

Technical Support Document:

Chapter 25

Intended Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard for Nebraska

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 (SO₂) primary national ambient air quality standard (NAAQS) (2010 SO₂ 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, EPA has defined a nonattainment area as an area that the EPA has determined violates the 2010 SO₂ 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 EPA as 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.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 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.

This technical support document (TSD) addresses designations for nearly all remaining undesignated areas in Nebraska for the 2010 SO₂ 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 SO₂ NAAQS for selected areas of the country.² 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 SO₂ NAAQS. After the Round 3 designations are completed, the only remaining undesignated areas will be those where a state has installed and begun timely operation of a new SO₂ monitoring network meeting EPA specifications referenced in EPA’s SO₂ Data Requirements Rule (DRR) (80 FR 51052). The EPA is required to designate those remaining undesignated areas by December 31, 2020.

Nebraska submitted its first recommendation regarding designations for the 2010 1-hour SO₂ NAAQS on June 1, 2011. The state submitted air quality analyses and updated recommendations on September 18, 2015, regarding the areas around three specific sources, the Omaha Public Power District (OPPD) Nebraska City, Nebraska Public Power District (NPPD) Sheldon Station, and NPPD Gerald Gentleman power plants. The September 18, 2015, submission is not relevant to this TSD, as the areas around these sources have already been designated. The state submitted additional air quality analysis and an updated recommendation regarding the area around the George Whelan Energy Center in Adams County, Nebraska, on January 12, 2017. In our intended designations, we have considered all the submissions from the state, except where a later submission indicates that it completely replaces an element of an earlier submission. For the areas in Nebraska that are part of the Round 3 designations process, Table 1 identifies the EPA’s intended designations and the counties or portions of counties to which they would apply. It also lists Nebraska’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 Nebraska

Area/County	Nebraska’s Recommended Area Definition	Nebraska’s Recommended Designation	EPA’s Intended Area Definition	EPA’s Intended Designation
Whelan Energy Center located in Adams County, Nebraska	Area around the Whelan Energy Center	Attainment	All of Adams County	Unclassifiable

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).

Area/County	Nebraska's Recommended Area Definition	Nebraska's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Remaining Undesignated Areas to Be Designated in this Action *	The state made no recommendation	Unclassifiable (in 2011 submittal)	Each county in Nebraska with the exception of Adams, Lincoln, Lancaster, Otoe, and Douglas Counties, as separate designated areas	Unclassifiable/Attainment

* Except for the area that is associated with the source for which Nebraska elected to install and timely began operation of a new, approved SO₂ monitoring network meeting EPA specifications referenced in the EPA's SO₂ DRR (*see* Table 2), the EPA intends to designate the remaining undesignated counties (or portions of counties) in Nebraska as "unclassifiable/attainment" as these areas were not required to be characterized by the state under the DRR and the EPA does not have available information including (but not limited to) appropriate modeling analyses and/or monitoring data that suggests that the areas 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 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 Nebraska elected to install and began operation of a new, approved SO₂ 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 SO₂ emissions sources around which each new, approved monitoring network has been established.

Table 2 – Undesignated Area Which the EPA Is Not Addressing in this Round of Designations and Associated Source

Area	Source
Douglas County	OPPD North Omaha Station

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. The EPA designated Lancaster County as unclassifiable in 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 designation guidance for the 2010 SO₂ 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 SO₂ 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 SO₂, the EPA released its most recent version of a draft document titled, “SO₂ 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 SO₂ Primary National Ambient Air Quality Standard) and Chapter 2 (Intended Round 3 Area Designations for the 2010 1-Hour SO₂ Primary National Ambient Air Quality Standard for States with Sources Not Required to be Characterized).

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 SO₂ monitoring network meeting EPA specifications referenced in EPA’s” SO₂ 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 area associated with one +source in Nebraska meeting DRR emissions criteria that Nebraska chose to characterize by using air dispersion modeling and other areas not specifically required to be characterized by the state under the DRR.

Because many of the intended designations have been informed by available modeling analyses, this preliminary TSD is structured based on the availability of such modeling information. Section 3 of this document addresses Adams County, Nebraska, for which the state provided air quality modeling results. The remaining to-be-designated counties are then addressed together in section 4.

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 SO₂ monitoring network design, to advise states that have elected to install and begin operation of a new SO₂ monitoring network. *See* Draft SO₂ NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, February 2016, <https://www.epa.gov/sites/production/files/2016-06/documents/so2monitoringtad.pdf>.

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 SO₂ NAAQS – The primary NAAQS for SO₂ 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 SO₂ 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 Adams County, Nebraska Area

3.1. Introduction

The EPA must designate the Adams County area by December 31, 2017, because the area has not been previously designated and Nebraska has not installed and begun timely operation of a new, approved SO₂ monitoring network to characterize air quality in the vicinity of any source in Adams County.

3.2. Air Quality Modeling Analysis for the Adams County Area Addressing the Whelan Energy Center

3.2.1. Introduction

This section 3.2 presents all the available air quality modeling information for a portion of Adams County that includes the George Whelan Energy Center. (This portion of Adams County will often be referred to as “the Adams County area” or “the Whelan area” within this section 3) This area contains the following SO₂ source around which Nebraska was required by the DRR to characterize SO₂ air quality, or alternatively to establish an SO₂ emissions limitation of less than 2,000 tons per year:

- The Gerald Whelan Energy Center facility emitted 2,000 tons or more annually. Specifically, Whelan emitted 2,899 tons of SO₂ in 2014. This source meets the DRR criteria and thus is on the SO₂ DRR Source list, and Nebraska has chosen to characterize it via modeling.

In its January 12, 2017, submission, Nebraska recommended that the area surrounding the Whelan facility be designated as attainment based in part on an assessment and characterization of air quality impacts from this facility and other nearby sources that may have a potential impact in the area where the 2010 SO₂ 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 agrees with the state’s recommendation for the area, and intends to designate the area as unclassifiable. Our reasoning for this intended designation is explained in a later section of this TSD, after all the available information is presented.

The area that the state has assessed via air quality modeling is located in south-central Nebraska near the city of Hastings (population ~ 25,000) in Adams County.

As seen in Figure 1 below, the Whelan facility is located 5 kilometers (km) east from Hastings, Nebraska. Also included in the figure are other nearby emitters of SO₂.⁵ These are Chief Ethanol located 0.5 km to the northwest of Whelan, Ag Processing Inc. (AGP) located 2.5 km to the northwest of Whelan, and Platte Generating Station located 30 km to the north of Whelan. There are no other emitters above 100 tpy of SO₂ in Adams County.

The EPA's intended unclassifiable designation boundary for the Adams County area is the boundary of Adams County.

Figure 1. Map of Adams County and Surrounding Areas Addressing the Whelan Energy Center. The Whelan Energy Center facility is located by the red circle and the nearby facilities included in the modeling are located by the blue circles.



⁵ All other SO₂ emitters based on information in the 2014 NEI are shown in Figure 1. Nebraska included all SO₂ sources within 40 km of Whelan in the modeling analysis.

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.

For this area, the EPA received and considered the modeling assessment provided by Nebraska. We received no assessments from other parties.

3.2.2. Modeling Analysis Provided by the State

3.2.2.1. Model Selection and Modeling Components

The EPA's Modeling TAD notes that for area designations under the 2010 SO₂ 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 15181 with the regulatory default options, the most recent at the time the modeling analysis was conducted. On January 17, 2017, EPA published its revision to Appendix W – Guideline to Air Quality Models.⁷ Since the publication of Appendix W, AERMOD version 16216r has since become the regulatory model version. There were no updates from 15181 to 16216r that would significantly affect the concentrations predicted here. EPA agrees that version 15181 is appropriate for use in the modeling analysis. A discussion of the state's approach to the individual components is provided in the corresponding discussion that follows, as appropriate.

