State Implementation Plan (SIP) Revision for the Attainment and Maintenance of National Ambient Air Quality Standards for Regional Haze

(2014 Five-Year Progress Report)

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Contents

Executive Summary

In amendments to the Clean Air Act (CAA) in 1977, Congress set a national goal to restore vistas in national parks, wilderness areas, and wildlife refuges to pristine conditions by preventing any future, and remedying any existing, man-made visibility impairment. In 1999, the U.S. Environmental Protection Agency (EPA) finalized the federal Regional Haze Rule, which aims to fulfill the goals set forth in the CAA by the year 2064. The Regional Haze Rule addresses the combined effects of several pollution sources over large geographic areas. It was therefore necessary to use a regional planning approach.

EPA helped develop and fund five regional planning organizations (RPOs); the Central Regional Air Planning Association (CENRAP, no longer active as an organization) was designated as the RPO to represent the central portion of the United States. The State of Kansas was actively involved in CENRAP since its inception. In addition, CENRAP served as a platform for consultation between states, tribes, federal land managers (FLMs), and other stakeholders. The Kansas Regional Haze Plan incorporates data analyses, modeling results, and technical support documents prepared for CENRAP members by various contractors.

The Regional Haze Rule applies to states that encompass air emission sources that contribute to visibility impairment at any of the 156 large, federally managed national parks, wilderness areas, and wildlife refuges designated as visibility protection areas by EPA—the mandatory Class I federal areas. Modeling based on 2002 air emissions inventories showed that Kansas sources moderately impacted several Class I areas in the CENRAP region; in addition, Kansas emission sources were identified by Oklahoma as potential contributors to visibility impairment at a specific Class I area, namely the Wichita Mountains Wilderness located in the southwest part of that state.

On October 26, 2009 the Kansas Department of Health and Environment (KDHE) submitted to the U.S. Environmental Protection Agency (EPA) a state implementation plan (SIP) for the initial ten-year period of the Regional Haze Rule. The SIP was received by EPA on November 9, 2009, and was approved in the December 27, 2011 Federal Register (76 FR 80754) with an effective date of January 26, 2012.

Provisions of the Regional Haze Rule contained in 40 CFR §51.308(g) and (h) require that states submit a progress report five years after the submittal of their initial regional haze SIP. The progress reports must be in the form of a SIP revision and must include a determination regarding the adequacy of the existing regional haze SIP. This document has been prepared to fulfill all applicable requirements pertaining to the five-year progress report of the initial Kansas Regional Haze SIP. KDHE concludes that the current SIP is sufficient to address the reasonable progress goals of Wichita Mountains Class I area, and by extension, other Class I areas that showed less visibility impact in the original modeling.

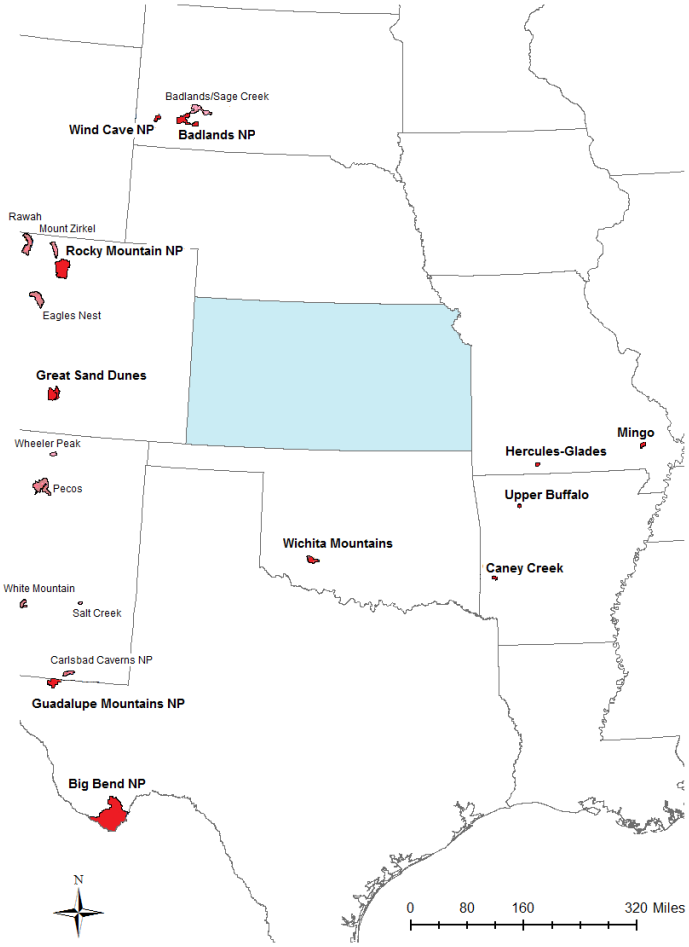
In accordance with 40 CFR §51.308(h) KDHE is also providing to EPA a negative declaration, i.e., that further revision of the existing implementation plan is not needed at this time. This finding is based upon (a) current state and federal regulations of air pollutants, (b) reductions in Kansas of anthropogenic NO_x and SO_2 emissions, and (c) improvement in visibility at the Wichita Mountains Wilderness, as well as other nearby Class I areas, over the past five years (2009 to 2013).

1. Introduction

The Regional Haze Rule was originally promulgated as a final rule by the U.S. Environmental Protection Agency (EPA) July 1, 1999 (64 FR 35714). Only after lengthy litigation, however, was it finally promulgated six years later, on July 6, 2005 (70 FR 39104). The Regional Haze Rule encompassed the first regulations governing visibility impairment attributable to widespread and numerous emissions sources. On October 26, 2009 the Kansas Department of Health and Environment (KDHE) submitted to EPA the final revision to Kansas' State Implementation Plan (SIP) to address the first ten-year implementation period of its regional haze program. The Kansas initial Regional Haze SIP is available at http://www.kdheks.gov/bar/reghaze/KDHERegHaze.pdf.

The Clean Air Act (CAA) provides EPA with the authority to regulate visibility impairment. In the 1977 CAA Amendments, Congress added the national goal of preventing any future and remedying any existing impairment of visibility at 156 mandatory Class I federal areas (Class I areas), which are certain national parks and other federally managed wilderness areas and wildlife refuges that meet certain criteria. A map showing the Class I areas closest to Kansas is provided in Figure 1. Note there are 11 areas originally selected by EPA Region 7 for Kansas' initial SIP—labeled in Figure 1 using bold font.

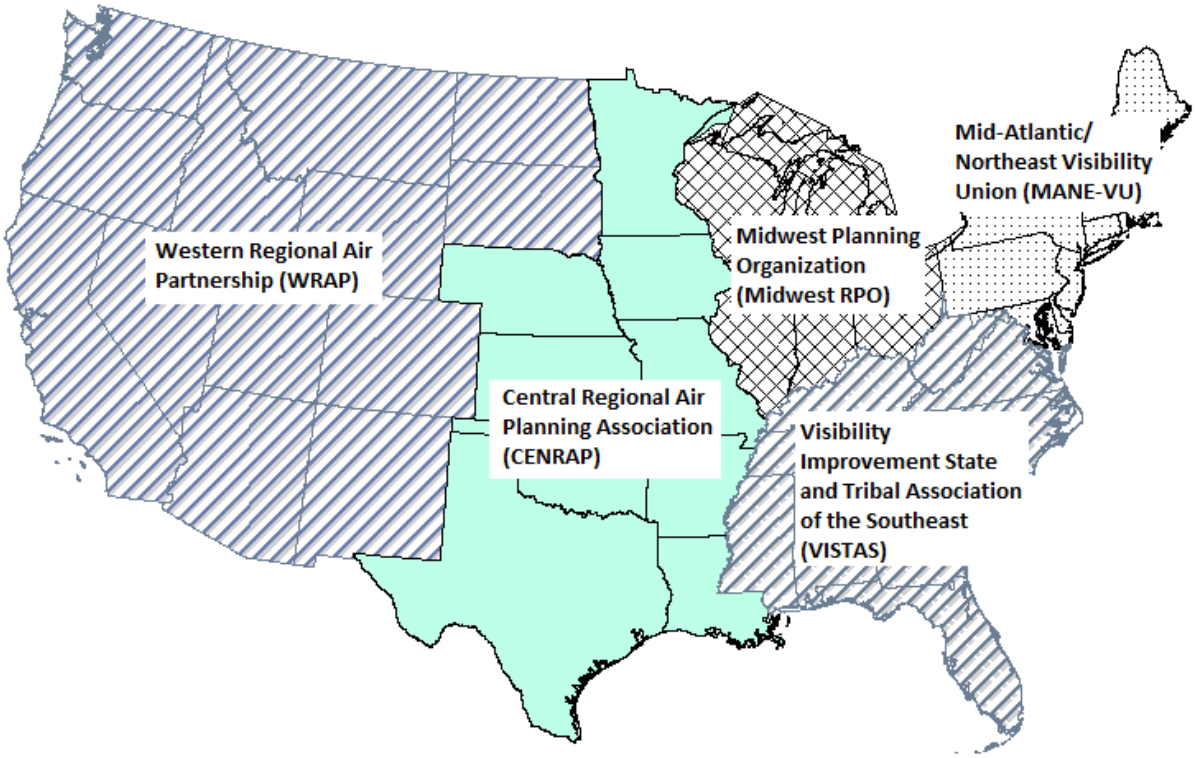
Figure 1. Locations of the mandatory Class I federal areas closest to Kansas.



As can be seen in Figure 1, there are no Class I areas in Kansas. However, the pollutants contributing to regional haze can travel many hundreds of miles. Source apportionment modeling (based on CAMx photochemical modeling) for the initial Kansas Regional Haze SIP showed that applying best available retrofit technology (BART) to Kansas sources would potentially result in visibility improvements of greater than 0.5 inverse megameter (Mm^{-1}) at four Class I areas. The complete set of areas can be found in Table 10.15 in the SIP (accessible at http://www.kdheks.gov/bar/reghaze/KDHERegHaze.pdf), presented in Appendix A in this document. The four areas of interest for this Progress Report are Caney Creek Wilderness Area (Arkansas), Hercules-Glades Wilderness Area (Missouri), Mingo Wilderness Area (Missouri), and Wichita Mountains Wilderness Area (Oklahoma). Wichita Mountains was the only Class I area found to be significantly impacted by Kansas sources for the course of the State's initial Regional Haze SIP; however, for purposes of completeness the other three areas with greater than 0.5 Mm^{-1} improvement will be considered as well in this Progress Report.

The Regional Haze Rule calls for a cooperative approach involving state, federal, and tribal participants to address visibility impairment. Five regional planning organizations (RPOs), shown in Figure 2, were formed to assist in the development of work products needed to understand and address visibility impairment. When formed, the Central Regional Air Planning Association (CENRAP) included Kansas and eight other states (Arkansas, Iowa, Louisiana, Minnesota, Missouri, Nebraska, Oklahoma, and Texas) in the central portion of the continental United States. Note that since CENRAP funding was specifically designated for regional haze work for the initial SIP process, it is no longer active.

Figure 2. Geographical areas of regional planning organizations (RPOs).



Technical analyses and interstate consultation forums provided through CENRAP and other regional planning organizations (RPOs) assisted KDHE in the development of its initial Regional

Haze SIP. Within the initial SIP, KDHE provided a long-term strategy to fulfill the requirement of 40 CFR §51.308(d)(3), addressed the BART regulations codified at 40 CFR §51.308(e), and satisfied the other applicable requirements found in 40 CFR §51.308.

The regional haze implementation process requires the submittal of a progress report five years following the submittal of the initial regional haze implementation plan. Progress reports are also due five years following all subsequent comprehensive Regional Haze SIP revisions. This document constitutes KDHE's five-year Progress Report for Kansas' initial Regional Haze SIP. It conforms with EPA's document *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans* (April 2013, cf. http://www.4cleanair.org/Documents/haze_5year_4-10-13.pdf) regarding information provided, and it is in the form of a SIP revision, fulfilling all applicable obligations required by 40 CFR §51.308(g) and §51.308(h). The first comprehensive revision to the Regional Haze SIP is due July 31, 2018.

