

Technical Support Document

1-Hour SO₂ National Ambient Air Quality Standard Recommended Air Quality Designations for Specific Sources



COLORADO

Air Pollution Control Division

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Introduction

Designation Recommendations

This Technical Support Document (TSD) provides the basis for the proposed source specific sulfur dioxide (SO₂) National Ambient Air Quality Standard (NAAQS) air quality designation recommendations for the Public Service Company of Colorado – Pawnee Power Plant and Colorado Springs Utilities – Martin Drake Power Plant. The Division is requesting that the Air Quality Control Commission (Commission) recommend to the U.S. Environmental Protection Agency (EPA) that the nearby areas surrounding both power plants be designated as unclassifiable as insufficient data and analysis is available to ascertain compliance with the 1-hr SO₂ NAAQS. The unclassifiable designation recommendations for both power plants will allow extra time to acquire more data to better analyze compliance with the SO₂ standard.

Overview

In 2010, the EPA promulgated a new NAAQS for SO₂ as a 1-hour average. The level was set at 75 parts per billion (ppb) as the 3-year average of the 99th percentile 1-hour daily maximum values. In 2011, Colorado submitted final recommendations of “attainment” and “attainment/unclassifiable” as applicable for all air quality control regions in the state. In August 2013, EPA promulgated a final rule establishing nationwide SO₂ non-attainment areas (none in Colorado) based on 2009-2011 monitoring data while acknowledging that EPA intended to address designations for other areas in separate future actions. EPA refers to the initial state designations based on 2009-2011 SO₂ monitoring data as “Round 1” designations.

In August 2013, the Sierra Club and Natural Resources Defense Council filed a complaint in federal District Court alleging that EPA failed to promulgate SO₂ designations for all areas of the country within the timeframe provided under the Clean Air Act (Act). On March 2, 2015, a Consent Decree was ordered that requires EPA to promulgate source specific designations on certain SO₂ sources no later than July 2, 2016 – this set of designations is referred to as “Round 2” designations. This section of the Consent Decree applies to any stationary source (1) emitting more than 16,000 tons/year (tpy) of SO₂ in 2012, or (2) emitting more than 2,600 tpy of SO₂ and having an annual average emission rate of 0.45 lbs SO₂/MMBtu¹ or higher in 2012. Nationwide there are 68 coal-fired power plants that are specifically listed in the Consent Decree, including two in Colorado: Public Service Company of Colorado – Pawnee Power Plant and Colorado Springs Utilities – Martin Drake Power Plant. As a result of the Consent Decree, states with certain affected sources meeting the criteria above must submit source specific designation recommendations, to assist EPA in promulgating “Round 2” designations, by September 18, 2015. The timing of the Consent Decree designation process does not provide for consideration of post-2012 installed air pollution controls required pursuant to Regional Haze State Implementation Plan.

¹ MMBtu means one million British Thermal Units



History

Under the original annual and daily (24-hour) SO₂ standards (1971) there was extensive nationwide monitoring that indicated few SO₂ non-attainment problems; accordingly, the nationwide SO₂ monitoring network decreased in size from approximately 1,496 sites in 1980 to 488 sites operating in 2008. When the revised SO₂ NAAQS was promulgated in 2010, only two SO₂ monitors were operating in Colorado, both in the Denver Metro Area. Both monitors showed levels below the standard. Since there was very limited SO₂ monitoring data on which to base designations, most of Colorado's air quality control regions were recommended as "attainment/unclassifiable" during a public hearing of the Commission on March 17, 2011.

In response to the lack of SO₂ monitoring data nationwide and associated concerns on whether large SO₂ sources may emit levels exceeding the 1-hour standard, EPA proposed the SO₂ Data Requirements Rule (DRR) in May 2014 that solicited public comment on future monitoring or modeling requirements for large SO₂ sources based on three proposed SO₂ emission threshold options. The final SO₂ NAAQS DRR was signed on August 10, 2015.

