

Draft Technical Support Document

Colorado  
Area Designations for the 2010 SO<sub>2</sub> Primary National Ambient Air Quality Standard

Summary

Pursuant to section 107(d) of the Clean Air Act (CAA), the U.S. Environmental Protection Agency (EPA, or the Agency) must designate areas as either “unclassifiable,” “attainment,” or “nonattainment” for the 2010 one-hour sulfur dioxide (SO<sub>2</sub>) primary national ambient air quality standard (NAAQS). The CAA defines a nonattainment area as one that does not meet the NAAQS or that contributes to a violation in a nearby area. An attainment area is defined as any area other than a nonattainment area that meets the NAAQS. Unclassifiable areas are defined as those that cannot be classified on the basis of available information as meeting or not meeting the NAAQS.

Colorado submitted updated recommendations on September 18, 2015, ahead of a July 2, 2016, deadline for the EPA to designate certain areas established by the U.S. District Court for the Northern District of California. This deadline is the first of three deadlines established by the court for the EPA to complete area designations for the 2010 SO<sub>2</sub> NAAQS. Table 1 below lists Colorado’s recommendations and identifies the counties or portions of counties in Colorado that the EPA intends to designate by July 2, 2016 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. State’s recommended and EPA’s intended designations

Area	Colorado’s Recommended Area Definition	Colorado’s Recommended Designation	EPA’s Intended Area Definition	EPA’s Intended Designation
Colorado Springs, Colorado	Unspecified (Area around source)	Unclassifiable	El Paso County, Colorado	Unclassifiable
Morgan County, Colorado	Unspecified (Area around source)	Unclassifiable	Morgan County, Colorado	Unclassifiable

## Background

On June 3, 2010, the EPA revised the primary (health based) SO<sub>2</sub> NAAQS by establishing a new one-hour standard at a level of 75 parts per billion (ppb) which is attained when the three-year average of the 99th percentile of one-hour daily maximum concentrations does not exceed 75 ppb. This NAAQS was published in the Federal Register on June 22, 2010 (75 FR 35520) and is codified at 40 CFR 50.17. The EPA determined this is the level necessary to protect public health with an adequate margin of safety, especially for children, the elderly and those with asthma. These groups are particularly susceptible to the health effects associated with breathing SO<sub>2</sub>. The two prior primary standards of 140 ppb evaluated over 24 hours, and 30 ppb evaluated over an entire year, codified at 40 CFR 50.4, remain applicable.<sup>1</sup> However, the EPA is not currently designating areas on the basis of either of these two primary standards. Similarly, the secondary standard for SO<sub>2</sub>, set at 500 ppb evaluated over 3 hours has not been revised, and the EPA is also not currently designating areas on the basis of the secondary standard.

## General Approach and Schedule

Section 107(d) of the Clean Air Act requires that not later than one year after promulgation of a new or revised NAAQS, state governors must submit their recommendations for designations and boundaries to EPA. Section 107(d) also requires the EPA to provide notification to states no less than 120 days prior to promulgating an initial area designation that is a modification of a state's recommendation. If a state does not submit designation recommendations, the EPA will promulgate the designations that it deems appropriate. If a state or tribe disagrees with the EPA's intended designations, they are given an opportunity within the 120 day period to demonstrate why any proposed modification is inappropriate.

On August 5, 2013, the EPA published a final rule establishing air quality designations for 29 areas in the United States for the 2010 SO<sub>2</sub> NAAQS, based on recorded air quality monitoring data from 2009 - 2011 showing violations of the NAAQS (78 FR 47191). In that rulemaking, the EPA committed to address, in separate future actions, the designations for all other areas for which the Agency was not yet prepared to issue designations.

Following the initial August 5, 2013 designations, three lawsuits were filed against the EPA in different U.S. District Courts, alleging the Agency had failed to perform a nondiscretionary duty under the CAA by not designating all portions of the country by the June 2013 deadline. In an effort intended to resolve the litigation in one of those cases, plaintiffs Sierra Club and the Natural Resources Defense Council and the EPA filed a proposed consent decree with the U.S. District Court for the Northern District of California. On March 2, 2015, the court entered the consent decree and issued an enforceable order for the EPA to complete the area designations according to the court-ordered schedule.

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<sup>1</sup> 40 CFR 50.4(e) provides that the two prior primary NAAQS will no longer apply to an area one year after its designation under the 2010 NAAQS, except that for areas designated nonattainment under the prior NAAQS as of August 22, 2010, and areas not meeting the requirements of a SIP Call under the prior NAAQS, the prior NAAQS will apply until that area submits and EPA approves a SIP providing for attainment of the 2010 NAAQS. Neither El Paso County nor Morgan County were designated nonattainment under the prior NAAQS or were failing to meet SIP Call requirements under the prior NAAQS, so the exception does not apply.

According to the court-ordered schedule, the EPA must complete the remaining designations by three specific deadlines. By no later than July 2, 2016 (16 months from the court's order), the EPA must designate two groups of areas: (1) areas that have newly monitored violations of the 2010 SO<sub>2</sub> NAAQS and (2) areas that contain any stationary sources that had not been announced as of March 2, 2015 for retirement and that according to the EPA's Air Markets Database emitted in 2012 either (i) more than 16,000 tons of SO<sub>2</sub> or (ii) more than 2,600 tons of SO<sub>2</sub> with an annual average emission rate of at least 0.45 pounds of SO<sub>2</sub> per one million British thermal units (lbs SO<sub>2</sub>/mmBTU). Specifically, a stationary source with a coal-fired unit that as of January 1, 2010 had a capacity of over 5 megawatts and otherwise meets the emissions criteria, is excluded from the July 2, 2016 deadline if it had announced through a company public announcement, public utilities commission filing, consent decree, public legal settlement, final state or federal permit filing, or other similar means of communication, by March 2, 2015, that it will cease burning coal at that unit.

