of the pot superstructures. Following the removal of the pot superstructures, Intalco will begin demolishing the majority of the buildings and structures at the site. During decommissioning, there may be intermittent and minimal sources of SO_2 from fuel-fired engines. In accordance with WAC 173-400-035(3) and NWCAA Section 304.3, Intalco must use ultra-low sulfur diesel for all non-road engines, including the engines used for decommissioning. Additionally, these engines cannot be used on-site for more than 12 months without NSR permitting. Following the termination of Intalco's Title V AOP, any NSR permitting at the site is under the jurisdiction of NWCAA.

In Alcoa's closure announcement, they identified that AltaGas had acquired the rights to develop and own the majority of the Intalco site. Any future industrial operations at the site with air emissions are subject to air quality permitting requirements. NWCAA has jurisdiction for air quality permitting throughout Whatcom County, including at the site now owned by AltaGas.

Chapter 4. Monitoring Data

Washington SO_2 air quality monitoring network overview

Ecology's AQP partners with LCAAs, Tribes, and federal agencies to operate monitoring sites and collect air quality information across the state through the Washington Ambient Air Monitoring Network (Washington Network). As the Primary Quality Assurance Organization (PQAO) and designated monitoring agency for the state of Washington, Ecology is responsible for ensuring that the monitoring requirements described in 40 CFR Part 58 are met. Ecology and its partners collect monitoring data to support the three monitoring objectives defined in 40 CFR Part 58 Appendix D:

1. Provide air pollution data to the public in a timely manner.
2. Support compliance with NAAQS and development of pollution control strategies.
3. Support air pollution research studies.

To meet these objectives, Ecology and its partners operate several different types of sites at different representative spatial scales, which vary according to the pollutant. SO_2 monitors are sited to:

- Determine representative pollutant concentrations in areas of high population density.
- Assess general background pollutant concentrations.
- Identify the impact of significant sources or source categories on pollutant concentrations in the ambient air.

Ecology and its partners operate five SO_2 monitoring sites in the Washington Network as shown in **Figure 4**. Two are source-oriented monitoring sites designed to capture the impacts of one facility (gray dots), and the remaining three are used to capture regional background concentrations and meet EPA's requirement for monitoring by the Population Weighted Emissions Index (PWEI). The SO_2 design criteria described in 40 CFR 58 Appendix D 4.4 include a requirement for states to calculate the PWEI for each core-based statistical area (CBSA) they contain:

> "The PWEI shall be calculated by multiplying the population of each CBSA, using the most current census data or estimates, and the total amount of SO_2 in tons per year emitted within the CBSA area, using an aggregate of the most recent county level emissions data available in the National Emissions Inventory for each county in each CBSA. The resulting product shall be divided by one million, providing a PWEI value, the units of which are million persons-tons per year. For any CBSA with a calculated PWEI value equal to or greater than 1,000,000, a minimum of three SO_2 monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 100,000, but less than 1,000,000, a minimum of two SO_2 monitors are required within that CBSA. For any CBSA with a calculated PWEI value equal to or greater than 5,000, but less than 100,000, a minimum of one SO_2 monitor is required within that CBSA."

As of 2023, the Seattle-Tacoma-Bellevue, WA MSA was the only CBSA in Washington where SO_2 monitoring was required due to a calculated PWEI value between 5,000 and 100,000.

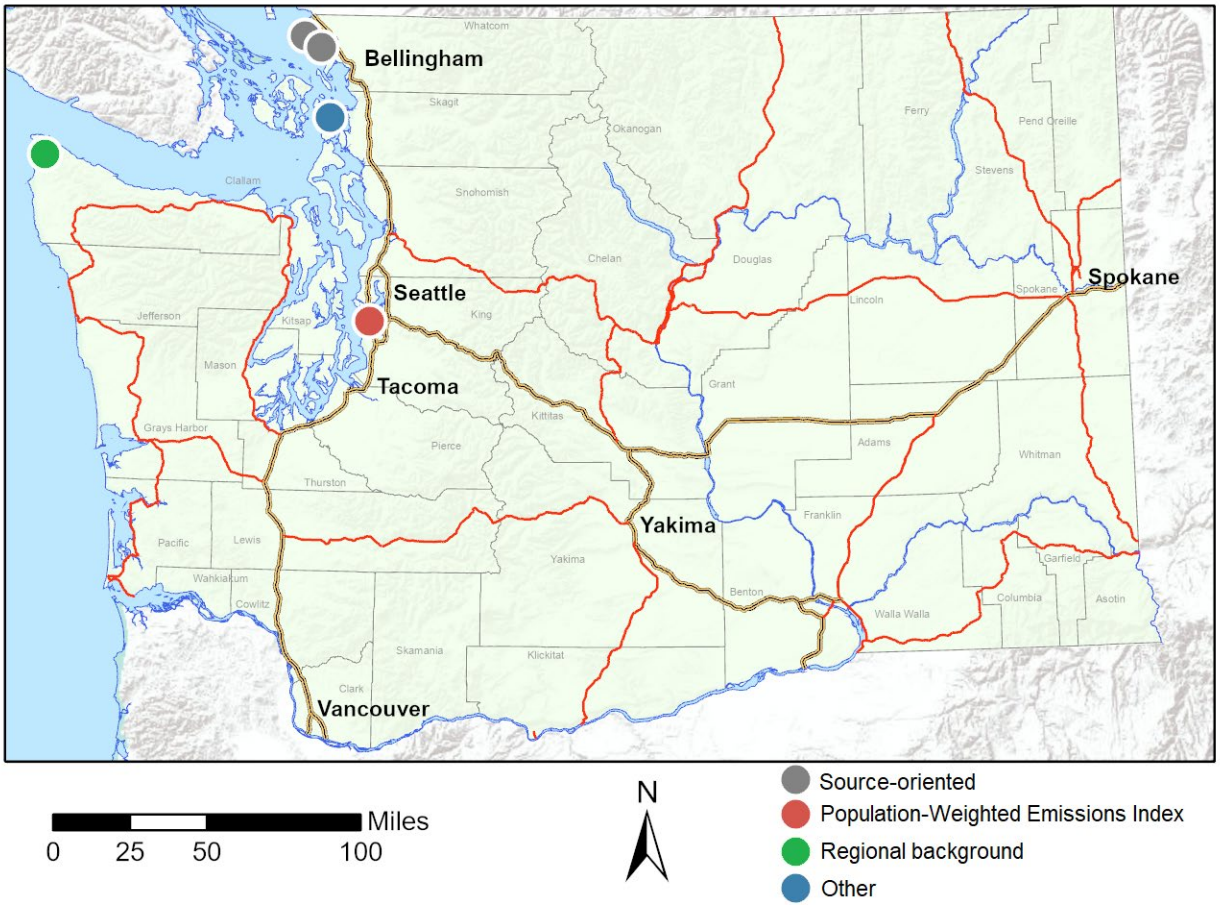

Figure 4. Map of Washington Network SO_2 monitoring sites[18]

The 2022 99th percentile daily maximum 1-hour SO_2 concentrations from these five monitoring sites are listed in **Table 1**.

[18] Source: https://www.epa.gov/air-trends/design-value-interactive-tool

Table 1. 99th Percentile SO_2 Concentrations at Washington SO_2 Monitoring Sites, 2022

AQS Site ID	Site Name	County	2022 99th Percentile
53-073-0017	Ferndale-Mountain View Rd	Whatcom	3.3 ppb
53-073-0013	Ferndale-Kickerville Rd	Whatcom	3.1 ppb
53-057-0011	Anacortes-202 Ave	Skagit	1.8 ppb
53-009-0013	Cheeka Peak	Clallam	0.5 ppb
53-033-0080	Seattle – Beacon Hill	King	3.4 ppb

Intalco SO_2 air quality monitoring

In 2010, when EPA revised the health-based NAAQS for SO_2 to a 1-hour standard of 75 ppb, it also revised the form of the standard to a 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations.

Along with the new standard, EPA revised the data reporting requirements to include 1-hour average SO_2 concentrations and the maximum 5-minute block average SO_2 concentration of each hour. EPA also issued new requirements for the placement of monitors. These new monitoring requirements resulted in changes to the Washington SO_2 network, including adding two new monitors at the Intalco aluminum smelter to characterize SO_2 levels in the area.

Ecology proposed adding two new SO_2 sites near Intalco to the Washington Network in the 2016 Ambient Air Monitoring Network Plan.[19] Following EPA's concurrence, Intalco installed, and has been operating, two SO_2 monitoring sites near the facility as part of the Washington Network and Ecology's PQAO since January 1, 2017. The map in **Figure 5** shows the locations of the monitoring sites and **Table 2** summarizes their metadata.

Table 2. Summary of Ferndale Monitoring Site Metadata

Site Name	AQS ID	Latitude	Longitude	Parameters Measured
Ferndale-Kickerville Road	53-073-0013	48.855274	-122.704700	SO_2
Ferndale-Mountain View Road	53-073-0017	48.848065	-122.688888	SO_2, wind speed, wind direction, ambien3t temperature

[19] https://www.epa.gov/amtic/washington-2016-annual-network-plan

Figure 5. Map of the two SO_2 monitoring sites near Intalco Aluminum LLC

Both sites are located on Intalco property near the property line and in publicly accessible areas that meet EPA criteria for ambient air as defined in 40 CFR Part 50.1(e). These monitoring sites are referred to as the Ferndale-Kickerville Road and Ferndale-Mountain View Road sites. Both monitors are sited and operated in accordance with the ambient monitoring network requirements described in 40 CFR Part 58, including the Quality Assurance Requirements for Monitors used in Evaluations of NAAQS (Appendix A) and the Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring (Appendix E).

The Ferndale-Kickerville Road site is located north of the Intalco facility, and the Ferndale-Mountain View Road site is located east of the Intalco facility, near the public Mountain View Road. Ecology identified appropriate locations for the two Ferndale monitors in 2015 by running the AERMOD dispersion model using SO_2 actual emissions from BP, Intalco, and Phillips

66. Ferndale-Kickerville was identified as a suitable site due to the historical data record from an industry-monitoring site operated by the Intalco facility as recently as 2014. In addition to the historical record, the Ferndale-Kickerville site is also located downwind of the Intalco facility when winds are blowing from the dominant wind direction.

Figure 6. Ferndale Mountain View Road monitoring site and the road heading into the main Intalco facility (looking west)

The Ferndale-Mountain View site was added as a new site in the area of the highest expected SO_2 concentrations based on the AERMOD results. Since the meteorological measurements made at the Ferndale-Mountain View Road site are used in dispersion modeling for Prevention of Significant Deterioration (PSD) permitting, the site is operated according to EPA's monitoring guidelines for PSD to ensure it is meeting the data quality objectives of the PSD program.

SO_2 monitoring data analysis

Requirement 1 of 4: A demonstration that the NAAQS for 1-hour SO_2, as published in 40 CFR 50.17, has been attained

During monitoring from 2017-2020, both the Ferndale-Mountain View and Ferndale-Kickerville monitors recorded exceedances of the 1-hour SO_2 NAAQS of 75 ppb. However, only the Ferndale-Mountain View monitor recorded a design value above 75 ppb.

In April 2020, Alcoa announced its intent to curtail operations at the Intalco facility. Intalco fully curtailed operations on August 26, 2020. As soon as operations were curtailed, SO_2 concentrations at both Ferndale monitoring sites dropped to single digits (ppb). In both 2021 and 2022, the Ferndale-Mountain View monitor attained the national primary ambient air quality standards for SO_2 as published in 40 CFR 50.17.

Table 3 and **Table 4** summarize the annual 99th percentiles of 1-hour daily maximum concentrations and the 3-year design values at Ferndale-Mountain View and Ferndale-Kickerville, respectively. All calculations were made in accordance with the data handling conventions and computations described in 40 CFR 50 Appendix T.

Table 3. Summary of Ferndale-Mountain View Annual 99th Percentiles and DVs (in ppb of SO_2)

Year	99th Percentile	3-year DV
2017	113.6	---
2018	101.3	---
2019	104.5	106
2020	62.0	89
2021	2.6	56
2022	3.3	23

Table 4. Summary of Ferndale-Kickerville Annual 99th Percentiles and DVs (in ppb of SO_2).

Year	99th Percentile	3-year DV
2017	70.0	---
2018	73.7	---
2019	69.9	71
2020	59.2	68
2021	2.4	44
2022	3.1	22

We show the annual 99th percentiles in comparison with the 1-hour SO_2 NAAQS in the graph in **Figure 7**.

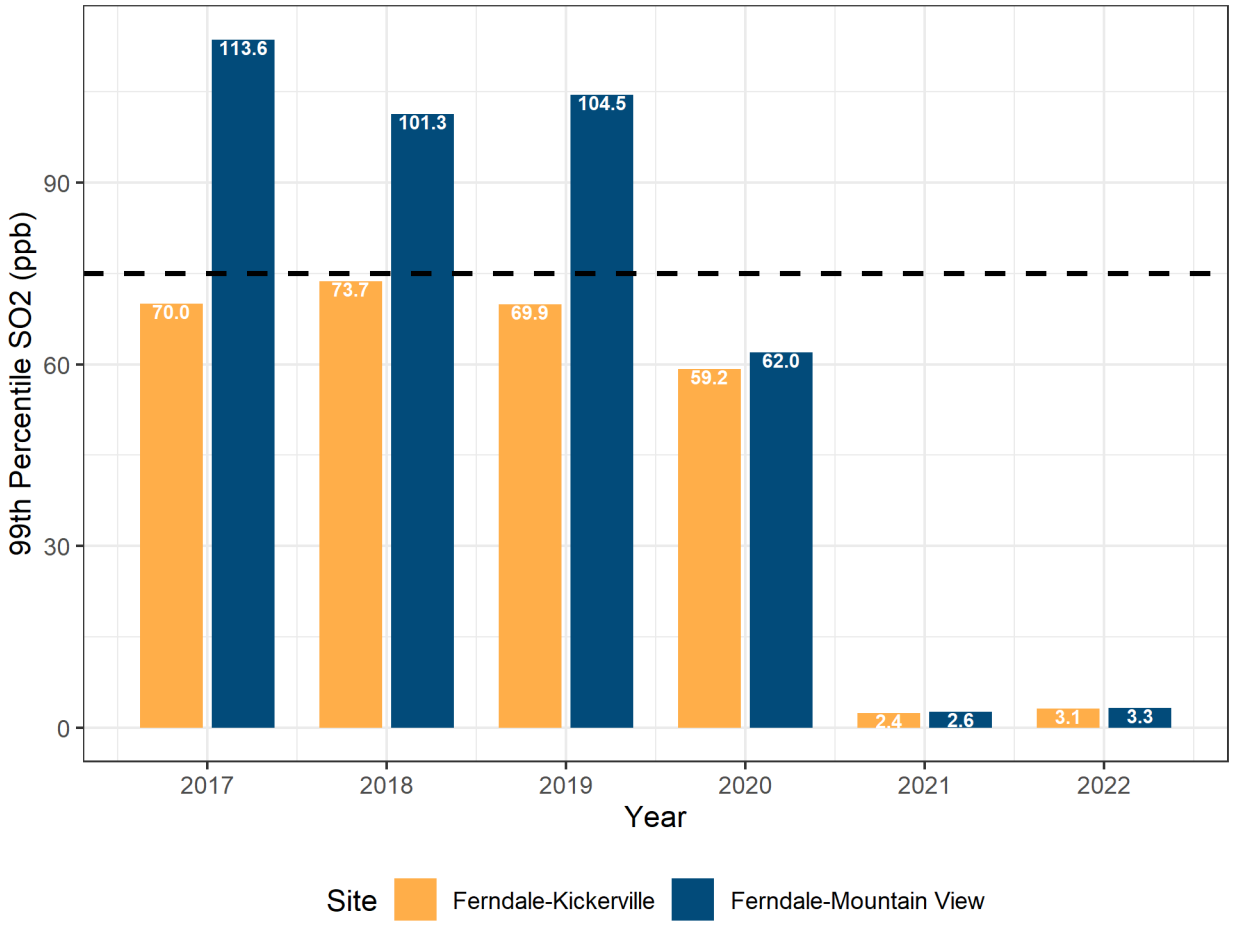

Figure 7. Annual 99th percentile daily maximum 1-hour concentrations

Between the curtailment in August 2020 and the end of 2022, the maximum 1-hour concentration recorded at Ferndale-Kickerville was 5.4 ppb, and at Ferndale-Mountain View was 6.0 ppb. A time-series graph of the daily maximum 1-hour SO_2 concentrations at both sites from 2020-2022 is shown in **Figure 8**, with the date of the curtailment marked with a dashed line.