3.2.2.2. Modeling Parameter: Rural or Urban 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 SO₂ modeling, the urban/rural determination is important because AERMOD invokes a 4-hour half-life for urban SO₂ 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 rural determination was made based on land cover around the area of the Whelan facility. The Guideline on Air Quality Models, Appendix W (November 2005) section 7.2.3 instructs users to define the urban or rural

classification of the area considering land use and population density. The land use procedure in Appendix W section 7.2.3(c) classifies urban areas based on industrial, commercial, and residential land use over 50% within a 3 km radius of the source. The population density threshold of the 3 km radius surrounding each facility is compared to the urban threshold of 750 people per square kilometer. Both the land use and population density guidelines in Appendix W were used to assess the urban characteristics of the area and it was determined to be rural. As previously mentioned, Whelan is located 5 km east of Hastings, Nebraska and the land around the Whelan facility is predominately farmland. Thus, the EPA agrees with the state that rural mode is appropriate for this analysis.

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

The Modeling 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 SO₂ 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 SO₂ concentrations.

The source of SO₂ emissions subject to the DRR in this area is described in the introduction to this section. For the Whelan area, the state has included three other emitters of SO₂ within 40 km of Whelan 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 SO₂ NAAQS exceedances in the area of analysis and any potential impact on SO₂ air quality from other sources in nearby areas. In addition to Whelan, the other emitters of SO₂ included in the area of analysis are as follows: Chief Ethanol (Chief) located 0.5 km to the northwest of Whelan, Ag Processing Inc. (AGP) located 2.5 km to the northwest of Whelan, and Platte Generating Station (PGS) located 30 km to the north of Whelan, in Hall County. No other sources beyond 40 km were determined by the state to have the potential to cause concentration gradient impacts within the area of analysis.

The grid receptor spacing for the Whelan area of analysis is shown in Figure 2 and described by the state in its submittal as follows:

- 50-meter spacing on the fence line
- 50-meter spacing from the fence to 1 kilometer from the fence
- 100-meter spacing from 1 kilometer to 2 kilometers from the fence
- 250-meter spacing from 2 kilometers to 5 kilometers from the fence
- 500-meter spacing from 5 kilometers to 7 kilometers from the fence
- 1000-meter spacing from 7 to 40 kilometers in the north direction from the fence and from 7 to 10 km in all other direction.

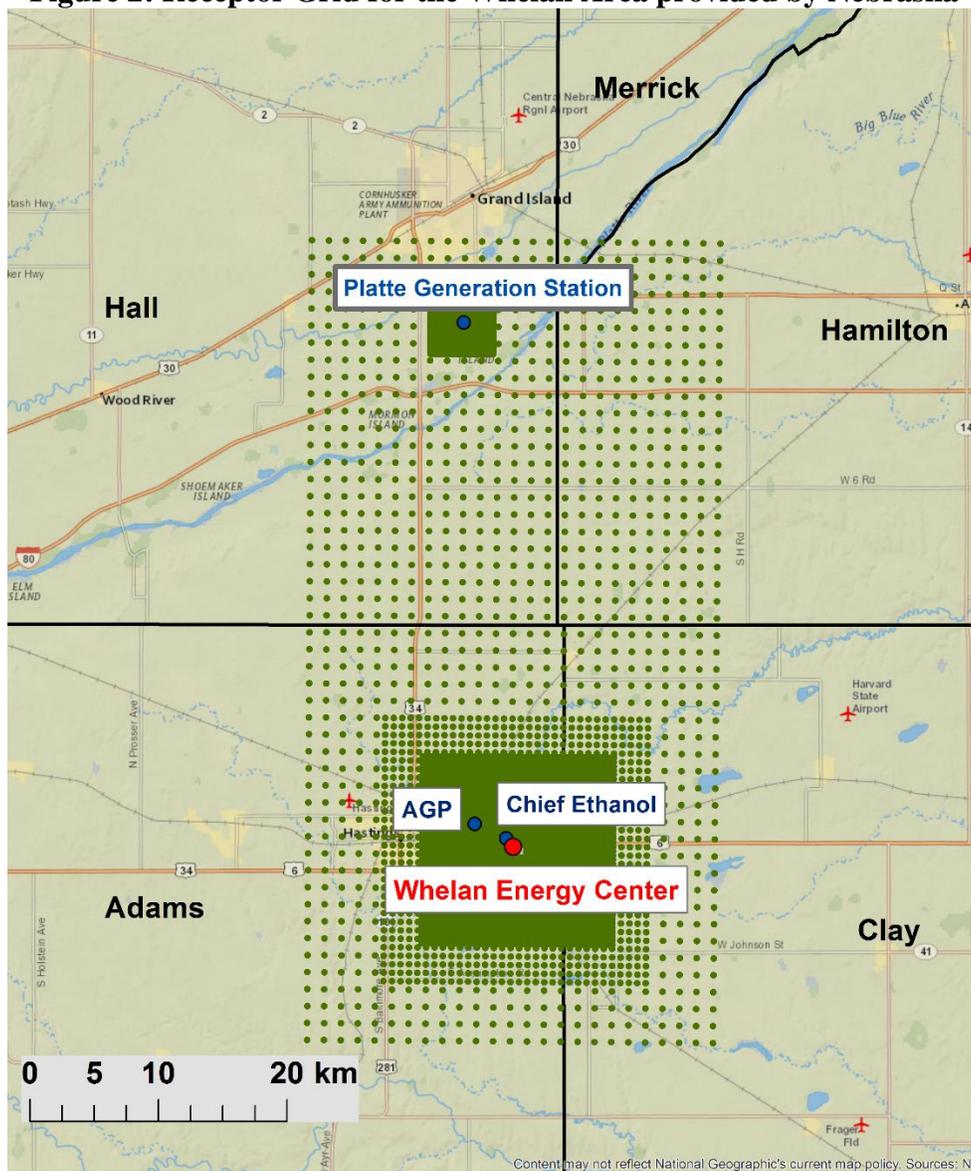
In addition to the grid centered on Whelan as described above, an enhanced density grid of additional receptors is placed around the nearby sources of AGP, Chief and PGS. The grids at AGP, Chief and PGS extend out to at least ten kilometers from each facility.

The receptor network contained 12,045 receptors, and the network covered the portions of four counties: the northeastern portion of Adams County, the northwestern portion of Clay County, the southwestern portion of Hamilton County and the southeastern portion of Hall County. Figure 2 was produced by the EPA from the modeling outputs provided by the state.

The state placed receptors for the purposes of this designation effort in locations that would be considered ambient air relative to the Whelan facility, including other facilities' property with the exceptions of locations described in Section 4.2 of the Modeling TAD as not being feasible locations for placing a monitor. Receptors were excluded within the Whelan Facility property, which restricts public access via a fence that the EPA verified through satellite imagery.

The EPA concludes that the receptors used in the Nebraska submittal are appropriate for characterizing the air quality around the Whelan facility.

Figure 2: Receptor Grid for the Whelan Area provided by Nebraska



3.2.2.4. 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.

As mentioned previously, the state explicitly modeled the Whelan facility along with all sources of SO₂ within 40 km of Whelan, including Chief, AGP, and PGS. The state used actual stack heights in

conjunction with actual emissions for the Whelan facility. The state also followed the EPA's good engineering practices (GEP) policy in conjunction with allowable emissions limits modeled for the nearby sources of Chief and AGP. For Chief and AGP, the state modeled using allowable emissions with actual stack heights since the actual stack heights are below the GEP stack height. For PGS, the state modeled allowable emissions with the actual stack height (~125 meters), which counters the recommendations of the modeling TAD. The actual stack height for PGS is 6 meters above the post 1979 GEP formula stack height of 119 meters. The difference in modeled stack height versus formula GEP stack height would cause minimal impacts in the area around Whelan, which, as mentioned above, is 40 km away.

Based on review of available information, the state adequately characterized Whelan's and AGP's building layout and location. The AERMOD component BPIPFRM was used to assist in addressing building downwash. No building information was provided for Chief. It appears the state correctly characterized additional stack parameters for all modeled facilities, e.g., exit temperature, exit velocity, location, and diameter.

3.2.2.5. 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 and enforceable.

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, where a facility that has recently adopted a new federally enforceable emissions limit or implemented other federally enforceable mechanisms and control technologies to limit SO₂ 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 SO₂ 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 Whelan and three other emitters of SO₂ within 40 km in the area of analysis. For this area of analysis, the state has opted to use a hybrid approach, where emissions from certain facilities are expressed as actual emissions, and those from other facilities are expressed as PTE rates. The facilities in the state’s modeling analysis and their associated actual or PTE rates are summarized below.