2. Summary of Initial Regional Haze SIP

The key components of Kansas' initial Regional Haze SIP included best available retrofit technology (BART) requirements and the State's long-term strategy. Beginning in 2004, KDHE sent out a survey to the State's stationary air emissions sources. A detailed review of the survey results found 66 emission units, located at 19 different facilities, comprising the BART-eligible sources in Kansas. Of these, five emission units located at three facilities—all electric generating units—were found subject to source-specific BART limits. The limits agreed to by the owners of these subject-to-BART units met or exceeded the presumptive limits enumerated in 40 CFR Part 51 Appendix Y, "Guidelines for BART Determinations Under the Regional Haze Rule."

Kansas developed a long-term strategy to address Class I areas located outside the State that may be affected by emissions from Kansas, as required by 40 CFR §51.308(d)(3). Development of the long-term strategy and fulfillment of other regional haze obligations included consulting with downwind states containing Class I areas. Kansas participated in discussions involving Class I areas in the states of Missouri and Arkansas, and attended discussions led by Oklahoma. Emissions from Kansas were determined to be contributing to visibility impairment in the Class I area in Oklahoma (i.e., the Wichita Mountains Wilderness), but not to any Class I area in Missouri or Arkansas.

In terms of emissions reductions for stationary sources, the long-term strategy for reasonable progress was approached in two ways. For those facilities subject to BART, agreements for reductions in nitrogen oxides (NO_x) and sulfur dioxide (SO_2) emissions were negotiated and signed. For remaining stationary sources with significant (greater than 500 tons per year) NO_x and/or SO_2 emissions, a selection process using a "dollars per deciview difference[1]" approach was used to identify units that could be expected to add controls in the event BART controls were insufficient. The units identified as reasonable progress, or "beyond BART" emission units, included eight electric generating units and two Portland cement kilns.

[1] One deciview is approximately the smallest amount of change in visibility impairment that a person can detect.

Further, Kansas considered the following ongoing programs in developing its long-term strategy for reasonable further progress:

- phase-in of on-board refueling vapor recovery (ORVR) federal standards;
- phase-in of on-board diagnostics (OBD I and OBD II);
- federal onroad and nonroad emissions standards;
- federal low sulfur fuel standards, including locomotive emissions standards;
- the Kansas City Ozone Maintenance Plan;
- the Cross-State Air Pollution Rule (CSAPR); and
- federal National Emission Standards for Hazardous Air Pollutants (NESHAP)

3. Regional Haze Five-Year Periodic Report

In general, the purpose of the five-year review is to evaluate accomplishments toward the reasonable progress goals of each mandatory Class I federal area (Class I area) that may be affected by emissions from within a state. Progress reports are periodic in that they are due five years following the submission of the initial regional haze SIP and every five years following submission of a subsequent comprehensive regional haze SIP revision. Progress reports must be in the form of an implementation plan revision that complies with the procedural requirements of 40 CFR §51.102 (public hearings) and §51.103 (submission and preliminary review of plans). The regulatory criteria for the progress reports are codified in 40 CFR §51.308(g), which treats requirements for periodic reports, and 40 CFR §51.308(h), which treats SIP adequacy.

Kansas does not contain a Class I area, and this reduces—but does not eliminate—the applicable requirements just discussed. The remainder of this document contains the elements to be addressed for Kansas' first five-year Regional Haze Progress Report.

3.1 Implementation Status - 40 CFR §51.308(g)(1)

> 40 CFR §51.308(g)(1) requires that the five-year periodic report contain: "*A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I federal areas both within and outside the State.*"

Long-term strategies developed for the initial Regional Haze SIPs were to include all measures relied upon by a state to achieve the reasonable progress goals of Class I areas affected by their emissions. Kansas' long-term strategy was broad in scope to ensure it encompassed all ongoing state and federal programs reducing the types of air pollutants that might be associated with visibility impairment, especially NO_x and SO_2, which are by far the most important pollutants from stationary sources. Additional factors listed in 40 CFR §51.308(d)(3)(v), such as smoke management plans, source retirements and replacements, emissions limits, and the net effect upon visibility from projected changes in emissions from anthropogenic emissions over the period addressed by the long-term strategy, were also required components of the long-term strategy. Not all items included in Kansas' long-term strategy are expected to significantly influence visibility impairment in a Class I area, but were included for completeness.[2]

[2] Such as the requirement that long-term strategies must consider measures to mitigate emissions from construction activities (51.308(d)(3)(v)(B)). Not all measures reviewed are considered significant in terms of visibility impairment, but are once again included for completeness.

State Programs

Unit-specific emissions limits were developed for the Kansas Regional Haze SIP for the five electric generating units found to be subject to BART. These limits were embodied in the form of agreements between the Kansas Department of Health and Environment (KDHE) and the two owners/operators of the five subject-to-BART units, KCP&L and Westar Energy (Westar). Relevant sections of these agreements may be found in Appendix B. Table 1 summarizes the emissions limits stipulated in the agreements for the subject-to-BART units.

Table 1. Kansas Regional Haze SIP Emissions Limits for Subject-to-BART Emissions Units

Unit(s) subject to BART	Emissions limit (lb/MMBtu, 30-day rolling average)			
	NO_x	SO_2	PM_{10} filterable	PM_{10} total
KCP&L - La Cygne (average of Unit 1 and Unit 2)[3]	0.13	0.10	0.015	0.024
KCP&L - La Cygne Unit 1 (>10-week outage of Unit 2)[4]	0.10	0.10	0.015	0.024
Westar Energy - Gordon Evans Unit 2	n/a	Natural gas only	n/a	n/a
Westar Energy - Jeffrey Unit 1	0.15	0.15	n/a	n/a
Westar Energy - Jeffrey Unit 2	0.15	0.15	n/a	n/a

The SIP compliance date for the Westar units is January 1, 2014; nonetheless, compliance with BART limits for both NO_x and SO_2 was met by Units 1 and 2 throughout inventory year 2012.[4] SO_2 emissions from Units 1 and 2 have been continuously controlled with wet scrubbers since 2009 and 2010, respectively.

The compliance date for the KCP&L units is June 1, 2015. A major construction project including installation of a new wet scrubber and baghouse for Unit 1, as well as low NO_x burner, selective catalyst reduction (SCR) control, baghouse, and wet scrubber for Unit 2, is scheduled for completion sometime prior to the June 1, 2015 compliance date.

The KDHE continues to implement a major source Prevention of Significant Deterioration (PSD) permitting program and a minor source review program. Additionally, KDHE has developed a Smoke Management Plan to address the air quality impacts associated with annual prairie burning in the Flint Hills region of the State. Information about the Kansas Smoke Management Plan is available at http://www.ksfire.org.

2010 Compliance Settlement

Beginning around the year 2000, the U.S. Department of Justice, at EPA's request, began filing lawsuits against coal-fired electric utilities for alleged violations of the Clean Air Act. The resulting series of cases, called by EPA its "Power Plants Enforcement Effort," sought to bring the power plant industry into full compliance with EPA's New Source Review (NSR) and Prevention of Significant Deterioration (PSD) requirements of the Clean Air Act. In its subsequent 2009 action and enforcement settlement with Westar (made final on March 25, 2010, cf. http://www2.epa.gov/enforcement/westar-energy-inc-settlement), EPA set limits on NO_x at the Jeffrey facility more stringent that the BART limits in the Kansas Regional Haze SIP.

[3] See Appendix B, part A1, KCP&L Agreement for more specific information on emissions limits for La Cygne Units 1 and 2.

[4] A table showing 2012 30-day rolling averages for NO_x and SO_2 for the two units is found in Appendix C.

Specifically:

- Beginning on December 31, 2011 [two years earlier than specified in the Kansas Regional Haze SIP], low NO_x systems at all three units were required to achieve and maintain a 30-day rolling average unit NO_x emission rate of at most 0.180 lb/MMBtu.
- By the end of 2014, when requirements under the settlement come into effect, Unit 1 will have selective catalytic reduction (SCR) installed on Unit 1, and selective non-catalytic reduction (SNCR) installed on Unit 2 and Unit 3. Under this scenario, which is the option Westar chose under the settlement, the plant-wide limit will be a 30-day rolling average NO_x emission rate of 0.100 lb/MMBtu, with a 12-month rolling tonnage limitation of 9,600 tons.

Federal Programs

The emission reductions associated with the federal programs that are described by the following paragraphs were included in the CENRAP future year emissions estimates. Descriptions contain qualitative assessments of emissions reductions associated with each program, and where possible, quantitative assessments. Additionally, estimates of particulate matter reductions from area source maximum achievable control technology (MACT) standards with compliance dates since January 1, 2009 (i.e., the start of the five-year look back for this progress report) is provided in Appendix D. The approximate total reduction in $PM_{2.5}$ from sources subject to these standards is 351 tons per year.

2007 Heavy-Duty Highway Rule (40 CFR Part 86, Subpart P)

In this regulation EPA set a particulate matter (PM) emissions standard for new heavy-duty engines of 0.01 g/bhp-hr, which took full effect for diesel engines in the 2007 model year. This rule also included standards for NO_x and non-methane hydrocarbons (NMHC) of 0.20 g/bhp-hr and 0.14 g/bhp-hr, respectively. These diesel engine NO_x and NMHC standards were successfully phased in together between 2007 and 2010. The rule also required that sulfur in diesel fuel be reduced to facilitate the use of modern pollution control technology on these trucks and buses. The EPA required a 97 percent reduction in the sulfur content of highway diesel fuel—from levels of 500 ppm (low sulfur diesel) to 15 ppm (ultra low sulfur diesel, or ULSD). These requirements were successfully implemented on the timeline in the regulation.

Tier 2 Vehicle and Gasoline Sulfur Program (40 CFR Part 80, Subpart H; 40 CFR Part 85; 40 CFR Part 86)

The EPA's Tier 2 fleet averaging program for onroad vehicles, modeled after the California LEV (Low Emissions Vehicle) II standards, became effective in the 2005 model year. The Tier 2 program allows manufacturers to produce vehicles with a range of emission rates among different models, but the mix of vehicles a manufacturer sells each year must have average NO_x emissions below a specified value. Mobile emissions continue to benefit from this program as motorists replace older, more polluting vehicles with cleaner vehicles.

Clean Air Nonroad Diesel Rule (40 CFR Part 89; 40 CFR Part 1039)

The EPA adopted standards for emissions of NOx, hydrocarbons, and carbon monoxide from several groups of nonroad engines, including industrial spark ignition engines and recreational nonroad vehicles. Industrial spark ignition engines power commercial and industrial applications and include forklifts, electric generators, airport baggage transport vehicles, and a variety of farm and construction applications. Nonroad recreational

vehicles include snowmobiles, off-highway motorcycles, and all-terrain vehicles. These rules were initially effective in 2004 and were fully phased in by 2012. The nonroad diesel rule set standards that reduced emissions by more than 90 percent from nonroad diesel equipment and, beginning in 2007, the rule reduced fuel sulfur levels by 99 percent from previous levels. The reduction in fuel sulfur levels applied to most nonroad diesel fuel in 2010, and applied to fuel used in locomotives and marine vessels in 2012.

3.2 Emissions Reductions - 40 CFR §51.308(g)(2)

40 CFR §51.308(g)(2) requires*: "A summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1) of this section."*

As described above, the chief measures relied upon by Kansas to achieve the reasonable progress goals in its initial Regional Haze SIP were establishing specific emissions limits for its subject-to-BART sources, combined with identifying reasonable progress (or "beyond BART") units—large NO_x and/or SO_2 sources—that could cost-effectively install controls in case Kansas' share of visibility impairment at the Wichita Mountains Class I area by 2018 is not sufficient.

Subject-to-BART Sources

As stated above, five emission units located at three facilities were found to be subject to BART, and the initial SIP details emission limits and projected emissions reductions expected after installing requisite controls. This information is summarized in Table 9.5 of the SIP, and presented in Table 2 below, along with 2002 (pre-construction) and 2012 (post-construction except for KCP&L – La Cygne) emissions values. Note the projected decreases in total NO_x and SO_2 have essentially been met despite the fact that the final La Cygne BART controls will not be in place until 2015.