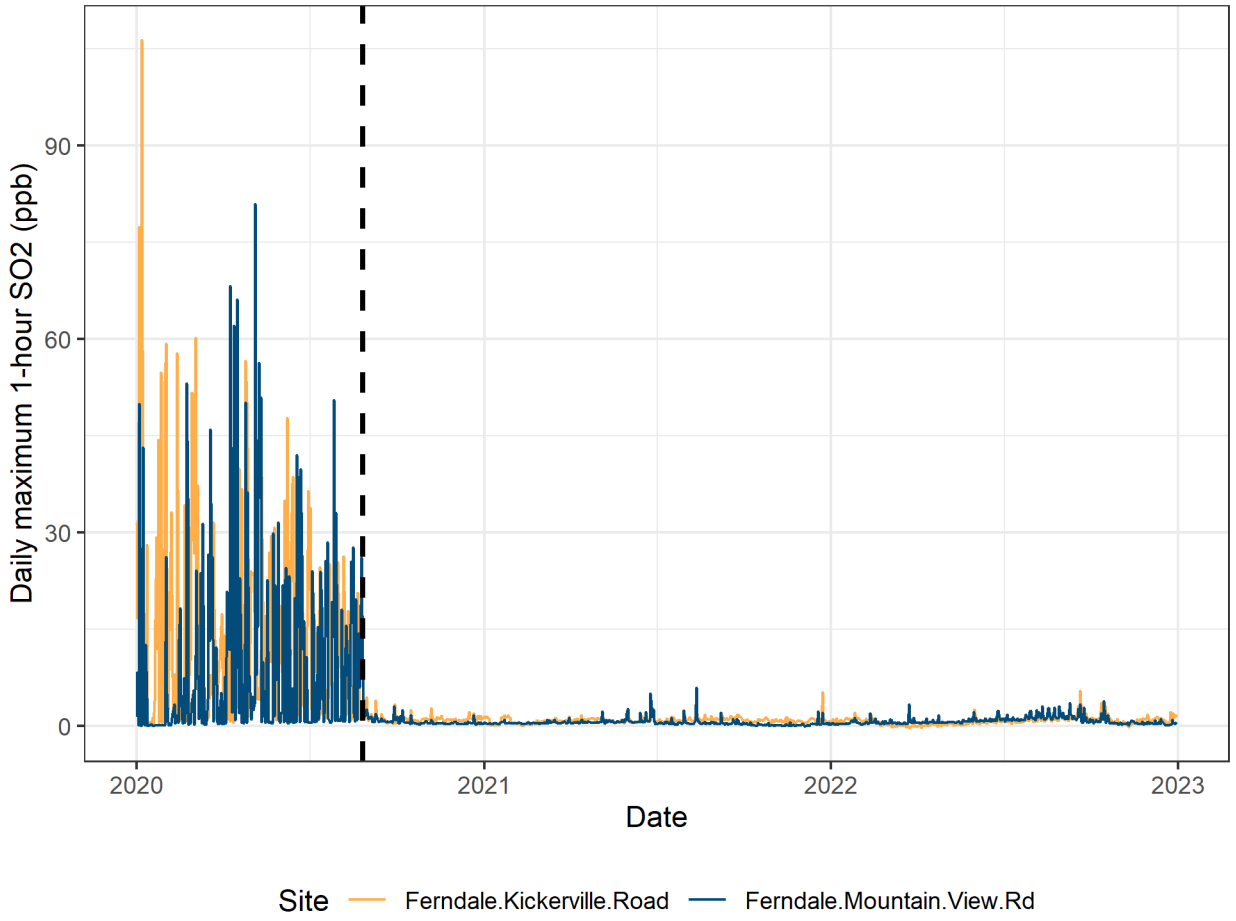

Figure 8. Time-series graph of daily maximum 1-hour SO_2 concentrations at Ferndale monitoring sites, January 2020 through December 2022

As shown above, both the Ferndale-Kickerville and the Ferndale-Mountain View now show attainment with the 2010 SO_2 NAAQS.

Requirement 2 of 4: Ambient monitoring data quality assured in accordance with 40 CFR 58.10, recorded in the AQS database, and available for public view

As part of Ecology's PQAO, the Ferndale-Mountain View and Ferndale-Kickerville monitors are subject to EPA's Quality Assurance Requirements for Monitors used in Evaluations of NAQQS (40 CFR Part 58 Appendix A). Monitoring site operators are required to follow Ecology's Quality Assurance Plan and Standard Operating Procedures. Ecology routinely performs in-person performance evaluations of the monitors twice per year and additionally as needed. Performance evaluations involve challenging monitors with independent SO_2 standards of known concentrations. Monitoring data and results of quality control checks are routinely evaluated for validity by Ecology's trained quality assurance staff to ensure that the data meet EPA's measurement quality objectives.

The Ferndale-Mountain View and Ferndale Kickerville monitors routinely exceed EPA's requirement to achieve greater than 75 percent data completeness per calendar quarter. Over the 2017-2022 period, daily data completeness (measured as the number of days with a valid maximum 1-hour SO_2 concentration divided by the number of possible days) was 99 percent at Ferndale-Mountain View and 93 percent at Ferndale-Kickerville.

Data from the Ferndale-Mountain View and Ferndale-Kickerville monitoring sites are submitted to EPA's Air Quality System (AQS) database monthly within 90 days of the end of each calendar month. Data are available for public view on Ecology's monitoring website and via EPA's Air Data website.

Requirement 3 of 4: A commitment that once redesignated, the state will continue to operate an appropriate monitoring network to verify the maintenance of the attainment status or have an approved alternative verification of attainment method

The SO_2 monitoring sites were placed in the source-specific hot spots identified by extensive air quality modeling based on the location and height of the Intalco aluminum smelter stacks and the alignment of the winds with the stacks. Intalco is now permanently closed and there are no SO_2 emissions from the facility. The existing SO_2 monitors were sited to capture impacts from Intalco and are now superfluous. Without modeling specific to any potential new sources, which haven't been proposed, the location of the existing SO_2 monitors would not necessarily be sited appropriately to provide a robust, 360-degree, ongoing evaluation of their SO_2 impacts.

Because of this unique situation, Ecology and NWCAA propose a robust alternative verification method to conduct annual evaluations of the area's attainment status in Chapter 6. NWCAA will provide the result of the annual review to Ecology to be included in the "Verification of Ongoing Attainment" document that is included as an attachment to the annual Ambient Air Monitoring Network Plan available for public comment and published on Ecology's website by July 1 each year.

Should the public and EPA agree with this approach to ongoing verification, Ecology intends to request discontinuation of the Ferndale-Mountain View and Ferndale-Kickerville monitors once the requirements of 40 CFR 58.14, which describes the criteria for SLAMS monitor station discontinuation, are met. Ecology would then submit this request for network modification in its annual air monitoring network plan according to the requirements of 40 CFR 58.10, "Annual monitoring network plan and periodic network assessment." The annual monitoring network plan provisions of 40 CFR 58.10 require that proposed network modifications be included in a draft plan available for public inspection and comment for at least 30 days and that such modifications are subject to the approval of the EPA Regional Administrator, who shall approve or disapprove the plan within 120 days of submission.

The network modification requirements described in 40 CFR 58.14 indicate that requests for monitor discontinuation will be approved if any of the criteria listed in 40 CFR 58.14 (c) (1-6) are met. Ecology anticipates that the monitors will meet the conditions described in 40 CFR 58.14

(c) (4) by the end of calendar year 2024 or upon approval of the maintenance SIP, whichever is later:

> "For any pollutant, any SLAMS monitor in a county (or portion of a county within a distinct attainment, nonattainment, or maintenance area, as applicable) provided the monitor has not measured violations of the applicable NAAQS in the previous five years, and the approved SIP provides for a specific, reproducible approach to representing the air quality of the affected county in the absence of actual monitoring data."

As stated in the previous chapter, AO No. 13551 requires ongoing continuous ambient SO_2 monitoring to remain in effect as long as required by EPA or an alternative operator is negotiated. The facility is required to continue operating the monitoring sites until EPA approves their removal.

Separately, the area's low levels of SO_2 qualify the area for a Limited Maintenance Plan (LMP) determination. However, this determination only applies to the areas with ongoing ambient monitoring. Since we are requesting EPA to approve an alternative verification method and to discontinue the two monitors, we chose to prepare a full MP. We believe it is appropriate in this area given the nature of hyper-localized SO_2 impacts that change depending on the location of the industrial emission points.

Chapter 5. Emissions Inventory

Introduction

EPA's redesignation guidance requires the submittal of a comprehensive inventory of SO_2 emissions representative of the year when the area achieves attainment of the 1-hour SO_2 air quality standard. The state also must demonstrate that the improvement in air quality between the year that violations occurred and the year that attainment was achieved is based on permanent and enforceable emission reductions. Other emissions inventory-related requirements include a projection of the emissions inventory to a year at least 10 years following redesignation; a demonstration that the projected level of emissions is sufficient to maintain the 1-hour SO_2 standard; and a commitment to provide future updates of the inventory to enable tracking of emission levels during the 10-year maintenance period. These requirements are addressed below.

Inventory types and years

Two annual emissions inventories (EIs) for Whatcom County and the Maintenance Area were developed:

1. Base year inventory (2020): The base year represents actual emissions in 2020, which is the most recent NEI year, and is the year that the now-closed Intalco smelter curtailed operations.
2. Maintenance projected inventory (2033): The maintenance projected inventory is an annual inventory that includes all the sources inventoried for the base year. The projections were based on the maximum of recent activity levels.

The annual base year and maintenance projected inventories were converted to hourly emission rates for both Whatcom County and the Maintenance Area, which is a small part (5.5 square miles) of the 2,503 square mile county.

Responsibility

The inventory process was a cooperative effort between Ecology's AQP and Industrial Section and NWCAA.

- **Ecology's AQP** inventoried all sources in the Maintenance Area and Whatcom County except point sources. Ecology wrote the final inventory documentation.
- **Ecology's Industrial Section** has regulatory jurisdiction for Intalco and provided the documentation confirming that the Intalco aluminum smelter is permanently shut down.
- **NWCAA** provided emissions estimates and locations for all other SO_2 point sources in Whatcom County. NWCAA reviewed the final EI.

Geographic area

The Maintenance Area is a rectangular-shaped area of approximately 5.5 square miles within the 2,503 square miles of Whatcom County. The Maintenance Area is bounded by lines

connecting the following UTM Coordinates (zone 10): Northwest Corner: 519671 5412272; Northeast Corner: 524091 5412261; Southwest Corner: 519671 5409010; Southeast Corner: 524111 5409044. The geographic coordinates of the Maintenance Area corners are approximate: 48.8631 N, 122.7318 W (corner of Henry Road and Gulf Road); 48.8628 N, 122.6715 W (corner of Thornton Road and N. Star Road); 48.8338 N, 122.7320 W (off coast); 48.8339 N, 122.6715 W (at Unick Road).

The Maintenance Area is to the west of Ferndale, WA, and includes the former Intalco aluminum smelter and a small part of the coast along the Puget Sound where ships dock. The only other facility within the Maintenance Area besides Intalco is the Petrogas Ferndale Terminal, which receives and ships propane and butane via truck, train, pipeline, and ship. The Petrogas Ferndale Terminal is a very minor source of SO_2. There are oil refineries and several smaller commercial/industrial SO_2 sources outside the Maintenance Area. None of these sources outside the Maintenance Area contributed to the exceedances of the SO_2 NAAQS in the Maintenance Area. There are public roads, a rail line, and marine traffic within the Maintenance Area. The population of the nearby city of Ferndale was estimated at 15,143 for 2020, but less than 20 households are within the Maintenance Area.

Emissions summaries and charts

The emissions summaries and charts shown below represent the annual emissions in the Maintenance Area (TPY) and the seasonal emissions in the county and Maintenance Area (pounds per hour (lb/hr)) which includes all seasons. The seasonal emissions (lb/hr) were calculated such that the highest fractions of monthly, daily, and hourly temporal profiles were used for each non-point, non-road, and on-road category.