EPA Guidance on SO₂ Designations

In December of 2013, the EPA issued draft modeling guidance "SO₂ NAAQS Designations Modeling Technical Assistance Document" (SO₂ TAD Guidance) that provides direction to states on demonstrating compliance with the SO₂ NAAQS through modeling of source impacts. Unlike ambient monitoring, which requires 3 years of data acquisition to ascertain compliance with the NAAQS, modeling provides for a relatively quick conservative assessment of ambient air quality from stationary source impacts. Accordingly, refined modeling is the preferred first approach to better characterize ambient air quality for both stationary source areas and the Division anticipates that refined modeling of the affected sources will be performed over an extended period likely spanning into next year.

Future EPA SO₂ Designations Process

The Data Requirements Rule establishes an SO₂ emissions applicability threshold of 2,000 tons per year (tpy) that identifies priority sources subject to a source specific SO₂ designations process, referred to as "Round 3" designations. This process includes both the Public Service Company of Colorado – Pawnee Power Plant and Colorado Springs Utilities – Martin Drake Power Plant. States have three options under the DRR to characterize current air quality in areas with large SO₂ sources (2,000 tpy or greater): establish federally enforceable emission limits (under 2,000 tpy) by January 13, 2017; conduct air quality modeling by January 13, 2017; or begin operating an appropriate monitoring network by January 1, 2017. The EPA will promulgate "Round 3" SO₂ designations (by Court Order) no later than December 31, 2017. For all other new monitored areas or remaining areas, EPA will promulgate "Round 4" SO₂ designations (by Court Order) no later than December 31, 2020. Consequently, the current Division recommendation of unclassifiable for both power plants results in only a temporary delay that will be resolved in future designation actions by EPA.

Analysis of Source Specific Designations

Public Service Company of Colorado – Pawnee Power Plant

Pawnee Power Plant – SO2 Emissions Analysis

The March 2015 Consent Decree identified subject sources for inclusion in “Round 2” designations based on 2012 continuous emissions monitoring data. In 2012, the Pawnee Power Plant had no SO2 controls aside from firing low-sulfur coal²; consequently, the facility’s SO2 emissions were over the Consent Decree applicability threshold of 2,600 tpy along with an annual average emission rate exceeding 0.45 lbs/MMBtu. In 2014, pursuant to Colorado’s Regional Haze SIP (approved by EPA in January 2013, the Public Service Company of Colorado (PSCO) installed and commenced operation of a semi-dry SO2 scrubber system (lime spray dryer) at the Pawnee Power Plant. Pursuant to the Regional Haze SIP, the scrubber system is subject to a federally enforceable permit limitation of 0.12 lbs/MMBtu based on a 30-day rolling average emission rate. Table 1 provides SO2 emissions data for the Pawnee Power Plant that is reported to the EPA Air Markets Program Data system. As indicated in the below table, the recently installed semi-dry SO2 scrubber has resulted in a significant SO2 emission reduction of about 87%.

Table 1: Pawnee Power Plant SO2 Emissions

Year	Number of Months Reported	SO2 Annual Emissions (tons/year)	SO2 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

*SO2 lime spray dryer controls started in August 2014

SO2 Emissions in Morgan County

Table 2 includes the most current comprehensive emission inventory for Morgan County, which indicates that over 99% of the 2013 SO2 emissions in Morgan County are from point sources. As indicated above, the Pawnee Power Plant began operating a semi-dry scrubber system in August of 2014 that will significantly lower SO2 emissions in the future.

² The Pawnee Power Plant generally fires sub-bituminous coal that has an average sulfur content ranging from 0.24 to 0.42 percent from the Powder River Basin area in Wyoming.