For Whelan, the state provided annual actual SO₂ emissions between 2013 and 2015. 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 SO₂ Emissions Between 2013 – 2015 from Facilities in the Area of Analysis for the Adams County Area.

Facility Name	SO ₂ Emissions (tpy)		
	2013	2014	2015
Whelan Energy Center	2,131	2,899	1,903

For Whelan, the actual hourly emissions data were obtained from CEMs, which have been collected and reported consistent with EPA’s Acid Rain Program. The EPA summed the temporally varying CEMs data used in the modeling for Whelan’s Units 1 and 2 to compare to the emissions Whelan reported to the CAMD database. For the years 2013 and 2015, the sum of the temporally varying CEMs data equaled the annual emissions reported to CAMD. However, for the year 2014, the sum of the modeled CEMs emissions for was 2,821 tons, about 2.7% lower than the 2,899 tons reported in the EPA Clean Air Markets Database (CAMD). This difference is discussed in more detail later in this section 3.2.2.5.

For the Chief, AGP, and PGS facilities, the state provided PTE values. This information is summarized in Table 4. A description of how the state obtained hourly emission rates is given below this table.

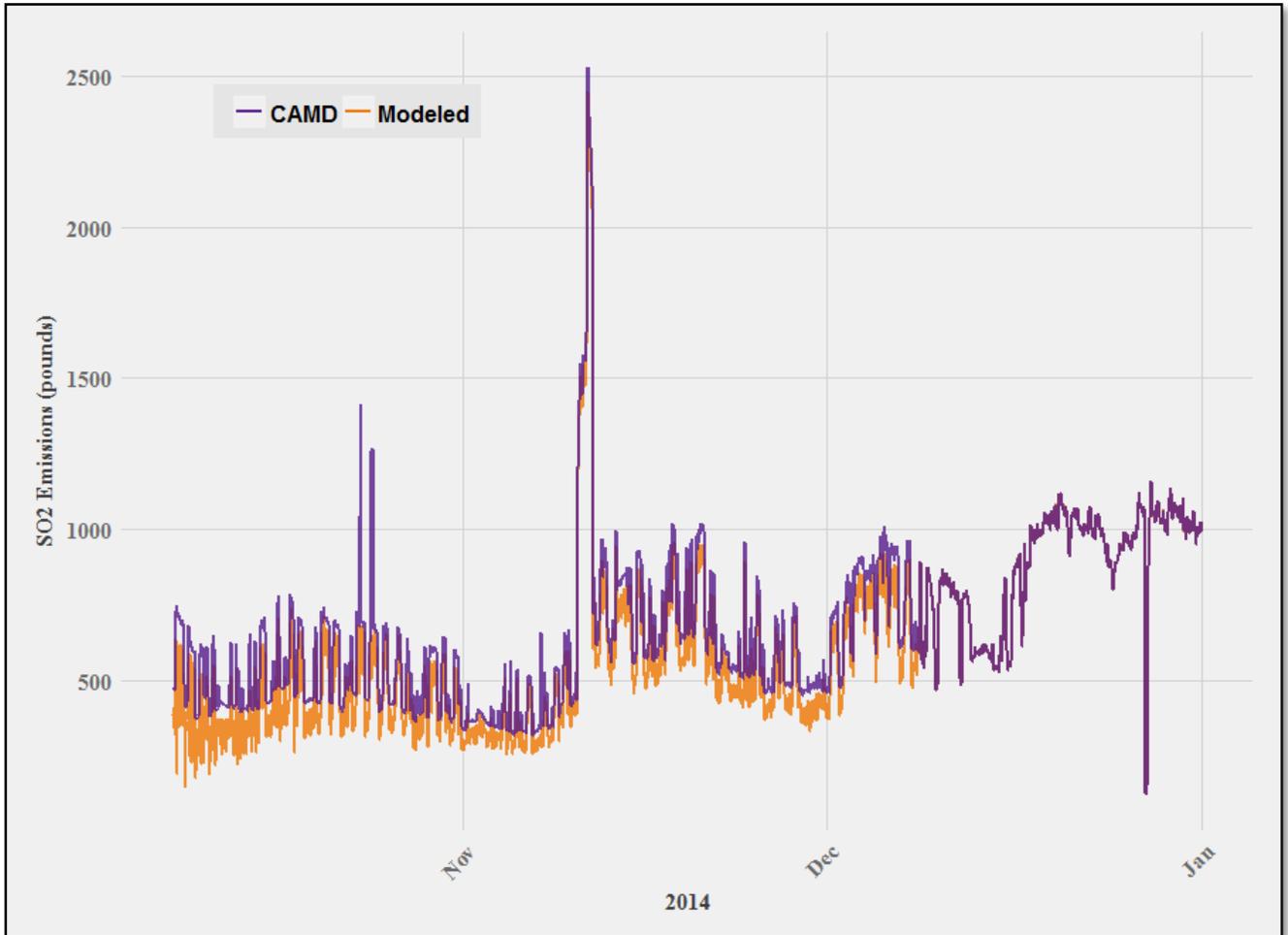
Table 4. SO₂ Emissions based on PTE from Other Facilities in the Area of Analysis for the Adams County Area. For comparison, the facilities’ actual emissions from the 2014 NEI are also provided.

Facility Name	SO ₂ Emissions (tpy, based on PTE)	Actual SO ₂ Emissions (tpy) for 2014
Chief Ethanol (Chief)	289	239
Ag Processing (AGP)	184	21
Platte Generating Station (PGS)	5,508	1,452
Total Emissions from Facilities in the Area of Analysis Modeled Based on PTE	5,981	N/A

The PTE in tons per year for each of Chief, AGP, and PGS was determined by the state based on its existing permitted emissions limit. For AGP and Chief, the state determined hourly emissions corresponding to this annual allowable emission value by assuming constant emissions for each hour of the year (annual PTE / 8760 hours). For PGS, the constant hourly emission input was set equal to the permitted 3-hour average emission rate in lb/MMBtu multiplied by the capacity of the boiler in MMBtu/hour.

As stated above, time-varying CEMs data was used as input for the Whelan facility. The EPA observed discrepancies (Figure 3) between the CEMs data used in the modeling compared to hourly CEMs obtained directly from CAMD for the period October 2014 – December 2014. The hourly emissions data reported by CAMD is consistently greater than the hourly modeled rates for this time period. The EPA further notes that the discrepancy corresponds to when the CAMD data was flagged with “Measured and Substitute”, which occurred for 2,354 hours during this time period. The “Measure and Substitute” flag indicates that the CEMs flow monitor was not operating correctly, although the CEMs SO₂ concentration monitor was operating correctly, and the CEMs emission rates submitted to CAMD are adjusted by CAMD’s software (the flow part of the calculation is “Substituted”) to account for missing flow monitor data. The “Substituted” flow data assumes a maximum flow rate based on past operations, and therefore the emissions reported by CAMD would likely be overestimated and conservative for this period. The state is not required to use the variable continuous emissions provided by CAMD, but EPA notes that the modeled emission rates are lower than the rates available from CAMD. during the period October 2014 – December 2014. The EPA will discuss the appropriateness of the emission rates used in the model in a later section of this TSD.

Figure 3: Hourly-varying CEMs data reported to the EPA Clean Air Markets Database (CAMD) (purple trace) and the hourly CEMs input used in the Whelan modeling analysis (orange trace).