Table 2. Projected Emissions Reductions from 2002 Levels after Installation of BART Controls for the Subject-to-BART Units in Kansas, and 2012 Actual NO_x and SO_2 Emissions

Subject-to-BART Emission Unit	Projected BART Emissions Reductions (tons/yr)		2002 Actual Emissions (tons)		2012 Actual Emissions (tons)	
	NO_x	SO_2	NOx	SO2	NO_x	SO_2
KCP&L - La Cygne Unit 1	27,481.6	2,700.0	30,057.6	6,648.1	2,220.1	2,068.7
KCP&L - La Cygne Unit 2	2,133.2	15,362.4	8,361.8	19,355.1	7,439.3	14,166.1
Westar Energy - Gordon Evans Unit 2	1,885.6	3,210.5	2,023.2	3,210.5	589.5	1.1
Westar Energy - Jeffrey Unit 1	5,333.6	16,927.3	9,601.6	20,458.9	2,950.2	389.2
Westar Energy - Jeffrey Unit 2	6,852.1	20,250.7	10,891.7	23,715.3	3,235.0	400.7
Totals	***43,686.1***	***58,450.9***	***60,935.9***	***73,387.9***	***16,434.1***	***17,025.8***

Large NO_x and/or SO_2 Sources Not Subject to BART ("Reasonable Progress Units")
In section 10.2 of its initial implementation plan, titled "Selection of Kansas Sources for Reasonable Progress Evaluation," Kansas developed a process to fairly select stationary sources not subject to BART that could contribute to reasonable progress goals. This process was:

1. Identify all Kansas emission units that had greater than or equal to 500 tons for NO_x and/or SO_2
2. Identify the most effective control technologies and screen for excessive cost
3. Model visibility impacts and screen for low-impact facilities
4. Calculate, screen, and rank based on cost per ton per deciview difference (delta deciview, or Δdv) [Note cost of controls were taken from EPA's AirControlNET tool (http://www.epa.gov/ttn/ecas/AirControlNET.htm), while Δdv values were found by running the CALPUFF model twice (with pre- and post-control emissions inputs) and finding the difference in deciview outputs.]
5. Screen for non-cost statutory factors, i.e., time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life
6. Re-sort and make final ranked list of potential facilities

The results of this process were summarized in Table 10.12 of the SIP, and sources are presented in Table 3. Note that Lafarge Midwest - Fredonia was permanently closed in 2012.

Table 3. Ranked List of Sources under the Reasonable Progress Analysis

Rank	Source ID	Reasonable Progress Emission Unit(s)	Pollutant
1	1730012	Westar Energy - Gordon Evans Unit 1	SO_2
2	1490001	Westar Energy – Jeffrey Unit 3	SO_2
3	2090008	Kansas City BPU – Nearman Unit 1	SO_2
4	0450014	Westar Energy - Lawrence Units 3, 4, & 5	NO_x
5	1770030	Westar Energy - Tecumseh Units 7/9 & 8/10	NO_x
6	2090008	Kansas City BPU - Nearman Unit 1	NO_x
7	1490001	Westar Energy - Jeffrey Unit 3	NO_x
8	2057022	Lafarge Midwest - Fredonia Kilns 1 & 2	NO_x

Emissions Reductions Summary — Subject-to-BART and Reasonable Progress Units
Using the two sets of emission units enumerated in the two tables above (i.e., subject-to-BART and reasonable progress, or "beyond BART" units), annual inventories from 2002 to 2012 and estimated future emissions 2013-2018 were compiled for the two major pollutants related to visibility impairment from stationary sources—NO_x and SO_2—and are summarized in Figure 3 (for NO_x) and Figure 4 (for SO_2) below. Tables containing individual reasonable progress unit values, along with notes describing estimates for future emissions, are presented in Appendix E.

Figure 3. Air Emissions of NO_x from Kansas Emissions Sources for Reasonable Progress, 2002–2018

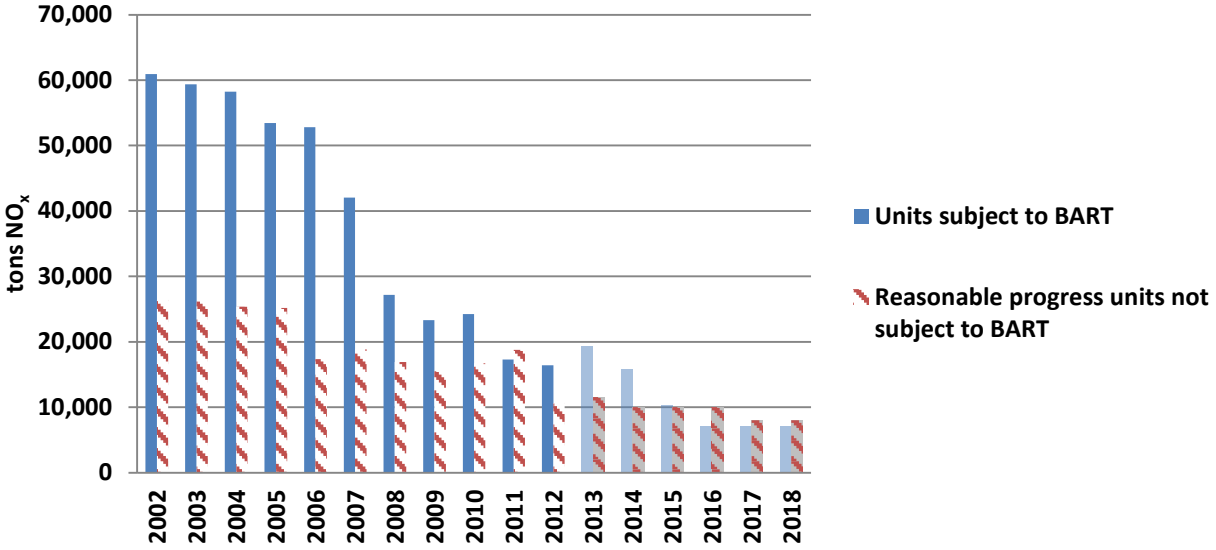
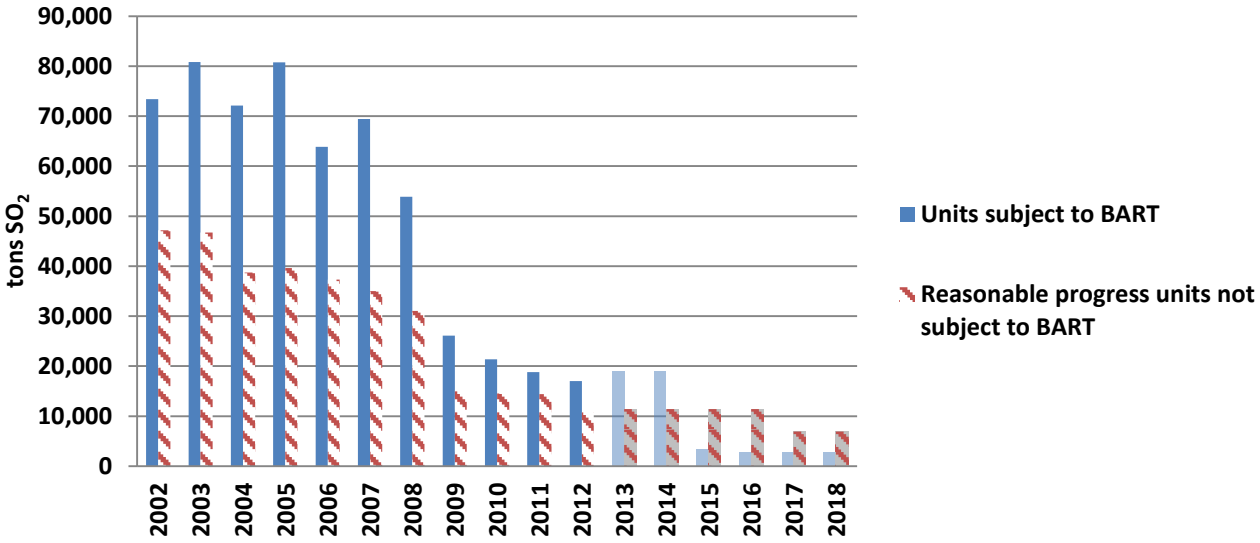


Figure 4. Air Emissions of SO_2 from Kansas Emissions Sources for Reasonable Progress, 2002–2018



Figures 3 and 4 show a dramatic decrease in both NO_x and SO_2 from Kansas sources since 2002, particularly for the subject-to-BART units beginning in 2008, when regional haze agreements were signed and their implementation begun. In absolute terms, total annual emissions of NO_x for subject-to-BART units have fallen from a high of 60,936 tons in 2002 to 16,434 tons in 2012 (a 73 percent decrease), and by 2018 are predicted to fall to 7,091 tons, which would represent a very substantial decline of 88 percent over the 16-year period. Likewise for SO_2, total annual emissions for subject-to-BART units have fallen from a high of 80,828 tons in 2003 to 17,026 tons in 2012 (a 79 percent decrease), and by 2018 are predicted to fall to 2,683 tons, which would represent a remarkable decline of 97 percent over the 16-year period. Emissions of NO_x and SO_2 for the reasonable progress units have decreased as well, with percent declines over the years 2002 to 2012 of 60 percent and 77 percent for NO_x and SO_2, respectively. It should be noted that a portion of these decreases was not mandated by the Regional Haze SIP, but came

about primarily due to the 2010 EPA compliance settlement involving the Westar Energy - Jeffrey facility, and secondarily due to the permanent closure of the Lafarge Midwest - Fredonia Portland cement kilns. Again, tables showing annual values for each emission unit are presented in Appendix E.

Non-BART-Related Kansas Point Source Emissions

Lastly, in consideration of the remainder of the stationary (point) sources not already considered, Table 4 shows NO_x and SO_2 emission trends over the period 2002-2012 for all Kansas Title V (major) and synthetic minor sources. Note in 2012 there were 471 of these sources reporting NO_x emissions, and 395 reporting SO_2 emissions.

Table 4. 2002-2012 NOx and SO2 emissions for all Kansas non-BART-related stationary emissions sources

Year	Total tons from Kansas sources reporting < 500 tons of NO_x and/or SO_2	
	tons NO_x	tons SO_2
2002	80,906	18,892
2003	79,760	24,768
2004	78,077	23,734
2005	80,529	26,575
2006	76,732	20,775
2007	75,261	20,903
2008	63,344	18,449
2009	59,072	17,135
2010	61,019	16,019
2011	56,832	13,619
2012	50,869	9,897

Table 4 again shows significant decreases in the emissions of the two most significant haze-forming pollutants from stationary sources, NO_x and SO_2, from Kansas sources. In the case of NO_x the decrease from 2002 to 2012 was 37 percent, and for SO_2 the corresponding decrease was 48 percent.

3.3 Visibility Conditions - 40 CFR §51.308(g)(3)

> The text of 40 CFR §51.308(g)(3) begins: *"For each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values."*

Kansas contains no Class I area and therefore is not subject to this requirement; nevertheless, it is beneficial for weight of evidence purposes to have available a record of visibility conditions and changes for the Wichita Mountains Wilderness, as well as for the three Class I areas mentioned above that showed the greatest potential visibility impact from Kansas emission sources by prior source apportionment modeling. For convenience, this report will focus on visibility conditions at the Wichita Mountains Wilderness only, but will show summary results for the other Class I areas. Data tables and glide paths for those areas can be found in Appendix F.

Table 4 below shows visibility data, taken from the Federal Land Manager Environmental Database at http://views.cira.colostate.edu/fed/, for annual average 20 percent worst and 20 percent best aerosol extinction days (in deciviews) for Wichita Mountains over the years 2002–2011. As specified in §51.308(g)(3), five-year rolling averages of these annual values are

calculated and displayed, along with the official baseline and "natural conditions" values for visibility (e.g., 7.53 dv for the average 20 percent worst days).