Table 2: 2013 SO2 Emission Inventory for Morgan County

Source Category	SO2 Emissions (tons/year)
Point Source	12,575.3
Agriculture Burning	41.5
Railroad	8.2
Motor Vehicles	2.2
Non-Road Vehicles	1.0
Wood Burning	1.0
Fuel Combustion	0.4
Oil & Gas Area	0.4
Oil & Gas Point	0.2
Aircraft	0.1
Total:	12,630.3

Table 3 includes the source specific emissions data from Air Pollutant Emissions Notice (APEN) reports filed with the Division in the spring of 2014 using actual SO2 emissions data from 2013 or earlier. According to EPA Guidance³ on SO2 Designations Modeling, all sources expected to cause significant concentration gradients in the vicinity of the source of interest should be evaluated. Based on a review of actual SO2 emissions in Morgan County, there are potentially two significant SO2 sources (Western Sugar Cooperative and Cargill Meat Solutions) that need further evaluation for potential inclusion in a technical modeling analysis and demonstration associated with the PSCo – Pawnee Power Plant.

Table 3: 2013 Point Source (Non-Oil & Gas) SO2 Emissions for Morgan County

Company	2013 Actual SO2 Emissions [tons/year]
Public Service Co – Pawnee Power Plant*	12,467.55
Western Sugar Coop.	58.30
Cargill Meat Solutions	48.84
Brush Cogeneration Partners/Colorado Power	0.18
Dairy Farmers of America, Inc.	0.16
City of Brush	0.16
Brushco Farms, Inc.	0.04
Brush Meat Processors, Inc	0.02
Public Service Co. – Roundup Station	0.01
Heer Mortuary & Crematory	0.01
Leprino Foods Co.	<0.01
Total:	12,575.3

* Includes 0.95 tpy from other sources at the facility

³ See Draft - **SO2 NAAQS Designations Modeling Technical Assistance Document**, US EPA OAR-OAQPS-AQAD December 2013



The Western Sugar Cooperative – Fort Morgan Facility manufactures sugar and sugar by-products from sugar beets in an annual 5-month period that starts in about mid-September. This period of operation, which can range from about 100 to 170 days and averages about 140 days, is called a “campaign”. During the campaign the plant is in operation for 24 hours/day, seven days per week until all harvested beets have been processed. The facility has two boilers⁴ that fire low-sulfur coal. In 1975, an application was made to convert the boilers from firing natural gas to coal and install a venturi scrubber system for controlling emissions. Each boiler was equipped with a venturi scrubber system. The two boilers connect to common stack provided with a mist eliminator. The boilers do not have short-term SO₂ emission limits, but are subject to Regulation Number 1 emission limit of 1.8 lbs/MMBtu⁵. According to EPA SO₂ TAD Guidance, “air agencies may wish to conduct modeling using allowable or potential to emit (PTE) emissions.” In the situation of Western Sugar Cooperative, it is more appropriate to use actual emissions since the source only operates on a seasonal basis and the source PTE is much higher than actual emissions.

Cargill Meat Solutions underwent a permit renewal in 2013 that specifies the SO₂ emission limits. The facility has several boilers and a flare that fire either natural gas or bio-gas, which results in some SO₂ emissions. However, the SO₂ emissions are emitted from a number of emission points at relatively low concentrations. Thus, this source is not expected to have a significant impact on the 1-hr SO₂ NAAQS in the local area.

Figure 1 identifies the three SO₂ sources to be evaluated. Cargill Meat Solutions is about 5.4 miles and Western Sugar Company is about 7.3 miles from the Pawnee Power Plant respectively.

Figure 1: Significant SO₂ Sources in Morgan County



⁴ Boiler manufacturer is Babcock & Wilcox with Detroit Stoker Model Rotograte RG-4. Each boiler is rated at 196 MMBtu/hour.

⁵ See Colorado Air Quality Control Commission (AQCC) Regulation Number 1, Section VI.A.3.a.(i)

Modeling of Significant SO₂ Emission Sources

In order to conduct the modeling necessary to predict the attainment status of the area surrounding the Pawnee Power Plant, the Division needs to develop appropriate short-term emission rates for the Pawnee Power Plant and the other two significant SO₂ sources in consultation with the sources and EPA. Since the SO₂ NAAQS is an hourly standard, these short-term emission rates are necessary model inputs to properly characterize SO₂ emissions that might impact the ambient air quality in Morgan County. Since controls have only recently been installed, PSCo is still acquiring short-term emission rate data for Pawnee Power Plant. The Division anticipates that the refined modeling process could be completed in the next year, which will provide information on the attainment status for SO₂ air quality for Morgan County by the end of 2016.