Table 5. Base Year 2020 SO_2 Emissions Summary for Whatcom County

Source	Type	Whatcom County SO_2 (TPY)	Whatcom County SO_2 (lb/hr)	Within Maintenance Area?
Alcoa Primary Metals Intalco Works (Intalco)	Point ≥ 100 TPY SO_2 PTE	1613.4	952.0	Yes
BP Cherry Point Refinery	Point ≥ 100 TPY SO_2 PTE	1185.1	668.8	No
Phillips 66 Ferndale Refinery	Point ≥ 100 TPY SO_2 PTE	44	27.4	No
PSE Encogen Generating Station	Point < 100 TPY SO_2 PTE	3.2	2.4	No
PSE Ferndale Generating Station	Point < 100 TPY SO_2 PTE	9.2	3.6	No
PSE Whitehorn	Point < 100 TPY SO_2 PTE	0.1	1.6	No
PSE Sumas	Point < 100 TPY SO_2 PTE	4.1	1.9	No
Northwest Pipeline GP Sumas	Point < 100 TPY SO_2 PTE	9.7	2.2	No
Industrial/commercial/institutional fuel use	Non-point	15.8	17.5	No
Residential non-wood fuel use	Non-point	1.3	1.0	Yes
Residential wood combustion (home heating)	Non-point	13.3	10.5	Yes
On-road mobile sources	On-road	4.6	2.2	Yes
Aircraft: military, commercial, general aviation	Non-road	1.9	0.7	No
Ships (commercial marine vessels)	Non-road	8.0	3.9	Yes
Railroad (locomotives)	Non-road	0.2	0.1	Yes
Non-road mobile equipment and vehicles (NEC)	Non-road	0.6	0.3	Yes

Table 6. Projection Year 2033 SO_2 Emissions Summary for Whatcom County

Source	Type	Maintenance Area SO_2 (TPY)	Maintenance Area SO_2 (lb/hr)	Within Maintenance Area?
Alcoa Primary Metals Intalco Works	Point ≥ 100 TPY SO_2 PTE	0	0	Yes
BP Cherry Point Refinery	Point ≥ 100 TPY SO_2 PTE	809.1	668.8	No
Phillips 66 Ferndale Refinery	Point ≥ 100 TPY SO_2 PTE	41.6	27.4	No
PSE Encogen Generating Station	Point < 100 TPY SO_2 PTE	3.2	2.4	No
PSE Ferndale Generating Station	Point < 100 TPY SO_2 PTE	9.2	3.6	No
PSE Whitehorn	Point < 100 TPY SO_2 PTE	0.1	1.6	No
PSE Sumas	Point < 100 TPY SO_2 PTE	4.1	1.9	No
Northwest Pipeline GP Sumas	Point < 100 TPY SO_2 PTE	9.7	2.2	No
Industrial/commercial/institutional fuel use	Non-point	15.8	17.5	No
Residential non-wood fuel use	Non-point	1.3	1.0	Yes
Residential wood combustion (home heating)	Non-point	13.3	10.5	Yes
On-road mobile sources	On-road	4.6	2.2	Yes
Aircraft: military, commercial, general aviation	Non-road	1.9	0.7	No
Ships (commercial marine vessels)	Non-road	8.0	3.9	Yes
Railroad (locomotives)	Non-road	0.2	0.1	Yes
Non-road mobile equipment and vehicles (NEC)	Non-road	0.6	0.3	Yes

Table 7. Base Year 2020 and Projection Years 2026 and 2033 SO_2 Emissions Summaries for the Maintenance Area

Source	Type	2020 (TPY)	2026 and 2033 (TPY)	2020 (lb/hr)	2026 and 2033 (lb/hr)
Alcoa Primary Metals Intalco Works (Intalco)	Point ≥ 100 TPY SO_2 PTE	1613.4	0	952.0	0
Residential non-wood fuel use	Non-point	0.0026	0.0026	0.0020	0.0020
Residential wood combustion (home heating)	Non-point	0.0266	0.0266	0.0211	0.0211
On-road mobile sources	On-road	0.0095	0.0095	0.0045	0.0045
Ships (commercial marine vessels)	Non-road	0.0221	0.0221	0.0108	0.0108
Railroad (locomotives)	Non-road	0.0002	0.0002	0.0001	0.0001
Non-road mobile equipment and vehicles (NEC)	Non-road	0.0010	0.0010	0.0006	0.0006

Base year 2020 inventory development

The base year inventory is an inventory of actual emissions in 2020. Category selection was based on local knowledge of the area and the 2020 NEI for Whatcom County.

Emissions categories

Major sources ≥ 100 TPY SO_2 potential to emit

The federal CAA defines major sources as any stationary source having the potential to emit (PTE) 100 TPY of SO_2 (≥ 100 TPY PTE). Ecology and NWCAA records show that Intalco, BP Refinery, and Phillips 66 Refinery are the only sources in Whatcom County with a PTE ≥ 100 TPY SO_2. These facilities are federal CAA Title V sources and are required to report their annual emissions every year. The Intalco facility reported between 3,546 and 5,022 TPY SO_2 for the 2012 to 2019 reporting years. Intalco curtailed operations in 2020 and reported 1,919 tons of SO_2 for the year, with no emissions for 2021. Intalco is now permanently shut down. The BP Refinery has reported between 608 and 1,185 TPY SO_2 from 2012 to 2021, with an average of 846 TPY. The Phillips 66 Refinery has reported less than 75 TPY SO_2 from 2012 to 2021, with an average of 47 TPY. The 2020 annual emissions reports were used to develop the base year major point source inventory. The 2020 monthly air report maximums were used to calculate hourly emission rates for the base year seasonal inventory of Intalco. The ratio of 2020/2017 annual emissions was multiplied by the 2017 monthly air report maximums to infer hourly emission rates for the base year seasonal inventory of BP and Phillips 66. The maximum hourly rates for 2020 are included in **Table 7** and **Table 8** as the hourly SO_2 emission rate.

Major sources < 100 TPY SO_2 PTE

NWCAA permits other major sources in Whatcom County, with emissions of less than 100 TPY SO_2 PTE. All of these other major sources emitting SO_2 combined for a total of 26 tons in 2020.

Non-point, on-road, and non-road sources - general information

Non-point emissions of SO_2 are typically from fuel consumption sources: industrial, commercial, institutional, and residential. Fuel use at major sources is excluded from this calculation. On-road emissions of SO_2 are from the fuel consumption of mobile vehicles on roads: trucks, cars, motorcycles, etc. Non-road emissions of SO_2 are from fuel consumption of mobile sources not on roads: ships, trains, equipment, aircraft, etc. Non-point, on-road, and non-road emissions are typically calculated by multiplying estimated fuel use by an emission factor. On-road and non-road emission factors are temporally dynamic, while non-point emission factors are not.

The 2020 Ecology inventory, which was submitted to EPA for inclusion in the 2020 NEI, was pulled forward for the base year annual inventory. County emissions were allocated to the Maintenance Area using spatial surrogates. A brief description of the estimation methods and data sources used in the 2020 inventory is provided in the category sections below.

Industrial/commercial/institutional fuel use

Emissions from industrial/commercial/institutional combustion of wood, natural gas, and other fuels were taken from the 2020 EPA NEI. Total fuel consumption was estimated from the Energy Information Administration State Energy Data System. Reported major facility fuel use was subtracted to avoid double counting with the Point Source category. State fuel use was allocated to counties using the County Business Patterns database of employment by industry.

Residential non-wood fuel use

Emissions from residential non-wood fuel use (e.g., heating homes, heating water, and cooking) are based on distillate oil, natural gas, and liquefied petroleum usage reports. Each county's fuel use was estimated using the 2020 Energy Information Administration State Energy Data System, the 2020 American Community Survey 5-Year Estimates, and EPA emission factors.

Residential wood combustion (home heating)

Emissions from woodstoves, fireplaces, fireplace inserts, and pellet stoves are included in this source category. The 2020 Ecology EI estimates were used for the base year inventory. EPA used the 2018 Commission on Environmental Cooperation (CEC) nationwide survey, supplemented with information from the 2020 Energy Information Administration (EIA) Residential Energy Consumption Survey (RECS). Ecology accepted EPA defaults of appliance fractions and burn rates, which were provided by Ecology for the 2017 EI with data from surveys conducted by WSU, the National Research Center, and Kittitas County. However, EPA changed the defaults midway through the NEI cycle, so Ecology had to calculate emissions separately. EPA updated wood density and emission factors for this category, which resulted in significant increases for some pollutants, relative to previous years.

On-road mobile sources

On-road mobile source emissions are those emitted from the exhaust and brake and tire wear. The 2020 Ecology EI was used for the base year inventory, which matches the NEI very closely. Emissions were calculated using EPA's Motor Vehicle Emission Simulator (MOVES) model. The MOVES model may be run in a default mode or may be tailored to individual counties using local input data. Ecology used local data to replace the defaults for vehicle miles traveled, vehicle population, and vehicle type and age distribution.

Railroad (locomotives)

Emissions from Burlington Northern Santa Fe Railway, Union Pacific Railroad, and Amtrak are included in this category. Railroads provided 2020 county fuel use for switchyard locomotives, which was combined with EPA's line-haul emissions to calculate total emissions for the NEI. Class II/III locomotives and additional rail yard emissions were also obtained from the 2020 NEI.

Aircraft: military, commercial, general aviation

Emissions from aircraft landing and takeoff cycles are included in this category, but in-flight emissions are not included. Base year emissions were taken from the 2020 EPA NEI. EPA used the Federal Aviation Administration Emissions and Dispersion Modeling System for airports where detailed aircraft-specific activity data were available. Emissions from smaller airports were estimated using aircraft operations data and activity survey responses provided by the Federal Aviation Administration.

Ships (commercial marine vessels)

Emissions from ocean-going vessels and harbor vessels are included in this category. Most vessels in this category are powered by diesel engines that are either fueled with distillate or residual fuel oil blends. Estimates were taken from the 2020 EPA NEI. EPA's commercial marine vessels (CMV) estimates use satellite-based automatic identification system (AIS) activity data from the U.S. Coast Guard.

Non-road mobile equipment and vehicles (NEC)

This category includes emissions from gasoline, diesel, compressed natural gas, and liquefied petroleum gas-fueled equipment used in agriculture, lawn and garden, airports, logging, oil fields, construction and mining, recreation, commerce, railroad maintenance, and industry. Emissions for the 2020 base year are from the 2020 NEI, which used EPA's MOVES model with the NONROAD model embedded.

Spatial allocation methods

The Maintenance Area is essentially a boundary around the Intalco facility, with no other major sources of SO_2 within the Maintenance Area. The other potential sources of SO_2 within the Maintenance Area (non-road, non-point, and on-road) are mostly insignificant and intermittent due to the small size of the Maintenance Area. It is difficult to accurately estimate non-facility emissions within such a small area, so a simple approach was used based on the Whatcom County totals. Area-based spatial surrogates were used to approximate the amount of the

county emissions of source categories within the Maintenance Area. The surrogates were allocated to the Maintenance Area using the formula:

$$E_{Maintenance\ Area} = E_{County} * A_{Maintenance\ Area} / A_{County}$$

Where $E_{Maintenance\ Area}$ is the emissions in the Maintenance Area, E_{County} is the emissions in the county, $A_{Maintenance\ Area}$ is the area of the Maintenance Area, and A_{County} is the area of the county. Land area was used for sources that occur on land while ships used ocean (Puget Sound) area. The Maintenance Area is in a rural area, so the entire county area (not urban area) was used.

Table 8. Area Sizes of the Maintenance Area and Whatcom County

Location	Area (km^2)
SO_2 Maintenance Area, Land	10.9
SO_2 Maintenance Area, Ocean	2.4
SO_2 Maintenance Area, Total	13.4
Whatcom County, Ocean	880.2
Whatcom County, Land	5456.7
Whatcom County, Total	6484.0

Temporal allocation methods

Emissions were estimated for a maximum hourly rate of all source categories within the Maintenance Area. The maximum hourly emissions for Intalco were calculated using the monthly reported emissions rates and operating conditions. All other source categories within the Maintenance Area were estimated using annual emissions and the maximum month/weekday/hour factors (e.g., peak rush hour for on-road, peak heating time for residential fuel use) from the appropriate temporal profiles in EPA 2016v2 modeling platform. The temporal profiles are source classification code (SCC) specific, so a different reference SCC was used for each emissions category.

Major source emissions outside the Maintenance Area were calculated using actual annual emissions divided by the annual operating hours reported, providing an average hourly rate during operations.

The temporal profiles were applied to the annual emissions using the formula:

$$E_{Hourly}\ (lbs/hour) = E_{Annual}\ (tons/yr) * F_{Monthly} * F_{Daily} * F_{Hourly} * 2000\ lbs/ton$$

Where E_{Hourly} is the hourly emissions rate, E_{Annual} is the annual emissions, $F_{Monthly}$ is the fraction of monthly emissions that occur in a year, F_{Daily} is the fraction of daily emissions that occur in a month, and F_{Hourly} is the fraction of hourly emissions that occur in a day. The maximum factor from the reference SCC profile was used in all calculations.

Table 9. Monthly, Daily, and Hourly Factors Used to Estimate Maximum Hourly Emissions for Non-point, Non-road, and On-road Categories

Emissions Category	Type	SCC Reference	Monthly Factor (%)	Daily Factor (%)	Hourly Factor (%)
Residential non-wood fuel use	Non-point	2104008000	19	3	6
Residential wood combustion (home heating)	Non-point	2104008000	19	3	6
On-road mobile sources	On-road	2201000000	8	4	8
Ships (commercial marine vessels)	Non-point	2280003000	14	3	5
Railroad (locomotives)	Non-road	2285002010	8	3	6
Non-road mobile equipment and vehicles (NEC)	Non-road	2270002000	12	3	6

Maintenance projection years 2026 and 2033 inventory development

The Maintenance Projection Year 2026 and 2033 emissions were developed using EPA guidance, mainly pulling forward actual emissions from the base year. The methods used are described for each source category below.

2026 and 2033 EI categories

Point sources

Permit conditions, controls, orders, and recent activity levels were considered in making emissions projections for major sources ≥ 100 TPY SO_2 PTE. The average annual emissions from 2017 to 2021 were used to calculate the projected annual emissions of BP Cherry Point Refinery and Phillips 66 Ferndale Refinery, while the max hourly emissions across those years were used for projected seasonal emissions. Major sources < 100 TPY SO_2 PTE were held constant at 2020 emissions values.

Non-point sources

Nonpoint sources of SO_2 are not expected to change significantly in Whatcom County by 2033. Nonpoint source emissions were held constant at 2020 emissions values with no changes for the projection year.

On-road and nonroad mobile sources

On-road and non-road mobile sources were held constant at 2020 base values. This is considered a conservative estimate because mobile source projections developed from MOVES show continued decreases in emissions as more efficient (and electric) vehicles are included in the fleet.

Commitments to EI review and updates

Ecology and NWCAA collect point source emissions annually as part of our federal and state emissions reporting requirements. A comprehensive EI is completed by Ecology and EPA every three years. Certified emissions of SO_2 in Whatcom County and the Intalco Maintenance Area will be reviewed annually.

Chapter 6. Verification of Attainment, Control Measures, and Maintenance Demonstration

Since the Intalco aluminum smelter ceased operating, there are no major SO_2 sources in the small (5.5 square miles) Intalco-Ferndale Nonattainment Area. Based on future emissions estimates within the area, and historical trend emissions analysis for all of Whatcom County (**Figure 9**), the area is projected to show continued attainment of the 2010 SO_2 NAAQS through 2033 and is eligible for reclassification from nonattainment to maintenance. The area will henceforth be referred to as the Intalco-Ferndale Maintenance Area, or the Maintenance Area.