Table 4. 20% Worst and 20% Best Aerosol Extinction Days (in deciviews) for Years 2002–2011 - Wichita Mountains Wilderness

20% worst and 20% best aerosol extinction days (in deciviews) for years 2002-2011 - Wichita Mountains						
Site	**Year**	**Parameter**	**Avg. 20% worst days**	**5-year average**	**Avg. 20% best days**	**5-year average**
WIMO1	2002	dv	23.60		9.75	
WIMO1	2003	dv	23.60		10.02	
WIMO1	2004	dv	24.23		9.56	
WIMO1	2005	dv	25.68		10.59	
WIMO1	2006	dv	21.83	23.79	9.74	9.93
WIMO1	2007	dv	22.80	23.63	9.32	9.85
WIMO1	2008	dv	21.55	23.22	9.85	9.81
WIMO1	2009	dv	21.62*	22.70	9.48*	9.80
WIMO1	2010	dv	21.69	21.90	9.11	9.50
WIMO1	2011	dv	22.86	22.10	10.25	9.60
WIMO1	*Baseline*	*dv*	*23.81*		*9.78*	
WIMO1	*2064*	*dv*	*7.53*		*3.02*	

* *Value shown is deciview average of years 2008 and 2010 (2009 annual average not supplied by source)*
Data source: http://views.cira.colostate.edu/fed/DataWizard/Default.aspx

An examination of Table 4 shows that average light extinction at Wichita Mountains (as well as the other Class I areas of interest in Appendix F) has been generally decreasing (visibility has been increasing) over the six five-year periods available since 2002. The degree to which visibility is increasing can be measured by plotting average deciview values over time, then looking at the slope of the best-fit line through the points—the more negative the slope, the greater the rate of visibility improvement. Figure 5, which is a Microsoft Excel chart with linear trendline included, shows the plot of five-year average deciview values—as specified in §51.308(g)(3)—over time for Wichita Mountains. Note Figure 5 is presented in two plots: Figure 5a is for 20 percent worst days and Figure 5b is for 20 percent best days. The set of five-year average plots for the other three Class I areas of interest can be found in Appendix G.

Figure 5a. Five-Year Average Visibility Impairment (in deciviews) for 20% Worst Days over Years 2002-2011 - Wichita Mountains Wilderness

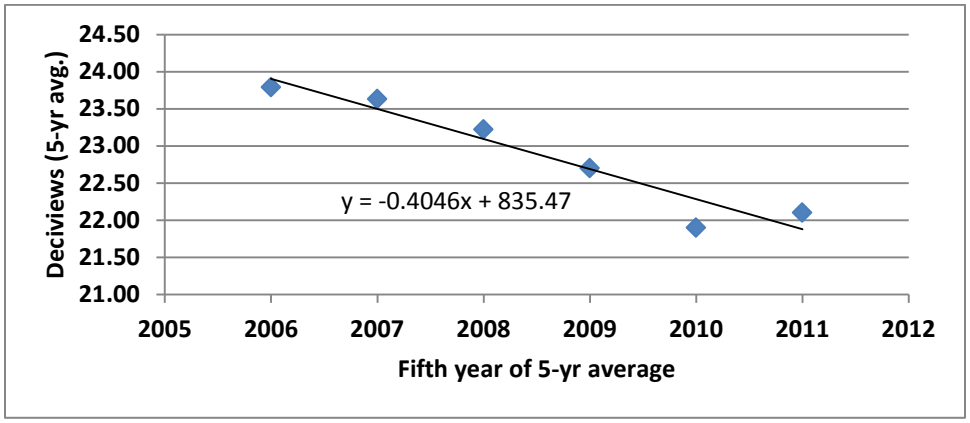
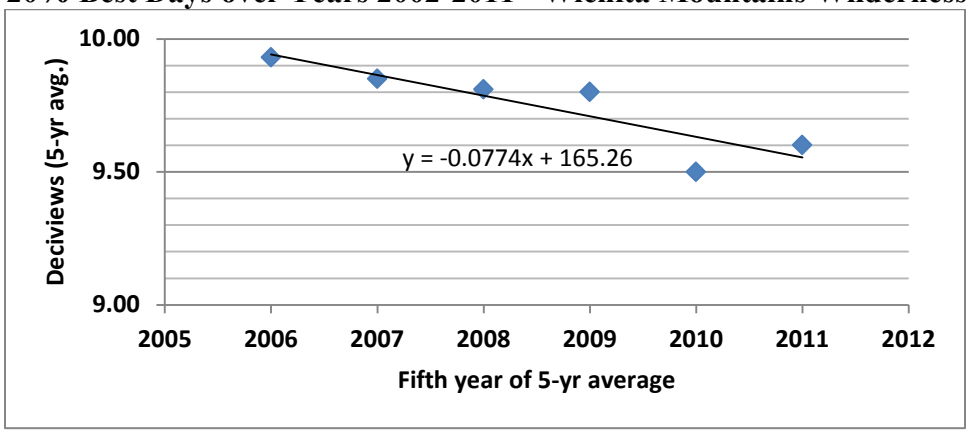


Figure 5b. Five-Year Average Visibility Impairment (in deciviews) for 20% Best Days over Years 2002-2011 - Wichita Mountains Wilderness



As indicated in Figure 5, the slope for 20 percent worst days at Wichita Mountains is -0.4046 dv/year. Likewise, for 20 percent best days the slope is -0.0774 dv/year.

Next, the five-year average slopes are compared with the slopes of the so-called "glide paths" to natural visibility conditions in the year 2064. The glide paths for both 20 percent worst days and 20 percent best days can be found at http://views.cira.colostate.edu/fed/DataWizard/Default.aspx, which is part of the official website for the Federal Land Manager Environmental Database (FED). Figure 6, taken directly from the website, shows the glide paths (for 20 percent worst days and 20 percent best days) for Wichita Mountains; glide paths for the other three Class I areas of interest are included (represented in the case of Mingo Wilderness Area) in Appendix F.

Figure 6. Wichita Mountains natural levels of haze and its composition on the 20% best and 20% worst haze days.

Slopes of the two glide paths in Figure 6 were calculated using the deciview values shown for year 2064 and the baseline values (found at the FED webpage). These results, along with the five-year average slopes for the four Class I areas of interest for Kansas, are presented in Table 5.

Table 5. Summary Comparison of Five-Year Average Deciview and Glide Path Slopes for Selected Class I Areas

Class I Area	Visibility improvement (deciviews per year)			
	20% worst days		20% best days	
	5-yr avg.	*Glide path*	*5-yr avg.*	*Glide path*
Wichita Mountains	-0.4046	-0.2713	-0.0774	-0.1127
Caney Creek	-0.7169	-0.2463	-0.3800	-0.1168
Hercules-Glades	-0.5737	-0.2575	-0.2829	-0.1358
Mingo	-0.52	-0.2987	-0.42	-0.1387

Comparing slope values (five-year average versus glide path) allows the testing of whether or not visibility is improving at the rate assumed adequate to meet reasonable progress goals. The goal is for five-year average slopes to be more negative than the comparable glide path slope. Looking at the two pairs of slope values for Wichita Mountains shows the five-year average actual visibility improvement for 20 percent worst days (-0.4046 dv/year versus -0.2713 dv/year) is significant, with a slope 49 percent more negative than the glide path. On the other hand, the 20 percent best day values show the actual visibility values improving at a rate slower than the glide path—31 percent less so. Of the four Class I areas examined, the 20 percent best day discrepancy for Wichita Mountains is the only case where visibility improvement for 20 percent best days is not significantly improved.

3.4 Emissions Trend Analysis - 40 CFR §51.308(g)(4)

> 40 CFR §51.308(g)(4) requires that the five-year periodic report contain: *"…an analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period."*

A statewide emissions inventory of pollutants that are reasonably anticipated to cause, or contribute to, visibility impairment at any Class I area was required to be included in the initial regional haze SIP (40 CFR §51.308(d)(4)(v)). The initial Kansas Regional Haze SIP used a baseline year of 2002, based on the final 2002 National Emissions Inventory (NEI), and these values were projected to 2018. 2018 emissions estimates were made primarily using the Economic Growth Analysis System (EGAS6), MOBILE 6.2 vehicle emission modeling software, and the Integrated Planning Model (IPM) version 2.93 for electric generating units (EGUs) (cf. section 7.1). As indicated in several places in 40 CFR §51.308, the pollutants inventoried by Kansas were those that "may reasonably be anticipated to cause or contribute to any impairment of visibility," namely ammonia (NH_3), nitrogen oxides (NO_x—NO and NO_2), coarse particulates (PM_{10}), fine particulates ($PM_{2.5}$), and sulfur dioxide (SO_2).

Pollutants and combined source types ("*all sources and activities*" per 40 CFR §51.308(g)(4)) included in the initial Kansas Regional Haze SIP are reviewed in this five-year progress report, with the goal of estimating changes in anthropogenic air emissions from 2009 to 2013 (i.e., "*over the past 5 years*"). The most recent comprehensive inventory is the 2011 NEI version 1 (version dated September 30, 2013). The 2011 inventory offers a recent and uniform platform for emissions comparisons, and combined with the 2002, 2005, and 2008 national inventories provides the logical data source to meet the requirements of 40 CFR §51.308(g)(4).

Figures 7 through 11 below show the overall trends in air emissions from all Kansas sources and activities (i.e., from all point, nonpoint, onroad, and nonroad sources) for the five pollutants of interest. Each of the figures was created in Microsoft Excel, which was also used to show best-fit lines for viewing estimated emissions over years 2009–2013. Data sources for emissions can be found at the following URLs at the EPA ftp site:

- 2002 NEI - ftp://ftp.epa.gov/EmisInventory/2002finalnei/all_sector_tier_summary_data/tier/02nei_v3tier_summary_oct_15_2007.zip
- 2005 NEI - ftp://ftp.epa.gov/EmisInventory/2005_nei/tier_summaries/tier_05v2
- 2008 NEI - ftp://ftp.epa.gov/EmisInventory/2008v3/tier_summaries
- 2011 NEI (version 1) - ftp://ftp.epa.gov/EmisInventory/2011/nei2011v1-county-tribe-allsectors.zip

