Technical Support Document:

Chapter 42
Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for Washington

1. Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (the EPA, we, or us) must designate areas as either "nonattainment," "attainment," or "unclassifiable" for the 2010 1-hour sulfur dioxide (SO_2) primary national ambient air quality standard (NAAQS) (2010 SO_2 NAAQS). The CAA defines a nonattainment area as an area that does not meet the NAAQS or that contributes to a nearby area that does not meet the NAAQS. An attainment area is defined by the CAA as any area that meets the NAAQS and does not contribute to a nearby area that does not meet the NAAQS. Unclassifiable areas are defined by the CAA as those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS. In this action, the EPA has defined a nonattainment area as an area that the EPA has determined violates the 2010 SO_2 NAAQS or contributes to a violation in a nearby area, based on the most recent 3 years of air quality monitoring data, appropriate dispersion modeling analysis, and any other relevant information. An unclassifiable/attainment area is defined by the EPA as an area that either: (1) based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, the EPA has determined (i) meets the 2010 SO_2 NAAQS, and (ii) does not contribute to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and the EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS[1]. An unclassifiable area is defined by EPA as an area that either: (1) was required to be characterized by the state under 40 CFR 51.1203(c) or (d), has not been previously designated, and on the basis of available information cannot be classified as either: (i) meeting or not meeting the 2010 SO_2 NAAQS, or (ii) contributing or not contributing to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.

This technical support document (TSD) addresses designations for nearly all undesignated areas in Washington ("the state") for the 2010 SO_2 NAAQS. In previous final actions, the EPA has

[1] The term "designated attainment area" is not used in this document because the EPA uses that term only to refer to a previous nonattainment area that has been redesignated to attainment as a result of the EPA's approval of a state-submitted maintenance plan.

issued designations for the 2010 SO_2 NAAQS for selected areas of the country.[2] These previous actions have not included any areas in Washington. The EPA is under a December 31, 2017, deadline to designate the areas addressed in this TSD as required by the U.S. District Court for the Northern District of California.[3] We are referring to the set of designations being finalized by the December 31, 2017, deadline as "Round 3" of the designations process for the 2010 SO_2 NAAQS. After the Round 3 designations are completed, the only remaining undesignated areas will be those where a state has timely installed and begun operating a new SO_2 monitoring network meeting EPA specifications referenced in EPA's SO_2 Data Requirements Rule (DRR). (80 FR 51052). The EPA is required to designate those remaining undesignated areas by December 31, 2020. There are two such areas in Washington.

Washington submitted its first recommendation regarding designations for the 2010 1-hour SO_2 NAAQS on June 2, 2011, which was to designate the whole state as unclassifiable. The state submitted its updated air quality analysis on January 23, 2017, but did not revise its recommendations at that time. In our intended designations, we have considered all the submissions from the state, except where a recommendation in a later submission regarding a particular area indicates that it replaces an earlier recommendation for that area we have considered the recommendation in the later submission.

For the areas in Washington that are part of the Round 3 designations process, Table 1 identifies EPA's intended designations and the counties to which they would apply. It also lists Washington's current recommendations. The EPA's final designation for these areas will be based on an assessment and characterization of air quality through ambient air quality data, air dispersion modeling, other evidence and supporting information, or a combination of the above.

Table 1. Summary of the EPA's Intended Designations and the Designation Recommendations by Washington

Area/County	Washington's Recommended Area Definition	Washington's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Lewis and Thurston Counties	Lewis and Thurston Counties as one designated area	Attainment	Same as State's Recommendation	Unclassifiable
Remaining Undesignated Areas to Be Designated in this Action*	Each Full County as a separate designated area	Attainment/ Unclassifiable	Same as State's Recommendation	Unclassifiable/ Attainment

* Except for areas that are associated with sources for which Washington elected to install and began timely operation of a new SO_2 monitoring network meeting EPA specifications referenced in the EPA's SO_2 DRR (*see* Table 2), the EPA intends to designate the remaining undesignated counties (or portions of counties) in Washington

[2] A total of 94 areas throughout the U.S. were previously designated in actions published on August 5, 2013 (78 FR 47191), July 12, 2016 (81 FR 45039), and December 13, 2016 (81 FR 89870).
[3] *Sierra Club v. McCarthy*, No. 3-13-cv-3953 (SI) (N.D. Cal. Mar. 2, 2015).

as "unclassifiable/attainment" as these areas were not required to be characterized by the state and cannot be classified on the basis of available information as meeting or not meeting the NAAQS. These areas that we intend to designate as unclassifiable/attainment (those to which this row of this table is applicable) are identified more specifically in section 4 of this TSD.

Areas for which Washington elected to install and began operation of a new, approved SO_2 monitoring network are listed in Table 2. The EPA is required to designate these areas, pursuant to a court ordered schedule, by December 31, 2020. Table 2 also lists the SO_2 emissions sources around which each new, approved monitoring network has been established.

Table 2 – Undesignated Areas Which the EPA Is Not Addressing in this Round of Designations (and Associated Source or Sources)

Area	Source(s)
Chelan County and Douglas County	Alcoa Primary Metals Wenatchee Works
Whatcom County	Intalco Aluminum LLC

Areas that the EPA previously designated unclassifiable in Round 1 (*see* 78 FR 47191) and Round 2 (*see* 81 FR 45039 and 81 FR 89870) are not affected by the designations in Round 3 unless otherwise noted. No areas in Washington were designated in Round 1 or Round 2.

2. General Approach and Schedule

Updated designations guidance documents were issued by the EPA through a July 22, 2016, memorandum and a March 20, 2015, memorandum from Stephen D. Page, Director, U.S. EPA, Office of Air Quality Planning and Standards, to Air Division Directors, U.S. EPA Regions I-X. These memoranda supersede earlier designations guidance for the 2010 SO_2 NAAQS, issued on March 24, 2011, and identify factors that the EPA intends to evaluate in determining whether areas are in violation of the 2010 SO_2 NAAQS. The documents also contain the factors that the EPA intends to evaluate in determining the boundaries for designated areas. These factors include: 1) air quality characterization via ambient monitoring or dispersion modeling results; 2) emissions-related data; 3) meteorology; 4) geography and topography; and 5) jurisdictional boundaries. To assist states and other interested parties in their efforts to characterize air quality through air dispersion modeling for sources that emit SO_2, the EPA released its most recent version of a draft document titled, "SO_2 NAAQS Designations Modeling Technical Assistance Document" (Modeling TAD) in August 2016.[4]

Readers of this chapter of this TSD should refer to the additional general information for the EPA's Round 3 area designations in Chapter 1 (Background and History of the Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard) and Chapter 2 (Intended Round 3 Area Designations for the 2010 1-Hour SO_2 Primary National Ambient Air Quality Standard for States with Sources Not Required to be Characterized).

[2] https://www.epa.gov/sites/production/files/2016-06/documents/so2modelingtad.pdf. In addition to this TAD on modeling, the EPA also has released a technical assistance document addressing SO_2 monitoring network design, to advise states that have elected to install and begin operation of a new SO_2 monitoring network. *See* Draft SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, February 2016, https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf.