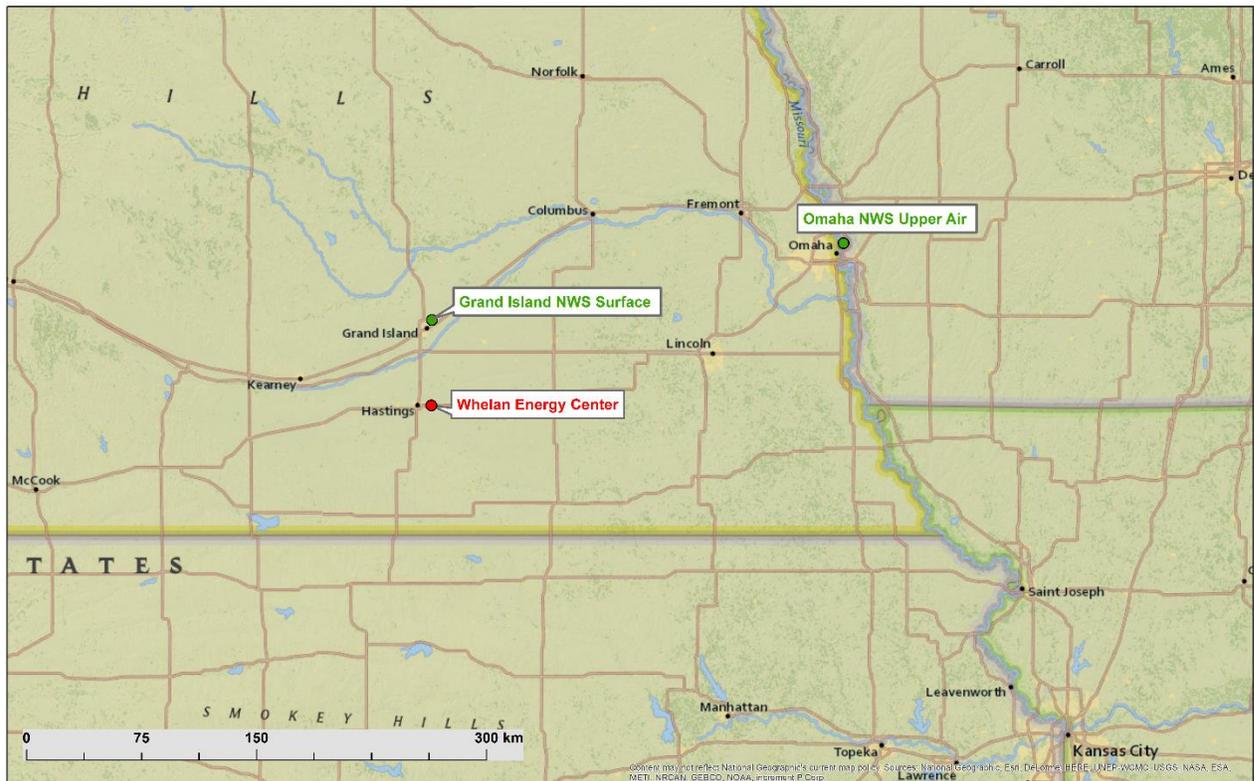
3.2.2.6. Modeling Parameter: Meteorology and Surface Characteristics

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 Adams County area, the state selected the surface meteorology from the NWS station in Grand Island, Nebraska, located at [40.961320°N, 98.313040°W], 40 km to the north of Whelan and coincident upper air observations from a different NWS station, located in Omaha, Nebraska, at [41.30°N, 95.90°W], 215 km to the northeast of Whelan as best representative of meteorological conditions within the area of analysis.

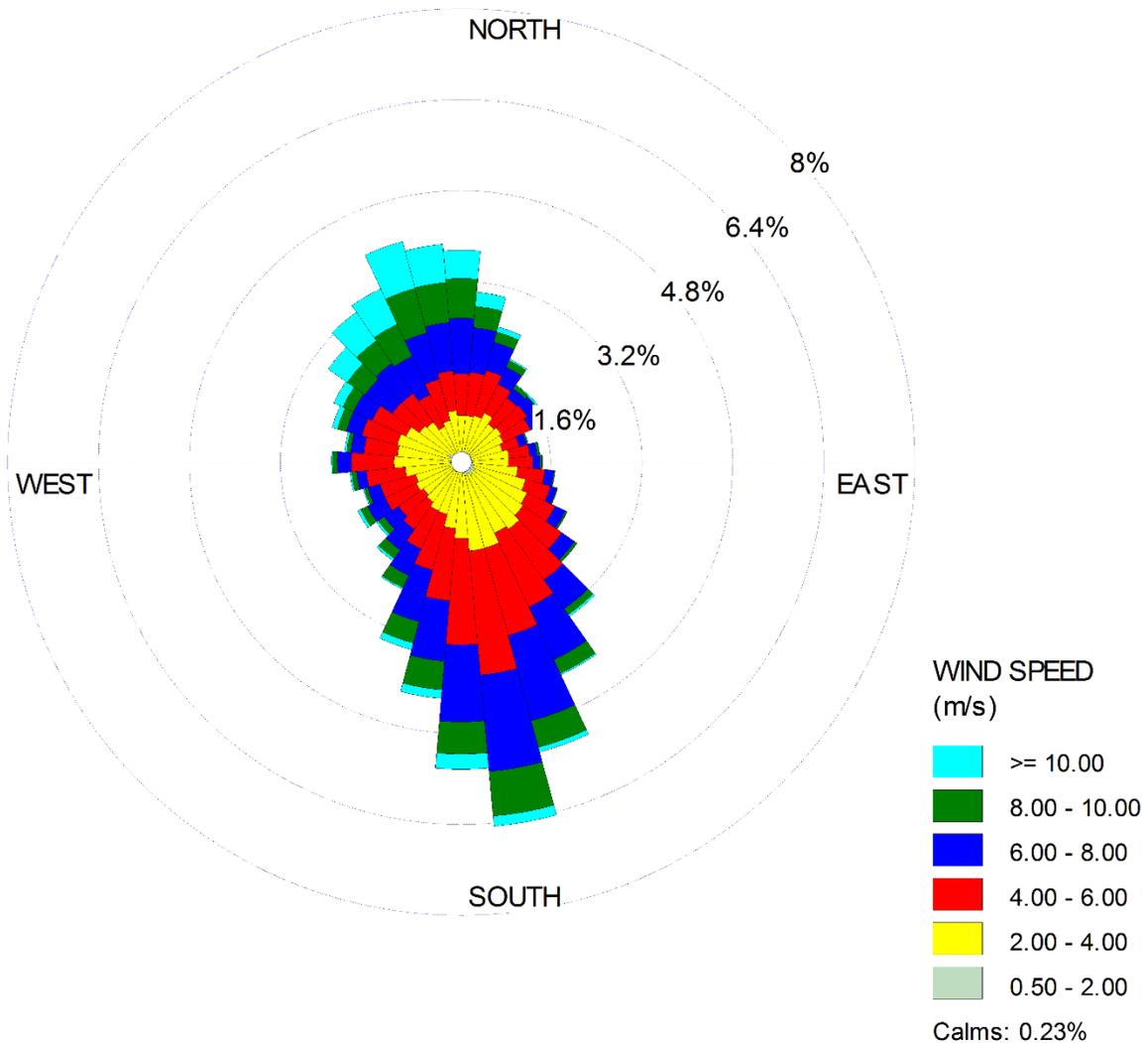
The state used AERSURFACE version 13016 using data from the Grand Island, Nebraska NWS station to estimate the surface characteristics (albedo, Bowen ratio, and surface roughness (z_o)) of the area of analysis. Albedo is the fraction of solar energy reflected from the earth back into space, the Bowen ratio is the method generally used to calculate heat lost or heat gained in a substance, and the surface roughness is sometimes referred to as “ z_o ”) of the area of analysis. The state estimated values for 12 spatial sectors out to 1 km at seasonal temporal resolution for average conditions. In Figure 4, generated by the EPA, the locations of the surface and upper air NWS stations are shown relative to the area of analysis.

Figure 4: Area of Analysis and the NWS stations in the Adams County Area. The surface meteorology NWS is located in Grand Island, Nebraska, and the upper air meteorology NWS is located in Omaha, Nebraska.



As part of its recommendation, the state provided the 3-year surface wind rose for the Grand Island, Nebraska NWS site. In Figure 5, the frequency and magnitude of wind speed and direction are defined in terms of from where the wind is blowing. Typical of the Great Plains region, the winds have a predominant north or south direction and strong winds (i.e., wind speeds > 8 m/s) occurred on approximately 15% of the observations.

Figure 5: Adams County Area Cumulative Annual Wind Rose for Years 2013 – 2015



Meteorological data from the above surface and upper air NWS stations 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 presented in Section 8.3 of Appendix W to 40 CFR Part 51 titled, “Guideline on Air Quality Models.” in the processing of the raw meteorological data into an AERMOD-ready format, and used AERSURFACE to best represent surface characteristics.