The last two deadlines for completing remaining designations are December 31, 2017, and December 31, 2020. The EPA has separately promulgated requirements for states and other air agencies to provide additional monitoring or modeling information on a timetable consistent with these designation deadlines. We expect this information to become available in time to help inform these subsequent designations. These requirements were promulgated on August 21, 2015 (80 FR 51052), in a rule known as the SO<sub>2</sub> Data Requirements Rule (DRR).

Updated designations guidance was issued by the EPA through 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. This memorandum supersedes earlier designation guidance for the 2010 SO<sub>2</sub> NAAQS, issued on March 24, 2011, and it identifies factors that the EPA intends to evaluate in determining whether areas are in violation of the 2010 SO<sub>2</sub> NAAQS. The guidance also contains the factors the EPA intends to evaluate in determining the boundaries for all remaining areas in the country, consistent with the court's order and schedule. 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. This guidance was supplemented by two technical assistance documents intended to assist states and other interested parties in their efforts to characterize air quality through air dispersion modeling or ambient air quality monitoring for sources that emit SO<sub>2</sub>. Notably, the EPA released its most recent versions of documents titled, "SO<sub>2</sub> NAAQS Designations Modeling Technical Assistance Document" (Modeling TAD) and "SO<sub>2</sub> NAAQS Designations Source-Oriented Monitoring Technical Assistance Document" (Monitoring TAD) in December 2013.

Based on ambient air quality data collected between 2012 and 2014, no violations of the 2010 SO<sub>2</sub> NAAQS have been recorded in any undesignated part of the State.<sup>2</sup> However, there are 2

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<sup>2</sup> For designations based on ambient air quality monitoring data that violates the 2010 SO<sub>2</sub> NAAQS, the consent decree directs the EPA to evaluate data collected between 2013 and 2015. Absent complete, quality assured and certified data for 2015, the analyses of applicable areas for the EPA's intended designations will be informed by data collected between 2012 and 2014. States with monitors that have recorded a violation of the 2010 SO<sub>2</sub> NAAQS

sources in the State meeting the emissions criteria of the consent decree for which the EPA must complete designations by July 2, 2016. In this draft technical support document, the EPA discusses its review and technical analysis of Colorado's updated recommendations for the areas that we must designate. The EPA also discusses any intended modifications from the State's recommendation based on all available data before us.

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

- 1) 2010 SO<sub>2</sub> NAAQS – The primary NAAQS for SO<sub>2</sub> promulgated in 2010. This NAAQS is 75 ppb, based on the three year average of the 99th percentile of the annual distribution of daily maximum one-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 which the EPA has determined has violated the 2010 SO<sub>2</sub> NAAQS or contributed to a violation in a nearby area. A nonattainment designation reflects considerations of state recommendations and all of the information discussed in this document. The EPA's decision is based on all available information including the most recent 3 years of air quality monitoring data, available modeling analysis, and any other relevant information.
- 4) Designated unclassifiable area – an area which the EPA cannot determine based on all available information whether or not it meets the 2010 SO<sub>2</sub> NAAQS.
- 5) Designated unclassifiable/attainment area – an area which the EPA has determined to have sufficient evidence to find either is attaining or is likely to be attaining the NAAQS. The EPA's decision is based on all available information including the most recent 3 years of air quality monitoring data, available modeling analysis, and any other relevant information.
- 6) Modeled violation – a violation based on air dispersion modeling.
- 7) Recommended attainment area – an area a state or tribe has recommended that the EPA designate as attainment.
- 8) Recommended nonattainment area – an area a state or tribe has recommended that the EPA designate as nonattainment.
- 9) Recommended unclassifiable area – an area a state or tribe has recommended that the EPA designate as unclassifiable.
- 10) Recommended unclassifiable/attainment area – an area a state or tribe has recommended that the EPA designate as unclassifiable/attainment.
- 11) Violating monitor – an ambient air monitor meeting all methods, quality assurance and siting criteria and requirements whose valid design value exceeds 75 ppb, based on data analysis conducted in accordance with Appendix T of 40 CFR part 50.

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during these years have the option of submitting complete, quality assured and certified data for calendar year 2015 by April 19, 2016 to the EPA for evaluation. If after our review, the ambient air quality data for the area indicates that no violation of the NAAQS occurred between 2013 and 2015, the consent decree does not obligate the EPA to complete the designation. Instead, we may designate the area and all other previously undesignated areas in the State on a schedule consistent with the prescribed timing of the court order, i.e., by December 31, 2017, or December 31, 2020.

## Technical Analysis for the Colorado Springs, Colorado Area

### Introduction

The Colorado Springs area contains a stationary source that according to the EPA's Air Markets Database emitted in 2012 either more than 16,000 tons of SO<sub>2</sub> or more than 2,600 tons of SO<sub>2</sub> and had an annual average emission rate of at least 0.45 pounds of SO<sub>2</sub> per one million British thermal units (lbs SO<sub>2</sub>/mmBTU). As of March 2, 2015, this stationary source had not met the specific requirements for being "announced for retirement." Specifically, in 2012, the Martin Drake Power Plant emitted 4,792 tons of SO<sub>2</sub>, and had an emissions rate of 0.56 lbs SO<sub>2</sub>/mmBTU. Pursuant to the March 2, 2015 court-ordered schedule, the EPA must designate the area surrounding the facility by July 2, 2016.