Colorado Springs Utilities – Martin Drake Power Plant

Martin Drake Power Plant – SO₂ Emissions Analysis

The March 2015 Consent Decree identified subject sources to include in “Round 2” based on 2012 emission rates. In 2012, the Martin Drake Power Plant had no SO₂ controls, aside from firing low-sulfur coal⁶; consequently the facility SO₂ emissions were over the Consent Decree applicability threshold of 2,600 tpy along with an annual average emission rate exceeding 0.45 lbs/MMBtu. Colorado Springs Utilities (CSU) is currently in the process of installing SO₂ 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. CSU submitted a compliance schedule to the Division on March 28, 2013, which was published for public comment and subsequently approved by the Division on November 4, 2013 (for SO₂ compliance – the Division approved additional schedule changes for NO_x in March 2015). The SO₂ Best Available Retrofit Technology (BART) limits for the Martin Drake Power Plant are as follows:

Drake Unit 5: 0.26 lb/MMBtu (30-day rolling average)

Drake Unit 6: 0.13 lb/MMBtu (30-day rolling average)

Drake Unit 7: 0.13 lb/MMBtu (30-day rolling average)

Martin Drake Power Plant SO₂ emissions by unit are indicated in Table 4 for the most recent three years of data that is reported to the EPA Air Markets Program Data system.

⁶ The Martin Drake Power Plant generally fires a blend of sub-bituminous and bituminous coal that has an average sulfur content ranging from 0.21 to 0.53 percent from a variety of coal mines, including Power River Basin, ColoWyo, 20-Mile Foidel Creek, and West Elk, located in western Colorado and Wyoming, based on 2006-2015 data.



Table 4: Martin Drake Power Plant SO2 Emissions

Year*	Unit	Number of Months Reported	SO2 Annual Emissions (tons/year)	SO2 30-day Rolling Emission Rate (lb/MMBtu)
2012	5	12	1,108	0.52
2013		12	982	0.49
Average			1,045	0.51
2012	6	12	1,680	0.55
2013		12	1,595	0.50
Average			1,637	0.52
2012	7	12	2,004	0.56
2013		12	2,004	0.51
Average			2,004	0.53
2012	All	12	4,707	0.56
2013		12	4,580	0.51
Average			4,686	0.52

**Drake Power Plant experienced a fire event that resulted in the units not operating for various periods of time. Unit 6 was down for nine weeks. Unit 7 was down for 16 weeks. Therefore, 2014 is not included in recent emission evaluations.

In comparison, the BART limits were based on emissions averaged from the years 2006 – 2008, shown in Table 5.

Table 5: Martin Drake Power Plant BART baseline emissions (2006 - 2008)

Pollutant	Unit 5		Unit 6		Unit 7	
	Annual Emissions* (tpy)	Annual Emissions** (lb/MMBtu)	Annual Emissions* (tpy)	Annual Emissions** (lb/MMBtu)	Annual Emissions* (tpy)	Annual Emissions** (lb/MMBtu)
SO ₂	1,269	0.63	2,785	0.82	4,429	0.83

*Using daily CEMs data from 2006 – 2008 calendar years.

**The Division calculated average emission rate (lb/MMBtu) from the 2006 - 2008 calendar years based on average daily reported data for each unit.

Emission differences between these two time frames are significant. The percent in emission reductions and resultant tons per year reductions (average of three years for 2006 – 2008 compared to 2012 – 2013,) are listed below:

Drake Unit 5: 18% SO2 emission reduction (224 tons/year)

Drake Unit 6: 41% SO2 emission reduction (1,148 tons/year)

Drake Unit 7: 55% SO2 emission reduction (2,425 tons/year)

There are several reasons for lower emissions in recent years: an overall increase in natural gas consumption, additional outages due to installation of Regional Haze controls, and a shift in coal types to lower sulfur coal⁷. The emission limits specified in the Regional Haze SIP will result in further SO₂ emission reductions from 2012 – 2013 emissions. Using the most recent two full years of data, the following percent emission reductions (from 2012 – 2013 average) will occur by the end of 2017, based on the required 30-day rolling average current emissions and future limits:

Drake Unit 5: 49% SO₂ emission reduction

Drake Unit 6: 75% SO₂ emission reduction

Drake Unit 7: 76% SO₂ emission reduction

SO₂ Emissions in El Paso County

The 2013 emissions inventory is the most current inventory year that the Division has developed for El Paso County, except for motor vehicles, for which the most recent inventory is the year 2011. Table 6 below indicates that approximately 99% of emissions are from point sources.

Table 6: 2013 SO₂ Emission Inventory for El Paso County

Source Category	SO ₂ Emissions (tons/year)
Point Source	8,668.5
Motor Vehicles	30.5
Wood Burning	21.8
Aircraft	15.3
Railroad	9.6
Fuel Combustion	7.2
Non-Road Vehicles	7.1
Agricultural Burning	0.3
Total:	8,760.4

Table 7 includes the source specific emissions data from Air Pollutant Emission Notice (APEN) reports filed with the Division in the spring of 2014 using actual SO₂ emissions data from 2013 or earlier. According to EPA Guidance⁸ on SO₂ Designations Modeling, all sources expected to cause significant concentration gradients in the vicinity of the source of interest should be evaluated. The Nixon Power Plant, approximately 15 miles away from Drake, is the only other significant SO₂ source in El Paso County, and contributed about 46% of point source SO₂ emissions in 2013 while Drake contributed 53%. As discussed in the modeling section below, air quality impacts from the Drake Power Plant have not been estimated due the lack of available representative meteorological data. When impacts from the Drake Power Plant are modeled, the Division will determine if contributions from Nixon and other off-site sources to cumulative impacts need to be addressed.

⁷ Sulfur content averaged 0.44% for 2006-2008 versus 0.25% for 2012 – June 2015 (plant-wide).

⁸ See Draft - **SO₂ NAAQS Designations Modeling Technical Assistance Document**, US EPA OAR-OAQPS-AQAD December 2013



Table 7: 2013 Point Source (Non-Oil & Gas) SO2 Emissions for El Paso County

Company	2013 Actual SO2 Emissions (tons/year)
Colorado Springs Utilities - Martin Drake Power Plant	4,580.3
Colorado Springs Utilities – Nixon Power Plant	3,955.1
Fort Carson US ARMY	34.5
Colorado Springs Utilities – Clear Spring Ranch	23.6
Schmidt Construction Company – Delta Drive Facility	23.2
Kiewit – Colorado Springs Asphalt Plant	16.0
Martin Marietta Materials – Fillmore	8.2
Schmidt Construction Company – Menzer Facility	3.7
Penrose Community Hospital	3.7
U.S. Air Force Academy	2.5
Peterson Air Force Base	2.4
Homeward Bound	2.3
Rocky Mountain Materials & Asphalt Inc.	2.2
Fountain Landfill	1.6
Federal Express – Colorado Tech	1.2
Fountain Valley Power – Boca Raton	1.1
Pikes Peak Pet Crematory	1.0
Cheyenne Mountain Zoo	0.8
Holt Family Funeral Homes	0.7
UCH-MHS Central	0.6
Hewlett-Packard Corporation	0.6
Color Star Growers – Peyton Greenhouse	0.6
Total:	8,668.5

*Sources reporting below 0.5 tpy were not included in this table due to extremely low emissions and contributions. This information is available upon request.

Modeling of Significant SO2 Emission Sources

In EPA’s draft guidance on state implementation of the 1-Hour SO2 NAAQS (issued September 21, 2011), air quality modeling was identified as an alternative to monitoring for demonstrating attainment. In October 2011, to prepare for this potential modeling exercise, the Division completed an assessment to determine if there was any available meteorological dataset(s) representative of transport and dispersion conditions at large stationary SO2 sources in Colorado. The Division assesses meteorological data representativeness on the factors discussed in Section 8.3 of EPA’s Guideline on Air Quality Models (40 CFR Part 51 Appendix W; November 2005). The only available meteorological data for the area is measured at the Colorado Springs Airport. Martin Drake Power Plant is located at the confluence of two large creek drainages, within and adjacent to terrain features that cause different meteorological conditions (e.g. wind directions/speeds, cloud cover) than at the Colorado Springs Airport.