Hourly surface meteorological data records are read by AERMET, and include all the necessary elements for data processing. However, wind data taken at hourly intervals may not always portray wind conditions for the entire hour, which can be variable in nature. Hourly wind data may also be overly prone to indicate calm conditions, which are not modeled by AERMOD. In order to better represent actual wind conditions at the meteorological tower, wind data of 1-minute duration was provided from the Grand Island, Nebraska NWS but in a different formatted file to be processed by a separate preprocessor, AERMINUTE. These data were subsequently integrated into the AERMET processing to produce final hourly wind records of AERMOD-ready meteorological data that better estimate actual hourly average conditions and that are less prone to over-report calm wind conditions. This allows AERMOD to apply more hours of meteorology to modeled inputs, and therefore produce a more complete set of concentration estimates. As a guard against excessively high concentrations that could be produced by AERMOD in very light wind conditions, the state set a minimum threshold of 0.5 meters per second in processing meteorological data for use in AERMOD. In setting this threshold, no wind speeds lower than this value would be used for determining concentrations. This threshold was specifically applied to the 1-minute wind data.

The EPA believes the NWS stations used are representative for the meteorological conditions near the Whelan facility. Overall, the methodology used by the state to process the meteorological data for input in AERMOD follows EPA guidance (e.g., use of AERSURFACE, AERMINUTE, etc.).

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

The terrain in the area of analysis is best described as flat with occasional rolling hills and small river or creek valleys. 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 Database. The source of the elevation data incorporated into the model is from the USGS National Elevation Dataset (NED). The state appropriately inputted terrain surrounding the Whelan facility using the NED data based on North American Datum (NAD) 83 for horizontal locations and NAD88 for elevation.

3.2.2.8. Modeling Parameter: Background Concentrations of SO₂

The Modeling TAD offers two mechanisms for characterizing background concentrations of SO₂ 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 chose the “tier 1” approach, and based the background concentration on the 2013-2015 design value from the Van Buren County, Iowa, monitor (AQS site ID: 191770006). The location of the Van Buren site in comparison to the Whelan facility is shown in Figure 6.

The single value of the background concentration for this area of analysis was determined by the state to be 8 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), equivalent to 3 ppb when expressed without significant figures,⁶ and that value was incorporated into the final AERMOD results.

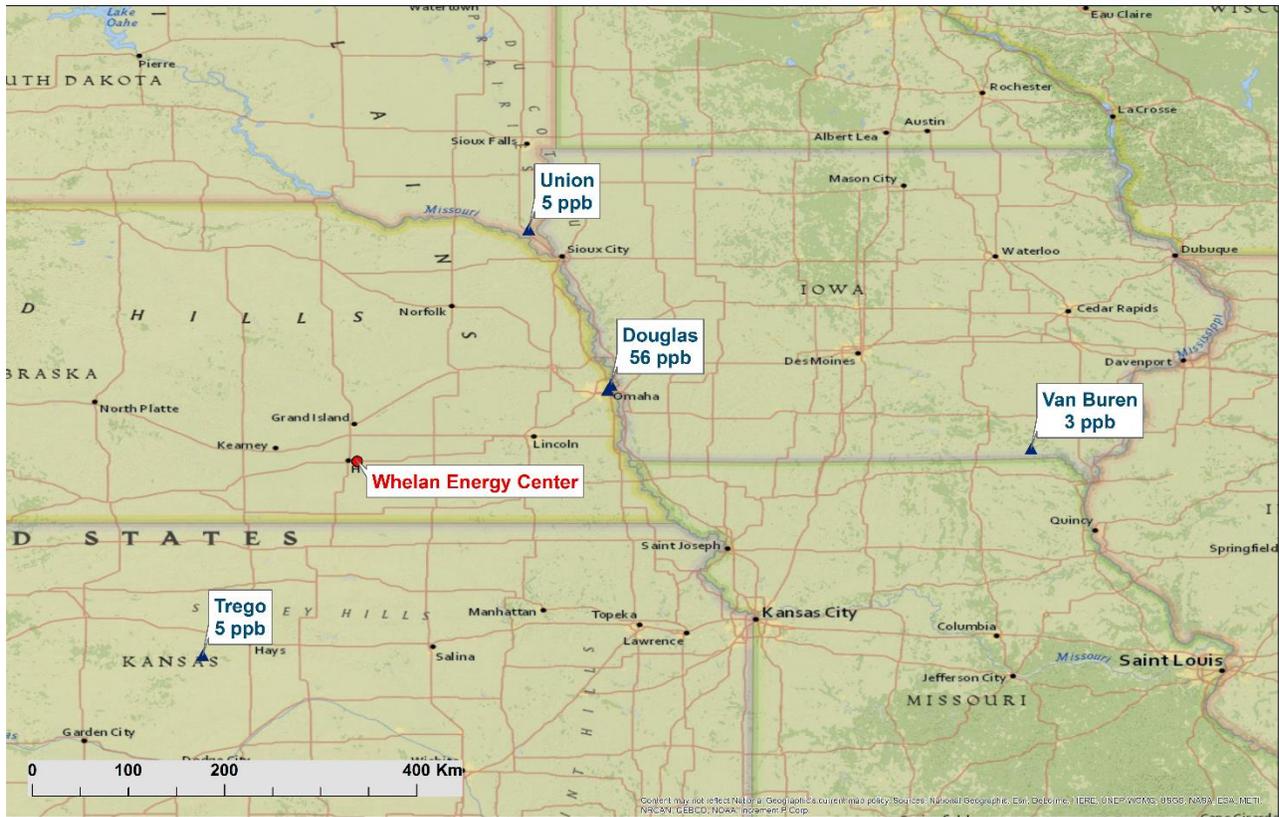
Figure 6 shows the potential sites of monitors that could be used to characterize background concentrations of SO_2 for the Whelan facility modeling analysis. SO_2 monitoring is limited in the rural areas surrounding the Whelan facility, with the closest monitor located over 200 km away in urban Omaha, Nebraska. The state decided to use the Van Buren County, Iowa, monitor for two primary reasons. One, no SO_2 monitors are located in the state of Nebraska outside of the two located in Omaha, Nebraska. The two sites in Omaha are influenced by local emissions from coal-fired EGUs and would not represent the rural area around Whelan. Second, the Van Buren site is used by the state of Iowa as its default SO_2 background concentration for its state-run New Source Review permitting program.⁷ The Van Buren site is not located near any sources of SO_2 emissions and provides a regional representation of natural background levels. The state of Nebraska also chose the Van Buren site as representative background for the Whelan area since the Nebraska and Iowa share similar characteristics (e.g., land-use, meteorology, etc.).

The Van Buren, Iowa, site is over 500 km away from the Whelan facility. Two regional SO_2 monitors do exist within 250 and 300 km. The Trego County, Kansas, monitor (design value of 5 ppb) is 275 km to the southwest and the Union County, South Dakota monitor (design value of 5 ppb) is 250 km to the northeast of Whelan. Both of these monitors would have represented a slightly more conservative background when compared to the Van Buren site (design value of 3 ppb), but there are large distances between these three monitors and the Adams County Area and the EPA finds the state's use of the Van Buren site acceptable.

⁶ The SO_2 NAAQS level is expressed in ppb but AERMOD gives results in $\mu\text{g}/\text{m}^3$. The conversion factor for SO_2 (at the standard conditions applied in the ambient SO_2 reference method) is 1ppb = approximately 2.619 $\mu\text{g}/\text{m}^3$.

⁷ Iowa Department of Natural Resources (IDNR) Technical Support Document for Background Concentrations used in dispersion modeling (<http://www.iowadnr.gov/Environmental-Protection/Air-Quality/Modeling/Dispersion-Modeling/Background-Data>).

Figure 6: Background monitor locations and 1-hr SO₂ Design Values (ppb) in the vicinity of Adams County Area of Analysis. The state chose the Van Buren County, Iowa monitor to characterize background concentrations for the Whelan modeling analysis.



3.2.2.9. Summary of Modeling Inputs and Results

The AERMOD modeling input parameters for the Adams County area of analysis are summarized below in Table 5.