As specified by the March 2, 2015, court order, the EPA is required to designate by December 31, 2017, all "remaining undesignated areas in which, by January 1, 2017, states have not installed and begun operating a new SO_2 monitoring network meeting EPA specifications referenced in EPA's" SO_2 DRR. The EPA will therefore designate by December 31, 2017, areas of the country that are not, pursuant to the DRR, timely operating EPA-approved and valid monitoring networks. The areas to be designated by December 31, 2017, include the areas associated with sources meeting DRR emissions criteria that states have chosen to be characterized using air dispersion modeling (including one source in Washington – TransAlta Centralia Generation, LLC), the areas associated with sources for which air agencies imposed emissions limitations on sources to restrict their SO_2 emissions to less than 2,000 tpy (none of which are in Washington), sources that met the DRR requirements by demonstrating shut down of the source (none of which are in Washington), and other areas not specifically required to be characterized by the state under the DRR (including the remainder of Washington).

Section 3 of this TSD addresses Lewis County and Thurston County, in which the TransAlta Power Plant is located or near and for which modeling information is available. The remaining to-be-designated counties in Washington are then addressed together in section 4.

The EPA does not plan to revise this TSD after consideration of state and public comment on our intended designation. A separate TSD will be prepared as necessary to document how we have addressed such comments in the final designations.

The following are definitions of important terms used in this document:

1) 2010 SO_2 NAAQS – The primary NAAQS for SO_2 promulgated in 2010. This NAAQS is 75 ppb, based on the 3-year average of the 99th percentile of the annual distribution of daily maximum 1-hour average concentrations. *See* 40 CFR 50.17.
2) Design Value - a statistic computed according to the data handling procedures of the NAAQS (in 40 CFR part 50 Appendix T) that, by comparison to the level of the NAAQS, indicates whether the area is violating the NAAQS.
3) Designated nonattainment area – an area that, based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, EPA has determined either: (1) does not meet the 2010 SO2 NAAQS, or (2) contributes to ambient air quality in a nearby area that does not meet the NAAQS.
4) Designated unclassifiable/attainment area – an area that either: (1) based on available information including (but not limited to) appropriate modeling analyses and/or monitoring data, EPA has determined (i) meets the 2010 SO2 NAAQS, and (ii) does not contribute to ambient air quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.
5) Designated unclassifiable area – an area that either: (1) was required to be characterized by the state under 40 CFR 51.1203(c) or (d), has not been previously designated, and on the basis of available information cannot be classified as either: (i) meeting or not meeting the 2010 SO2 NAAQS, or (ii) contributing or not contributing to ambient air

quality in a nearby area that does not meet the NAAQS; or (2) was not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS.

6) Modeled violation – a violation of the SO_2 NAAQS demonstrated by air dispersion modeling.
7) Recommended attainment area – an area that a state, territory, or tribe has recommended that the EPA designate as attainment.
8) Recommended nonattainment area – an area that a state, territory, or tribe has recommended that the EPA designate as nonattainment.
9) Recommended unclassifiable area – an area that a state, territory, or tribe has recommended that the EPA designate as unclassifiable.
10) Recommended unclassifiable/attainment area – an area that a state, territory, or tribe has recommended that the EPA designate as unclassifiable/attainment.
11) Violating monitor – an ambient air monitor meeting 40 CFR parts 50, 53, and 58 requirements whose valid design value exceeds 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.
12) We, our, and us – these refer to the EPA.

3. Technical Analysis for the Lewis County and Thurston County Area

3.1. Introduction

The EPA must designate the Lewis County and Thurston County area by December 31, 2017, because these areas have not been previously designated and Washington has not installed and begun timely operation of a new, approved SO_2 monitoring network to characterize air quality in the vicinity of any source in Lewis/or Thurston County. The TransAlta Central Generation Power Plant (TransAlta) is in Lewis County, close to the border between the counties.

3.2. Air Quality Monitoring Data for the Lewis County and Thurston County Area

There are no SO_2 monitoring stations in operation in Lewis County or Thurston County.

3.3. Air Quality Modeling Analysis for the Lewis County and Thurston County Area Addressing TransAlta

3.3.1. Introduction

This section 3.3 presents all the available air quality modeling information for a portion of Lewis and Thurston Counties that contain or are impacted by the emissions of TransAlta. (This portion of Lewis and Thurston Counties will often be referred to as "the TransAlta area" within this section 3.3.) This area contains the following SO_2 source, for which Washington is required by the DRR to characterize SO_2 air quality, or alternatively to establish an SO_2 emissions limitation of less than 2,000 tons per year:

- The TransAlta facility emitted 2,000 tons or more annually. Specifically, TransAlta emitted 4,794 tons of SO_2 in 2014. This source meets the DRR criteria and thus is on the SO_2 DRR Source list, and Washington has chosen to characterize it via modeling.

In its submission, Washington recommended that an area that includes the area surrounding the facility, specifically the entirety of Lewis and Thurston Counties, be designated as a single attainment area based in part on an assessment and characterization of air quality impacts from this facility and one other nearby source that may have a potential impact in the area where the 2010 SO_2 NAAQS may be exceeded. This assessment and characterization was performed using air dispersion modeling software, i.e., AERMOD, analyzing a mixture of actual and allowable emissions. After careful review of the state's assessment, supporting documentation, and all available data, the EPA intends to modify the state's recommendation and designate the area as unclassifiable. Our reasoning for this conclusion is explained in section 3.6 of this TSD, after all the available information is presented.

TransAlta is located at 913 Big Hanaford Road, Centralia, Washington 98531. The area modeled covers a large portion of the rural areas and communities along the I-5 corridor from Olympia

south to Napavine and the low foothills east of Centralia. The modeling domain encompasses most of Lewis County, most of southern Thurston County, and a small portion of southeast Grays Harbor County. The region is sparsely populated and consists mostly of wooded foothills. The largest city is Centralia, WA, (population 17,000), located near the center of the modeling domain.

Figure 1 below, shows the location of the TransAlta facility, which is 9 km northeast of Centralia.

Figure 1. Map of the Lewis/Thurston County Area Addressing TransAlta

No other nearby emitters of SO_2 were included in the modeling. Washington determined Cardinal Glass, located about 25 km southwest of TransAlta, as the sole emitter of more than 46.6 tons per year of SO_2 within 50 kilometers (km) of TransAlta. Preliminary investigation of Cardinal Glass impacts using AERSCREEN modeling led the State to the conclusion the contribution from the facility would be represented in the background concentration. The background design value was obtained from the Northwest Airquest 2011 background concentration tool[5]. The design value tool is a product of the Northwest International Air Quality Environmental Science and Technology Consortium's NW AEST project. The background design values provided by this tool are commonly accepted as representative values by state and local air permitting authorities in Washington, Oregon, and Idaho. The tool calculates design values using archived CMAQ model data from the 3-state daily air quality forecast model AIRPACT3. The tool provides an estimated design value for a given location (user input is source latitude and longitude; background values are calculated on a grid of 3 km resolution) using spatially interpolated model and monitor data (more detail on the methodology available at http://lar.wsu.edu/nw-airquest/docs/3state_bg_conc_maps_methodology.pdf). The design value is influenced by the actual emissions of facilities included in the model or adjacent to monitors. The state concluded any influence from Cardinal and more distant sources would be represented in the background value. Therefore, Cardinal Glass emissions were not included in the TransAlta modeling, as the state determined from the screening analysis that Cardinal Glass emissions were

[5] Northwest International Air Quality Environmental Science and Technology Consortium, NW AIRQUEST model and design value tool: http://lar.wsu.edu/nw-airquest/lookup.html

too low to contribute to the ambient SO_2 concentrations. The other sources of SO_2 identified by Washington included sources located in the Longview and the Tacoma Tideflat areas. These sources are beyond 50 km and the state assumed their contribution, if any, was included in the background SO_2 concentration.