In its submission, Colorado recommended that the area surrounding the Martin Drake Power Plant be designated as unclassifiable based on an assessment and characterization of air quality from the facility and other nearby sources which may have a potential impact in the area of analysis where maximum concentrations of SO<sub>2</sub> are expected. This assessment and characterization was based on consideration of the data available to the State, including attaining monitoring data with fewer than 3 total years of data that Colorado did not determine was located in the area of maximum concentration. 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 areas as unclassifiable. However, because the State did not provide specific boundaries in its recommendation, the EPA's intended boundary consists of El Paso County.

The Martin Drake Power Plant is located in Colorado Springs, Colorado in the western portion of El Paso County. As seen in Figure 1 below, the facility is located in southwestern Colorado Springs. Also included in the figure are nearby emitters of SO<sub>2</sub> (specifically the Nixon Power Plant, indicated in green). Figure 2, below, shows the intended unclassifiable area (El Paso County) in blue, with a red star which indicates the location of the Martin Drake facility.

Figure 1. The EPA's intended designation for El Paso County, Colorado

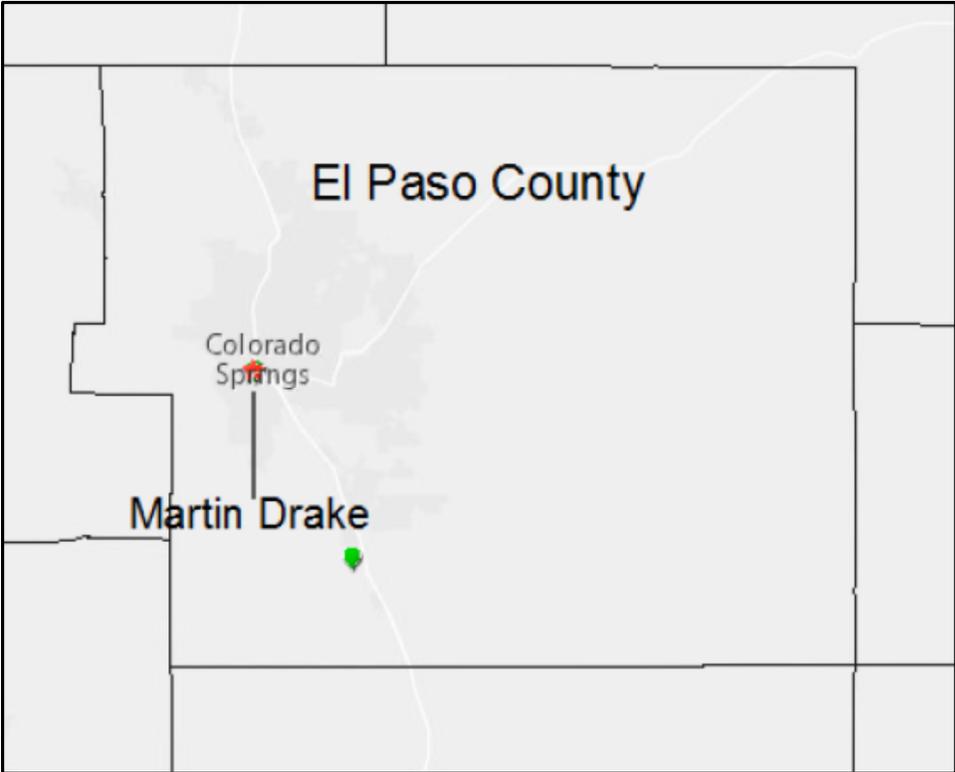
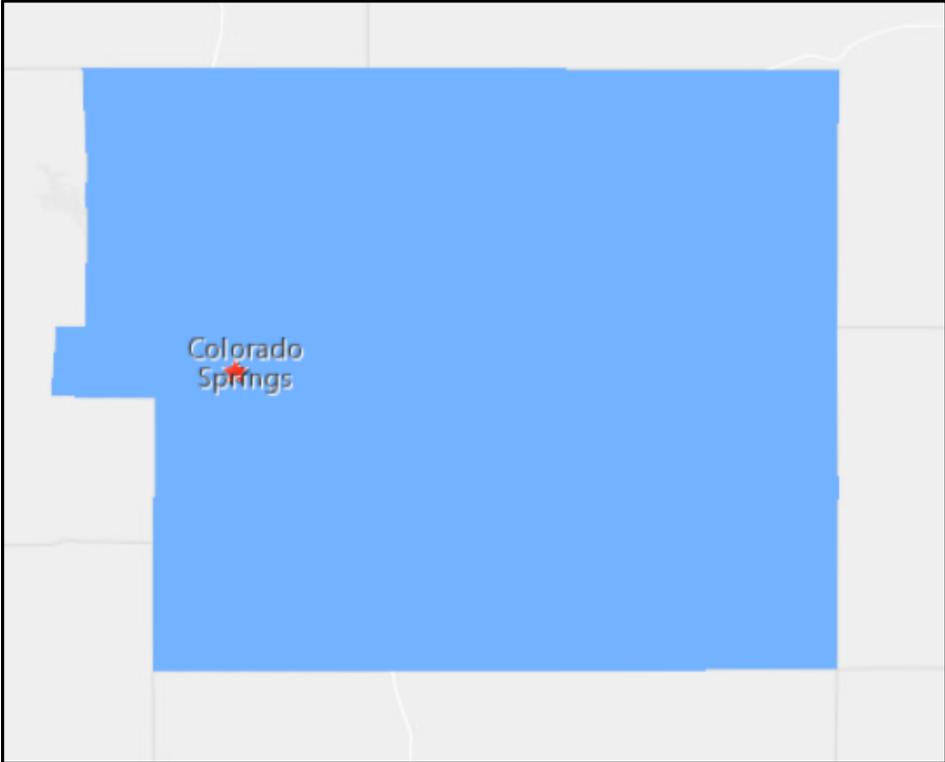


Figure 2. The EPA's intended unclassifiable designation for El Paso County, Colorado



The discussion and analysis that follows below will reference the State’s use of the Modeling TAD, the EPA’s assessment of the State’s modeling in accordance with the Modeling TAD, and the factors for evaluation contained in the EPA’s March 20, 2015 guidance, as appropriate.