Figure 7. Kansas Anthropogenic NH_3 from all NEI Sectors 2002−2013

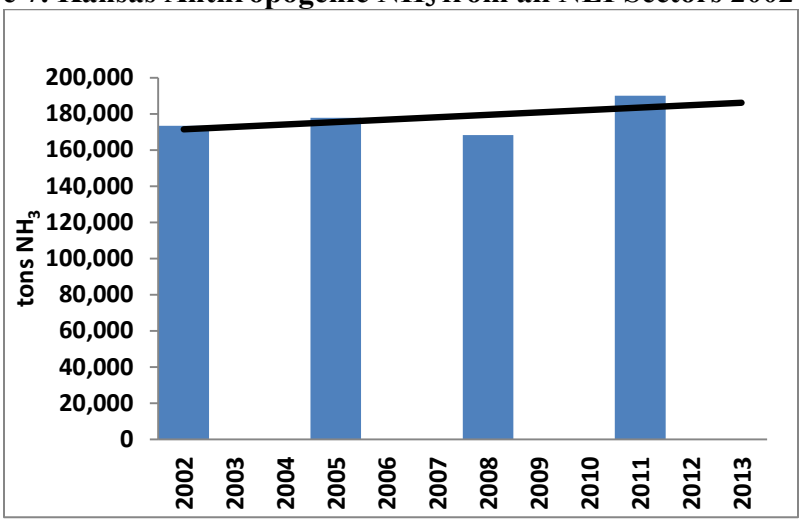


Figure 8. Kansas Anthropogenic NO_x from all NEI Sectors 2002−2013

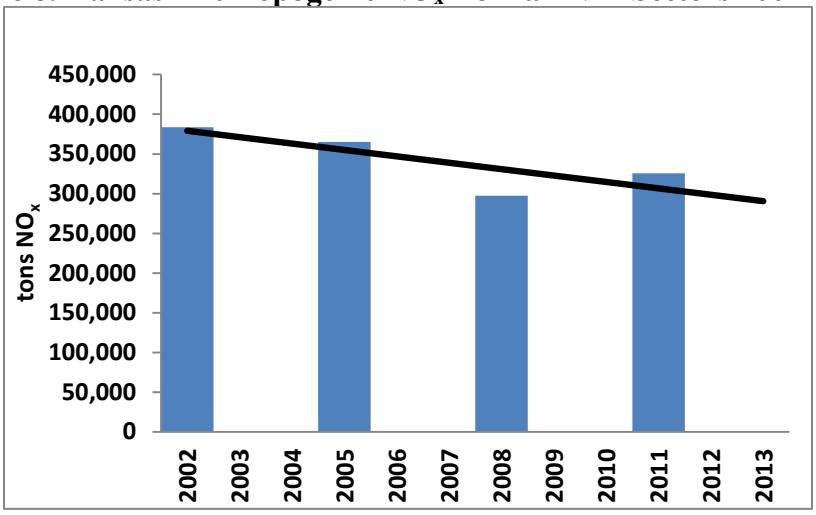


Figure 9. Kansas Anthropogenic PM_{10} from all NEI Sectors 2002−2013

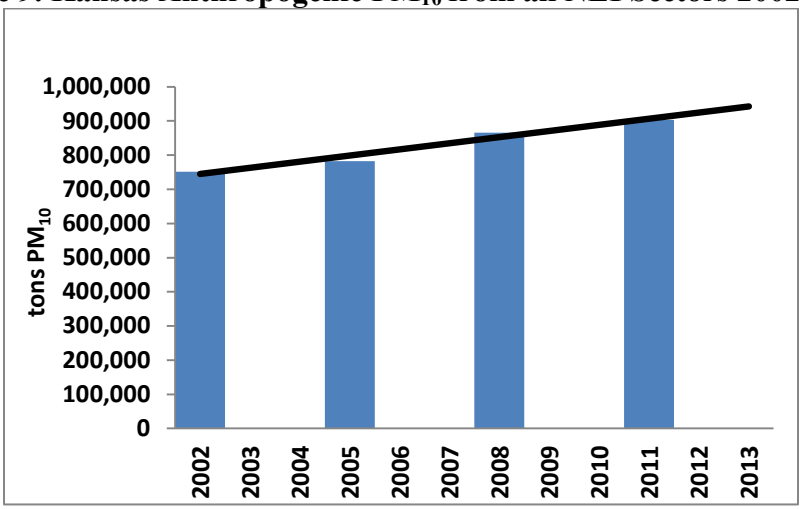


Figure 10. Kansas Anthropogenic $PM_{2.5}$ from all NEI Sectors 2002–2013

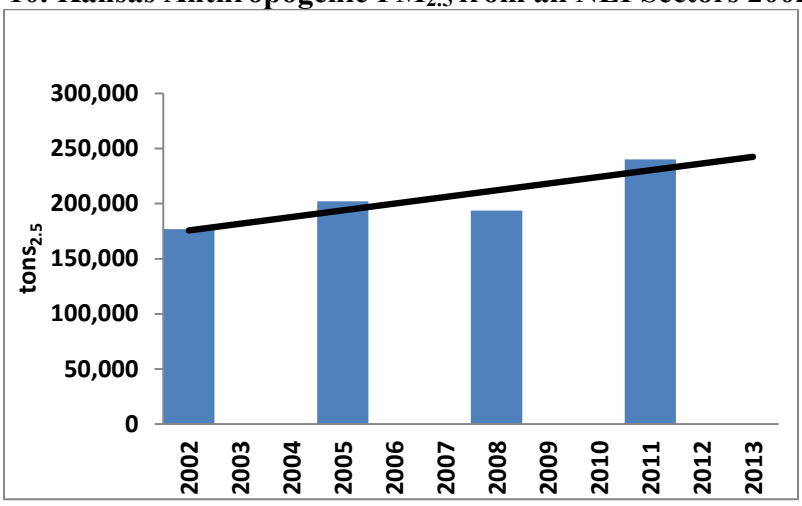


Figure 11. Kansas Anthropogenic SO_2 from all NEI Sectors 2002–2013

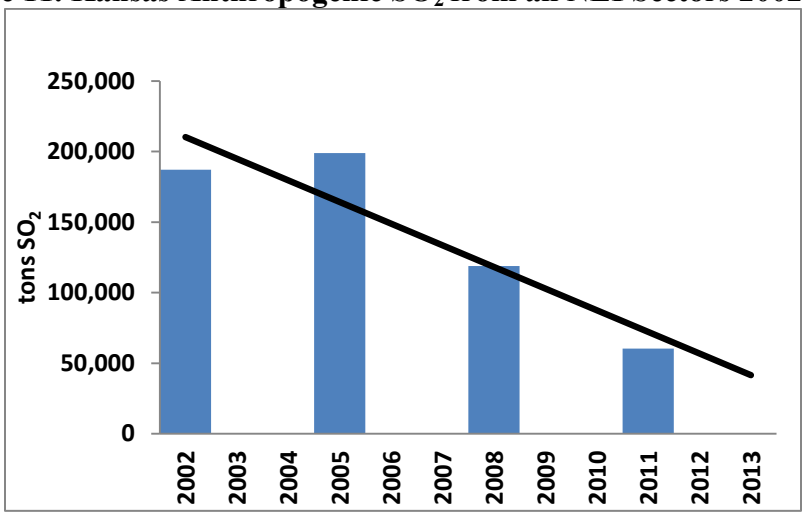


Table 6 is a summary of the emissions shown in the previous six charts in tabular form.

Table 6. Kansas Anthropogenic Air Emissions (in tons) of Haze-Related Pollutants from all NEI Sectors for Inventory Years 2002, 2005, 2008, and 2011

Year	NH_3	NO_x	PM_{10}	PM_{25}	SO_2
2002	173,505	383,622	751,976	176,799	187,133
2005	177,822	365,146	781,965	202,059	198,905
2008	168,388	297,479	866,127	193,718	118,970
2011	190,031	325,610	903,400	240,280	60,381

Table 7 provides a summary of interpolated Kansas total annual emissions over this report's five-year period (2009–2013) for the five pollutants of interest. Values in Table 6 were generated in Microsoft Excel using the FORECAST function (i.e., using the same linear regression as displayed in Figures 7 through 11). In addition to the interpolated values, differences in emissions of 2013 minus 2009 are displayed in the bottom row of Table 7 in order to show in absolute terms the decreases and increases in emissions over the five years of interest.

Table 7. Kansas Estimated Total Anthropogenic Air Emissions (in tons) of Haze-Related Pollutants for Years 2009–2013

Year	NH_3	NO_x	PM_{10}	PM_{25}	SO_2
2009	180,782	322,822	870,737	218,389	102,998
2010	182,120	314,766	888,684	224,459	87,658
2011	183,458	306,709	906,632	230,529	72,319
2012	184,796	298,652	924,580	236,599	56,979
2013	186,134	290,595	942,528	242,669	41,639
2013-2009	***5,352***	***-32,227***	***71,791***	***24,280***	***-61,359***

Based on the National Emissions Inventory results just presented, Kansas has seen both decreases and increases in anthropogenic air emissions over the years 2009 to 2013. Emissions of NO_x and SO_2—the primary contributors to visibility impairment from anthropogenic sources—are down significantly (10.0 percent for NO_x and 59.6 percent for SO_2), thanks to the Regional Haze agreements made with Westar Energy and KCP&L as discussed above. However, NH_3 (ammonia) and PM emissions are up, and reasons for the increasing levels recorded for these pollutants need to be addressed.

In order to analyze emissions trends in the four inventories in greater detail, it is important to understand that each triennial inventory cycle brings with it certain differences in both how emissions are estimated, as well as changes in how the emissions data are aggregated. Examples of these differences include:

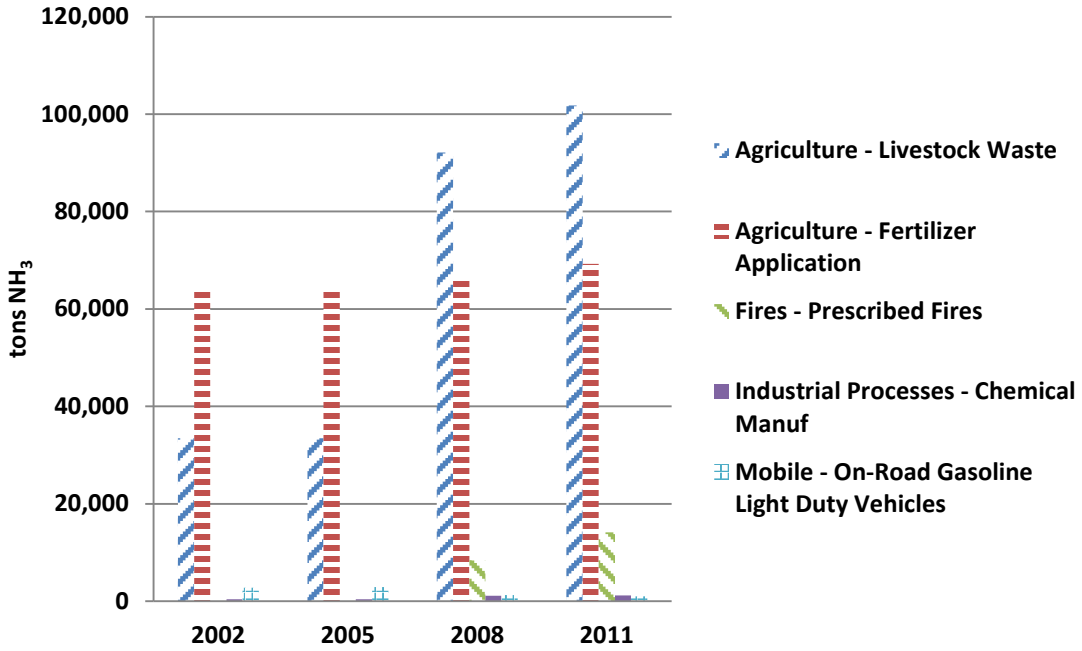
- For the 2005 NEI: "EPA developed the 2005 NEI v2 based on a reduced level of effort. Part of this reduced effort involved using some NEI 2002 v3 data in the NEI 2005 v2 as surrogates for emissions data representing 2005."[5] For Kansas, this resulted in nearly all nonpoint emissions for 2005 remaining the same as for 2002.
- For the 2008 NEI (beginning with version 2): "…updates are the use [of] a draft version of the MOVES model for onroad mobile sources, a review and update of hazardous air pollutant emissions, and additions of wildfires, prescribed burning and biogenic emissions."[6]

Figures 12 through 16 below show trends in Kansas air emissions from the five most significant source types (sectors) for each of the five haze-related pollutants of interest, based on results of the 2011 NEI. Text following Figure 12 (ammonia) and Figures 14 and 15 (particulate matter) will discuss reasons for upward trends as described above. Note that figures were created in Microsoft Excel; underlying data tables can be found in Appendix H. Data sources for emissions can be found at the following URLs at the EPA website:

- 2002 NEI - http://www.epa.gov/ttn/chief/net/2002inventory.html#inventorydata
- 2005 NEI - http://www.epa.gov/ttn/chief/net/2005inventory.html#inventorydata
- 2008 NEI - http://www.epa.gov/ttn/chief/net/2008inventory.html
- 2011 NEI - http://www.epa.gov/ttn/chief/net/2011inventory.html

[5] http://www.epa.gov/ttn/chief/net/2005inventory.html#inventorydata
[6] http://www.epa.gov/ttn/chief/net/2008inventory.html

Figure 12. Kansas NH_3 Emissions 2002-2011 - Five Largest Anthropogenic NEI Sectors



As Figure 12 shows, the increase in ammonia, basically from the 2005 to the 2008 inventory, was due chiefly to the increase in estimated livestock waste emissions, a nonpoint sector. Recalling that 2005 NEI values typically copied 2002 estimates, the large emissions increase for this sector is explained by Kansas not adopting the (EPA-approved) CMU (for Carnegie Mellon University) model version 3.6 until the 2008 inventory. As explained in EPA's documentation for the 2002 NEI: "Kansas, Minnesota, and Missouri included NH_3 emissions for confined animal feeding operations in their point source inventories and adjusted their nonpoint source inventories to exclude the point source emissions. Therefore, their nonpoint source inventories were not replaced since the CMU model inventory is not adjusted for point source emissions."[7] Starting with the 2008 NEI, KDHE modified its definition of point sources to include only Title V and synthetic minor sources (i.e., only those emission sources submitting annual inventories to the Kansas Emissions Inventory). As a result, Kansas estimates for 2002 and 2005 were significantly less than predicted by using the CMU model alone, which KDHE initiated in 2008.