Because there are no remaining major SO_2 sources within the Maintenance Area, the MP focuses on ensuring future sources don't cause or contribute to an NAAQS exceedance. To this end, we propose an approach that relies on emissions inventories, NSR permitting, air dispersion modeling, and cumulative assessment of stationary source emissions and impacts to ensure continuing compliance with the SO_2 NAAQS. Should these measures show that design values (impacts) are 50 percent of the NAAQS (ahead of any potential exceedances), we further propose the installation of an ambient SO_2 monitor in the identified area, for additional verification.

The section titled "Overview" provides a high-level overview of the proposed methods while the section titled "Verification of continued attainment – reproducible approach" provides additional details. Upon EPA approval of the ongoing verification approach, we will request to remove the existing two SO_2 monitoring sites following the process described in Chapter 4 earlier in the document.

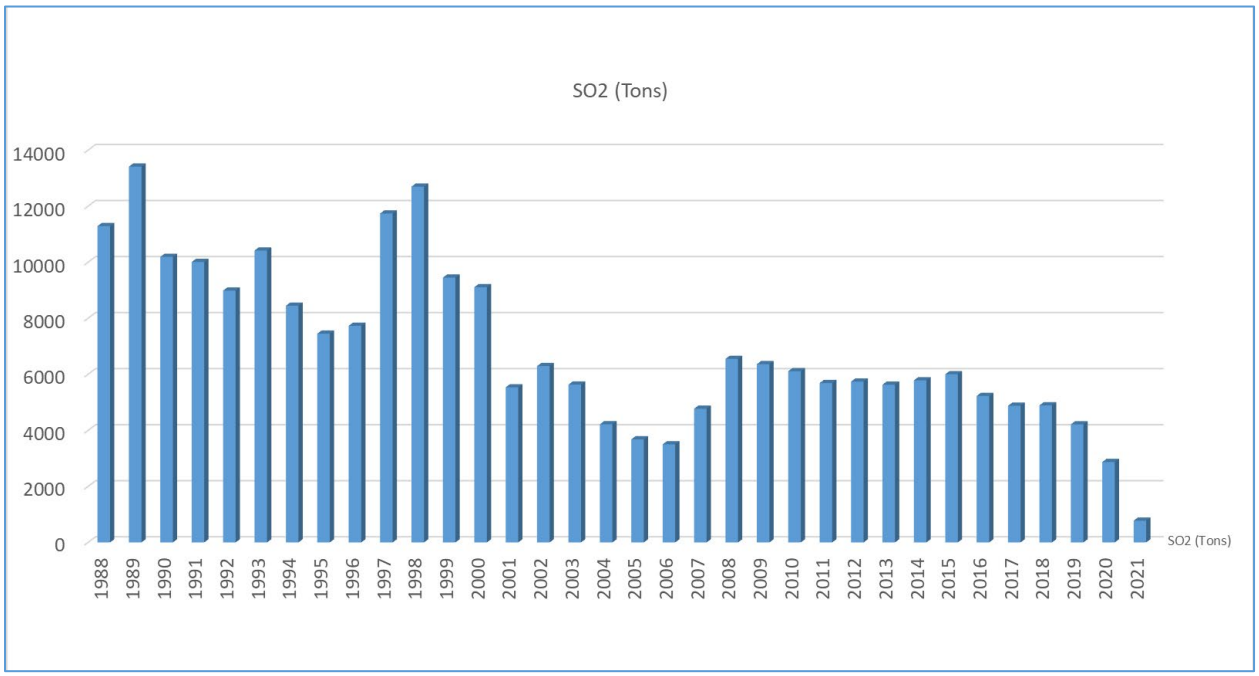

Figure 9. Historical annual SO_2 emissions in Whatcom County (tons), 1988-2021

Overview

We propose to rely on the non-monitoring actions described below to demonstrate compliance with the NAAQS as long as modeled 1-hour design concentrations remain below 50 percent of the NAAQS. These actions provide a specific, reproducible, approach to represent the air quality in the absence of monitoring data as required by 40 CFR 58.14(c)(3).

SO_2 modeling has proven to be highly reliable covering a grid of receptors 360 degrees around each source, and the concentrations predicted by modeling show a high degree of correlation with monitored values. In general, modeling allows us to survey a larger area, while monitoring only allows verification of a "hot" spot where the monitor is located. Since the closure of the Intalco aluminum smelter, there are no "hot" spots in the Intalco Maintenance Area. This lack of "hot" spots along with the high cost of monitor operation are key reasons why we propose to rely on non-monitoring methods while area-wide emissions remain low. This also aligns with NWCAA's strategic priority of providing the greatest public value with its limited monitoring budget.

The overview below introduces the verification measures: annual emissions inventories, NSR permitting programs, cumulative modeling of multiple sources, and the process to site a new monitor. These measures are further detailed and labeled as a series of increasingly stringent "action levels" in the "Verification of Continued Attainment – Reproducible Approach". These "action levels" will trigger actions that NWCAA and Ecology must take should the SO_2 emissions in the Maintenance Area rise from their current low levels. These action levels are depicted in the flowchart diagram in **Figure 10**.

Emissions inventories

To maintain the SO_2 standard through regulatory oversight and controls, Ecology and NWCAA will collect and assess emissions inventory data for sources in the Maintenance Area. Ecology will submit a cumulative inventory of the PTE SO_2 from stationary sources in the Maintenance Area to EPA as part of the annual Verification of Continued Attainment in Limited Maintenance Areas report (see "Baseline" action level below). In addition, if cumulative potential SO_2 emissions from stationary sources in the Maintenance Area reach or exceed 250 TPY, NWCAA will conduct a cumulative impact analysis.

NSR review using SIP-approved programs

Ecology and NWCAA will also implement SIP-approved NSR permitting programs in the Maintenance Area. The NSR program in Washington is split into minor source NSR and major source NSR. Within the Maintenance Area, NWCAA administers minor source NSR, and Ecology administers major source NSR. Both programs are SIP-approved[20] and both require demonstrations of NAAQS compliance.

[20] 40 CFR 52.2470(c) Table 2 and Table 5.

NWCAA's SIP-approved minor-source NSR program[21] requires permits for new sources and modifications with a PTE of 2.0 tons of SO_2 or more. Program elements include a review for NAAQS compliance, including air dispersion modeling if there is any question that a project could exceed the NAAQS.

NWCAA's minor-source NSR program is among the strictest in the nation and provides robust NAAQS protection. One way to view the NSR permitting threshold is as a percentage of the Intalco emissions which caused historical NAAQS exceedances. Viewed in this light, the threshold at which a minor NSR permit will be required is less than one-tenth of one percent (0.1%) of Intalco's emissions.

Ecology's SIP-approved major source NSR program requires PSD permits for PSD major new sources and modifications.[22] Program elements include NAAQS verification using air dispersion modeling to ensure the project or modification doesn't exceed the NAAQS. This verification follows the strict requirements for PSD modeling in 40 CFR Part 51 Appendix W and frequently requires the modeling of nearby existing sources in addition to modeling of the new source itself.

Cumulative impact analysis (modeling)

NSR permitting may fail to address the potential for a NAAQS exceedance from the operation of several sources at the same time. While this is a low-probability outcome, NWCAA will model the cumulative impacts of stationary sources if the cumulative potential SO_2 emissions from stationary sources in the Intalco-Ferndale Maintenance Area reach or exceed 250 TPY SO_2. See Action Levels 1, and 2 below, for additional details.

The conservative (low) threshold of 250 TPY SO_2 was chosen for cumulative modeling because it is the PSD major source threshold for a single stationary source that is not one of the 28 listed categories in the PSD regulations.[23] This is an extremely conservative threshold that equals less than five percent of Intalco aluminum smelter's historical SO_2 emissions.

Installation of a new SO_2 monitoring site

If cumulative source modeling of actual emissions from stationary sources within the Maintenance Area shows a 1-hour design concentration at or above 37.5 ppb SO_2 (50 percent of the NAAQS) at any receptor, NWCAA will begin consultations with EPA and Ecology about siting and deploying an SO_2 monitor in the Maintenance Area. With EPA and Ecology concurrence, NWCAA and Ecology will submit a proposal to EPA to install a new monitor in the area of maximum concentrations (via the annual Ambient Air Monitoring Network Plan or a separate submittal to EPA advising about siting the new monitor). NWCAA will deploy the monitor no later than one year from the time the new or modified source that triggered the need for the monitor begins operating.

[21] New Source Review Regulation 300, SIP-approved in 40 CFR 52.2470(c) Table 5.
[22] See EPA's approved SIP's for Washington State here: https://www.epa.gov/air-quality-implementation-plans/washington-sip-epa-approved-regulations-table-1-statewide
[23] 40 CFR 52.21(b)(1)(i)(b).

The reason for choosing 37.5 ppb SO_2 (50 percent of the NAAQS) as a criterion for monitor siting deserves further explanation. This value was selected because it mirrors the threshold in 40 CFR Part 68 Appendix D 4.5(a)(2) for waiving airshed lead (Pb) monitoring based on air dispersion modeling results. This is a time-tested, NAAQS protective, threshold that helps focus monitoring resources where they can provide the greatest public value.

Verification of continued attainment – reproducible approach

Under 40 CFR 58.14(c)(3) any State and Local Air Monitoring Stations (SLAMS) monitor in a county (or portion of a county within a distinct attainment, nonattainment, or maintenance area, as applicable) can be discontinued, subject to the review of the EPA Regional Administrator, provided the monitor has not measured violations of the applicable NAAQS in the previous five years, and the approved SIP provides for a specific, reproducible approach to representing the air quality in the absence of actual monitoring data.

Following redesignation of the Intalco nonattainment area to attainment, this plan establishes the reproducible approach through a series of steps described below. As discussed earlier, the use of a non-monitoring approach is appropriate because the facility that caused the NAAQS exceedances has ceased operating, the area now contains no major SO_2 emitting sources, and the area now has very low 1-hour SO_2 monitored concentrations (**Figure 7**).

The reproducible approach outlined in this plan focuses on ensuring that new sources that may be located in the area don't cause a future NAAQS exceedance. The steps outlined below are triggered when a new source or modification is proposed, leading to a need for NSR permitting. As noted earlier, NSR permitting will be triggered at the low level of 2.0 TPY SO_2 due to the stringency of Washington's existing NSR programs. The level of action required to determine if SO_2 monitoring should be reestablished will depend on the cumulative potential emissions of all sources in the area at the time of the project application, the potential emissions of the new source, and the results of any required dispersion modeling. A flow chart illustrating the process is shown in **Figure 10**.

Baseline – no trigger needed while maintenance area-wide cumulative potential emissions remain less than 250 TPY

There are currently no major stationary sources and only one minor stationary source operating in the Maintenance Area. All future stationary sources with a PTE 2.0 TPY or more SO_2 will be required to obtain NSR permits through either NWCAA's minor NSR program or Ecology's major NSR program. Both programs are SIP-approved[24] and both require verification of SO_2 NAAQS compliance before permit issuance.

For both major and minor NSR permits in the maintenance area, any modeling required under Washington's air permitting programs will be done using an EPA-preferred air dispersion model identified in 40 CFR Part 51 Appendix W ("Appendix W"). In situations where NSR rules require cumulative modeling, modeling may also consider the cumulative impacts from stationary

[24] NWCAA SIP-approval: 40 CFR 52.2470(c) Table 5; Ecology SIP-approval: 40 CFR 52.2470(c) Table 2.

sources in a large circle around the proposed new source, in accordance with Appendix W modeling guidelines.

Regardless of whether a minor or major NSR permit is needed, each new source or modification in the maintenance area with a PTE 100 TPY or more SO_2 will be modeled using AERMOD, EPA's preferred air dispersion model identified in Appendix W, or an alternative model approved by EPA Region 10. The permitting agency (NWCAA or Ecology) will consult with EPA Region 10 staff to formulate a modeling protocol. Modeling will be performed in accordance with the protocol. Model results will be kept on file by the permitting agency for the length of the MP.

If the new source in the maintenance area has a PTE less than 100 TPY SO_2, protection of the 1-hour SO_2 NAAQS will be assured through the air quality analysis required under Washington's minor NSR permitting program which includes as-needed analyses of air quality impacts using EPA-preferred air dispersion models.

Annually, for the previous calendar year, NWCAA will calculate the cumulative PTE of all stationary sources in the maintenance area and share the results with Ecology for their inclusion in the Verification of Continued Attainment in Limited Maintenance Areas, which is submitted annually to EPA. This inventory will be based on the information provided in NSR applications and the emissions information collected annually by NWCAA in accordance with NWCAA Regulation 150.2. The emissions inventory will be kept on file by NWCAA for the length of the MP.

The above actions will serve as the attainment demonstration while the cumulative, potential, SO_2 emissions within the maintenance area remain below 250 TPY.

Action Level 1 – triggered if cumulative potential emissions reach or exceed 250 TPY

If a proposed new source or modification will result in cumulative potential emissions of SO_2 from all stationary sources in the Maintenance Area that reach or exceed 250 TPY, cumulative modeling may be necessary. Cumulative modeling will be required if the new source has a PTE 40 TPY or more of SO_2. This threshold is highly conservative considering 40 TPY is generally about one percent of the average historical annual emissions from Intalco. Also, potential emissions of 40 TPY is EPA's Significant Emission Rate (SER) for SO_2, used under many state programs across the country as the threshold at which a minor NSR permit is required.

If the new source has a PTE less than 40 TPY SO_2, protection of the 1-hour SO_2 NAAQS will be assured through the air quality analysis required under Washington's minor NSR program. This program requires a permit for any new source or modification with a PTE 2.0 TPY or more SO_2 which includes as-needed analysis of air quality impacts from the source using an EPA-preferred air dispersion model.

In situations where cumulative modeling is required, NWCAA will consult with EPA to develop a modeling protocol for cumulative modeling of the potential emissions from all stationary sources in the Maintenance Area. Cumulative modeling will be done using AERMOD, EPA's preferred air dispersion model identified in 40 CFR Part 51 Appendix W, or another air dispersion model approved by EPA Region 10. The modeling protocol will be developed in

accordance with the requirements and recommendations in Appendix W. NWCAA will follow the modeling protocol developed in consultation with EPA.

For Action Level 1 cumulative modeling, if the modeled 1-hour design concentrations at all receptors are less than 67.5 ppb SO_2 (90 percent of the NAAQS), no further modeling analysis will be needed and monitoring will not be required. If the modeled 1-hour design concentrations meet or exceed 67.5 ppb at any receptor, then Action Level 2 will be triggered.

Action Level 2 – triggered if modeled, cumulative, potential impacts exceed 67.5 ppb SO_2

Air dispersion modeling of the cumulative potential emissions from all stationary sources (Action Level 1) may overestimate the actual impacts of such sources. If modeling from Action Level 1 shows a 1-hour design concentration at or above 67.5 ppb SO_2 (90 percent of the NAAQS) at any receptor, NWCAA will re-run the model and substitute actual SO_2 emissions for the potential emissions of the existing sources previously modeled in Action Level 1. For the new source(s), potential emissions will be modeled.