Detailed Assessment

*Air Quality Data*

This factor considers the SO<sub>2</sub> air quality monitoring data in the area surrounding Martin Drake Power Plant. The facility is located in El Paso County, and the State included all available monitoring data from the one SO<sub>2</sub> monitor currently operating in El Paso County. This monitor, which began collecting SO<sub>2</sub> data in 2013, is located about .5 miles northwest of the Martin Drake Power Plant. The table below shows information provided by the State related to the monitor located in El Paso County.

Table 2. Available Air Quality Data for the Area Closest to Martin Drake Power Plant

County	State Recommendation	Air Quality Systems (AQS) Monitor ID	Monitor Location	Distance to Martin Drake Power Plant (km)	2013 – 2015 SO <sub>2</sub> Design Value in ppb
El Paso	Unclassified	08-041-0015	690 W. Highway 24	.8 km	56 ppb

Based on available ambient air quality collected at the Highway 24 monitor, the county surrounding Martin Drake Power Plant does not show a violation of the 2010 SO<sub>2</sub> NAAQS at its monitor. Colorado did not attempt to use the Highway 24 monitoring data to justify an attainment designation, nor did the State attempt to demonstrate that the monitor is appropriately sited at a point of expected maximum SO<sub>2</sub> concentration. EPA therefore does not consider the Highway 24 data to be a sufficient technical justification to rule out that an exceedance of the 2010 SO<sub>2</sub> NAAQS may occur at another location near the facility.

*Emissions and Emissions-Related Data*

Evidence of SO<sub>2</sub> emissions from the source meeting the emissions criteria of the March 2, 2015 consent decree, i.e., Martin Drake Power Plant, is an important factor for determining whether the immediate area is experiencing elevated levels of SO<sub>2</sub> concentrations. Other considerations for this factor include county level SO<sub>2</sub> emissions data and data for sources located within 50 km.

As part of its recommendation, Colorado included the annual emissions for all point sources in El Paso County emitting at or above 0.5 tons per year of SO<sub>2</sub>. Colorado obtained the data for these sources and their emissions from the yearly facility reports that are submitted to the State. These emissions data are summarized below.

Table 3: SO<sub>2</sub> Emissions from Martin Drake Power Plant and Other Local Sources

County	Company	Distance to Martin Drake Power Plant	2013 Actual SO <sub>2</sub> Emissions (tons/year)
El Paso	Colorado Springs Utilities - Martin Drake Power Plant		4,580.3
El Paso	Colorado Springs Utilities – Nixon Power Plant	24 km	3,955.1
El Paso	Fort Carson US ARMY	7.5 km	34.5
El Paso	Colorado Springs Utilities – Clear Spring Ranch	23.5 km	23.6
El Paso	Schmidt Construction Company – Delta Drive Facility	6.5 km	23.2
El Paso	Kiewit – Colorado Springs Asphalt Plant		16.0
El Paso	Martin Marietta Materials – Fillmore		8.2
El Paso	Schmidt Construction Company – Menzer Facility		3.7
El Paso	Penrose Community Hospital		3.7
El Paso	U.S. Air Force Academy		2.5
El Paso	Peterson Air Force Base		2.4
El Paso	Homeward Bound		2.3

El Paso	Rocky Mountain Materials & Asphalt Inc.		2.2
El Paso	Fountain Landfill		1.6
El Paso	Federal Express – Colorado Tech		1.2
El Paso	Fountain Valley Power – Boca Raton		1.1
El Paso	Pikes Peak Pet Crematory		1.0
El Paso	Cheyenne Mountain Zoo		0.8
El Paso	Holt Family Funeral Homes		0.7
El Paso	UCH-MHS Central		0.6
El Paso	Hewlett-Packard Corporation		0.6
El Paso	Color Star Growers – Peyton Greenhouse		0.6

\* Distance was only measured for sources with emissions equal to or greater than 20 tons per year