Figure 1 shows the entirety of Lewis County and Thurston County, which is the state's recommended area for the designation. The EPA's intended unclassifiable designation boundary is also the outer boundaries of the two counties as shown in Figure 1.

The discussion and analysis that follows below will reference the Modeling TAD and the factors for evaluation contained in the EPA's July 22, 2016, guidance and March 20, 2015, guidance, as appropriate.

3.3.2. Modeling Analysis Provided by the State

For this area, the EPA received and considered only one modeling assessment, which was one assessment from the state and no assessments from other parties.

3.3.2.1.Differences Between and Relevance of the Modeling Assessments Submitted by the State

Washington submitted modeling with actual emissions. No other submissions from the State or other organizations were received.

3.3.2.2.Model Selection and Modeling Components

The EPA's Modeling TAD notes that for area designations under the 2010 SO_2 NAAQS, the AERMOD modeling system should be used, unless use of an alternative model can be justified. The AERMOD modeling system contains the following components:

- AERMOD: the dispersion model
- AERMAP: the terrain processor for AERMOD
- AERMET: the meteorological data processor for AERMOD
- BPIPPRM: the building input processor
- AERMINUTE: a pre-processor to AERMET incorporating 1-minute automated surface observation system (ASOS) wind data
- AERSURFACE: the surface characteristics processor for AERMET
- AERSCREEN: a screening version of AERMOD

The state used AERMOD version 16216. The state used the ADJ_U* module in AERMET 16216 to improve the performance of AERMOD for low-wind stable conditions. Use of the 16216 version of the model was deemed appropriate given known ADJ_U* bugs were fixed from an earlier version of AERMOD. The modeling also did not apply any AREACIRC sources, which were found to be problematic in version 16216. A discussion of the state's approach to the individual components is provided in the corresponding discussion that follows, as appropriate.

3.3.2.3.Modeling Parameter: Rural Dispersion

For any dispersion modeling exercise, the "urban" or "rural" determination of a source is important in determining the boundary layer characteristics that affect the model's prediction of downwind concentrations. For SO_2 modeling, the urban/rural determination is important because AERMOD invokes a 4-hour half-life for urban SO_2 sources. Section 6.3 of the Modeling TAD details the procedures used to determine if a source is urban or rural based on land use or population density.

For the purpose of performing the modeling for the area of analysis, the state determined that it was most appropriate to run the model in rural mode.

The EPA determined this decision was justified, given the rural character and low population density of the area surrounding the source. The facility is located in a rural valley containing small farms and stretches of conifer forest. The valley is surrounded by forested foothills. The nearest urban center is the city of Centralia, WA (population 17,000), located about 8 km southwest of the facility. A follow-up review of land use in a 3-km radius area around the TransAlta facility revealed about 1.3% of the land use surrounding the facility consisted of urban classification.

3.3.2.4.Modeling Parameter: Area of Analysis (Receptor Grid)

The Modeling Technical Assistance Document (TAD) recommends that the first step towards characterization of air quality in the area around a source or group of sources is to determine the extent of the area of analysis and the spacing of the receptor grid. Considerations presented in the Modeling TAD include but are not limited to: the location of the SO_2 emission sources or facilities considered for modeling; the extent of significant concentration gradients due to the influence of nearby sources; and sufficient receptor coverage and density to adequately capture and resolve the model predicted maximum SO_2 concentrations.

The source of SO_2 emissions subject to the DRR in this area is described in the introduction to this section. For the TransAlta area, the state has considered including one emitter of SO_2 within 50 kilometers (km) of TransAlta in any direction. The state determined that this was the appropriate distance to adequately characterize air quality through modeling to include the potential extent of any SO_2 NAAQS exceedances in the area of analysis and any potential impact on SO_2 air quality from other sources in nearby areas. The initial screening analysis, described above, determined the impacts of the emissions from Cardinal Glass were too low to merit inclusion in the modeling and its contribution is represented in the background design value. No other sources of SO_2 were included in the modeling analysis.

The state chose to apply a single receptor grid over a 50 km by 50 km domain at 200-meter spacing. The state did not apply a set of fenceline receptors and did not include a refined receptor grid in the area of the modeled maxima. Thus, the receptor grid configuration does not fully follow the recommendations in the modeling TAD. The receptor network contained 62,001 receptors, and the network covered the portion of northwest Lewis County surrounding Centralia and most of southern Thurston County. The grid extended north to Yelm, Washington, and south

to Salkum, Washington. It also extended west beyond Rochester, Washington, and east into the higher foothills of central Lewis County. The extent of the receptor grid is indicated by the gray area in Figure 3.

The State placed receptors for the purposes of this designation effort in locations that would be considered ambient air. The State did not use a facility fenceline to locate receptors. The state only applied the single receptor grid described above and did not remove any receptors from this grid that may have been located on facility property or other locations where location of a monitor would be unfeasible.

3.3.2.5. Modeling Parameter: Source Characterization

Section 6 of the Modeling TAD offers recommendations on source characterization including source types, use of accurate stack parameters, inclusion of building dimensions for building downwash (if warranted), and the use of actual stack heights with actual emissions or following GEP policy with allowable emissions, where applicable.

For the most part, the state characterized this source within the area of analysis in accordance with the best practices outlined in the Modeling TAD. Specifically, the state used actual stack height in conjunction with actual emissions. The single facility stack is 143 meters tall. The state used an incorrect stack diameter in the actual emissions modeling. The TransAlta stack is a single stack with two internal flues. Each flue is 9 meters in diameter. The modeling of actual emissions was conducted using the combined emissions from both flues emitting from a single 9 meter (m) diameter stack.

The state did not account for building layout and building downwash in its actual emissions modeling, noting building downwash could be disregarded given the stack was much higher than onsite buildings. The EPA agrees that this assumption is likely valid based on a qualitative evaluation of building and stack dimensions from aerial and site photographs. Figure 1 of the state's modeling report includes a photograph of the facility, demonstrating the stack height is much greater than the facility buildings. The nearby structures appear to be roughly a third of the height of the stack, about 50 meters tall. However, the EPA could not quantitatively verify this assumption, given no building dimension information was submitted by the state. The EPA conducted a mock BPIP analysis, using building heights and dimensions estimated from aerial maps and photographs, to estimate GEP stack height. An estimated GEP stack height of 120 meters was provided by the mock BPIP analysis. Considering the actual stack height is about 20% greater than the estimated GEP stack height, it is reasonable to assume building downwash is negligible in this case.