If Action Level 2 cumulative-source modeling shows that 1-hour design concentrations are less than 37.5 ppb SO_2 (50 percent of the NAAQS) at all receptors, the NAAQS compliance verification will be satisfied, and no monitoring will be required. If Action Level 2 is triggered, NWCAA will also include both PTE and actual emissions of all stationary sources in the maintenance area and share the results with Ecology for their inclusion in the Verification of Continued Attainment in Limited Maintenance Areas submitted annually to EPA. As part of this process, NWCAA and Ecology will alert EPA if there are significant changes in actual emissions and determine, in consultation with EPA, if re-running the Action Level 2 modeling is merited.

If Action Level 2 cumulative-source modeling shows a 1-hour design concentration at any receptor that equals or exceeds 50 percent of the NAAQS (37.5 ppb SO_2), NWCAA will proceed to Action Level 3, monitor siting.

Fifty percent of the NAAQS is a time-tested, protective, threshold that mirrors the threshold for waiving airshed monitoring in 40 CFR Part 68 Appendix D 4.5(a)(2). Using this threshold allows NWCAA to use its limited monitoring budget wisely where it will provide the greatest public value.

Action Level 3 – triggered if modeled, cumulative, actual impacts exceed 37.5 ppb SO_2

If cumulative-source modeling at Action Level 2 shows a 1-hour design concentration that equals or exceeds 37.5 ppb SO_2 at any receptor, NWCAA will begin consulting with EPA and Ecology about siting and deploying an SO_2 monitor in the Maintenance Area. NSR permits allow for 18 months to begin construction, and continue construction for an extended period, as long as the progress is made. During this period, the source is not operating and not causing the SO_2 levels to reach the modeled levels. Thus, the monitor will be deployed to the area of maximum concentration and the monitoring program will be active within one year of the initial startup of the new or modified source that triggered Action Level 3.

Any new monitors established for verification of continued attainment will be operated as SLAMS by NWCAA as part of Ecology's Primary Quality Assurance Organization (PQAO). Ecology will verify that monitor siting complies with 40 CFR Part 58 Appendix E (Probe and Monitoring Path Siting Criteria for Ambient Air Quality Monitoring) and will include any new site proposals in its annual Ambient Air Monitoring Network Plan. This plan is available for public inspection and comment for at least 30 days before its submission to EPA by July 1 of each year. Any such proposal will be subject to review and approval by the EPA Regional Administrator, following the process described in 40 CFR Part 58.10.

If the SO_2 monitor records a consecutive two-year average of the annual 99th percentile of 1-hour daily maximum SO_2 values exceeding 67.5 ppb (90 percent of the NAAQS), and such data is certified as accurate, NWCAA will implement contingency measures as outlined below.

A monitored violation of the SO_2 NAAQS will also prompt NWCAA to implement the outlined contingency measures.

Clarifying note: Action Levels 1 and 2 were designed to provide a reproducible approach to verify continued attainment in lieu of monitoring. Once an SO_2 monitor is installed and operating, Action Levels 1 and 2 will be superfluous. If this occurs, NWCAA and Ecology will stop implementing Action Levels 1 and 2 and rely on the SO_2 monitor instead for the verification of continued attainment.

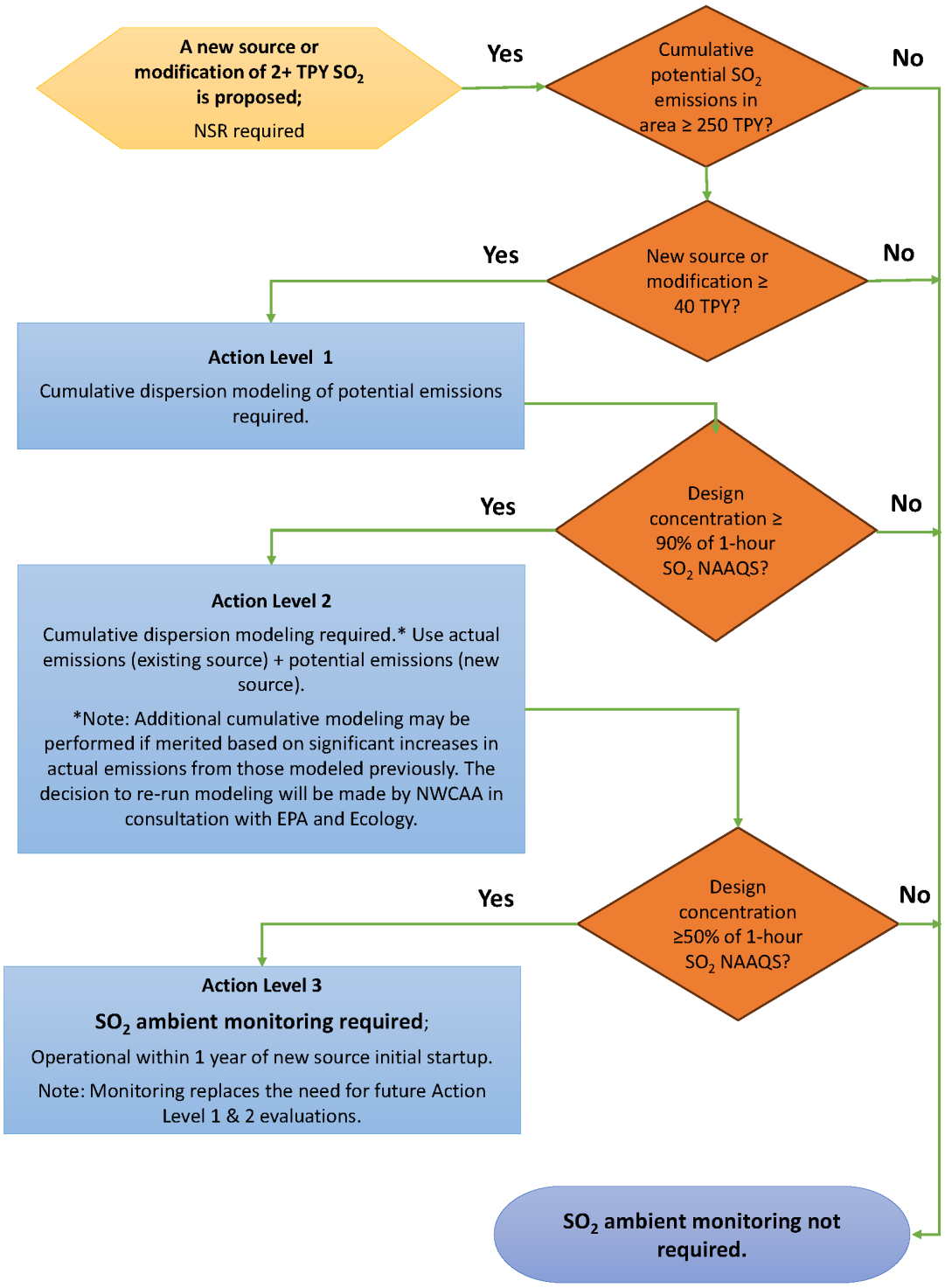

Figure 10. Flowchart determining whether SO_2 monitoring is required

Figure 10 Outline Description

Title: "Flowchart Determining Whether SO_2 Monitoring is Required"

The top of the chart begins with a trigger event: "A new source or modification of 2+ TPY of SO_2 is proposed; NSR required."

- If the above is true, then "Cumulative potential SO_2 emissions in the area >= 250 TPY?"
  - If "No," then Question "SO_2 monitoring not required"
  - If "Yes," then Question "New source or modification >=40 TPY?"
    - If "No," then "SO_2 monitoring not required"
    - If "Yes," then "**Action Level 1.** Cumulative dispersion modeling of potential emissions required."
      - Question "Design concentration >= 90% of 1-hour SO_2 NAAQS?"
        - If "No," then "SO_2 monitoring not required"
        - If "Yes," then "**Action Level 2**. Cumulative dispersion modeling required.* Use actual emissions (existing source) + potential emissions (new source).
      - *Note: Additional cumulative modeling may be performed if merited based on significant increases in actual emissions from those modeled previously. The decision to re-run modeling will be made by NWCAA in consultation with EPA and Ecology.
        - Question "Design concentration ≥50% of 1-hour SO_2 NAAQS?"
          - If "No," then "SO_2 monitoring not required"
          - If "Yes," then "**Action Level 3. SO_2 ambient monitoring required**; Operational within 1 year of new source initial startup. Note: Monitoring replaces the need for future Action Level 1 & 2 evaluations."

Chapter 7. Contingency Measures

As described in Chapter 6, if the SO_2 monitor records a consecutive two-year average of the annual 99th percentile of 1-hour daily maximum SO_2 values exceeding 67.5 ppb (90 percent of the NAAQS), and such data is certified as accurate, NWCAA will implement contingency measures as outlined below.

If contingency measures are triggered, NWCAA will first evaluate whether elevated SO_2 readings are due to exceptional events. If exceedances are due to exceptional events, NWCAA will follow EPA's exceptional events policy.

If exceedances are not due to exceptional events, NWCAA will evaluate which entity(ies) it believes to be responsible for the exceedance(s).

If NWCAA determines the exceedance was a result of a stationary source's non-compliance with existing regulations and/or permit conditions, NWCAA will undertake enforcement actions in accordance with current agency policy and guidance related to compliance and enforcement.

The implementation of the control measures stemming from an action-level response will take place no later than 18 months after NWCAA decides, based on quality-assured ambient data, that an action-level response was prompted.

Chapter 8. General and Transportation Conformity

General conformity under Section 176(c)(4) of the CAA

General conformity is a concept and requirement under CAA Section 176(c). General conformity requires that actions by federal agencies are consistent with, or conform to, the SIP. This means that federally funded projects should not:

- cause new air quality violations;
- worsen existing violations; and
- delay timely attainment of the relevant NAAQS.

General conformity applies to federal actions, other than certain highway and transportation projects, if the action takes place in a nonattainment or maintenance area for ozone, particulate matter, nitrogen dioxide, carbon monoxide, lead, or SO_2. The EPA's General Conformity Rule[25] establishes the criteria and procedures for determining if a federal action conforms to the SIP. More information about General Conformity and the rule is available on EPA's website: https://www.epa.gov/general-conformity.

With respect to the 2010 SO_2 NAAQS and the Intalco SO_2 Maintenance Area, should federal agencies propose a federally funded project within the maintenance area, they must estimate emissions for conformity analyses. The EPA's General Conformity Rule includes the basic requirement that a federal agency's general conformity analysis be based on the latest and most accurate emissions estimation techniques available. EPA expects the federal agency to use updated and improved emissions estimation techniques when they become available. The federal agencies must perform an applicability analysis and, if appropriate, develop a general conformity determination. The federal agencies must consult with NWCAA and Ecology when developing any control measures if needed.

Transportation conformity under Section 172(c) of the CAA

Transportation conformity is required by the CAA Section 176(c) (42 U.S.C. 7506(c)). It ensures that federal funding and approval are given to highway and transit projects that are consistent with ("conform to") the air quality goals in the SIP. Conformity, to the purpose of the SIP, means that transportation activities will not cause new air quality violations, worsen existing violations, or delay timely attainment of the national ambient air quality standards. In other words, the federal government would not fund projects that may worsen air quality in specific areas, for specific pollutants.

Code of Federal Regulations under 40 CFR 93.102(b)(1) and (2)(v) outlines the applicability of the transportation conformity requirement in the context of the SIP. It specifies that

[25] https://www.epa.gov/general-conformity/final-revisions-general-conformity-regulations

transportation conformity requirements apply only to transportation-related criteria pollutants in the following situations:

1. Nonattainment areas designated nonattainment for that pollutant.
2. Maintenance areas (those nonattainment areas that were redesignated to attainment after 1990 with plans developed under CAA Section 175A also if designated for that pollutant.

In general, each state with attainment and maintenance areas must develop a comprehensive transportation emissions analysis. If an area is determined to qualify for a Limited Maintenance Plan (LMP) option, then the comprehensive transportation emission analysis is not required but there is still an obligation for the transportation planning conformity consultation. The Intalco-Ferndale SO_2 maintenance plan is not an LMP, however, the EPA's transportation conformity rules provide that transportation conformity does not apply to SO_2 in most situations due to the relatively small, and decreasing, amounts of sulfur in gasoline and on-road diesel fuel. EPA's April 23, 2014 "Guidance for 1-hour SO_2 Nonattainment Area SIP Submissions" advised that transportation conformity rules do not apply to SO_2 nonattainment areas unless the EPA administrator or state agency has determined that either:

- Transportation-related emissions of SO_2, as a precursor, are a significant contributor to a particulate matter less than 2.5 micrometers in diameter ($PM_{2.5}$) nonattainment problem.
- If the SIP has established an approved or adequate budget for such emissions as part of the attainment or maintenance strategy.

Earlier in this document, Washington demonstrated that transportation-related emissions are not a significant source of SO_2 emissions. Furthermore, we assert that the minimal transportation-related emissions of SO_2 within the Intalco SO_2 nonattainment area are not a precursor or a significant contributor to a $PM_{2.5}$ nonattainment problem elsewhere. There are no $PM_{2.5}$ nonattainment areas in Washington at this time. The closest $PM_{2.5}$ Maintenance Area is in Tacoma, Pierce County, over 130 miles away. The closest $PM_{2.5}$ nonattainment areas are in Idaho and Oregon. Their maintenance or attainment plans did not identify Washington's transportation emissions in Whatcom County as a contributing source even when the Intalco facility was still operating.

Therefore, Washington finds that:

- The transportation emissions are insignificant contributors in the maintenance inventories for the reviewed maintenance period.
- This submittal does not require transportation budgets.
- There are no transportation control measures (TCM) in this area, for this standard.
- There are no requirements for transportation conformity evaluations specific to the maintenance of the 2010 SO_2 NAAQS in the Intalco-Ferndale SO_2 Maintenance Area.

Chapter 9. Environmental Justice Review

Environmental Justice (EJ) is defined[26] as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, rules, and policies.

- **Fair treatment** means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies.
- **Meaningful involvement** means the public has a fair opportunity to participate in decisions about activities that may affect their environment and/or health; can influence the regulatory agency's decision; and the decision-makers seek out and facilitate the involvement of those potentially affected early and throughout the process.