### *Emissions Controls*

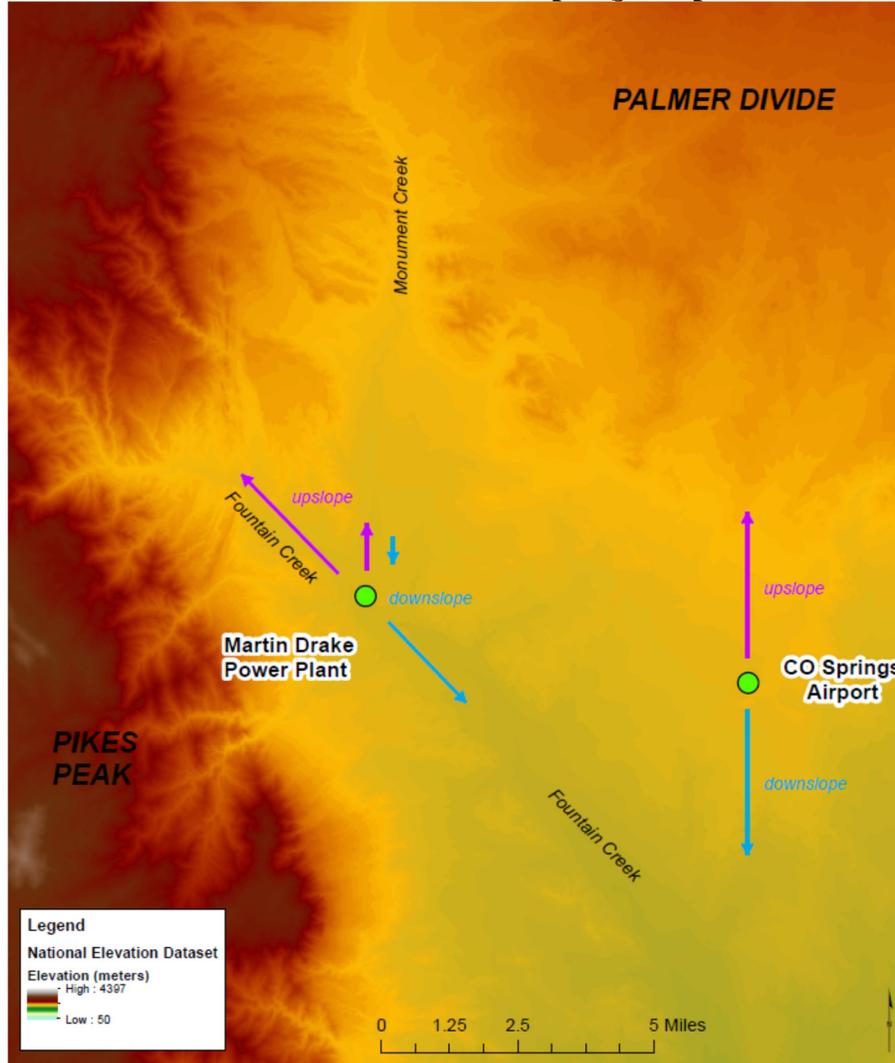
The EPA recognizes that control strategies implemented after the release of the 2011 NEI may not be reflected, or may warrant further discussion. The State indicated that Colorado Springs Utilities (CSU) is currently in the process of installing SO<sub>2</sub> controls on Units 5, 6 and 7 to comply with Regional Haze emission limits. At the time of this analysis, CSU plans to install dry sorbent injection (DSI) on Unit 5 and lime spray dryers or equivalent on Units 6 and 7 with target control operational dates by December 31, 2016 and compliance dates no later than December 31, 2017.

### *Meteorology (Weather & Transport Patterns)*

In its designation recommendation, Colorado indicated that there are no available representative meteorological datasets for the transport and dispersion conditions at the Martin Drake Power Plant. Following its designation recommendation, Colorado submitted to EPA a document describing why it did not consider the nearest available meteorological data, at the Colorado Springs Airport over 11 kilometers east of the Martin Drake Power Plant, to be representative of EPA’s Guideline on Air Quality Models (40 CFR Part 51 Appendix W; November 2005). This document, “Meteorological Determination for the Martin Drake Power Plant,” was submitted to EPA on October 6, 2015.

In its “Meteorological Determination” document, Colorado noted that winds at/near Martin Drake are expected to flow up the valley of Fountain Creek during most daytime hours and up the valley of Monument Creek at a much lower frequency due to differential heating and the proximity of the power plant to Pikes Peak (see Figure 3, below). During nighttime and early morning hours, drainage winds flowing from the valleys of Fountain Creek and Monument Creek towards the power plant are expected.

**Figure 3. Expected Wind Directions at the Martin Drake Power Plant and Colorado Springs Airport**



By contrast, the State determined that the upslope and downslope winds at the Colorado Springs Airport are driven by the higher terrain to the north of the airport, the Palmer Divide. There are no other significant terrain features that influence the winds at the airport. This makes the wind directions at the airport predominantly northerly (downslope) and southerly (upslope).

The State also indicated that during inversion conditions with light surface winds during which the highest impacts from the power plant are expected to occur, the light drainage winds transporting the plumes from Martin Drake are especially likely to follow along Fountain Creek. Finally, Colorado stated that wind speeds at the airport are expected to be higher than at the Martin Drake Power Plant.

All of these factors led Colorado to conclude that there are no available meteorological datasets that are representative of transport and dispersion conditions of the Martin Drake Power Plant plumes due to the differences in meteorological conditions between the Colorado Springs Airport

and the Martin Drake Power Plant. As a result, Colorado Springs Utilities erected a sound detection and ranging (SODAR) tower just south of Martin Drake in fall 2015 in order to gather representative meteorological data to more accurately inform future modeling.

EPA agrees with Colorado's determination that the meteorological data from the Colorado Springs Airport are not representative of meteorological conditions at the Martin Drake Power Plant. Therefore, EPA does not consider modeling which relies on meteorological data from the Colorado Springs Airport to be sufficient as the sole basis for a designation of the area impacted by emissions from the Martin Drake Power Plant. A discussion and analysis of other information the EPA received, including air dispersion modeling relying on these non-representative meteorological conditions, follows in the section titled, "Other Relevant Information."

#### *Geography and Topography (Mountain Ranges or Other Air Basin Boundaries)*

The Martin Drake Power Plant is located near the confluence of two large creek drainages; Fountain Creek and Monument Creek. It is about two miles west of Rocky Mountain foothills, which rise dramatically in elevation. The wind flows impacting the plumes at Martin Drake Power Plant generally follow Fountain Creek.

#### *Jurisdictional Boundaries*

Once the geographic area associated with the immediate area surrounding the Martin Drake Power Plant, other nearby sources, and background concentrations are determined, existing jurisdictional boundaries are considered for the purpose of informing our intended unclassifiable area. Specific attention will be given to clearly defined legal boundaries.

The EPA believes that our intended unclassifiable area, consisting of El Paso County, is comprised of clearly defined legal boundaries, and we find these boundaries to be a suitably clear basis for defining our intended unclassifiable area.