Therefore, the Division concluded that there was no available representative meteorological dataset for the Drake Power Plant.

The Division received air quality modeling from interested stakeholders regarding 1-hour SO₂ NAAQS compliance for the Drake Power Plant in October 2012 and September 2013. These modeling submittals use meteorological data from the Colorado Springs Airport. However, modeling with non-representative meteorological data affects the magnitude and location of impacts. Therefore, it would be inappropriate to base an attainment or nonattainment designation on the modeling analyses submitted to the Division, which rely upon meteorological data from the Colorado Springs Airport, a non-representative dataset.

The Division is working with CSU to gather representative meteorological data. One year of meteorological data will be collected and modeling is anticipated to require about 6 months to develop and finalize. Consequently, the Division anticipates the final impact analysis to be complete in 2017.

SO₂ Ambient Monitoring in El Paso County

The Division analyzed the potential to determine if the Drake Power Plant could be classified “attainment/nonattainment” based on current or historical ambient monitoring near the facility. Currently, there are four monitoring locations in operation in Colorado, of which one is located in Colorado Springs at Highway 24 and 8th Street (AQS-ID: 08-041-0015). This site may be relocated in the future when the Division approves a final modeling impact analysis based on maximum modeled impacts and siting relocation issues.

Monitoring data for SO₂ has never approached the level of any SO₂ standard until this monitor was added in January 2013. Table 8 below details the concentrations at the Highway 24 monitor over the past two years. This monitor has noted four total exceedances of the 75 ppb standard since monitoring began in 2013 through July 2015. However, the 99th percentile value, as of July 2015, remains below the 75 ppb 1-hour NAAQS at approximately 60 ppb (2015 data year is not complete).

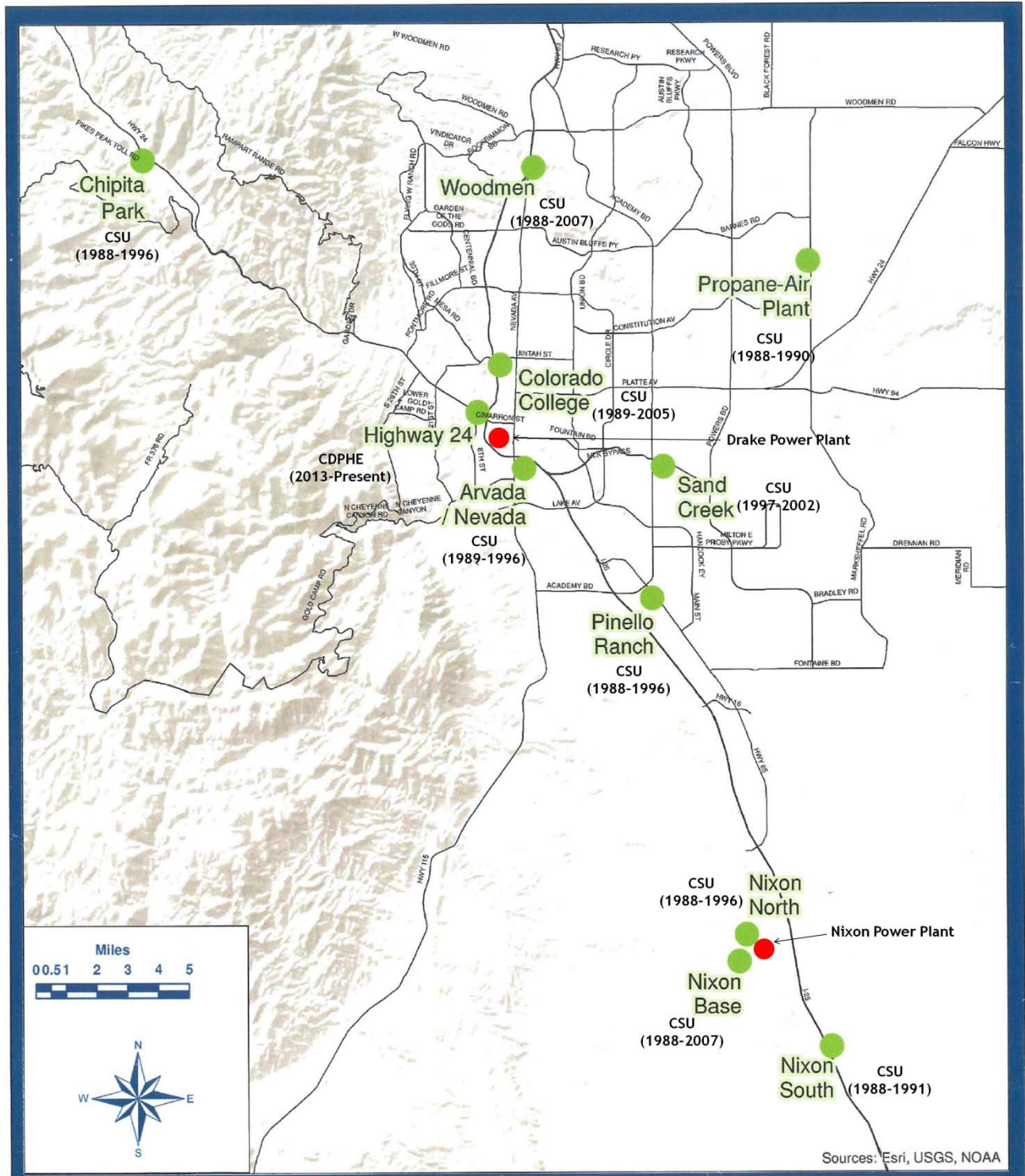
Table 8: CDPHE Highway 24 Monitor Data (2013 - present)