Several federal acts and executive orders direct agencies to incorporate environmental justice review and take decisive action to address disproportionate impacts on underserved and vulnerable populations. Some of them are:

- Title VI of the Civil Rights Act of 1964
- Title IX of the Education Amendments of 1972
- Section 504 of the Rehabilitation Act of 1973
- Age Discrimination Act of 1975
- Federal Water Pollution Control Act Amendments of 1972
- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations
- Executive Order 14008, Tackling the Climate Crisis at Home and Abroad
- Executive Order 13166, Improving Access to Services for Persons with Limited English Proficiency
- Executive Order 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis
- Executive Order 13985, Advancing Racial Equity and Support for Underserved Communities

To implement these federal executive directives and to create a coordinated and inclusive approach to EJ assessments, the Washington Legislature passed the Healthy Environment for All Act (also known as the HEAL Act)[27] in 2021. It is the first statewide law to create a coordinated and collaborative approach to EJ, making it a priority and part of the mission of key state agencies. The law requires Ecology and the state departments of Agriculture, Commerce, Health, Natural Resources, Transportation, and the Puget Sound Partnership to identify and address environmental health disparities in overburdened communities and vulnerable populations. In parallel, EPA and Ecology emphasized their commitment to advancing EJ in the

[26] https://www.epa.gov/environmentaljustice
[27] https://ecology.wa.gov/About-us/Who-we-are/Environmental-Justice/HEAL

joint work plan called the Environmental Performance Partnership Agreement[28] (PPA) effective July 1, 2023 – June 30, 2025. EPA funds PPA activities and commitments via the Performance Partnership Grant (PPG) program. The PPA program funds air quality planning and revisions to the Washington State Air Quality Implementation Plan.

Ecology conducted a baseline evaluation of the communities within the Maintenance Area as well as reviewed available information about protections for the Lummi Nation reservation lands located nearby. Specifically, This analysis found that there are no communities of color or low-income populations within the Intalco-Ferndale SO_2 Maintenance Area. The analysis also did not identify population demographic characteristics requiring additional public outreach and engagement considerations (such as age, educational attainment, and LEP).

Historically, this area was used by and is culturally important to the Lummi Nation, Tulalip Tribes, Samish Indian Nation, Nooksack Indian Tribe, Swinomish Indian Tribal Community, and Upper Skagit Indian Tribe. There are no Tribal reservations within the designated area; however, the Lummi Indian Reservation is located less than 0.5 miles south of the designated area. In the section "The Lummi Nation Reservation," we review how the proposed MP continues to ensure that the SO_2 levels continue to comply with the federal national ambient air quality standard in the context of the tribal air quality.

The MP specifies how NWCAA and Ecology will be overseeing any new sources of SO_2 in the area and requires them to obtain permits. During the permitting process, a more specific EJ analysis to identify impacts on overburdened communities from the proposed action may be required.

U.S. Census

Ecology reviewed demographic data from the U.S. Census Bureau.[29] The Maintenance Area is located within Census block group 53073010501. Communities of color were identified using census data for all people who identify as a race other than white alone and/or list their ethnicity as Hispanic or Latino. Low-income populations are defined in this report as the percentage of people living at or below twice the federal poverty level. Race and ethnicity characteristics were compiled from the ACS 2015 to 2019 5-year estimates for the Maintenance Area.

For this analysis, the Maintenance Area would be identified as a "community of color" if the percentage of people of color within the Maintenance Area was greater than the percentage of people of color in Whatcom County. Whatcom County's population is 21 percent people of color. The Maintenance Area has 17 percent people of color, lower than Whatcom County.

[28] https://apps.ecology.wa.gov/publications/SummaryPages/2301003.html

[29] U.S. Census Bureau 2015-2019 American Community Survey (ACS) 5-year estimate data for population demographics, median household incomes, ratios of incomes to poverty levels, age, educational attainment, and Limited English Proficiency (LEP) populations and percentages.

Thus, it is not identified as a community of color. Hence, the Maintenance Area is not identified as a "community of color."

Low-income populations can be identified using a combination of data from the U.S. Census Bureau and the Washington Department of Health. For this plan, low income is defined as an income at or below twice the federal poverty level. The 2021 federal poverty level for a four-person household was $26,500. The population of the Maintenance Area would be identified as a "low-income population" if the percentage of low-income people in the Maintenance Area was greater than the percentage county-wide for Whatcom County. The data indicates that Whatcom County is 31 percent low-income while the Maintenance Area is 20 percent low income. Thus, the percentage of low-income households in the Maintenance Area is less than the percentage in Whatcom County. Therefore, the Maintenance Area does not qualify as a "low-income population" for purposes of this plan.

EJScreen and environmental health disparities analyses

Ecology used EPA's EJScreen tool[30] and DOH Environmental Health Disparities Map[31] to look for overburdened communities and health disparities. The EJScreen Report generated for the Maintenance Area and Whatcom County is in the Appendix B. Below are the maps of the Maintenance Area overlaid with the Environmental Health Disparities map.

We reviewed Washington Tracking Network (WTN) program data. WTN combines information on a variety of environmental and public health factors and includes a map that ranks environmental health disparities for all state census tracts. Specifically, this analysis used the EHD layer, an interactive tool that compares communities across our state for environmental health disparities. Tracts ranked 9 or 10 on a scale of 1 to 10 are considered areas with EJ considerations. The EHD ranking for the Intalco-Ferndale SO_2 Maintenance Area is 3 overall and 5 for health outcomes (WTN Version 2.0, July 28, 2022). This is well below the ranking needed to identify the census tract as an area with EJ communities. Hence, we conclude that the Maintenance Area is considered a low risk for environmental health disparities and not an overburdened community at this time.

[30] U.S. EPA EJScreen: Environmental Justice Screening and Mapping Tool
[31] WA DOH Environmental Health Disparities Map (Version 2.0, July 28, 2022)

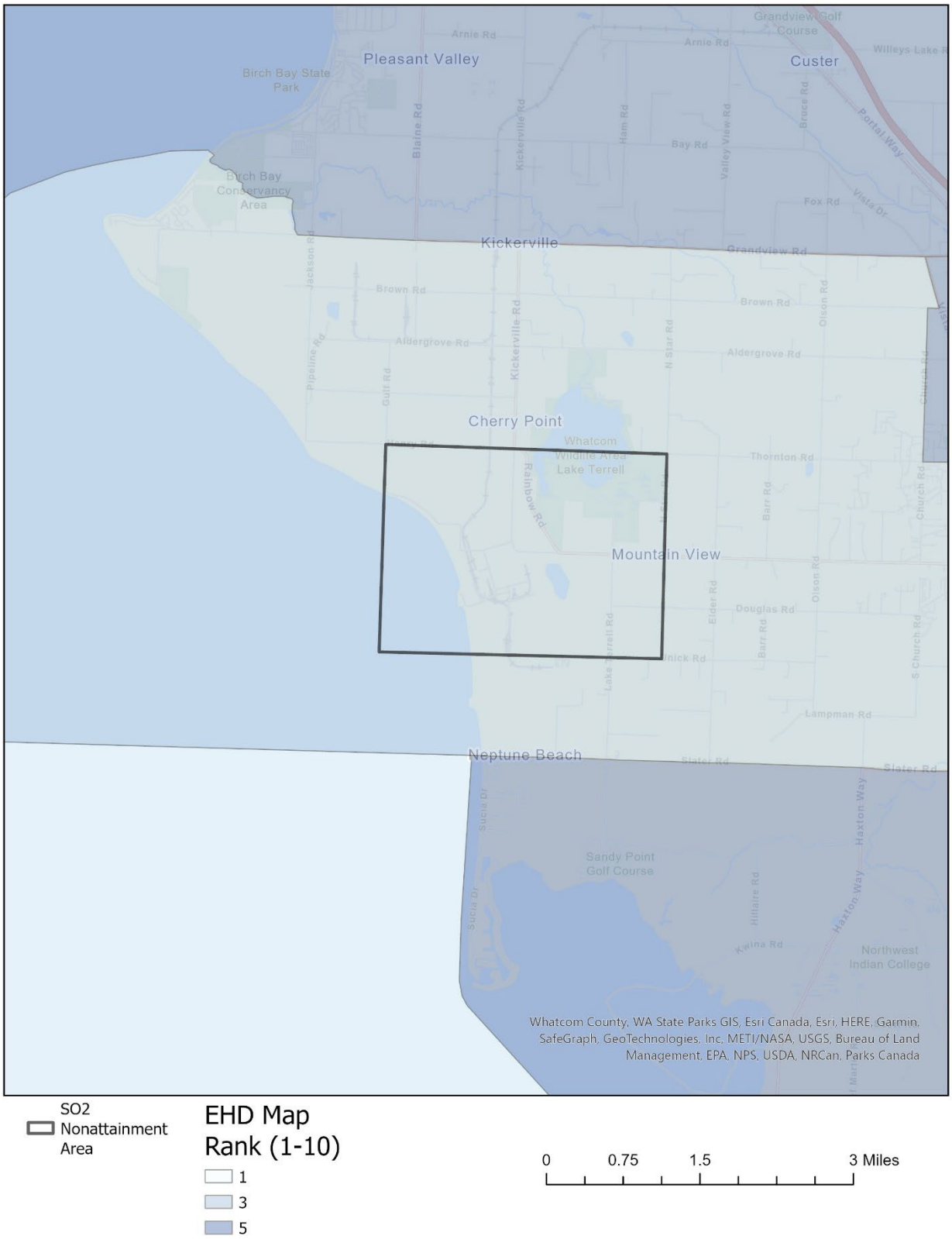

Figure 11. WTN EHD map with health layer

The Lummi Indian Nation Reservation

The Lummi Nation reservation is 0.5 miles south of the Maintenance Area border (**Figure 12**). With the Intalco smelter's permanent shutdown, and the measures listed in the MP, the Lummi Nation's air is expected to continue to demonstrate complete attainment of the SO_2 standard. NWCAA and Ecology will annually review that the Maintenance Area continues to attain the standard and report the findings to EPA, the Lummi Nation, and the public for review and oversight.

During the nonattainment area designation process and the Intalco aluminum smelter's operation, Ecology, NWCAA, and EPA carefully reviewed the SO_2 impacts on the Lummi reservation using air pollution dispersion modeling. We did not find levels of SO_2 close to or exceeding the federal air quality standard. SO_2 concentrations are highest near the emissions source and decrease significantly every hundred yards away from the source, even in the direction of prevailing winds.[32] Our modeling during nonattainment designation indicated that the maximum SO_2 DV (a calculated number at a given location that is used to compare against the standard) at the Lummi Indian Reservation was about 32 ppb of SO_2. This included the emissions from the now-closed Intalco aluminum smelter. EPA considers the levels of SO_2 to pose a health risk when the DV number is above 75 ppb. This SO_2 standard is set at the level that is protective of vulnerable populations such as children and people who are elderly, pregnant, or have respiratory or cardiovascular conditions.

While the SO_2 NAAQS was not exceeded on tribal lands even while the Intalco facility was operational, we understand there may be concern about future emissions from potential growth within the Maintenance Area. We took this into account in developing our maintenance strategy as outlined in Chapters 6 and 7 earlier. Among other steps, the plan includes annual verification of any changes in the SO_2 emissions in the area and implementing current permitting regulations that require robust modeling demonstrations for projects with stationary sources that emit SO_2. Moreover, NWCAA committed to conducting cumulative modeling if several stationary sources with significant SO_2 emissions apply to operate in the maintenance area. Together, these modeling demonstrations will offer one of the most stringent levels of scrutiny in the country.

Additionally, because the localized SO_2 impacts are highly dependent on the location of the emissions release point (e.g., a stack), we included provisions to install SO_2 monitors should the cumulative-source modeling of actual emissions (Action Level 2) show a 1-hour design concentration (impact) at or above 37.5 ppb SO_2 (50 percent of the SO_2 NAAQS) at any receptor. In other words, should we identify a highly impacted receptor, we would place a specific monitoring site to closely monitor the impacts on the area. At the same time, we will investigate the causes of the elevated SO_2 impacts and identify any actions needed to ensure that the SO_2 standard is not exceeded. We believe this is a very protective and preemptive action that would identify any potential elevations in the SO_2 levels before they trigger a

[32] See a technical paper "Analysis of Sulfur Dioxide Monitoring Data in Whatcom County: Air Quality Technical Report," available at: https://apps.ecology.wa.gov/publications/SummaryPages/2002015.html.

repeated violation of the standard. This approach allows us to place monitoring sites where they are needed the most and, therefore, provides additional protections to specific areas vulnerable to adverse impacts from elevated levels of SO_2 pollution.

These thresholds and our MP approach continue to be based on federal air quality standards. Yet, our implementation incorporates early actions that result in the overall prevention of an increase in impacts on nearby communities even if such impacts are still within the limits of the national standards.

This MP is a small part of the larger, and more complex, compilation of air quality evaluations and regulations. In addition to complying with the federal air quality standards, we continue working toward reducing pollution in communities across Washington under Section 3 of the Climate Commitment Act (Chapter 70A.65 RCW) and seeking Lummi Nation's advice regarding air quality in this shared airshed.

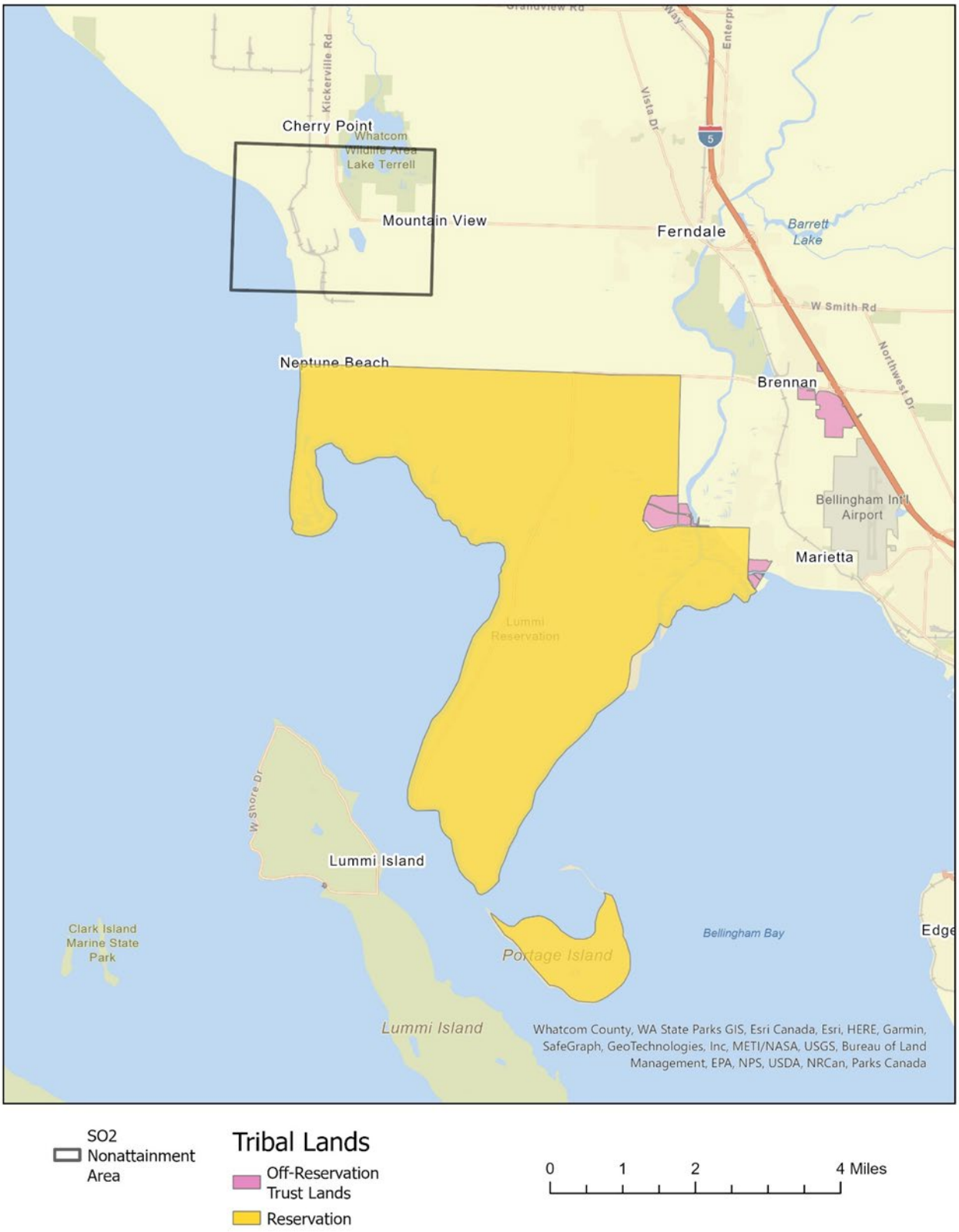

Figure 12. EHD map overlaid with the reservation lands

Public engagement and accessibility

Public notice and hearing

The federal regulations require that Washington:

- Ensures public participation in matters for which hearings are required.
- Provide adequate public notification of the opportunity to participate.