A secondary cause for the jump in ammonia emissions from 2005 to 2011 was due to a discrepancy in how fires were categorized: prescribed fires (event sector) or agricultural field burning (nonpoint sector). Beginning in 2008, EPA corrected the classifying of fires on pastures—at least for the Flint Hills region of eastern Kansas—from "grass crop" residue burning (nonpoint sector) to prescribed burning (event sector). As a result, the 2002 and 2005 NEI estimates for the two anthropogenic fire-related sectors (i.e., Prescribed Fires and Agricultural Field Burning) are inconsistent, and for trend analysis need to be summed into a single sector.

[7] ftp://ftp.epa.gov/EmisInventory/2002finalnei/documentation/nonpoint/2002nei_final_nonpoint_documentation0206version.pdf

Figure 13. Kansas NO_x Emissions 2002-2011 - Five Largest Anthropogenic NEI Sectors

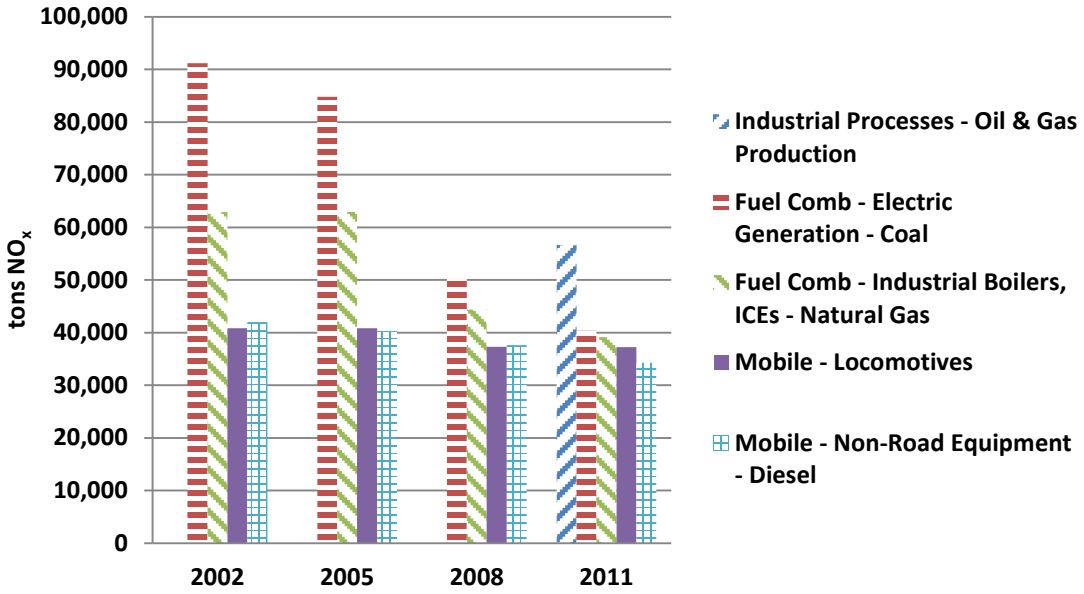


Figure 14. Kansas PM_{10} Emissions 2002-2011 - Five Largest Anthropogenic NEI Sectors

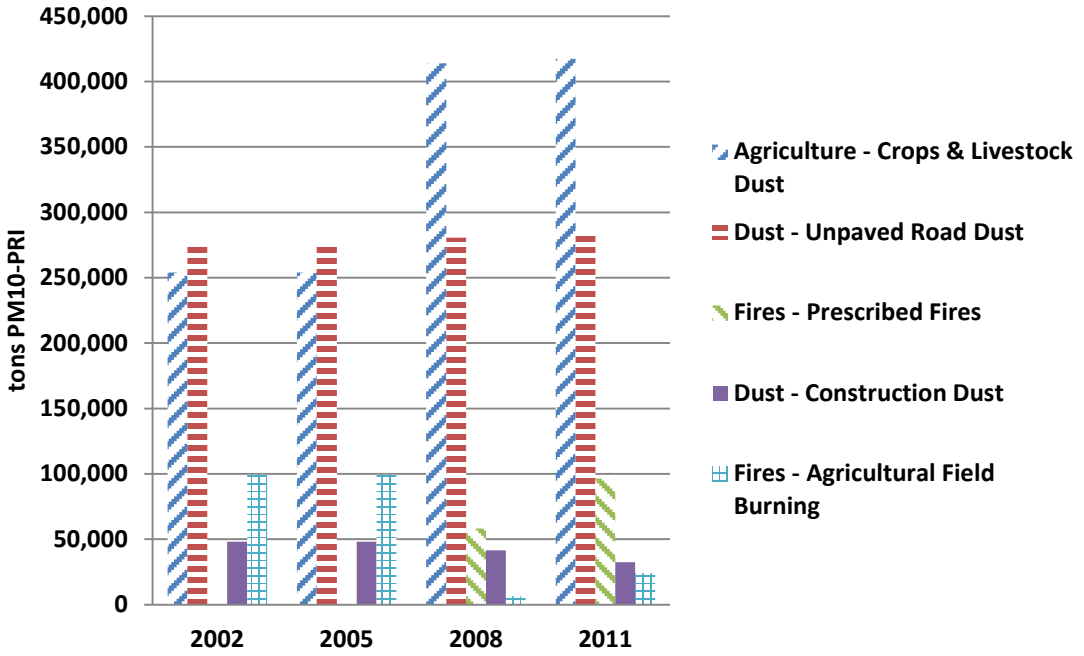
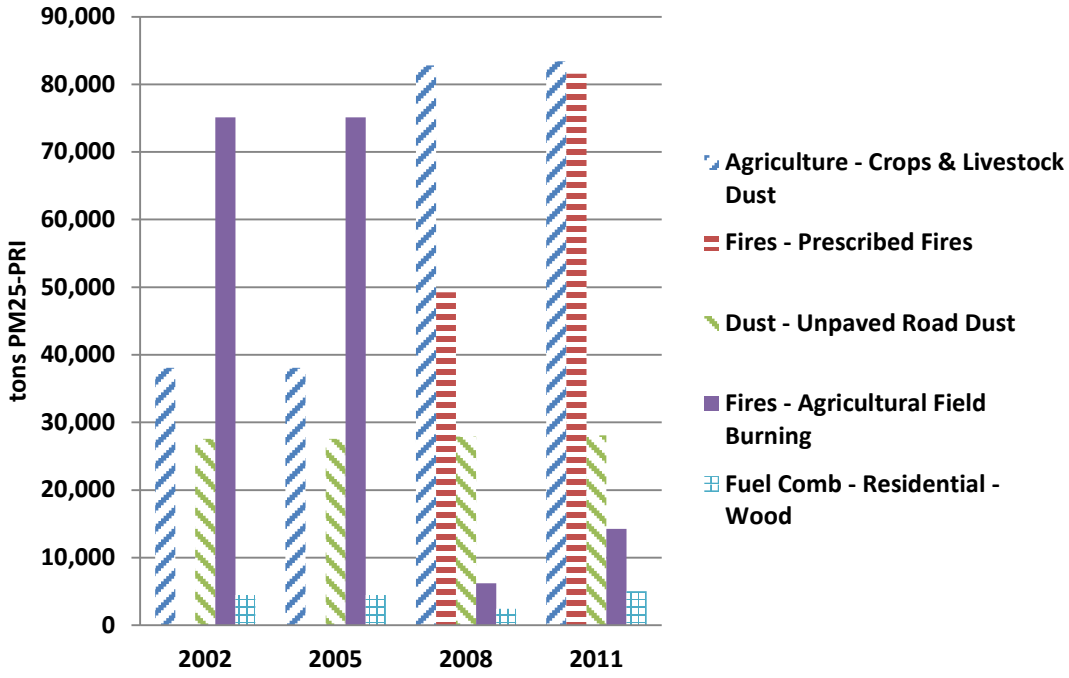


Figure 13 shows a dramatic increase in NO_x emissions in the oil and gas production sector—from less than 10 tons in the 2002, 2005, and 2008 NEIs to more than 50,000 tons in the 2011 NEI. While there was an increase in drilling activities seen in Kansas beginning around 2011, the primary reason for this jump in NO_x emissions was EPA's effort for the 2011 inventory cycle to improve data inputs in the oil and gas production sector. Figure 14 shows distinct changes in PM_{10} emissions trends for two sectors, again with breaks from 2005 to the 2008 NEI. As was already discussed for ammonia emissions under Figure 12, there was a correction made after 2005 that shifted most of what had been classified as agricultural field burning to prescribed burning. Given that change, summing emissions for the two sectors show a trend in PM_{10} for

burning that is slightly upward: 99,292 tons (2002), 99,292 tons (2005), 64,308 tons (2008), and 120,145 tons (2011). It is to be noted, however, that emissions from prescribed burning actually are quite variable from year to year, depending chiefly on fuel loading and weather conditions more than any other factor.

The single largest source of Kansas PM_{10}— the "Agriculture - Crops & Livestock Dust" sector—displays a jump in PM_{10} emissions from just over 250,000 tons for 2002 and 2005 to approximately 415,000 tons for 2008 and 2011—a 66 percent increase. Reviewing the worksheets used for emissions calculations for this sector reveals that up through 2005, crop-related PM_{10} emission factors were provided for planting and harvesting only. Beginning in 2008 (with EPA consultant E.H. Pechan & Associates-supplied spreadsheets), default PM emission factors supplied by EPA were to be used in conjunction with the total number of passes or tillings per year (e.g., five for winter wheat - conventional use or three for winter wheat - conservation use). Using two to five (instead of only two) passes in calculations for PM_{10} emissions for each crop resulted in significant increases from 2005 to 2008.

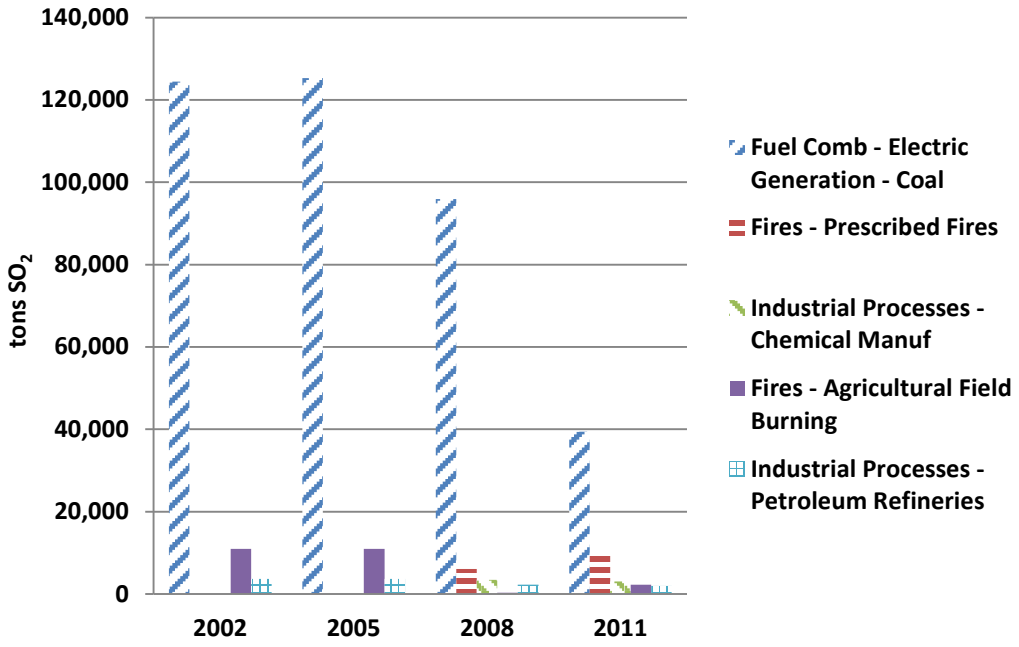
Figure 15. Kansas $PM_{2.5}$ Emissions 2002-2011 - Five Largest Anthropogenic NEI Sectors



As expected, the trends seen in $PM_{2.5}$ emissions follow those seen for PM_{10}. Summing the fire-related sectors' emissions yields a moderately upward $PM_{2.5}$ trend: 75,167 tons (2002), 75,167 tons (2005), 55,443 tons (2008), and 95,813 tons (2011). Recall, however, that fire emissions are highly variable from year to year.