Table 5: Summary of AERMOD Modeling Input Parameters for the Area of Analysis for the Adams County Area

Input Parameter	Value
AERMOD Version	15181
Dispersion Characteristics	Rural
Modeled Sources	4
Modeled Stacks	6
Modeled Structures	35
Modeled Fencelines	2
Total receptors	12,045
Emissions Type	Mixed/Hybrid of actual and allowable
Emissions Years	2013-2015 for actuals
Meteorology Years	2013-2015
NWS Station for Surface Meteorology	Grand Island, Nebraska
NWS Station Upper Air Meteorology	Omaha, Nebraska
NWS Station for Calculating Surface Characteristics	Grand Island, Nebraska
Methodology for Calculating Background SO ₂ Concentration	Tier 1 Van Buren County, Iowa 2013-2015 Design Value (AQS ID: 191770006)
Calculated Background SO ₂ Concentration	8 µg/m ³

The results presented below in Table 6 show the magnitude and geographic location of the highest predicted modeled concentration based on the input parameters.

Table 6: Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO₂ Concentration for the Area of Analysis for the Adams County Area

Averaging Period	Data Period	Receptor Location [UTM zone 14]		99 th percentile daily maximum 1-hour SO ₂ Concentration (µg/m ³)	
		UTM/Latitude	UTM/Longitude	Modeled concentration (including background)	NAAQS Level
99th Percentile 1-Hour Average	2013-2015	557950	4493250	188.7	196.4*

*Equivalent to the 2010 SO₂ NAAQS of 75 ppb using a 2.619 µg/m³ conversion factor.

The state’s modeling indicates that the highest predicted 99th percentile daily maximum 1-hour concentration within the chosen modeling domain is 188.7 µg/m³, equivalent to 72.0 ppb. This modeled concentration included the background concentration of SO₂, and is based on a mixture of actual and permitted allowable emissions from the facility/facilities. Figure 7 shows the modeling results throughout the 40 km receptor grid and Figure 8 provides the results around the Whelan facility and indicates that the maximum predicted value occurred about 0.8 km to the north-northwest of the Whelan facility. The state’s receptor grid is also shown in Figure 7 and 8. Figure 7 and Figure 8 were produced by the EPA from the modeling outputs provided by the state.

Figure 7: Maximum Predicted 99th Percentile Daily Maximum 1-Hour SO₂ Concentrations for the Area of Analysis for the Adams County Area. The modeled receptor locations are shown with “+”. The maximum modeled design value is 0.8 km to the north of Whelan at 188.7 µg/m³ with background concentration.

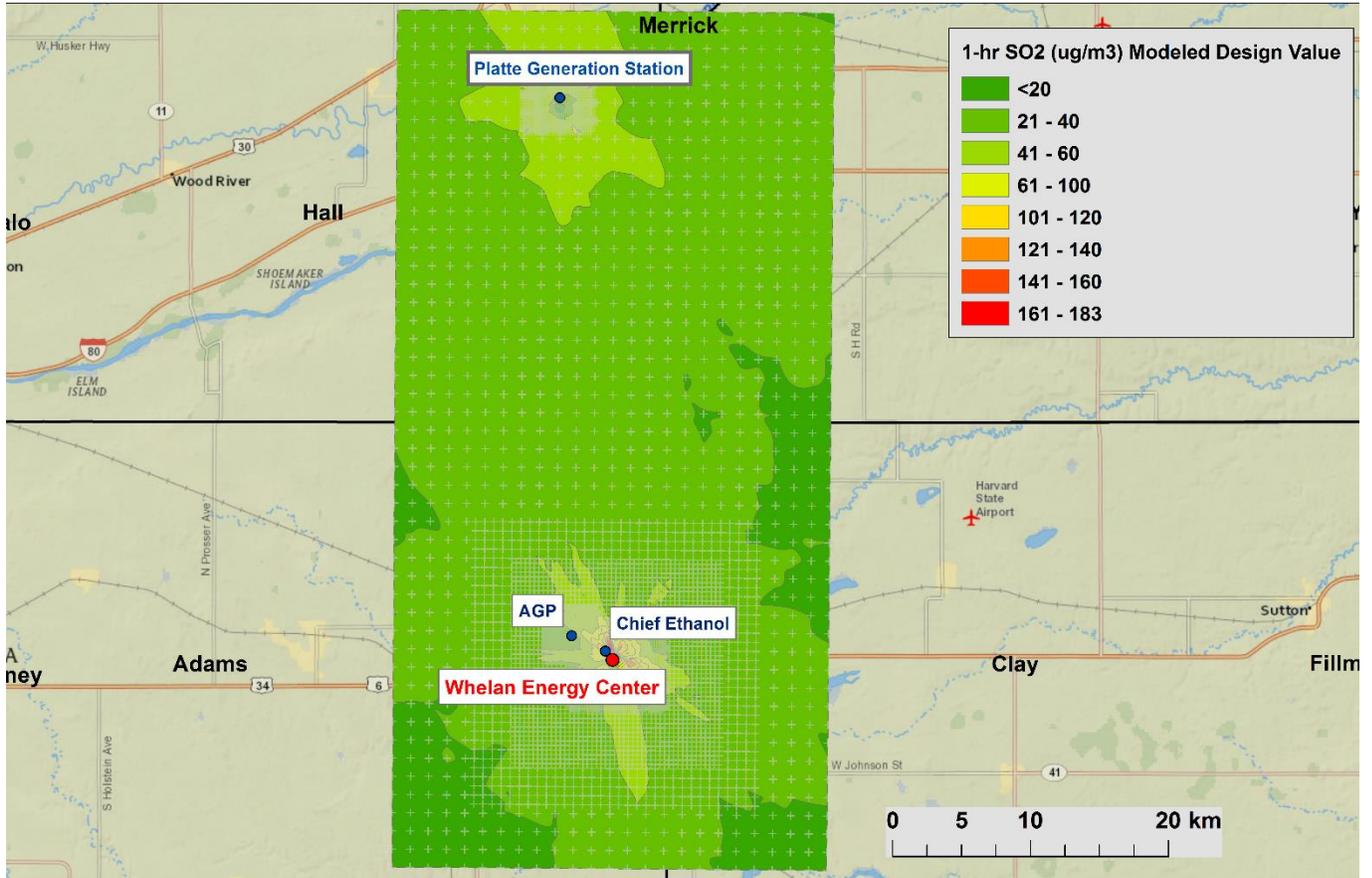
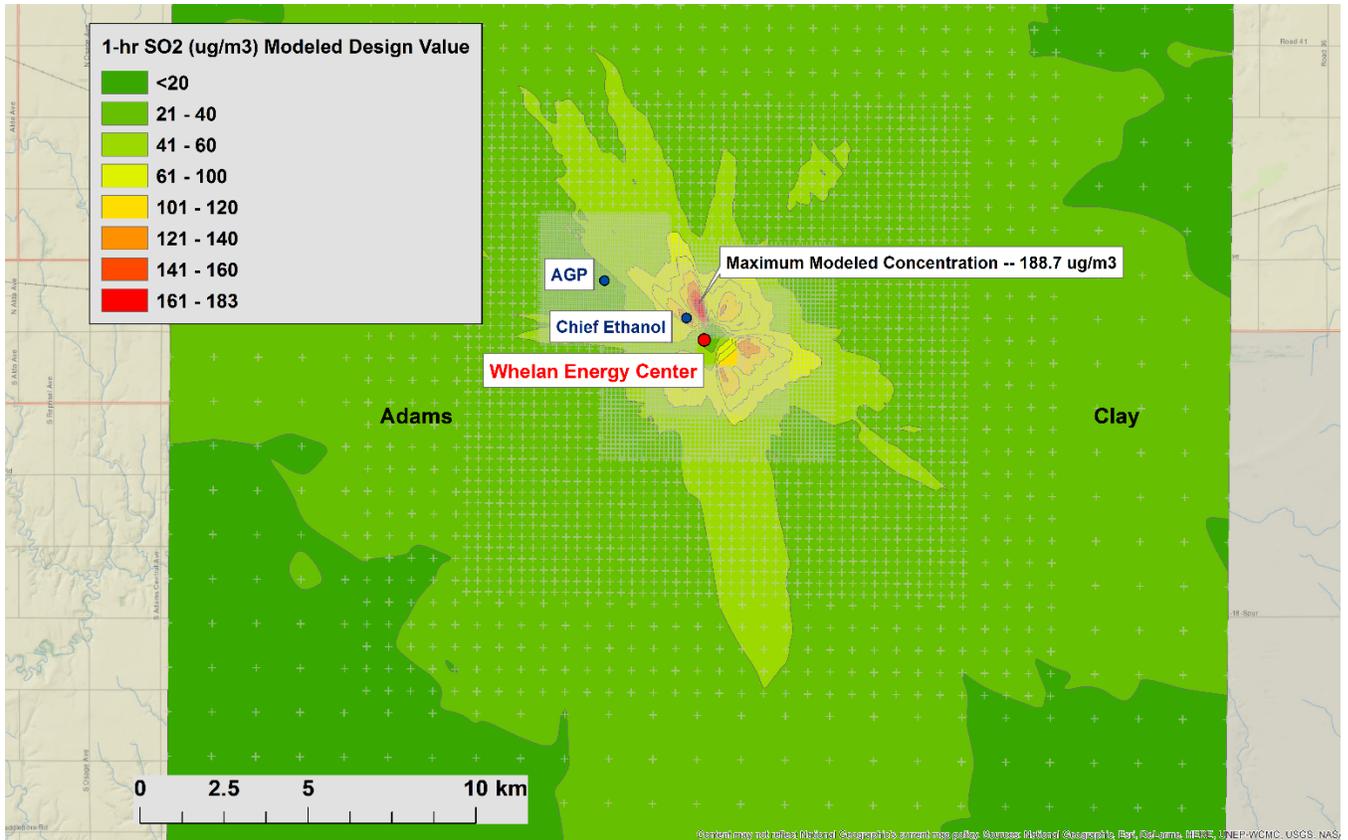