AQS Site ID	Site “Name”	Address	Year	1st Max 1-hour	2nd Max 1-hr	99 th % 1-hour
08-041-0015	Highway 24	690 W. Highway 24	2013	99	81	58
			2014	83	57	56
			2015*	87	68	68

*Data year is from January 1, 2015 – July 15, 2015 (all data has not been QA/QC’d)

Historically, there has been substantial SO₂ monitoring in the Colorado Springs area, with up to ten monitors operating during different periods between 1988 and 2007, shown in Figure 2.

Figure 2: Map of Historical and Current SO2 Monitoring Sites in Colorado Springs Metropolitan Area



Monitors were dispersed across the metropolitan area, with multiple monitors located near the two major SO₂ sources (Drake and Nixon Power Plants) and one located at higher elevation (Chipita Park). The monitoring sites, operator, and years of operation are shown in Table 9.

Table 9: Historical and Current Colorado Springs Area Monitors

AQS Site ID	Site "Name"	Address	Operator	Operating Years
08-041-0015	Highway 24	690 W. Highway 24	CDPHE	2013 – present
08-041-6001	Nixon Base	R.D. Nixon Power Plant (Exit 125 off Interstate I-25)	CSU	1988 – 2007
08-041-6002	Propane Air-Plant	3550 Marksheffel Road	CSU	1988 – 1990
08-041-6003	Nixon South	R.D. Nixon Power Plan (Exit 123 off Interstate I-25)	CSU	1988 – 1991
08-41-6004	Woodmen	6000 Pulpit Rock Drive	CSU	1988 – 2007
08-41-6005	Pinello Ranch	4940 S. Highway 85/87	CSU	1988 – 1996
08-41-6006	Chipita Park	9400 Chipita Park Road	CSU	1988 – 1996
08-41-6009	Nixon North	R.D. Nixon Power Plan (Exit 123 off Interstate I-25)	CSU	1988 – 1996
08-41-6011	Colorado College	130 West Cache La Poudre	CSU	1989 – 2003
08-41-6013	Arvada Nevada	1699 S. Corona Avenue	CSU	1989 – 1996
08-41-6018	Sand Creek	4125 Center Park Drive	CSU	1997 – 2002