3.3.2.6.Modeling Parameter: Emissions

The EPA's Modeling TAD notes that for the purpose of modeling to characterize air quality for use in designations, the recommended approach is to use the most recent 3 years of actual emissions data and concurrent meteorological data. However, the TAD also indicates that it would be acceptable to use allowable emissions in the form of the most recently permitted (referred to as PTE or allowable) emissions rate that is federally effective.

The EPA believes that continuous emissions monitoring systems (CEMS) data provide acceptable historical emissions information, when they are available. These data are available for many electric generating units. In the absence of CEMS data, the EPA's Modeling TAD highly encourages the use of AERMOD's hourly varying emissions keyword HOUREMIS, or through the use of AERMOD's variable emissions factors keyword EMISFACT. When choosing one of these methods, the EPA recommends using detailed throughput, operating schedules, and emissions information from the impacted source(s).

In certain instances, states and other interested parties may find that it is more advantageous or simpler to use PTE rates as part of their modeling runs. For example, for a facility that has recently adopted a new federally enforceable emissions limit or implemented other federally enforceable mechanisms and control technologies to limit SO_2 emissions to a level that indicates compliance with the NAAQS, the state may choose to model PTE rates. These new limits or conditions may be used in the application of AERMOD for the purposes of modeling for designations, even if the source has not been subject to these limits for the entirety of the most recent 3 calendar years. In these cases, the Modeling TAD notes that a state should be able to find the necessary emissions information for designations-related modeling in the existing SO_2 emissions inventories used for permitting or SIP planning demonstrations. In the event that these short-term emissions are not readily available, they may be calculated using the methodology in Table 8-1 of Appendix W to 40 CFR Part 51 titled, "Guideline on Air Quality Models."

As previously noted, the state included TransAlta and no other emitters of SO_2. The state has chosen to model this facility using actual emissions. For TransAlta the state provided annual actual SO_2 emissions between 2014 and 2016. This information is summarized in Table 3. A description of how the state obtained hourly emission rates is given below this table.

Table 3. Actual SO_2 emissions between 2013 – 2016 from facilities in the Lewis/Thurston County area.

	Estimated-SO_2 Emissions (tpy)		
Facility Name	**2014**	**2015**	**2016**
TransAlta	3,040	2,388	1,380

The state's modeling report says that actual hourly emissions data were obtained from CEMs data provided by TransAlta to EPA's Clean Air Markets Division database. We have confirmed with the state that the hourly inputs used in the modeling were actually values downloaded from the CAMD database, not the values submitted by TransAlta. As emissions from the final quarter of 2016 were not yet uploaded by CAMD to that database, they were obtained directly from the

Southwest Clean Air Agency. SO_2 emissions from each of the 26,304 hours were modeled as-is; large values substituted by the CAMD quality checks were retained.

3.3.2.7. Modeling Parameter: Meteorology and Surface Characteristics

As noted in the Modeling TAD, the most recent 3 years of meteorological data (concurrent with the most recent 3 years of emissions data) should be used in designations efforts. The selection of data should be based on spatial and climatological (temporal) representativeness. The representativeness of the data is determined based on: 1) the proximity of the meteorological monitoring site to the area under consideration, 2) the complexity of terrain, 3) the exposure of the meteorological site, and 4) the period of time during which data are collected. Sources of meteorological data include National Weather Service (NWS) stations, site-specific or onsite data, and other sources such as universities, Federal Aviation Administration (FAA), and military stations.

For the area of analysis for the Lewis/Thurston County area, the state selected prognostic meteorological data from the University of Washington's regional Weather Research and Forecasting (WRF) modeling system. A thorough search for observational datasets revealed no representative data for the immediate region near the TransAlta facility. The complex terrain near the facility has a lot of influence on the wind climate. The nearest NWS weather station is Chehalis-Centralia (KCLS) AWOS, located about 13 km southwest of the TransAlta facility. The state determined this dataset was not representative of the TransAlta site. The dataset also does not contain sub-hourly wind observations for use in AERMINUTE. A quick review of the KCLS dataset revealed an excessive number of calm winds (about 37% calm from 2012-2016). A PSD-quality onsite dataset was collected at the facility in 1994/1995, but the state determined this dataset was outdated and not representative of winds at stack height.

As an alternative to observations, the state contracted with the University of Washington's Atmospheric Science Department (UWASD) to provide input meteorology for AERMET from its WRF database. The UW WRF model is used to provide high resolution meteorological forecasts twice a day for the Pacific Northwest. Information regarding the model configuration and continuing validation effort are available on the UWASD's website[6,7].

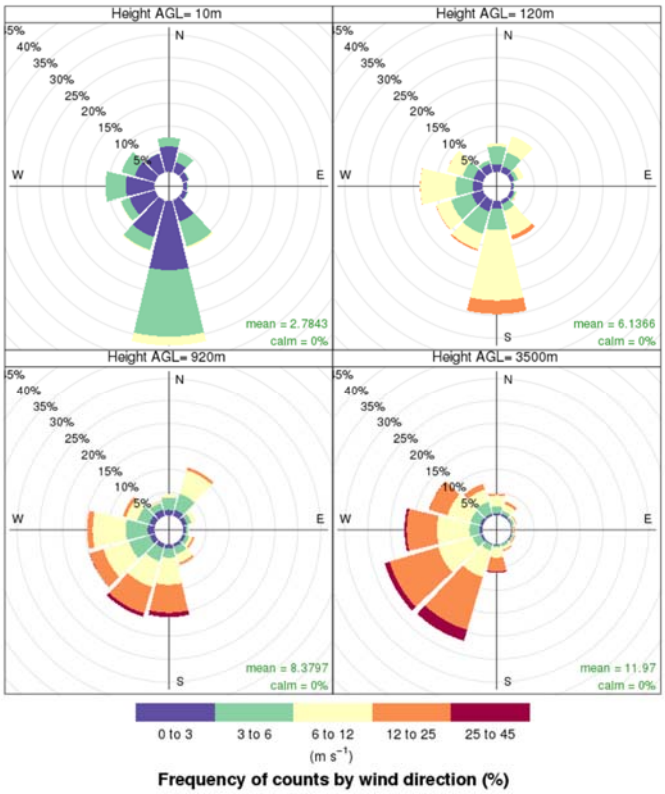
The state decided prognostic data provided the best method to characterize the unique 3-dimensional wind patterns in the vicinity of the facility. Due to limited time and resources, only a single year (2016) of UWASD WRF data was available for this modeling effort from the archives.