Figure 8: Similar to Figure 7 except zoomed into area around Whelan. The modeled receptor locations are shown with “+”. The maximum modeled design value is 0.8 km to the north of Whelan at 188.7 $\mu\text{g}/\text{m}^3$ with background concentration.



3.2.2.10. *The EPA’s Assessment of the Modeling Information Provided by the State*

For the most part, the state’s modeling analysis for the Whelan facility followed the SO₂ modeling TAD and the results for the 99th percentile daily maximum 1-hour SO₂ concentration of 188.7 $\mu\text{g}/\text{m}^3$ does not indicate a NAAQS violation.

However, there is a discrepancy between the modeled CEMs emissions and the reported CAMD emissions for Whelan. The modeled hourly emissions are lower than the hourly emissions reported by CAMD for the period of October 2014 – December 2014. The discrepancy between the two datasets are likely from adjustments made by CAMD to the reported emissions rates due to a CEMs flow monitor that was not operating properly, but Nebraska did not provide any background on the discrepancy or a justification for the emission rates used during this period. The lower emission rates used in the model could lead to lower modeled SO₂ concentrations for this period. This lack of justification means that there is uncertainty as whether a finding of NAAQS compliance could be valid.

Also, the state's modeling is based on an assumption of constant hourly allowable emissions for AGP and Chief, for which CEMS-based data are either not available (Chief) or not used in the modeling (AGP), with the sum of hourly emission inputs over the year equal to the permitted limit on annual emissions. These two sources are close to the area of maximum modeled concentrations. Conceptually, actual hourly emissions in many hours could be higher than this constant rate without violating the permit, and this possibility should not have been overlooked. The EPA considers this an important source of uncertainty in the modeling results. In contrast, the hourly emission inputs for PGS were based on a permitted emission limit that has a 3-hour averaging period, and in this case the EPA accepts a 3-hour averaging period as sufficient to prevent wide variations in hourly emissions.

3.3. Emissions and Emissions-Related Data, Meteorology, Geography, and Topography for the Adams 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.

3.4. Jurisdictional Boundaries in the Adams County Area

Existing jurisdictional boundaries are considered for the purpose of informing the EPA's designation action for Adams County, Nebraska. 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 did not provide specific jurisdictional boundaries in its designation recommendation, only recommending "the area around the Whelan Energy Center" be designated attainment. The modeling analysis included all sources of SO₂ within Adams County and nearby counties greater than 100 tons per year and the EPA believes using the existing Adams County boundary is appropriate.

3.5. Other Information Relevant to the Designations for the Adams County Area

No other significant information was determined to be relevant for the Adams County Area.

3.6. The EPA's Assessment of the Available Information for the Adams County Area

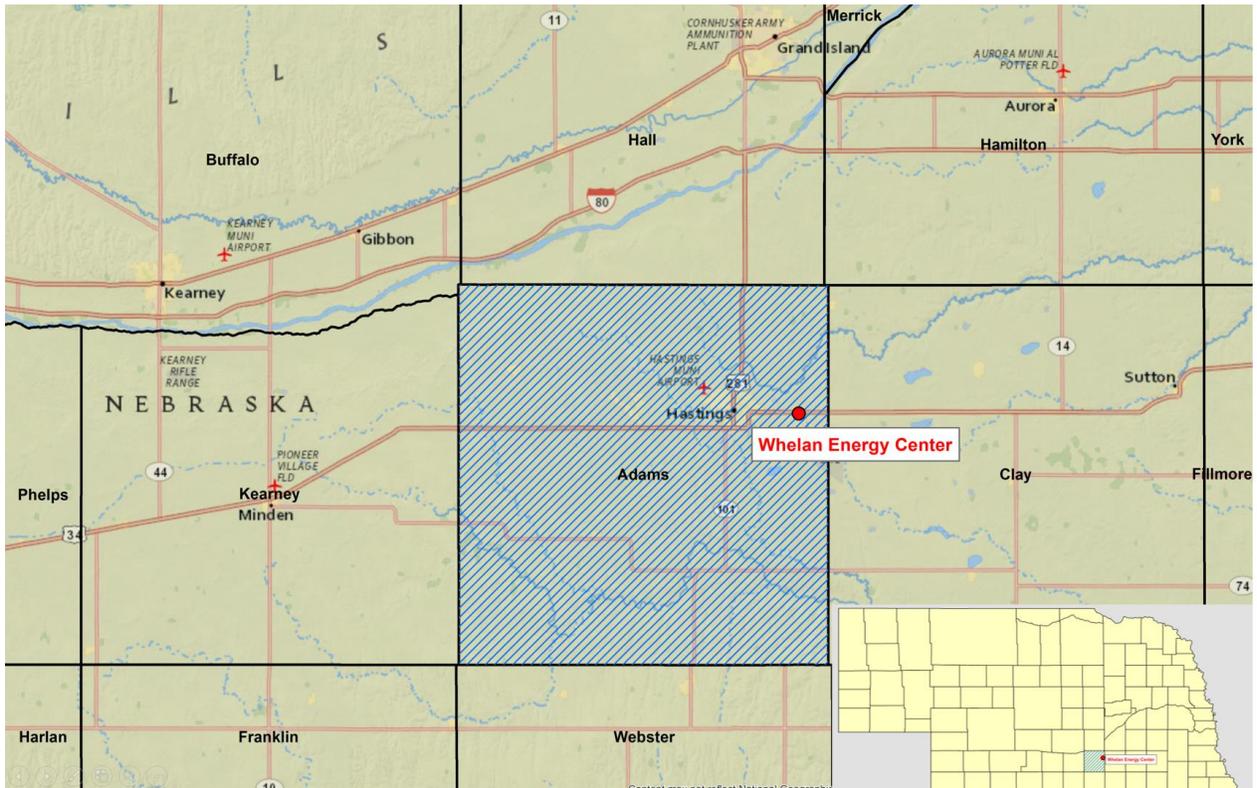
With consideration of the available information provided by the state for purposes of designating the area around the Gerald Whelan Energy Center and all other available information, the EPA is unable to determine whether the area is meeting or is not meeting the NAAQS or is contributing to an area that does not meet the NAAQS. The intended unclassifiable designation includes full consideration of the modeling analysis that the state of Nebraska provided to the EPA. While the modeling analysis provided by the state does not show that the area is not meeting the NAAQS, the modeled design value ($188.7 \mu\text{g}/\text{m}^3$) is near the NAAQS ($196.4 \mu\text{g}/\text{m}^3$) and during review of the state's modeling submittal, the EPA identified two technical issues that may affect the modeling results: the unexplained basis for some of the 2014 hourly emission values for the Whelan facility that do not match the values published by CAMD and the assumption of constant hourly allowable emissions for the sources for which CEMS-based data are not available. These issues and their potential impacts on modeling results were discussed previously in this section 3. Although the state provided a modeling analysis that it believes demonstrated compliance with the NAAQS, these two issues place uncertainty on this modeling analysis. Therefore, we intend to designate the area around Gerald Whelan Energy Center, Nebraska, as unclassifiable for the 2010 SO₂ NAAQS. Specifically, the area is comprised of the entirety of Adams County, Nebraska.