#### Other Relevant Information

The EPA received air dispersion modeling results from the Sierra Club (with modeling conducted by Wingra Engineering, S.C.), in which the submitter asserts that SO<sub>2</sub> emissions from the Martin Drake Power Plant, when considered alone or in tandem with other local sources, are causing a violation of the NAAQS.

In its modeling analysis, Sierra Club used meteorological data from the Colorado Springs Airport. As noted, the State has determined that the "meteorological data from the Colorado Springs Airport is not representative of transport and dispersion conditions of the Drake Power Plant plumes due to the differences in meteorological conditions at the Colorado Springs Airport and the Drake Power Plant. The use of the Colorado Springs Airport data to model the Drake Power Plant is inconsistent with the TAD and Appendix W." EPA agrees with Colorado's conclusion.

In addition to its review of meteorological data, the state of Colorado reviewed the methodology and model inputs in the Sierra Club's modeling evaluation to determine if they were consistent with recommendations in the Modeling TAD, procedures for regulatory applications of AERMOD that are addressed in U.S. EPA's *Guideline on Air Quality Models* - Appendix W to 40 CFR 51 (Appendix W) and the U.S. EPA's AERMOD Implementation Guide (AIG), and relevant clarification memos issued by U.S. EPA.<sup>3</sup> Based on its review, the state of Colorado determined that several inputs were inconsistent with EPA guidance. Specifically, the State concluded;

1. A downwash analysis was not used in Sierra Club's evaluation. Building parameters (including downwash) should be used in the modeling since there are structures at both plants that will cause plume downwash.
2. The National Elevation Dataset (NED) in the Sierra Club evaluation was developed using base data from 1947. Since all of the modeled emission units were built after this date, plant survey data would provide more accurate base elevations.
3. Sierra Club's evaluation assumed that Martin Drake is located in a rural area based on examination of land use/cover. Colorado concluded that it would be more appropriate to model Drake as an urban source using the population density procedure and 2010 Census Tract data.
4. Receptor elevations and hill heights were determined using the NED in the Sierra Club evaluation. Colorado noted use of higher resolution NED is more appropriate.
5. A flagpole height of 1.5 meters was used for all receptors in the Sierra Club evaluation. Colorado concluded that ground-level receptors would be more appropriate per the TAD and Appendix W.

Similar to the state of Colorado, EPA also has concerns with the assumptions used in the modeling conducted by the Sierra Club to support a nonattainment classification. EPA finds that certain modeling inputs do not conform to EPA guidance or are not sufficiently supported for use in AERMOD for the characterization of ambient air quality with significant SO<sub>2</sub> emission sources. Specifically, the components of the Sierra Club modeling analysis that EPA finds inconsistent with EPA guidance or are not sufficiently supported include:

1. The use of a version of AERMOD/AERMET dated 14134 and AERMINUTE dated 14237. In a proposed rulemaking published in the July 29, 2015 Federal Register (80 FR 45340), EPA released a revised version of AERMOD (15181), which replaces the previous version of AERMOD dated 14134. The latest version of AERMINUTE is also 14337. The latest release of the AERMOD platform is recommended for use in regulatory applications.
2. The use of receptors placed 1.5 meters above ground-level. EPA Modeling TAD and Appendix W do not recommend that receptors be placed at levels other than ground level for comparison to the NAAQS.

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<sup>3</sup> Colorado considered the memos "Applicability of Appendix W Modeling Guidance for the 1-hour SO<sub>2</sub> NAAQS", August 23, 2010; "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO<sub>2</sub> National Ambient Air Quality Standard" March 1, 2011.

3. The use of actual stacks heights for modeling actuals and allowable emissions. For the purposes of modeling with actual emissions to characterize air quality for use in the SO<sub>2</sub> designations process, EPA guidance recommends the use of actual stack heights. If allowable emissions are modeled, EPA guidance recommends that the GEP stack height policy be used in the model.
4. Not considering building downwash. EPA guidance recommends careful consideration of the information for any nearby buildings, such as location and orientation relative to stacks and building size parameters. Given that there are structures at both the Drake and Nixon Power plant, building downwash should be considered to represent actual conditions.
5. The use of rural dispersion coefficients. EPA's guidance recommends two methods for determining land classification as either urban or rural. The methods include analyzing land use or population density with the most recent and representative information. It is not clear that the information used in the Sierra Club analysis is the most recent or representative of the area to support the use of rural dispersion coefficients.
6. The assumed background concentration of 75.9 µg/m<sup>3</sup> based on monitor information at a site about 100 km from the source. EPA's guidance recommends that air quality data in the vicinity of the source should be used to determine the background concentrations. EPA is aware of monitoring data closer to the sources that should be considered for determining the background concentrations. Also, the assumed value may not be a representative background concentration because it may be impacted by other nearby sources. Based on the information provided by the Sierra Club, it does not appear that the calculation excluded periods when the dominant sources could have been influencing the monitored concentrations. EPA's modeling TAD recommends approaches for correcting for source impacted background data which Sierra Club apparently did not take into account.

For these reasons, and due to the use of unrepresentative meteorological data, EPA finds that the results of the Sierra Club modeling should not be used as the basis for a nonattainment designation for Colorado Springs, as Sierra Club has recommended in their evaluation of compliance with the 1-hour NAAQS for SO<sub>2</sub>.

EPA has also received information from residents of Colorado Springs and nearby communities. Like Sierra Club, these individuals have advocated that the area around Martin Drake be designated as nonattainment for the 2010 SO<sub>2</sub> NAAQS. EPA has not yet fully addressed the information provided by these individuals given time constraints and the expectation of additional technical information to support their specific claims. EPA will review and take in to account all of the information received by these and other parties as part of its final designation process for the Colorado Springs area.