[6] UWASD WRF description page: http://www.atmos.washington.edu/wrfrt/info.html
[7] UWASD WRF verification page:
http://www.atmos.washington.edu/~qcreport/verification_index.psp?page=documentation

The contractor, in coordination with the state, used the EPA's Mesoscale Model Interface Program (MMIF)[8] version 3.2 to extract a 1-year (2016) set of meteorological inputs for AERMET. The default settings were used in the extraction, including Golder stability and the default upper-air layers. MMIF recalculation of the PBL height (PBL_recalc = TRUE) was used, as recommended by the EPA. The meteorology was extracted from the nearest WRF grid point from the 1.33-km WRF domain (46.7514 lat., -122.8669 long., about 700 m southwest of the facility). MMIF also provided a land-use file, based on the land-use characteristics of the WRF grid cell. Land-use parameters were provided on a monthly basis with an albedo ranging from 0.17 to 0.2 and Bowen ratio ranging from 0.1 (in wet winter months) to 2.0 (in dry summer months), and a constant roughness length of 0.8 m. The high roughness length corresponds to the high density of conifer forests in the foothills surrounding the TransAlta facility. The state considered the 1-year WRF dataset as the best and most representative dataset available for this evaluation.

As part of its recommendation, the state provided the 1-year surface wind rose for 2016. In Figure 2, the frequency and magnitude of wind speed and direction are defined in terms of from where the wind is blowing.

Figure 2. Lewis/Thurston County Cumulative Annual Wind Rose for Year 2016



[8] MMIF, available at: https://www.epa.gov/scram/air-quality-dispersion-modeling-related-model-support-programs

Meteorological data from the MMIF - UW WRF model were used in generating AERMOD-ready files with the AERMET processor. The output meteorological data created by the AERMET processor is suitable for being applied with AERMOD input files for AERMOD modeling runs. The state followed the methodology and settings recommended by the Regional Office in the use of MMIF to process meteorological data in AERMOD-ready format.

MMIF extracts vertical temperature gradient and not cloud cover data. The Bulk-Richardson method was used for calculation of boundary layer flux parameters. A portion of the vertical temperature gradient values provided by MMIF were outside the acceptable bounds (-2.0 to 5.0 °C) and rejected for use in Stage 1 processing of AERMET (about 12% of the hours were rejected due to temperature gradient values below the lower limit). The state provided cloud cover data from the Chehalis-Centralia (KCLS) ASOS surface meteorological dataset for AERMET to process stability parameters for these periods (METHOD REFLEVEL SUBNWS option used). The ADJ_U* option in AERMET version 16216 was used in this modeling. The use of this option is justified, in this application, given the complexity of the terrain in the area.

The EPA was involved in discussions with the state regarding meteorology. Washington's submission contains an outline of the decisions and corrective actions made during this process. The approach used complies with our recommendations regarding MMIF and AERMET settings. Only a single year was available for the final modeling. The state chose not to engage the contractor for extraction of additional years for the final modeling due to limitations in time and resources. The state's modeling report contains additional arguments and evidence to support the use of a single year of prognostic data.

Originally, the state performed AERMOD modeling using a 3-year dataset provided by the contractor. However, the meteorological dataset provided by MMIF used the WRF-to-AERMOD approach instead of the WRF-to-AERMET approach. In the MMIF-based WRF-to-AERMET approach, MMIF extracts the meteorological information from WRF output files and provides input files for AERMET. It should be noted although both the WRF-to-AERMOD approach and the WRF-to-AERMET approach result in the same wind speed and direction (MMIF does not alter wind speed or direction provided by WRF), the boundary layer scaling and turbulence parameters may vary.

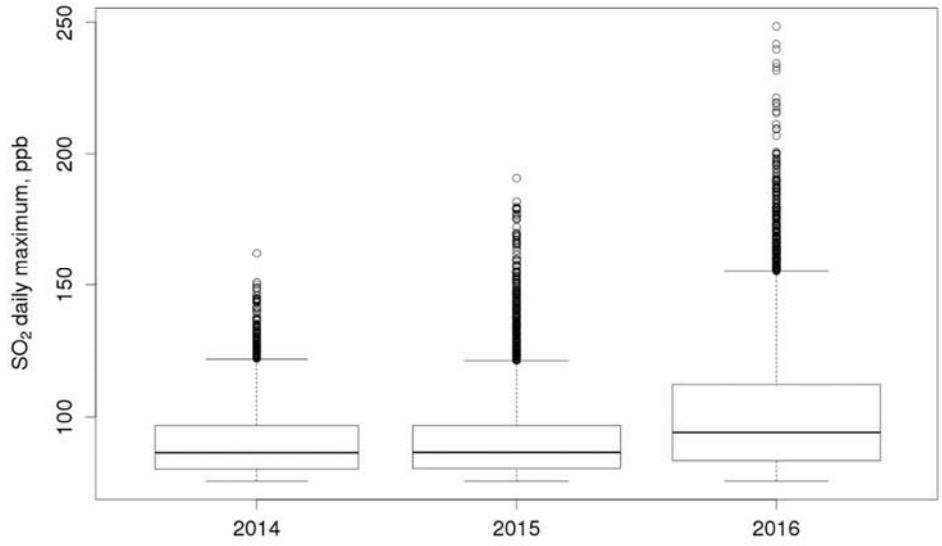
Appendix W states the following about the processing of WRF output:

> When using MMIF to process prognostic data for regulatory applications, the data should be processed to generate AERMET inputs and the data subsequently processed through AERMET for input to AERMOD. If an alternative method of processing data for input to AERMET is used, it must be approved by the appropriate reviewing authority. (Section 8.4.5.1)

We consider the MMIF-based approach to be the better approach for designations also, and we advised the state of this. After initial discussions with the EPA, the state revised the modeling, ensuring the meteorological inputs were produced using the better, MMIF-based approach. Unfortunately, at the time of the revision, the 2014 and 2015 WRF datasets were no longer readily available. Therefore, only the single year of 2016 meteorological data was used for the submitted modeling.

A draft of the state's submission included an analysis of the modeled concentration distribution using the initial/preliminary 2014, 2015, and 2016 meteorological inputs (i.e., the initial input meteorology produced using the less appropriate WRF-to-AERMOD approach). This analysis resulted in predicted distributions of 2014, 2015, and 2016 SO_2 concentrations. The average concentrations, maximum concentrations, and 99th percentile concentrations were all significantly greater than the 2014 and 2015 values, as shown in Figure 2 (taken from the draft of the state's submission; this figure was subsequently removed and not included in its official submission).

Figure 2. Concentration distributions from preliminary modeling analysis



The state provided this analysis as evidence the modeling using only the 2016 meteorological dataset was adequate to demonstrate protection of the NAAQS.

The EPA's assessment of this aspect of the modeling is given in section 3.3.2.11.

3.3.2.8.Modeling Parameter: Geography, Topography (Mountain Ranges or Other Air Basin Boundaries) and Terrain

The terrain in the area of analysis is best described as complex. The facility is surrounded by foothills and taller terrain to its east, characteristic of the Cascade Range of southwest Washington. To account for these terrain changes, the AERMAP terrain program within AERMOD was used to specify terrain elevations for all the receptors. The source of the elevation data incorporated into the model is from the USGS National Elevation Dataset.

The EPA reviewed the input and outputs of the AERMAP processing and found no problems with the approach used.