The CFR specifies under 40 CFR 50.102 "Public hearings" that a state must:

- Provide at least a 30-day public notice before holding a hearing.
- Make a copy of the proposed plan available for public inspection in at least one location in the affected area to which it will apply and the availability of the compliance schedule for public inspection in at least one location in the region in which the affected source is located.
- Provide the opportunity to submit written comments.

To comply with these requirements, Ecology and NWCAA plan the following actions:

- Prominently advertise public notices in the affected area at least 30 days before holding a public hearing:
    - Published in the local newspaper (Ferndale)
    - Distributed to the email distribution lists
    - Emailed to interested parties and affected entities
    - Provided to EPA and elected officials
    - Posted on NWCAA and Ecology's websites
- Schedule the hearing in an accessible virtual format, which minimizes barriers due to traffic, transportation, childcare, disability, or short-term illness.
    - Additional help is available upon request for those with limited access to internet or computer technology. Accommodate requests for sign language and other interpretation services during the hearing.
    - The hearing has been scheduled to be held after traditional work hours to accommodate the schedules of those residents and members of the community who would be unable to attend otherwise.
- Make print and electronic versions of the plan available to the public at the following locations:
    - A printed copy of the documents at the city of Ferndale Library.[33]

[33] City of Ferndale Library is located at 2125 Main Street, Ferndale, WA 98248.

    - Electronic copies on our website and shared links to them in the public notices, emails, and on the NWCAA's website.
- Provide opportunities for written comments:
    - E-comment website where the public can submit their comments online and review written comments received by Ecology.
    - Mailing address for those who wish to mail their comments.

Based on the EJ evaluation of the communities affected within the Intalco SO_2 Maintenance Area, we did not identify a need in the community for translating documents or public notice into other languages.

Accessible electronic documents

We prepared this document and the AO to be electronically accessible and compliant with assistive technologies. There are some documents in the appendices that we received from other entities that may have a different level of accessibility and compatibility with assistive technologies. For such cases, we provided contact information at the beginning of the document on how to request further assistance, which we would be happy to provide.

Chapter 10. Summary of the Redesignation Request and MP

Summary

Washington has prepared this Redesignation Request to initiate the redesignation process for the Intalco-Ferndale SO_2 nonattainment area given the improved air quality.

With this submittal, we are requesting EPA to:

- Find that the area's air quality is attaining the 2010 1-hour SO_2 NAAQS.
- Approve the 1st 10-year MP.
- Redesignate this area to attainment of the 2010 1-hour SO_2 NAAQS.

Redesignation timeline

The CAA outlines the responsibilities and timelines for the redesignation process under Section 110(3)(A-D). Either EPA or the state can initiate the redesignation process, however, the authority to redesignate the area lies exclusively with EPA. After the state submits a redesignation request to EPA, it:

- Has **6 months** to determine whether the submittal is complete, or it defaults to being complete and sufficient for EPA's review and determination at the 6-month mark.
- Must approve or deny the redesignation request within **18 months** of a **complete** state redesignation submittal.

Depending on when the submittal is found complete, EPA's redesignation decision is expected within no more than two years following the submittal.

Appendices

Appendix A. Intalco Facility Permit Revocation Copies

PRESS RELEASE

VIEW ALL NEWS

Alcoa Announces Closure of Intalco Smelter and Prepares Site for Redevelopment

03/16/2023

PITTSBURGH--(BUSINESS WIRE)-- Alcoa Corporation (NYSE:AA) today announced the closure of its Intalco aluminum smelter in Washington State, which has been fully idle since 2020.

The closure announcement begins a process to prepare the site for new economic development opportunities.

“The Intalco smelter site operated for nearly 55 years, and we’ve spent significant time evaluating options for the asset, including a potential sale,” said Alcoa President and CEO Roy Harvey. “Our analysis, however, indicates that the facility cannot be competitive for the long-term.

“The site is an important part of our history, and we are encouraged by the prospects for potential economic development via another entity that will own and control land at the site,” Harvey said. “We will continue to engage with our stakeholders, including community members and government officials, as we make this transition.”

Pursuant to an agreement with AltaGas (TSX: ALA), AltaGas has acquired the rights to develop and own approximately 1,600 acres at the Intalco site, which includes transportation and utility infrastructure.

“AltaGas is currently exploring potential development which would align with Washington state and Whatcom County’s climate ambitions and provide long-term, sustainable benefits to the community and the local economy,” said Randy Toone, President Midstream at AltaGas. “We understand the rich legacy and importance of this site to the community. We look forward to working with local stakeholders, Tribes and Alcoa to ensure potential development benefits the region and positively contributes to the ongoing energy transition.”

The Intalco smelter was fully curtailed in the third quarter of 2020, amid declining market conditions and high input costs. The smelter, which began operation in 1966, lacks access to competitively priced power and would have required significant capital expenditures to restart.

The site currently has 19 employees; some will remain to assist with the closure-related activities that allow opportunities for future redevelopment. Support services will be provided for those displaced by the closure decision.

About Alcoa Corp.

Alcoa (NYSE: AA) is a global industry leader in bauxite, alumina and aluminum products with a vision to reinvent the aluminum industry for a sustainable future. With a values-based approach that encompasses integrity, operating excellence, care for people and courageous leadership, our purpose is to Turn Raw Potential into Real Progress. Since developing the process that made aluminum an affordable and vital part of modern life, our talented Alcoans have developed breakthrough innovations and best practices that have led to greater efficiency, safety, sustainability and stronger communities wherever we operate.

Dissemination of Company Information

Alcoa Corporation intends to make future announcements regarding company developments and financial performance through its website at **www.alcoa.com**, as well as through press releases, filings with the Securities and Exchange Commission, conference calls and webcasts.

Forward-Looking Statements

This press release contains statements that relate to future events and expectations, and as such constitute forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Forward-looking statements include those containing such words as “aim,” “ambition,” “anticipates,” “believes,” “could,” “develop,” “endeavors,” “estimates,” “expects,” “forecasts,” “goal,” “intends,” “may,” “outlook,” “plans,” “potential,” “projects,” “reach,” “seeks,” “sees,” “should,” “targets,” “will,” “working,” “would,” or other words of similar meaning. All statements by Alcoa Corporation that reflect expectations, assumptions or projections about the future, other than statements of historical fact, are forward-looking statements. Forward-looking statements are not guarantees of future performance and are subject to known and unknown risks, uncertainties, and changes in circumstances that are difficult to predict. Although Alcoa Corporation believes that the expectations reflected in any forward-looking statements are based on reasonable assumptions, it can give no assurance that these expectations will be attained, and it is possible that actual results may differ materially from those indicated by these forward-looking statements due to a variety of risks and uncertainties. Additional information concerning factors that could cause actual results to differ materially from those projected in the forward-looking statements is contained in Alcoa Corporation’s filings with the Securities and Exchange Commission. Alcoa Corporation disclaims any obligation to update publicly any forward-looking statements, whether in response to new information, future events or otherwise, except as required by applicable law.

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Source: Alcoa

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VIEW ALL NEWS

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

PO Box 47600, Olympia, WA 98504-7600 • 360-407-6000

November 30, 2023

Tia Daulph
Intalco Aluminum LLC
4050 Mountain View Road
Ferndale, WA 98248

Re: Termination of Title V Air Operating Permit No. 0002950 and various Notice of Construction Orders, Compliance Orders, and Agreed Orders

Dear Tia Daulph:

Intalco Aluminum LLC (Intalco), a subsidiary of Alcoa Corporation (Alcoa), fully curtailed aluminum smelting operations in 2020. On March 16, 2023, Alcoa announced the permanent closure of the Intalco facility. In response to Alcoa's closure of the Intalco facility, the Washington State Department of Ecology (Ecology) is terminating Intalco's Title V Air Operating Permit (AOP) No. 0002950.

Ecology issued AOP No. 0002950 to Intalco on December 2, 2013, with an effective date of January 1, 2014, and an expiration date of December 31, 2018. Intalco submitted a complete Title V renewal application on June 26, 2018, and Ecology deemed it complete on July 27, 2018. As such, Intalco's AOP No. 0002950 has remained in effect to date.

Following Intalco's curtailment of aluminum smelting operations in 2020, Intalco has continued to submit reports as required under AOP No. 0002950. Upon Ecology's termination of AOP No. 0002950, Intalco will no longer be required to submit air quality reports or relevant notifications to Ecology's Industrial Section. The Northwest Clean Air Agency (NWCAA) is the regulatory authority for all air emission sources in Whatcom County that are not aluminum smelters. As the activities conducted at the Intalco facility are no longer considered aluminum smelting operations, NWCAA will assume responsibility for enforcing all air quality requirements at the site.

This letter provides formal notice to Intalco that Ecology's AOP No. 0002950 will be revoked in accordance with WAC 173-401-710(4). The effective date of the permit revocation will be **30 days from receipt of this letter or on the date Intalco submits formal written notice that it does not object to the permit termination**.

With the termination of AOP No. 0002950, Ecology will also terminate the following Notice of Construction (NOC) Orders, Compliance Orders, and Agreed Orders:

- NOC Order DE 85-108, issued January 23, 1985
    - Ecology issued this NOC order for the construction of a metal treatment process (treatment of aluminum crucibles, TAC, station), and the associated baghouse. NOC Order DE 85-108 included one approval condition requiring Intalco to extend the baghouse exhaust stack to a minimum height of four feet above the roof of the TAC station building. Intalco reportedly completed the required stack extension; however, it does not appear that Ecology terminated this NOC order.
- NOC Order DE 00AQIS-702, issued June 22, 2000
    - Ecology issued this NOC order for modifications to Intalco's dust collection and emission control systems for the lumina ore unloader and conveyor. Based on Ecology's records, it appears that Intalco did not complete this project. However, it does not appear that Ecology terminated this NOC order.
- NOC Order DE 02AQIS-3967-2, issued December 2, 2013
    - Ecology issued this NOC order as a consolidated order incorporating various conditions from previously issued NOC orders and terminating those historic NOC orders.
- NOC Order Docket No. 10795, issued July 8, 2014
    - Ecology issued this NOC order for the construction of two calcined petroleum coke bucket elevators.
- NOC Order Docket No. 15449, issued August 30, 2018
    - Ecology issued this NOC order for the conversion of the side-work pre-bake (SWPB) pots to center-work pre-bake (CWPB) pots.
- Compliance Order Docket No. 19515, issued December 8, 2020
    - Ecology issued this revised compliance order requiring Intalco to convert a specified number of pots from SWPB to CWPB pots within a specified timeframe upon restart of smelting operations at the site.
- Compliance Order Docket No. 19514, issued December 8, 2020
    - Ecology issued this revised compliance order requiring Intalco to complete repairs to the pot hoods prior to restarting smelting operations at the site.
- Agreed Order No. 18216, issued January 22, 2021
    - Ecology and Intalco coordinated on the requirements of this agreed order in response to Ecology's regional haze requirements. The agreed order requires Intalco to submit specified information to Ecology prior to restarting smelting operations and to install and operate identified emissions controls within 3 years of Ecology's approval of the submission.
- Agreed Order No. 21310, issued November 29, 2022
    - Ecology and Intalco coordinated on the requirements of this agreed order in response to the designation of the area surrounding the Intalco facility as non-attainment for sulfur dioxide (SO_2).

The agreed order applies new emissions limits to the facility, requires installation and operation of a new wet scrubber, and requires Intalco to complete specific actions prior to restarting smelting operations.

In addition to the above identified NOC Orders, Compliance Orders, and Agreed Orders, Intalco submitted an NOC application for modifications to Holding Furnaces 1-4 at the Casthouse on August 3, 2018 (Casthouse NOC). Ecology drafted the Casthouse NOC Order; however, Intalco announced the curtailment of operations prior to Ecology's public notice of the draft Casthouse NOC Order. With the announcement of the permanent closure of the Intalco facility, Ecology considers the Casthouse NOC application to be formally rescinded and therefore will take no further action to issue the draft Casthouse NOC Order.

Agreed Order No. 13551, issued August 4, 2016, remains in effect. Intalco must continue operating the identified ambient air monitors in compliance with this agreed order, "Until EPA grants permission to remove the monitors," (Section IV.3). Ecology will notify Intalco in writing when this condition is met, at which time Agreed Order No. 13551 will also be terminated.

If you have any questions, please contact Kelsey Brotherton at 360-280-2668 or kelsey.brotherton@ecy.wa.gov.

To request ADA accommodation for disabilities, or printed materials in a format for the visually impaired, contact Ecology at 360-280-4325 or ecyadacoordinator@ecy.wa.gov. Persons with impaired hearing may call Washington Relay Service at 711. Persons with a speech disability may call TTY at 800-833-6384.