The monitors all showed widely variable concentration ranges from year to year. The two monitors closest to the Drake Power Plant (Colorado College and Arvada Nevada) ranged from 39 ppb for the lowest annual 1st maximum value to 122 ppb for the highest. Monitors located further from the power plants, but still within the Colorado Springs urban area (Woodmen, Pinello Ranch, Sand Creek, and Propane-Air Plant) showed 1st maximum values well below the standard, ranging from 10-20 ppb in some years to maximum values between 50-60 ppb in other years. These values were all recorded in the late 1990's. The higher elevation site also showed 1st maximum values well below the standard, with the lowest at 18 ppb and the highest at 30 ppb. These values were recorded in the late 1980's and mid 1990's. It is important to note that annual 99th percentile values from all historical monitors near the Drake Power Plant never came close to exceeding the current 75 ppb NAAQS, with values lower for 3-year 99th percentiles.

Since the majority of SO2 emissions in El Paso County are from the Drake and Nixon Power Plants, the Division assessed how SO2 emissions have changed from these sources since the historical monitoring period. Figure 3 and Figure 4 illustrate there has been a downward trend from both plants in past 20 years. This trend will continue due to Regional Haze SIP requirements for both plants. Although monitors are no longer dispersed throughout the Colorado Springs area, this information demonstrates that prior monitored values were below the current 1-hour SO2 standard and that SO2 emission reductions have been both declining historically and will continue to decline in the future, resulting in lower ambient SO2 concentrations.

Figure 3: Drake Power Plant Annual SO2 Emissions (tons/year) (1985-2014)

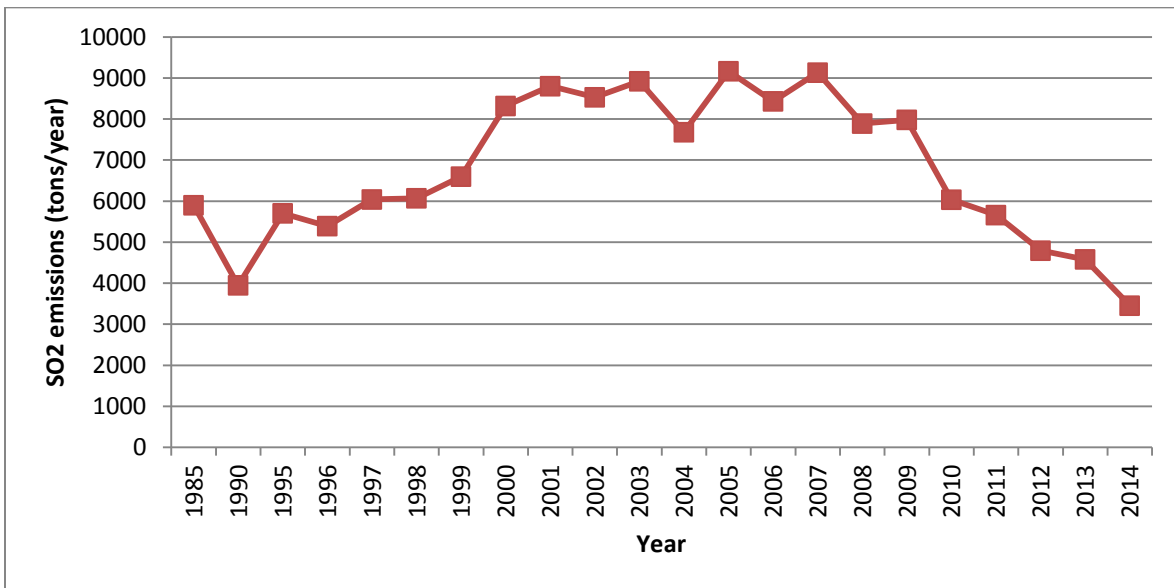


Figure 4: Nixon Power Plant Annual SO2 Emissions (tons/year) (1985-2014)