3.3.2.9.Modeling Parameter: Background Concentrations of SO_2

The Modeling TAD offers two mechanisms for characterizing background concentrations of SO_2 that are ultimately added to the modeled design values: 1) a "tier 1" approach, based on a monitored design value, or 2) a temporally varying "tier 2" approach, based on the 99th percentile monitored concentrations by hour of day and season or month. For this area of analysis, the state opted to use the tier 1 design value extracted from the Northwest AIRQUEST 2011 design value lookup tool[9]. The design value tool is a product of the Northwest International Air Quality Environmental Science and Technology Consortium's NW IRQUEST project. The background design values provided by this tool are commonly accepted as representative values by state and local air permitting authorities in Washington, Oregon, and Idaho. The tool calculates design values using archived CMAQ model data from the three-state daily air quality forecast model AIRPACT3. The tool provides an estimated design value for a given location (user input is source latitude and longitude; background values are calculated on a grid of 3 km resolution) using spatially interpolated model and monitor data (more detail on the methodology available at http://lar.wsu.edu/nw-airquest/docs/3state_bg_conc_maps_methodology.pdf).

The AIRQUEST design values near the source are influenced by the emissions from TransAlta since it is in the area. Therefore, the background value used is considered to be conservative because the modeling used to estimate the background value used emissions from the TransAlta facility. The single value of the background concentration for this area of analysis was determined by the state to be 13 micrograms per cubic meter ($\mu g/m^3$), equivalent to 5.0 ppb when expressed with two significant figures,[10] and that value was incorporated into the final AERMOD results

3.3.2.10. Summary of Modeling Inputs and Results

The AERMOD modeling input parameters for the TransAlta area of analysis are summarized below in Table 4.

[9] Northwest International Air Quality Environmental Science and Technology Consortium, NW AIRQUEST model and design value tool: http://lar.wsu.edu/nw-airquest/lookup.html

[10] The SO_2 NAAQS level is expressed in ppb but AERMOD gives results in $\mu g/m^3$. The conversion factor for SO_2 (at the standard conditions applied in the ambient SO_2 reference method) is 1ppb = approximately 2.619 $\mu g/m^3$.

Table 4. Summary of AERMOD Modeling Input Parameters for the Area of Analysis for the Lewis/Thurston County Area

Input Parameter	Value
AERMOD Version	v16216 (ADJ_U*)
Dispersion Characteristics	Rural
Modeled Sources	1
Modeled Stacks	2
Modeled Structures	0
Modeled Fencelines	0
Total receptors	62001
Emissions Type	Actual
Emissions Years	2014-2016
Meteorology Years	2016
NWS Station for Surface Meteorology	WRF-MMIF data, KCLS (for substitution)
NWS Station Upper Air Meteorology	WRF-MMIF data
NWS Station for Calculating Surface Characteristics	WRF-MMIF provided
Methodology for Calculating Background SO_2 Concentration	Tier 1, based on design value determined from the NW-AIRQUEST design value tool.
Calculated Background SO_2 Concentration	5.0 ppb (13 μg/m3)

Although meteorology was not developed for 2014 and 2015, facility emissions from this period were used. The 2014, 2015, and 2016 actual emissions were used in separate AERMOD modeling runs using 2016 meteorology. Total annual emissions in 2014 were more than double those in 2016, so it is important to assess impacts using emissions from periods earlier than 2016.

The results presented below in Table 5 show the magnitude and geographic location of the highest predicted modeled concentration based on the input parameters.

Table 5. Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentration Averaged Over 3 Years for the Area of Analysis for the Lewis County and Thurston County Area

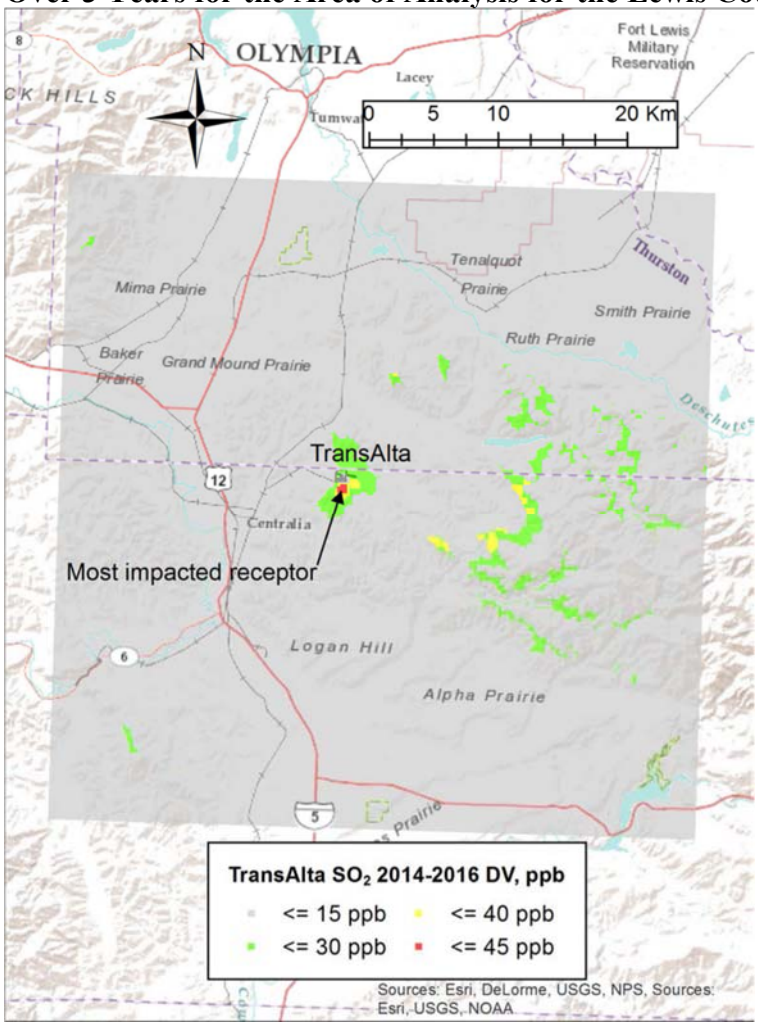
Averaging Period	Data Period	Receptor Location UTM zone 10		99th percentile daily maximum 1-hour SO_2 Concentration ($\mu g/m^3$)	
		UTM	UTM	Modeled concentration (including background)	NAAQS Level
99th Percentile 1-Hour Average	2014-2016	5177439 N	510890 E	113.7	196.4*

*Equivalent to the 2010 SO_2 NAAQS of 75 ppb using a 2.619 $\mu g/m^3$ conversion factor

The state's modeling indicates that the highest predicted 99th percentile daily maximum 1-hour concentration within the chosen modeling domain is 113.7 $\mu g/m^3$, equivalent to 43 ppb. This modeled concentration included the background concentration of SO_2, and is based on actual emissions from the facility.

Figure 3 below was included as part of the state's recommendation, and indicates that the predicted value occurred on the forested high terrain just south of the facility. The state's receptor grid domain is also shown in Figure 3.

Figure 3. Predicted 99th Percentile Daily Maximum 1-Hour SO_2 Concentrations Averaged Over 3 Years for the Area of Analysis for the Lewis County and Thurston County Area



The modeling submitted by the state does not indicate that the 1-hour SO_2 NAAQS is violated at the receptor with the highest modeled concentration. In addition, the modeling indicates that if receptors had been placed at the fenceline of the source, the predicted concentrations at those receptors would also have been below the NAAQS.