### Conclusion

After careful evaluation of the State's recommendation and supporting information, as well as all available relevant information, the EPA intends to designate the area around Martin Drake Power Plant as unclassifiable for the 2010 SO<sub>2</sub> NAAQS. Specifically, the boundaries are comprised of the entirety of El Paso County, Colorado. The EPA is basing this conclusion on the lack of

sufficient technical information on which to base a determination regarding whether the area is meeting or not meeting the NAAQS.

At this time, our intended designations for the State only apply to this area. Consistent with the conditions in the March 2, 2015 court-ordered schedule, the EPA will evaluate and designate all remaining undesignated areas in Colorado by either December 31, 2017 or December 31, 2020.

## Technical Analysis for the Morgan County, Colorado Area

### Introduction

Morgan County, Colorado contains a stationary source that according to the EPA's Air Markets Database emitted in 2012 either more than 16,000 tons of SO<sub>2</sub> or more than 2,600 tons of SO<sub>2</sub> and had an annual average emission rate of at least 0.45 pounds of SO<sub>2</sub> per one million British thermal units (lbs SO<sub>2</sub>/mmBTU). As of March 2, 2015, this stationary source had not met the specific requirements for being "announced for retirement." Specifically, in 2012, the Pawnee Power Plant emitted 13,510 tons of SO<sub>2</sub>, and had an emissions rate of 0.76 lbs SO<sub>2</sub>/mmBTU. Pursuant to the March 2, 2015 court-ordered schedule, the EPA must designate the area surrounding the facility by July 2, 2016.

In its submission, Colorado recommended that the area surrounding the Pawnee Power Plant be designated as unclassifiable based on an assessment and characterization of air quality from the facility and other nearby sources which may have a potential impact in the area of analysis where maximum concentrations of SO<sub>2</sub> are expected. This assessment and characterization was based on consideration of the data available to the State. 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 areas as unclassifiable. However, because the State did not provide specific boundaries in its recommendation, the EPA's intended boundary consists of Morgan County.

The Pawnee Power Plant is located roughly 8.5 km southeast of Fort Morgan, Colorado in the central portion of Morgan County (see Figure 4, below). Also included in the figure are nearby emitters of SO<sub>2</sub> (the green dot demarks Cargill Meat Solutions). Figure 5 shows the EPA's intended unclassifiable designation for the area (i.e. Morgan County), in blue, with the Pawnee Power Plant indicated by the red star.

Figure 4. Pawnee Power Plant and other sources in Morgan County, Colorado

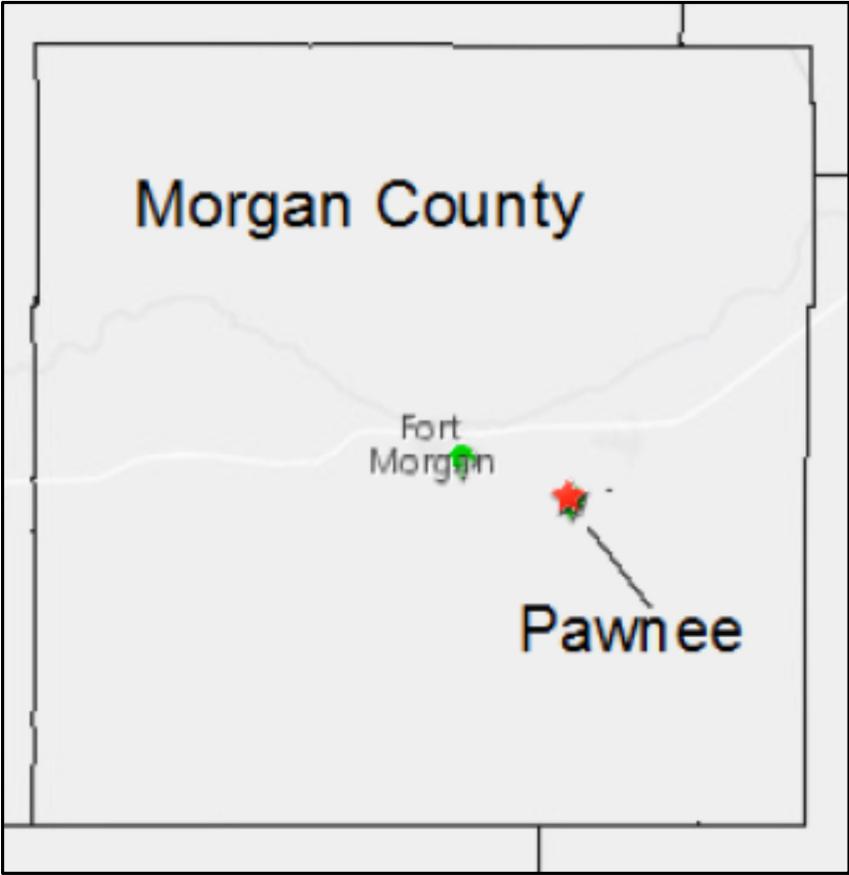


Figure 5. EPA’s intended unclassifiable area, which consists of Morgan County, Colorado.



The discussion and analysis that follows below will reference the State’s use of the Modeling TAD, the EPA’s assessment of the State’s modeling in accordance with the Modeling TAD, and the factors for evaluation contained in the EPA’s March 20, 2015 guidance, as appropriate.