Agricultural tilling emissions of $PM_{2.5}$ appear to have a greater 2005-to-2008 disparity than PM_{10}. In addition to the number of passes issue discussed above, there is an additional reason. For the 2002 and 2005 inventories, the $PM_{2.5}/PM_{10}$ ratio used by EPA for agricultural tilling was 0.15; however, beginning with the 2008 (Pechan-produced) inventory, the $PM_{2.5}/PM_{10}$ ratio became 0.20 (i.e., $PM_{2.5}$ emissions were 20 percent of calculated PM_{10} values). As a consequence, a 33 percent jump in value for $PM_{2.5}$ emissions starting in 2008 is to be expected due to the change made in the PM ratio.

Figure 16. Kansas SO_2 Emissions 2002-2011 - Five Largest Anthropogenic NEI Sectors



3.5 Emissions Changes Impeding Visibility Improvement - 40 CFR §51.308(g)(5)

40 CFR §51.308(g)(5) requires that the five-year periodic report contain: *"An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility."*

Over the period 2009–2013 there has been a steady decline in point source emissions of NO_x and SO_2 throughout the Midwest, especially due to sources installing controls to comply with present and near-future lowered air quality standards, the Mercury and Air Toxics Standards Rule, and the Clean Air Interstate Rule. Table 8 shows state-level emissions of NO_x and SO_2 from the most significant point sources of those pollutants—large electric generating units (EGUs)—located in Kansas and its four bordering states.[8]

Table 8. 2009 and 2013 NO_x and SO_2 emissions from large EGUs in bordering states

	NO_x			SO_2		
	2009	2013	% change	2009	2013	% change
Colorado	53,473	44,640	-16.5%	43,837	38,287	-12.7%
Kansas	47,863	28,542	-40.4%	51,561	30,021	-41.8%
Missouri	53,475	75,831	41.8%	240,202	141,417	-41.1%
Nebraska	46,314	27,554	-40.5%	75,494	65,824	-12.8%
Oklahoma	73,357	49,937	-31.9%	95,307	74,425	-21.9%
Totals	*274,482*	*226,504*	***-17.5%***	*506,401*	*349,975*	***-30.9%***

[8] http://ampd.epa.gov/ampd/

As Table 8 shows, with the sole exception of increased NO_x in Missouri over the five-year period, that NO_x and SO_2 emissions in Kansas and its bordering states from large EGUs have decreased significantly, with an overall decrease in NO_x of 17.5 percent and decrease in SO_2 of 30.9 percent.

In conjunction with the emissions trend analysis just seen in section 3.4, KDHE is not aware of anthropogenic emissions within or nearby Kansas that have occurred over the past five years that have limited or impeded progress in reducing pollutant emissions and improving visibility.

3.6 SIP Sufficiency – 40 CFR §51.308(g)(6)

40 CFR §51.308(g)(6) requires that the five-year periodic report contain: *"An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals."*

EPA's guidance document April 2013 document *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (Intended to Assist States and EPA Regional Offices in Development and Review of the Progress Reports*)[9] includes the following text referencing this requirement:

> *(h) Determination of the adequacy of existing implementation plan. At the same time the State is required to submit any 5-year progress report to the EPA in accordance with paragraph (g) of this section, the State must also take one of the following actions based upon the information presented in the progress report:*
>
> > *(1) If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the Administrator a negative declaration that further revision of the existing implementation plan is not needed at this time.*
> >
> > ….
>
> Where the visibility and emissions trends indicate substantial progress, we expect that this requirement will be satisfied with a simple negative declaration according to the first option.

As discussed earlier in Section 3.2 there has been a dramatic decrease in both NO_x and SO_2 from Kansas point sources since 2002, particularly for the subject-to-BART units beginning in 2008, when regional haze agreements were signed and their implementation begun. Total annual emissions of NO_x for Kansas subject-to-BART units fell 73 percent from 2002 to 2012. Similarly for SO_2, total annual emissions fell 79 percent from 2002 to 2012. As mentioned in Section 3.4, the five-year period 2009–2013 has seen a drop in total anthropogenic emissions of NO_x of 10 percent and of SO_2 59.6 percent. These are substantial emissions reductions in the primary haze-causing pollutants NO_x and SO_2; therefore, KDHE declares that: (1) Kansas' current implementation plan elements and strategies are sufficient to enable the State to meet all established reasonable progress goals; and (2) no substantive further revision to the initial Kansas Regional Haze SIP is needed at this time in order to achieve established goals for visibility improvement.

[9] http://www.4cleanair.org/Documents/haze_5year_4-10-13.pdf

3.7 Monitoring Strategy – 40 CFR §51.308(g)(7)

40 CFR §51.308(g)(7) requires that the five-year periodic report contain: *"A review of the State's visibility monitoring strategy and any modifications to the strategy as necessary."*

Under Section 6.1 (Current Monitoring Strategy) of the current Kansas Regional Haze SIP, Section 6.1.1 (Measuring Visibility Data) reads:

> Shortly after creation of the Central Regional Air Planning Association (CENRAP), the organization's Monitoring Workgroup identified large visibility data voids in southern Arkansas, Iowa, Kansas, southern Minnesota, Nebraska, and Oklahoma. Only five IMPROVE sites were located in the CENRAP region. Between 2000 and 2003, five more IMPROVE sites and 15 IMPROVE Protocol sites (i.e., sites not managed by IMPROVE directly but by individual government or tribal organizations) were established in the CENRAP region.
>
> In conjunction with CENRAP and EPA Region 7, Kansas installed one IMPROVE protocol sampler at Cedar Bluff State Park in Trego County in the western part of the State, and another at the Tallgrass Prairie National Preserve in the Flint Hills region of eastern Kansas.

Since the time the original Regional Haze SIP was written, the following notes have been added to KDHE's annual monitoring Plan updates regarding the IMPROVE monitors in the State:

- 2010–2011 Kansas Ambient Air Monitoring Network Plan
  - *20-017-0001; Tallgrass Prairie National Preserve*

    This site, which currently includes an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler, was accepted by EPA as a rural NCore station. Relocation of this site to another part of the Tallgrass Prairie National Preserve is likely, contingent upon pending negotiations with the National Park Service. This site's operational start date will be contingent on additional funding made available to KDHE by EPA. The site is located at N 38.433611; W -96.55944, northwest of Strong City, Kansas on Highway 177.
- 2011–2012 Kansas Ambient Air Monitoring Network Plan
  - *20-017-0001; Tallgrass Prairie National Preserve*

    This site operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler. Relocation of this site to another part of the Tallgrass Prairie National Preserve is likely, contingent upon pending negotiations with the National Park Service. In 2011, as a result of personnel and funding shortages, the department informed the EPA Region VII office that the Department was no longer interested in developing the rural NCore site at the Tallgrass Prairie National Preserve in Chase County. The site is located at N 38.433611; W -96.55944, northwest of Strong City, Kansas on Highway 177.
- 2012–2013 Kansas Ambient Air Monitoring Network Plan
  - *20-017-0001; Tallgrass Prairie National Preserve*

    This site operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler. Relocation of this site to another part of the Tallgrass Prairie National Preserve is likely, contingent upon pending negotiations with the National Park Service. The site is located

at N 38.433611; W -96.55944, northwest of Strong City, Kansas on Highway 177.

- *20-195-0001; Cedar Bluff Reservoir*

  This location was chosen in Western Kansas to serve as a background site for several pollutants, including SO_2, ozone, and $PM_{2.5}$. It also operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler site. The site is located at N 38.77027; W -99.76361, on the south side of Cedar Bluff Reservoir in Trego County.

- 2013–2014 Kansas Ambient Air Monitoring Network Plan
  - *20-017-0001; Tallgrass Prairie National Preserve:*

    This site operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler. Relocation of this site to another part of the Tallgrass Prairie National Preserve is likely, contingent upon pending negotiations with the National Park Service. The site is located at N 38.433611; W -96.55944, northwest of Strong City, Kansas on Highway 177.
  - *20-195-0001; Cedar Bluff Reservoir:*

    This location was chosen in Western Kansas to serve as a background site for several pollutants, including SO_2, ozone, and $PM_{2.5}$. It also operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler site. The site is located at N 38.77027; W -99.76361, on the south side of Cedar Bluff Reservoir in Trego County.
- 2014–2015 Kansas Ambient Air Monitoring Network Plan
  - 20-017-0001; Tallgrass Prairie National Preserve:

    This site operates as an Interagency Monitoring of Protected Visual Environments (IMPROVE) protocol sampler. The site is located at N 38.433611; W -96.55944, northwest of Strong City, Kansas on Kansas Highway 177.
  - 20-195-0001; Cedar Bluff Reservoir:

    This location was chosen in Western Kansas to serve as a background site for several pollutants, including SO_2, ozone, and $PM_{2.5}$. It also operates as an IMPROVE protocol sampler site. The site is located at N 38.77027; W -99.76361, on the south side of Cedar Bluff Reservoir in Trego County.

As the Kansas Department of Health and Environment faces increasingly constrained finances, consideration of the need to operate two IMPROVE sites within the state will continue to be factored into the annual planning process.

3.8 Federal Land Manager (FLM) Coordination – 40 CFR §51.308(i)

The Regional Haze Rule, at 40 CFR §51.308(i)(4), requires that states consult with federal land managers, "including development and review of implementation plan revisions and 5-year progress reports... ." In conformity with this requirement, KDHE provided the federal land managers a draft copy of this five-year update on November 25, 2014. Also, KDHE notified the FLMs of a 60-day review and comment period commencing November 26. A summary of FLM comments and responses is included in Appendix I to this document.

KDHE will continue to coordinate and consult with FLMs during the development of future progress report and plan revisions, as well as during the implementation of programs having the potential to contribute to visibility impairment in mandatory Class I areas.

4. Conclusion

In accordance with 40 CFR §51.308(h), this five-year update provides justification for KDHE to hereby make a negative declaration, i.e., that further revision of the existing implementation plan is not needed at this time. This finding is based upon (a) current state and federal regulations of air pollutants, (b) significant reductions in Kansas of anthropogenic NO_x and SO_2 emissions, and (c) improvement in visibility at the Wichita Mountains Wilderness, as well as other nearby Class I areas, over the past five years (2009 to 2013).

APPENDICES

Appendix A: Net 2002 to 2018 Improvement in Visibility at Selected Class I Areas Due to BART Controls in Kansas (*Table 10.15 in the original Kansas Regional Haze SIP)**

Class I areas with visibility improvement >0.5 Mm^{-1} shown in bold text)

Class I area	Net 2002-2018 light extinction difference (improvement) from Kansas sources (Mm^{-1})
Caney Creek (Arkansas)	**0.63493**
Upper Buffalo (Arkansas)	0.44533
Great Sand Dunes (Colorado)	0.03322
Rocky Mountain (Colorado)	0.06051
Hercules-Glades (Missouri)	**0.56911**
Mingo (Missouri)	**0.58719**
Wichita Mountains (Oklahoma)	**1.03715**
Badlands (South Dakota)	0.12856
Wind Cave (South Dakota)	0.16741

* *http://www.kdheks.gov/bar/reghaze/KDHERegHaze.pdf*

Appendix B: KCP&L and Westar Energy Regional Haze Agreements

A1. KCP&L Agreement (partial) (signed 12/5/2007)

For complete text beyond the terms of agreement for emissions limits refer to
http://www.epa.gov/region7/air/rules/kansas/KCPL_Regional_Haze_Agreement.pdf