The EPA believes that our intended unclassifiable area, bounded by entirety of Adams County, Nebraska, will have clearly defined legal boundaries, and we intend to find these boundaries to be a suitable basis for defining our intended unclassifiable area.

3.7. Summary of Our Intended Designation for the Adams 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 entirety of Adams County as unclassifiable for the 2010 SO₂ NAAQS. Specifically, the boundaries are comprised of the borders of Adams County, Nebraska. Figure 8 shows the boundary of this intended unclassifiable area.

Figure 8. Boundary of the Intended Adams County Unclassifiable Area



At this time, our intended designations for the state only apply to this area and the areas addressed in section 4. The EPA intends in a separate action to evaluate and designate the one remaining undesignated area in Nebraska by December 31, 2020.

4. Technical Analysis for Certain Other Counties

4.1. Introduction

The state has not installed and begun timely operation of a new, approved SO₂ monitoring network meeting EPA specifications referenced in the EPA’s DRR for any sources of SO₂ emissions in the counties identified in Table 7. Accordingly, the EPA must designate these counties by December 31, 2017. At this time, there are no air quality modeling results available to the EPA for these counties. In addition, there are no air quality monitoring data that indicate any violation of the 1-hour SO₂ NAAQS. The EPA is designating the counties in Table 7 in the state as “unclassifiable/attainment” 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.

Table 7. Other Counties that the EPA Intends to Designate Unclassifiable/Attainment

County	Nebraska’s Recommended Area Definition	Nebraska’s Recommended Designation	EPA’s Intended Area Definition	EPA’s Intended Designation
Antelope	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Arthur	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Banner	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Blaine	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Boone	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Box Butte	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Boyd	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Brown	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Buffalo	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Burt	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment
Butler	Entire county	Unclassifiable	Same as state’s	Unclassifiable/Attainment

County	Nebraska's Recommended Area Definition	Nebraska's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Cass	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Cedar	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Chase	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Cherry	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Cheyenne	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Clay	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Colfax	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Cuming	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Custer	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Dakota	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Dawes	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Dawson	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Deuel	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Dixon	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Dodge	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Dundy	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Fillmore	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Franklin	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Frontier	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Furnas	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Gage	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment

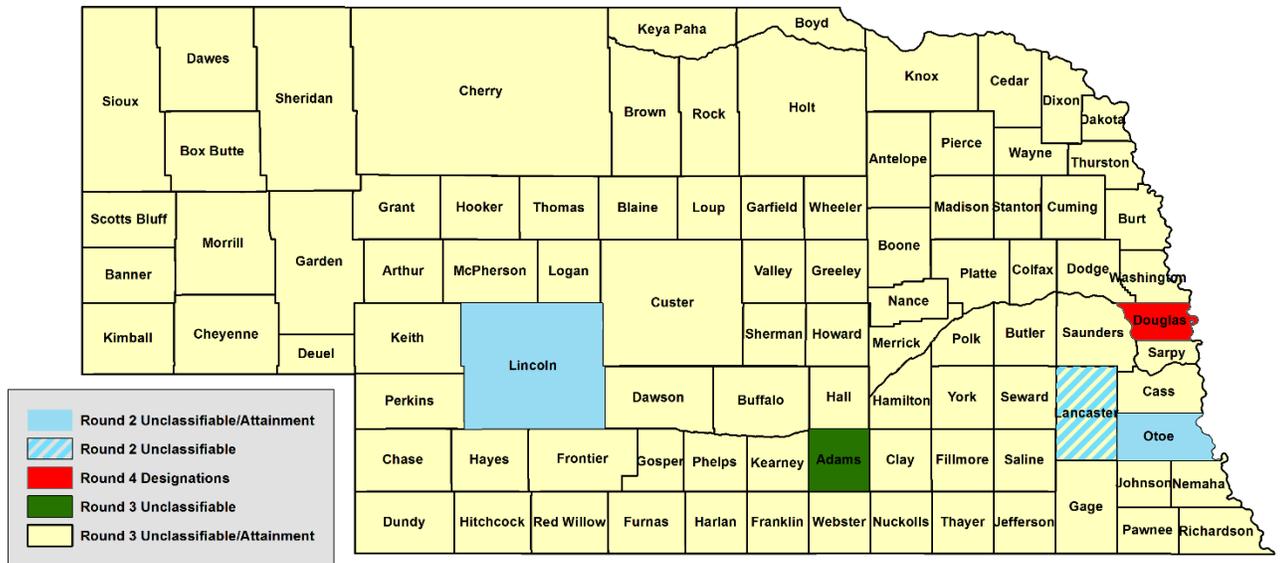
County	Nebraska's Recommended Area Definition	Nebraska's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Garden	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Garfield	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Gosper	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Grant	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Greeley	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Hall	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Hamilton	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Harlan	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Hayes	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Hitchcock	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Holt	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Hooker	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Howard	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Jefferson	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Johnson	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Kearney	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Keith	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Keya Paha	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Kimball	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Knox	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Logan	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment

County	Nebraska's Recommended Area Definition	Nebraska's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Loup	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Madison	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
McPherson	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Merrick	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Morrill	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Nance	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Nemaha	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Nuckolls	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Pawnee	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Perkins	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Phelps	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Pierce	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Platte	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Polk	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Red Willow	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Richardson	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Rock	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Saline	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Sarpy	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Saunders	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Scotts Bluff	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment

County	Nebraska's Recommended Area Definition	Nebraska's Recommended Designation	EPA's Intended Area Definition	EPA's Intended Designation
Seward	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Sheridan	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Sherman	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Sioux	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Stanton	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Thayer	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Thomas	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Thurston	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Valley	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Washington	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Wayne	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Webster	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
Wheeler	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment
York	Entire county	Unclassifiable	Same as state's	Unclassifiable/Attainment

Table 7 also summarizes Nebraska's recommendations for these areas. Specifically, the state recommended that the counties listed in Table 7 be designated unclassifiable in the state's June 1, 2011, submittal. 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 each of these counties as a separate unclassifiable/attainment area. Figure 9 shows the locations of these areas within Nebraska.

Figure 9. The EPA’s Intended Unclassifiable/Attainment Designations for Certain Other Counties in Nebraska.



As referenced in the Introduction (*see* Table 2), the one county associated with a source for which Nebraska has installed and begun timely operation of a new, approved SO₂ monitoring network is required to be designated by December 31, 2020, and is not being addressed at this time. Counties previously designated in Round 2 (*see* 81 *Federal Register* 45039) will remain unchanged unless otherwise noted.

4.2. Jurisdictional Boundaries for Certain Other Counties in Nebraska

Existing jurisdictional boundaries are considered for the purpose of informing the EPA’s designation action for each city or county. 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 recommended that the counties listed in Table 7 be designated unclassifiable in the state’s June 1, 2011, submittal, and has not changed that recommendation. The EPA believes using the existing county boundaries is appropriate.

4.3. Other Information Relevant to the Designations for Certain Other Counties in Nebraska

The receptor network for the air quality modeling submitted by the state of Iowa for the Walter Scott Jr. Energy Center in Iowa included portions of Douglas and Sarpy counties. That modeling did not indicate any NAAQS violations in those portions.

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

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.

4.5. Summary of Our Intended Designation for Certain Other Counties in Nebraska

After careful evaluation of the state's recommendation and supporting information, as well as all available relevant information, the EPA intends to designate the counties listed in Table 7 as separate unclassifiable/attainment areas for the 2010 SO₂ NAAQS. Specifically, the boundaries are comprised of the county borders for all counties listed in Table 7.

Figure 9 above shows the location of these areas within Nebraska.

For each of the counties listed in Table 7 the boundary of the unclassifiable/attainment area is the county boundary.

At this time, our intended designations for the state only apply to these areas and the other area (Adams County) presented in this technical support document. The EPA intends to evaluate and designate the remaining undesignated area in Nebraska, i.e., Douglas County, by December 31, 2020.