3.3.2.11. The EPA's Assessment of the Modeling Information Provided by the State

The state has produced modeling results based on the most representative meteorology available at the time. The onsite dataset from 1994/1995 is outdated and only contains wind measurements at a single level, whereas the WRF dataset provides crucial wind information at the surface (10 m), stack height, and other levels. The nearest airport site (KCLS) is an AWOS station and the dataset lacks the 2-minute or 5-minute data needed for AERMINUTE processing. The excessive fraction of hours with calm winds in that dataset would have been unacceptable for adequate dispersion modeling of the TransAlta facility emissions.

We understand and agree with the state's reservations about the use of the 1994/1995 on-site data and the AWOS data.

Our August 2016 draft Modeling TAD states the following:

> For the purpose of the modeling for designations, a minimum of the most recent 3 years of NWS data or site-specific data should be used if possible. This is recommended because the modeling is being conducted as a surrogate for ambient monitoring, and area designations are commonly established based on the 3-year design value of the area. If the most recent three years are not available, Section 7.4 discusses the use of older meteorological data.

Section 7.4 of the TAD states:

> In some instances, representative meteorological data from the most recent three years may not be available, especially if the most representative data is older site-specific data. In such cases, it may be feasible to use older meteorological data (either site specific or NWS) that has been used in past regulatory applications for the area containing the threshold exceeding source, if these datasets are still considered representative of the most recent three years of meteorological conditions.

The TAD also notes that the use of site-specific data for regulatory applications is discussed in detail in Section 8.3.3 of Appendix W. Since the date of this TAD, this section of Appendix W has been renumbered 8.4.4. This section of Appendix W contains the following discussion about the use of representative site-specific data (followed by recommendations on how to collect on-site data and how to use them in an air quality modeling analysis):

> Spatial or geographical representativeness is best achieved by collection of all of the needed model input data in close proximity to the actual site of the source(s). Site-specific measured data are, therefore, preferred as model input, provided that appropriate instrumentation and quality assurance procedures are followed, and that the data collected are adequately representative (free from inappropriate local or microscale influences) and compatible with the input requirements of the model to be used. It should be noted that, while site-specific measurements are frequently made "on-property" (i.e., on the source's premises), acquisition of adequately representative site-specific data does not preclude collection of data from a location off property. Conversely, collection of meteorological data on a source's property does not of itself guarantee adequate representativeness. For help in determining representativeness of site-specific measurements, technical guidance is available. Site-specific data should always be reviewed for representativeness and adequacy by an experienced meteorologist, atmospheric scientist, or other qualified scientist in consultation with the appropriate reviewing authority (paragraph 3.0(b)).

These statements in the TAD and Appendix W recognize that when on-site or NWS data are not representative, they may not be the best data to use. We believe that the state has provided sufficient basis for considering the available on-site and NWS data to be less representative than the WRF dataset, for a given year.

The state submitted a WRF dataset that includes only 1 year, 2016, of meteorological data. We have considered how this limitation should affect our intended designation for the area around TransAlta. As a result, without the 3 years of appropriate meteorological data, as well as the modeled error in the stack diameter, the EPA has a fair amount of uncertainty in determining whether or not TransAlta causes or contributes to a NAAQs violation, and therefore we are designating the area as unclassifiable.

The MMIF and AERMET processing was conducted in accordance with Appendix W and EPA guidance. The state used the ADJ_U* module in AERMET 16216 to improve the performance of AERMOD for low-wind stable conditions. The state provided no evaluation of the WRF performance but did provide references to the model verification efforts and records made publically available by the contractor, UWASD.

3.4. Emissions and Emissions-Related Data, Meteorology, Geography, and Topography for the Lewis County and Thurston County Area

These factors have been incorporated into the air quality modeling efforts and results discussed above. The EPA is giving consideration to these factors by considering whether they were properly incorporated and by considering the air quality concentrations predicted by the modeling. The EPA is concluding that without the three years of meteorological data, the TransAlta area should be designated as unclassifiable.

3.5. Jurisdictional Boundaries in Lewis County and Thurston County

Existing jurisdictional boundaries are considered for the purpose of informing the EPA's designation action for the area around TransAlta. Our goal is to base designations on clearly defined legal boundaries, and to have these boundaries align with existing administrative boundaries when reasonable.

The State of Washington is recommending that the entireties of Lewis and Thurston Counties be designated as a single attainment area.

The EPA believes that our intended single unclassifiable area, bounded by the external boundaries of the two counties, will have clearly defined legal boundaries, and we intend to find these boundaries to be a suitable basis for defining our intended unclassifiable area.

3.6. The EPA's Assessment of the Available Information for Lewis County and Thurston County

The EPA intends to determine that Lewis County and Thurston County have no violations and are not contributing to violations in any nearby areas. The modeling shows there are no violations in the modeled area which includes much of Lewis County and Thurston County and much of the surrounding counties. However, the EPA has determined the modeling submitted is not sufficient to determine attainment due to the insufficient temporal length of the meteorological inputs.

The modeling demonstrated there were no violations of the 1-hour SO_2 standard in the region modeled. The model results, shown in Figure 3, demonstrated no violations due to emissions from TransAlta across a region covering northwest Lewis County and southern Thurston County. Although the modeled region did not cover the entirety of the two counties, the EPA intends to determine that the demonstration is sufficient to conclude that the full extents of the two counties are in attainment, given the absence of other sources of SO_2 in or adjacent to these counties that likely could cause or contribute to NAAQS violations. Section 3.3.1 outlined the state's evaluation of the other emitter of SO_2 in the vicinity of Lewis and Thurston Counties. The only other emitter of SO_2 identified in the Lewis and Thurston Counties region was Cardinal Glass, located about 25 km southwest of TransAlta. Initial screen modeling demonstrated this source would not cause or contribute to violations of the standard in Lewis County. Given local wind climate and the distances involved, the EPA agrees with the state's assumption that sources in the Tacoma Tideflats were too far to contribute to air quality in the regions impacted by TransAlta emissions.

The modeling also demonstrates SO_2 impacts in adjacent counties from TransAlta emissions will likely not contribute to violations of the NAAQS. The modeling shows highest impacts within a few kilometers of the facility and some local peaks of higher concentration (but well within the standard) on high terrain 20 to 40 kilometers west of the facility.

In summary, TransAlta is the only source of SO_2 in Lewis and Thurston Counties exceeding the DRR threshold for required characterization and the modeling submitted by the state provided ample evidence that no violations of the SO_2 1-hour standard will occur. However, the modeling used does not satisfy the Appendix W guidance regarding the length of the prognostic meteorological dataset used. Although the State demonstrated with preliminary modeling that the 2016 meteorology resulted in significantly more conservative concentrations, this demonstration is unreliable because the approach used in the preliminary modeling used the MMIF-AERMOD approach instead of the required MMIF-AERMET approach for producing meteorological inputs for AERMOD. Therefore, there is the possibility the preliminary modeling results are not representative of the modeling results that would be produced by MMIF-AERMET based meteorological inputs. It is therefore the EPA's conclusion that the modeling submitted is insufficient to make a determination of attainment due to the insufficient length of the prognostic meteorological dataset.