Detailed Assessment

*Air Quality Data*

This factor considers the SO<sub>2</sub> air quality monitoring data in the area surrounding Pawnee Power Plant. The facility is located in Morgan County; however, there are no ambient air quality monitors located in this county. The State did not include the most recent 3 years of monitoring data, i.e., 2012 – 2014, in its recommendation for the closest neighboring county, i.e., Adams County. The table below shows information related to the monitor(s) located in Adams County, which were confirmed through the EPA’s 2014 design value report for SO<sub>2</sub>.<sup>4</sup>

Table 4: Available Air Quality Data for the Area Closest to Pawnee Power Plant

County	State Recommendation	Air Quality Systems (AQS) Monitor ID	Monitor Location	Distance to Martin Drake Power Plant (km)	2012 – 2014 SO <sub>2</sub> Design Value in ppb
Adams	None	08-001-3001	3174 E. 78 <sup>th</sup> Ave. Welby, Colorado	110 km	25 ppb

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<sup>4</sup> The design value report for SO<sub>2</sub>, as well as each of the other NAAQS, can be found at this link: <http://www3.epa.gov/airtrends/values.html>

Due to the large distance from the nearest monitor (in Welby, Colorado) to the Pawnee Power Plant, the information from this monitor is not informative as to a designation of the area surrounding Pawnee.

*Emissions and Emissions-Related Data*

Evidence of SO<sub>2</sub> emissions from the source meeting the emissions criteria of the March 2, 2015 consent decree, i.e., Pawnee Power Plant, is an important factor for determining whether the immediate area is experiencing elevated levels of SO<sub>2</sub> concentrations. Other considerations for this factor include county level SO<sub>2</sub> emissions data and data for sources located within a significant concentration gradient.<sup>5</sup>

As part of its recommendation, Colorado included the annual emissions for all point sources in Morgan County emitting SO<sub>2</sub>. Colorado obtained the data for these sources and their emissions from the yearly facility reports that are submitted to the State. These emissions data are summarized below.

Table 5: SO<sub>2</sub> Emissions from Martin Drake Power Plant and Other Local Sources

<b>County</b>	<b>Company</b>	<b>Distance to Pawnee Power Plant*</b>	<b>2013 Actual SO2 Emissions [tons/year]</b>
Morgan	Public Service Co – Pawnee Power Plant		12,467.55
Morgan	Western Sugar Coop.	12 km	58.30
Morgan	Cargill Meat Solutions	8.6 km	48.84
Morgan	Brush Cogeneration Partners/Colorado Power		0.18
Morgan	Dairy Farmers of America, Inc.		0.16
Morgan	City of Brush		0.16
Morgan	Brushco Farms, Inc.		0.04
Morgan	Brush Meat Processors, Inc		0.02
Morgan	Public Service Co. – Roundup Station		0.01
Morgan	Heer Mortuary & Crematory		0.01
Morgan	Leprino Foods Co.		<0.01

<sup>5</sup> The State addressed the sources within a significant concentration gradient of Pawnee, citing EPA’s Modeling TAD.

\* Distance was only measured for sources with SO<sub>2</sub> emissions greater or equal to 20 tons per year.

*Emissions Controls*

The EPA recognizes that control strategies implemented after the release of the 2011 NEI may not be reflected, or may warrant further discussion. As part of its designation recommendation, Colorado submitted information on emissions reductions resulting from controls put into place after the date of the emissions inventory data provided in the table above.

Pursuant to Colorado’s Regional Haze SIP (77 FR 76871, December 31, 2012), a semi-dry SO<sub>2</sub> scrubber system was installed at the Pawnee Power Plant. The controls began operating in August 2014, and have resulted in an SO<sub>2</sub> reduction of about 87%. Table 6, below, was included in Colorado’s recommendation and demonstrates the significant decrease in SO<sub>2</sub> emissions following the installation of the new scrubber system.

Table 6: Pawnee Power Plant Emissions

Year	Number of Months Reported	SO <sub>2</sub> Annual Emissions (tons/year)	SO <sub>2</sub> Annual Emission Rate (lb/MMBtu)
2012	12	13,510	0.76
2013	12	12,467	0.72
2014	12	5,508*	0.34
2015 (partial)	3	476	0.08
2015 (projected)	-	≈1,700	≈0.10

\* SO<sub>2</sub> lime spray dryer controls installed August 2014

*Meteorology (Weather & Transport Patterns)*

Evidence of source-receptor relationships between specific emissions sources and high SO<sub>2</sub> concentrations in the surrounding area is another important factor in determining the appropriate extent of the EPA’s intended unclassifiable area.

### *Geography and Topography (Mountain Ranges or Other Air Basin Boundaries)*

The Pawnee Power Plant is located on the plains of eastern Colorado about 7 km south of the South Platte River. There are no significant topographical features impacting the area near the Pawnee Power Plant.

### *Jurisdictional Boundaries*

Once the geographic area associated with the immediate area surrounding the Pawnee Power Plant, other nearby sources, and background concentrations are determined, existing jurisdictional boundaries are considered for the purpose of informing our intended unclassifiable area. Specific attention will be given to clearly defined legal boundaries.

The EPA believes that our intended unclassifiable area, consisting of Morgan County, is comprised of clearly defined legal boundaries, and we find these boundaries to be a suitably clear basis for defining our intended unclassifiable area.

### Conclusion

After careful evaluation of the State's recommendation and supporting information, as well as all available relevant information, the EPA intends to designate the area around Pawnee Power Plant as unclassifiable for the 2010 SO<sub>2</sub> NAAQS. Specifically, the boundaries are comprised of the entirety of Morgan County, Colorado.

EPA is basing this conclusion on the lack of sufficient technical information on which to base a determination regarding whether the area is meeting or not meeting the NAAQS. As indicated, no modeling has been conducted, and the appropriate modeling parameters are not understood. Further, ambient air quality data that properly represents the areas of predicted maximum concentrations in the vicinity of Pawnee Power Plant are not available.

At this time, our intended designations for the State only apply to this area. Consistent with the conditions in the March 2, 2015 court-ordered schedule, the EPA will evaluate and designate all remaining undesignated areas in Colorado by either December 31, 2017 or December 31, 2020.