Sincerely,

James DeMay
Industrial Section
Solid Waste Management Program

Certified Mail: 9489-0090-0027-6383-8993-74

cc: Kristin Gaines, Alcoa
Ryan Harried, Intalco
Shauna Abbenhaus, Ecology
Karl Pepple, EPA Region X
Agata McIntyre, NWCAA
Toby Mahar, NWCAA

Alcoa Primary Metals
Intalco Works
4050 Mountain View Road
P.O. Box 937
Ferndale, WA 98248 USA
Tel: 1 360 384 7061
Fax:1 360 384 6185

December 7, 2023

James DeMay
Department of Ecology, Industrial Section
P.O. Box 47600
Olympia, WA 98504-7600

RE: Termination of Title V Air Operating Permit No. 0002950

Dear James DeMay:

Intalco Aluminum LLC (Intalco), a subsidiary of Alcoa Corporation (Alcoa), fully curtailed aluminum smelting operations in 2020. On March 16, 2023, Alcoa announced the permanent closure of the Intalco facility. In response to Alcoa's closure of the Intalco facility, the Washington State Department of Ecology (Ecology) is revoking Intalco's Title V Air Operating Permit (AOP) No. 0002950. Intalco received formal notification from Ecology in a letter dated November 30, 2023.

Intalco recognizes that WAC 173-401-710(4) provides for an effective date of permit revocation 30 days from receipt of notification from Ecology. However, Intalco does not object to the immediate revocation of the permit and requests revocation/termination of the permit upon Ecology's receipt of this formal written notice.

If you have questions, please feel free to contact me.

Sincerely,

Tia Daulph
Site Manager

Cc: Kelsey Brotherton, Ecology
Kristin Gaines, Alcoa

Appendix B. EPA's EJScreen Report

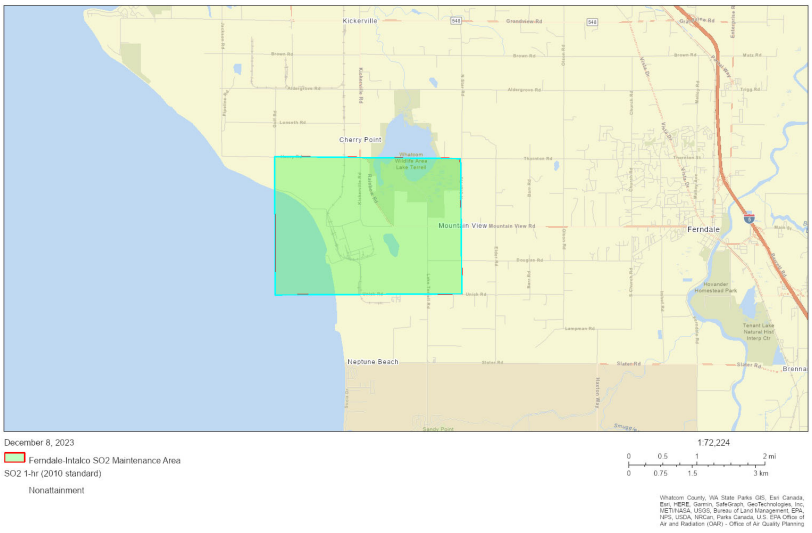
EJScreen Community Report

This report provides environmental and socioeconomic information for user-defined areas, and combines that data into environmental justice and supplemental indexes.

Whatcom County, WA

the User Specified Area
Population: 116
Area in square miles: 5.50

A3 Landscape



LANGUAGES SPOKEN AT HOME

LANGUAGE	PERCENT
English	81%
Spanish	2%
German or other West Germanic	1%
Russian, Polish, or Other Slavic	7%
Other Indo-European	1%
Korean	3%
Other Asian and Pacific Island	1%
Arabic	4%
Total Non-English	19%

COMMUNITY INFORMATION

- Low income: 20 percent
- People of color: 1 percent
- Less than high school education: 2 percent
- Limited English households: 0 percent
- Unemployment: 2 percent
- Persons with disabilities: 14 percent
- Male: 51 percent
- Female: 49 percent
- 80 years — Average life expectancy
- $44,683 — Per capita income
- Number of households: 39
- Owner occupied: 88 percent

BREAKDOWN BY RACE

- White: 99%
- Black: 0%
- American Indian: 0%
- Asian: 0%
- Hawaiian/Pacific Islander: 0%
- Other race: 0%
- Two or more races: 0%
- Hispanic: 1%

BREAKDOWN BY AGE

From Ages 1 to 4	9%
From Ages 1 to 18	25%
From Ages 18 and up	75%
From Ages 65 and up	23%

LIMITED ENGLISH SPEAKING BREAKDOWN

Speak Spanish	0%
Speak Other Indo-European Languages	0%
Speak Asian-Pacific Island Languages	0%
Speak Other Languages	0%

Notes: Numbers may not sum to totals due to rounding. Hispanic population can be of any race.
Source: U.S. Census Bureau, American Community Survey (ACS) 2017 -2021. Life expectancy data comes from the Centers for Disease Control.

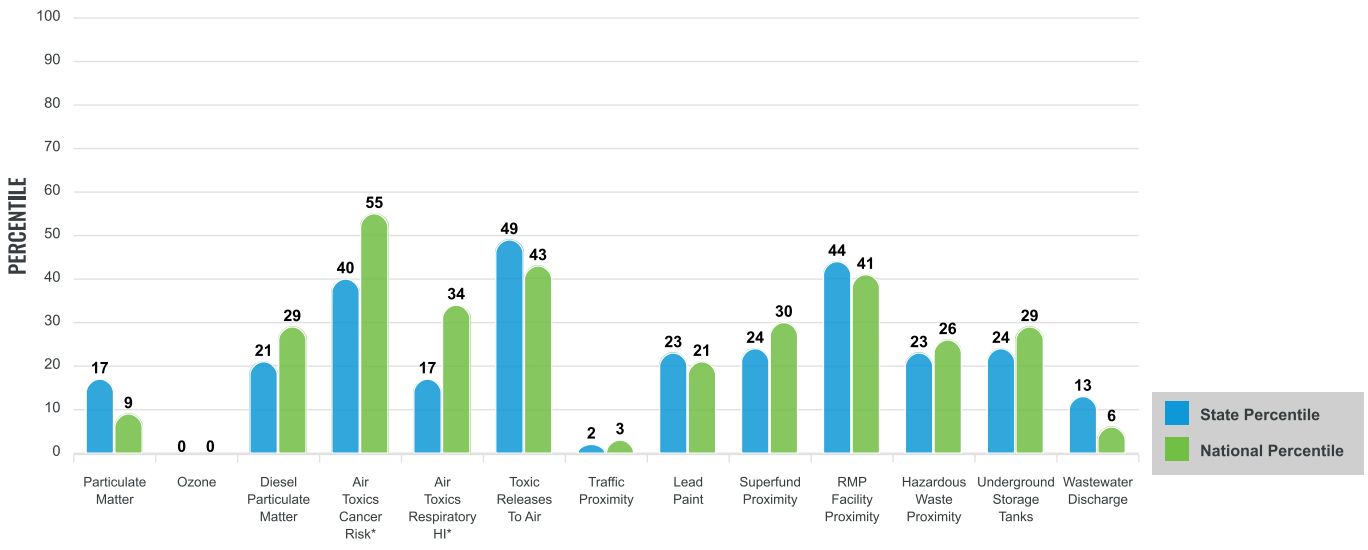
Environmental Justice & Supplemental Indexes

The environmental justice and supplemental indexes are a combination of environmental and socioeconomic information. There are thirteen EJ indexes and supplemental indexes in EJScreen reflecting the 13 environmental indicators. The indexes for a selected area are compared to those for all other locations in the state or nation. For more information and calculation details on the EJ and supplemental indexes, please visit the EJScreen website.

EJ INDEXES

The EJ indexes help users screen for potential EJ concerns. To do this, the EJ index combines data on low income and people of color populations with a single environmental indicator.

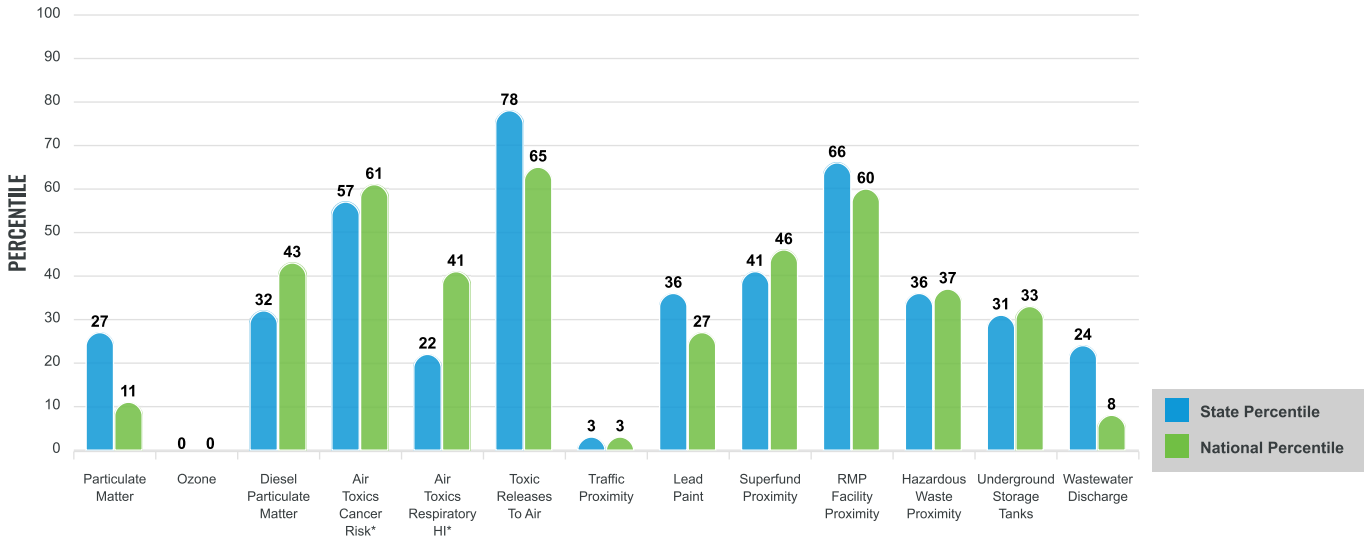
EJ INDEXES FOR THE SELECTED LOCATION



SUPPLEMENTAL INDEXES

The supplemental indexes offer a different perspective on community-level vulnerability. They combine data on percent low-income, percent linguistically isolated, percent less than high school education, percent unemployed, and low life expectancy with a single environmental indicator.

SUPPLEMENTAL INDEXES FOR THE SELECTED LOCATION



These percentiles provide perspective on how the selected block group or buffer area compares to the entire state or nation.

Report for the User Specified Area

EJScreen Environmental and Socioeconomic Indicators Data

SELECTED VARIABLES	VALUE	STATE AVERAGE	PERCENTILE IN STATE	USA AVERAGE	PERCENTILE IN USA
POLLUTION AND SOURCES					
Particulate Matter (µg/m^3)	6.51	7.02	28	8.08	12
Ozone (ppb)	44.4	49.8	0	61.6	0
Diesel Particulate Matter (µg/m^3)	0.217	0.355	34	0.261	50
Air Toxics Cancer Risk* (lifetime risk per million)	30	27	37	25	52
Air Toxics Respiratory HI*	0.3	0.39	14	0.31	31
Toxic Releases to Air	8,900	1,800	96	4,600	92
Traffic Proximity (daily traffic count/distance to road)	1	190	3	210	4
Lead Paint (% Pre-1960 Housing)	0.085	0.23	39	0.3	32
Superfund Proximity (site count/km distance)	0.071	0.18	41	0.13	55
RMP Facility Proximity (facility count/km distance)	0.79	0.4	86	0.43	84
Hazardous Waste Proximity (facility count/km distance)	0.31	1.6	38	1.9	43
Underground Storage Tanks (count/km^2)	0.38	6.3	31	3.9	37
Wastewater Discharge (toxicity-weighted concentration/m distance)	1.5E-06	0.024	23	22	9
SOCIOECONOMIC INDICATORS					
Demographic Index	11%	28%	9	35%	11
Supplemental Demographic Index	8%	12%	33	14%	25
People of Color	1%	32%	1	39%	5
Low Income	20%	24%	49	31%	37
Unemployment Rate	2%	5%	30	6%	31
Limited English Speaking Households	0%	4%	0	5%	0
Less Than High School Education	2%	8%	24	12%	18
Under Age 5	9%	6%	83	6%	83
Over Age 64	23%	16%	78	17%	76
Low Life Expectancy	18%	18%	54	20%	41

*Diesel particulate matter, air toxics cancer risk, and air toxics respiratory hazard index are from the EPA's Air Toxics Data Update, which is the Agency's ongoing, comprehensive evaluation of air toxics in the United States. This effort aims to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that the air toxics data presented here provide broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. Cancer risks and hazard indices from the Air Toxics Data Update are reported to one significant figure and any additional significant figures here are due to rounding. More information on the Air Toxics Data Update can be found at: https://www.epa.gov/haps/air-toxics-data-update.

Sites reporting to EPA within defined area:

Superfund 0
Hazardous Waste, Treatment, Storage, and Disposal Facilities 0
Water Dischargers 6
Air Pollution 2
Brownfields 0
Toxic Release Inventory 2

Other community features within defined area:

Schools 0
Hospitals 0
Places of Worship 0

Other environmental data:

Air Non-attainment ..... Yes
Impaired Waters ..... Yes

Selected location contains American Indian Reservation Lands* ..... No
Selected location contains a "Justice40 (CEJST)" disadvantaged community ..... No
Selected location contains an EPA IRA disadvantaged community ..... No

Report for the User Specified Area

EJScreen Environmental and Socioeconomic Indicators Data

HEALTH INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Low Life Expectancy	18%	18%	54	20%	41
Heart Disease	5.3	5.3	51	6.1	35
Asthma	10.6	10.5	51	10	71
Cancer	6.3	6.3	50	6.1	52
Persons with Disabilities	16.7%	13.1%	75	13.4%	74

CLIMATE INDICATORS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Flood Risk	3%	11%	36	12%	29
Wildfire Risk	0%	12%	0	14%	0

CRITICAL SERVICE GAPS					
INDICATOR	HEALTH VALUE	STATE AVERAGE	STATE PERCENTILE	US AVERAGE	US PERCENTILE
Broadband Internet	0%	9%	0	14%	0
Lack of Health Insurance	2%	6%	16	9%	15
Housing Burden	No	N/A	N/A	N/A	N/A
Transportation Access	Yes	N/A	N/A	N/A	N/A
Food Desert	No	N/A	N/A	N/A	N/A

Footnotes

Report for the User Specified Area

Appendix C. Copies of Public Notices [Reserved]

This Appendix will contain copies of outreach and public notices about the opportunity to review and comment on this SIP revision and will include copies of all public comments we receive on the proposal. EPA requires us to provide these records as part of the SIP submittal.

Appendix D. Public Review and Response to Comments [Reserved]

Following the public review process, we will amend this Appendix to include:

- Summary of the public notification process and comments received.
- Our responses to the public comments on the proposal.
- Explanation of any changes made to the final submittal as the result of the public comments.

Appendix E. SIP Adoption and Transmittal Letter to EPA [Reserved]