3.7. Summary of Our Intended Designation for the Lewis County and Thurston County Area

After careful evaluation of the state's recommendation and supporting information, as well as all available relevant information, the EPA intends to designate Lewis County and Thurston County as unclassifiable for the 2010 SO_2 NAAQS. Specifically, the boundaries are comprised of the external county lines of Lewis and Thurston Counties combined into a single boundary.

Figure 4 shows the boundary of this intended designated area.

Figure 4. Boundary of the Intended Lewis and Thurston Counties Unclassifiable

4. Technical Analysis for Certain Other Counties of Washington

4.1. Introduction

The state has installed and began operations of new, approved SO_2 monitoring networks by January 1, 2017, for two sources of SO_2 emissions in Whatcom and Chelan counties. The source in Chelan County is near Douglas County. Table 2 indicates that the EPA does not intend to designate these three counties in Round 3. Accordingly, the EPA must designate all the other remaining counties of Washington by December 31, 2017. These counties are listed in Table 6. At this time, there are no air quality modeling results available to the EPA for these counties. In addition, there is no air quality monitoring data that indicate any violation of the 1-hour SO_2 NAAQS. Table 6 summarizes Washington's recommendations for these areas. Specifically, the state recommended that all areas in Washington except for Lewis, Thurston, Whatcom, Douglas, and Chelan Counties be designated as attainment/unclassifiable.

After careful review of the state's assessment, supporting documentation, and all available data, the EPA agrees with our interpretation of the state's recommendation for these areas, and intends to designate the counties listed in Table 6 as separate "unclassifiable/attainment" areas since these counties were not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS. Figure 7 shows the locations of these areas within Washington.

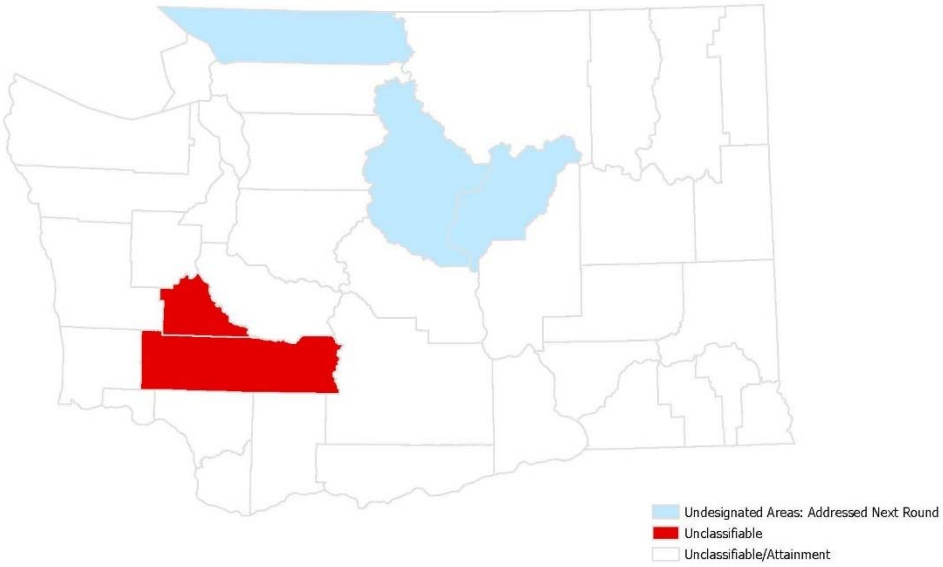
Table 6. Counties that the EPA Intends to Designate Unclassifiable/Attainment

County	Washington's Recommended Area Definition	Washington's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Adams County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Asotin County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Benton County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Clallam County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Clark County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Columbia County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Cowlitz County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Ferry County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment

County	Washington's Recommended Area Definition	Washington's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Franklin County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Garfield County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Grant County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Grays Harbor County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Island County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Jefferson County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
King County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Kittitas County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Kitsap County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Klickitat County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Lincoln County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Mason County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Okanogan County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Pacific County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Pend Oreille County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Pierce County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
San Juan County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Skagit County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Skamania County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Snohomish County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Spokane County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment

County	Washington's Recommended Area Definition	Washington's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Stevens County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Wahkiakum County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Walla Walla County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Whitman County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment
Yakima County	Entire County	Unclassifiable/ Attainment	Same as state's	Unclassifiable/ Attainment

Figure 5. The EPA's Intended Unclassifiable/Attainment Designations for Certain Counties in Washington



As referenced in the Introduction (*see* Table 2), Whatcom, Douglas, and Chelan Counties are associated with sources for which Washington has installed and begun timely operation of a new, approved SO_2 monitoring network and thus are required to be designated by December 31, 2020, but are not being addressed at this time.

4.2. Air Quality Monitoring Data for Certain Other Counties of Washington

No monitoring data relevant to the designation for the remaining counties in Washington addressed in this section were provided by the State of Washington with its recommendations.

4.3. Jurisdictional Boundaries in Certain Other Counties of Washington

Existing jurisdictional boundaries are considered for the purpose of informing the EPA's designation action for the remaining counties in Washington addressed in this section. Our goal is to base designations on clearly defined legal boundaries, and to have these boundaries align with existing administrative boundaries when reasonable.

Our intended unclassifiable/attainment areas, each bounded by county lines, will have clearly defined legal boundaries, and we intend to find these boundaries to be suitable bases for defining our intended unclassifiable/attainment areas.

4.4. The EPA's Assessment of the Available Information for Certain Other Counties of Washington

These counties were not required to be characterized under 40 CFR 51.1203(c) or (d) and EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the area may (i) not be meeting the NAAQS, or (ii) contribute to ambient air quality in a nearby area that does not meet the NAAQS. These counties therefore meet the definition of an "unclassifiable/attainment" area. Therefore, the EPA intends to designate the remaining counties of Washington listed in Table 6 (all counties except Lewis, Thurston, Whatcom, Douglas, and Chelan Counties) as separate unclassifiable/attainment areas for the 2010 SO_2 NAAQS.

Our intended unclassifiable/attainment areas, bounded by the boundaries of each county listed in Table 6, will have clearly defined legal boundaries, and we intend to find these boundaries to be a suitable basis for defining our intended unclassifiable/attainment area.

4.5. Summary of Our Intended Designations for Certain Other Counties of Washington

After careful evaluation of the state's recommendation and supporting information, as well as all available relevant information, the EPA intends to designate the remaining counties of Washington listed in Table 6 (all counties except Lewis, Thurston, Whatcom, Douglas, and Chelan Counties) as separate unclassifiable/attainment areas for the 2010 SO_2 NAAQS. Specifically, the intended boundary of each area is the border of the county.

Figure 7 above shows the boundaries of the intended Washington unclassifiable/attainment areas.

At this time, our intended designations for the state only apply to these areas and the Lewis County and Thurston County area presented in this technical support document. The EPA

intends to evaluate and designate all remaining undesignated areas in Washington by December 31, 2020.