AGREEMENT AND COMPLIANCE PLAN

22. The terms of this Agreement constitute an agreement pursuant to K.S.A. 65-3005 to satisfy future regulatory requirements imposed by the RHR and BART requirements. Nothing in this Agreement shall constitute or be construed as a release for any claim or cause of action for any New Source Review (NSR) or New Source Performance Standards (NSPS) liability under the Clean Air Act.
23. KCP&L and KDHE agree that these emission limits for La Cygne Units 1 and 2 will meet or be less than the presumptive emission limits established by 40 CFR Part 51, Appendix Y, averaged for Units 1 and 2. Unless otherwise specified in this Agreement, within 5 years of EPA's approval of the Kansas Regional Haze Implementation Plan, KCP&L agrees to install the emissions control and process equipment as expeditiously as possible, as required by 40 CFR 51.308(e)(1)(iv) and in subparagraph E below, and to implement any necessary operating procedures in order to achieve the following:
    A. Nitrogen Oxides (NO_x): 0.13 lb/mmBTU based on a 30-day rolling weighted average of both Units 1 and 2, excluding periods of startup and shutdown. During an extended outage of La Cygne Unit 2 (duration in excess of 10 weeks), KCP&L will submit a plan for Unit 1 to KDHE to achieve compliance with the presumptive NO_x limit of 0.10 lb/mmBTU on a 30-day rolling average excluding periods of startup and shutdown.
    B. Sulfur Dioxide (SO_2): 0.1 lb/mmBTU on a 30-day rolling average of both Units 1 and 2, excluding periods of statup and shutdown.
    C. PM_{10} filterable: 0.015 lbs/mmBTU, based on either an average of 3 one-hour stack tests annually using an approved test method for filterable PM_{10}, or KCP&L will comply with KDHE approved Continuous Assurance Monitoring (CAM) plan for PM_{10} filterable before baghouses go online for La Cygne Unit 1 and La Cygne Unit 2, at the discretion of KCP&L.
    D. PM_{10} total: 0.024 lbs/mmBTU, based on either an average of 3 one-hour stack test annually, using an approved test method for filterable PM_{10} and Method 202 or an approved test method for condensable PM as modified to remove artifact bias subject to KDHE approval, or KCP&L will comply with the KDHE approved CAM plan for PM_{10} total before baghouses go online for La Cygne Units 1 and 2, at the discretion of KCP&L.
    E. Schedule: KCP&L will issue a Request For Proposals (RFP) for equipment needed to achieve the aforesaid emissions limits by December 31, 2008. The RFP will request that construction commence by December 31, 2010. KCP&L will install and operate BART as expeditiously as practical, but in no event later than 5 years after approval of the SIP or June 1, 2015, which ever date occurs first.
24. KCP&L agrees to minimize excess emissions of air pollutants during startup, shutdown and malfunction by committing to the following actions:
    A. During startup, pollution control equipment will be activated as soon as practical, within the manufacturer's recommendations or following best engineering practices in the industry.

B. During shutdown, pollution control equipment will be operated as long as practical, within the manufacturer's recommendations or following best engineering practices in the industry.
C. Good combustion and operating practices will be utilized to minimize excess air pollutant emissions during all startup, shutdown and malfunction conditions.

25. KCP&L agrees to perform compliance verification procedures and recordkeeping requirements in accordance with 40 CFR 51.308(e)(1)(v) and 40 CFR Part 51, Appendix Y.
26. The emission limits in this Agreement will be incorporated into any construction or operating permits issued to KCP&L for La Cygne Units 1 and 2.
27. This Agreement shall be proposed by the State of Kansas for incorporation into the aforementioned Regional Haze Implementation Plan.

A2. Westar Energy (Westar) Agreement (partial) (signed 2/29/2008)

For complete text beyond the terms of agreement for emissions limits refer to *http://www.epa.gov/region7/air/rules/kansas/Westar_Regional_Haze_Agreement.pdf*

AGREEMENT AND COMPLIANCE PLAN

23. The terms of this Agreement constitute an agreement pursuant to K.S.A. 65-3005 to satisfy future regulatory requirements imposed by the RHR and BART requirements. Nothing in this Agreement shall constitute or be construed as a release for any claim or cause of action for any New Source Review (NSR) or New Source Performance Standards (NSPS) liability under the Clean Air Act.
24. Westar agrees that emissions from the Jeffrey Energy Center (1490001) Units 1 and 2 will meet the presumptive limits established by 40 CFR 51 Appendix Y.
25. Unless otherwise specified in this Agreement, within five (5) years of EPA's approval of the Kansas Regional Haze State Implementation Plan, Westar agrees to install the emissions control and process equipment as expeditiously as possible in order to implement any necessary operating procedures and to achieve the air pollutant emission limits as specified for all of the units listed in Appendix A. The emission limits will become effective January 1, 2014.
    A. For Jeffrey Energy Center Units 1, 2 and 3, as required by 40 CFR 51.308(e)(1)(iv), Westar agrees within three (3) years of EPA's approval of the Kansas Regional Haze State Implementation Plan to install any equipment and to implement any operating practices necessary to achieve the presumptive NOx and SO2 emission limits established under 40 CFR 51 Appendix Y.
    B. For Gordon Evans Energy Center Unit 2, Westar will implement an alternative control strategy that will achieve greater visibility improvement than BART, as outlined in the BART Five Factor Analysis which was submitted to KDHE in August, 2007. Westar will demonstrate compliance with the alternative control strategy of switching from No. 6 fuel oil to natural gas by submitting annual certifications of compliance verifying that natural gas was the only fuel combusted at Gordon Evans Energy Center Unit 2 for the preceding year, except as follows:
    C. When the natural gas supplier to Gordon Evans Energy Center Unit 2 takes emergency action which could result in an impact to electric system reliability, Westar may combust No. 6 fuel oil for the duration of that condition. Westar will diminish the existing supply of No. 6 fuel oil, and will replace any fuel oil used with a fuel oil containing 1% or less sulfur content. Westar may burn a limited amount of fuel oil during non-emergencies to assure that the Gordon Evans Energy Center Unit 2 functions properly during emergencies.

26. Westar agrees to minimize excess emissions of air pollutants during startup, shutdown and malfunction situations by committing to the following actions:
    A. During startup, pollution control equipment will be activated as soon as practical, within the manufacturer's recommendations or following best engineering practices in the industry;
    B. During shutdown, pollution control equipment will be operated as long as practical, within the manufacturer's recommendations or following best engineering practices in the industry;
    C. Good combustion and operating practices will be utilized to minimize excess air pollutant emissions during all startup, shutdown and malfunction conditions.
27. Westar agrees to perform compliance verification procedures and recordkeeping requirements in accordance with 40 CFR 51.308(e)(1)(v) and 40 CFR Part 51, Appendix Y.
28. The emissions limits in this Agreement will be incorporated into any construction or operating permits issued to Westar for any and all facilities listed in Appendix A.
29. This Agreement shall be proposed by the State of Kansas for incorporation into the aforementioned Regional Haze State Implementation Plan.

Appendix A - Westar Regional Haze Agreement

Source ID	Facility	Unit #	Fuel	Start Date	Proposed SO_2 rate[1] (lb/MMBtu)	Proposed NO_x rate[1] (lb/MMBtu)	Proposed controls
1730012	Gordon Evans Energy Center	1	NG/FO	1961			Natural gas only.[2]
1730012	Gordon Evans Energy Center	2	NG/FO	1967			Natural gas only.[2]
1550033	Hutchinson Energy Center	4	NG/FO	1965			Natural gas only.[2]
1490001	Jeffrey Energy Center	1	Coal/FO	1978	0.15	0.15	Wet limestone scrubber rebuild, low NOx burner system and ESP rebuild.
1490001	Jeffrey Energy Center	2	Coal/FO	1980	0.15	0.15	Wet limestone scrubber rebuild, low NOx burner system and ESP rebuild.
1490001	Jeffrey Energy Center	3	Coal/FO	1983	0.15	0.15	Wet limestone scrubber rebuild, low NOx burner system and ESP rebuild.
0450014	Lawrence Energy Center	3	Coal/NG	1954		0.18	Low NOx burner system and ESP rebuild.
0450014	Lawrence Energy Center	4	Coal/NG	1960	0.15	0.18	Low NOx burner system, fabric filter baghouse and wet limestone scrubber rebuild.[3]
0450014	Lawrence Energy Center	5	Coal/NG	1971	0.15	0.15	Low NOx burner system, fabric filter baghouse and wet limestone scrubber rebuild.[3]
1730014	Murray Gill Energy Center	1	NG/FO	1952			Natural gas only.[2]
1730014	Murray Gill Energy Center	2	NG/FO	1954			Natural gas only.[2]
1730014	Murray Gill Energy Center	3	NG/FO	1956			Natural gas only.[2]
1730014	Murray Gill Energy Center	4	NG/FO	1959			Natural gas only.[2]
0990001	Neosho Energy Center	7	NG/FO	1954			Natural gas only.[2]
1770030	Tecumseh Energy Center	7/9	Coal/NG	1957		0.18	Low NOx burner system and ESP rebuild.
1770030	Tecumseh Energy Center	8/10	Coal/NG	1962		0.18	Low NOx burner system and ESP rebuild.
	FO = fuel oil; NG = natural gas;						

[1] 30-day rolling average excluding periods of start-up, shutdown and malfunction.
[2] Fuel oil firing is allowed in emergencies and during periods of periodic testing of the fuel oil handling and combustion equipment.
[3] Existing wet limestone scrubber will be rebuilt as necessary to achieve compliance with the proposed SO2 limitation and to accommodate the installation of a fabric filter baghouse.
All coal-fired units are tangential boilers.

Appendix C: 2012 NO_x and SO_2 30-Day Rolling Averages for Westar - Jeffrey Units 1 and 2

Source: EPA Air Markets Program Data - http://ampd.epa.gov/ampd/

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	12/3/11	11.65	1.262	0.037		4.435	0.130	
1	12/4/11	5.53	0.012	0.008		0.140	0.043	
1	12/5/11	24	2.056	0.026		11.492	0.144	
1	12/6/11	24	2.444	0.028		12.742	0.147	
1	12/7/11	24	2.522	0.032		10.571	0.134	
1	12/8/11	24	2.272	0.027		11.445	0.138	
1	12/9/11	24	3.177	0.036		12.148	0.139	
1	12/10/11	24	2.617	0.030		13.098	0.148	
1	12/11/11	24	1.996	0.027		9.692	0.132	
1	12/12/11	24	2.967	0.036		11.659	0.141	
1	12/13/11	24	2.753	0.035		10.618	0.134	
1	12/14/11	24	2.202	0.031		9.342	0.130	
1	12/15/11	24	2.126	0.028		10.293	0.134	
1	12/16/11	24	3.055	0.037		11.818	0.142	
1	12/17/11	24	3.673	0.041		12.946	0.144	
1	12/18/11	24	2.024	0.031		7.876	0.120	
1	12/19/11	24	2.300	0.032		9.367	0.127	
1	12/20/11	24	2.520	0.031		11.359	0.136	
1	12/21/11	24	2.257	0.027		11.467	0.137	
1	12/22/11	24	0.737	0.011		8.503	0.120	
1	12/23/11	24	0.944	0.011		11.375	0.136	
1	12/24/11	24	0.825	0.010		10.460	0.130	
1	12/25/11	24	0.606	0.009		7.646	0.118	
1	12/26/11	24	0.804	0.011		9.002	0.124	
1	12/27/11	24	0.629	0.010		7.819	0.119	
1	12/28/11	24	0.872	0.011		10.632	0.132	
1	12/29/11	24	0.692	0.011		7.796	0.119	
1	12/30/11	24	0.364	0.007		5.744	0.107	
1	12/31/11	24	0.476	0.009		5.124	0.099	
1	1/1/2012	24	0.493	0.008	**0.023**	7.416	0.119	**0.127**
1	1/2/2012	24	0.859	0.011	**0.022**	10.613	0.133	**0.127**
1	1/3/2012	24	0.685	0.010	**0.022**	9.348	0.129	**0.130**
1	1/4/2012	24	1.723	0.029	**0.022**	7.267	0.119	**0.130**
1	1/5/2012	24	0.439	0.007	**0.022**	7.043	0.116	**0.128**
1	1/6/2012	24	0.517	0.009	**0.021**	6.420	0.114	**0.128**
1	1/7/2012	24	0.628	0.010	**0.020**	7.843	0.120	**0.127**
1	1/8/2012	24	0.474	0.008	**0.019**	6.978	0.113	**0.126**
1	1/9/2012	23.98	3.385	0.043	**0.020**	10.899	0.135	**0.126**
1	1/10/2012	23.32	1.753	0.024	**0.020**	10.072	0.138	**0.126**
1	1/11/2012	24	0.907	0.014	**0.019**	7.388	0.116	**0.125**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	1/12/2012	24	1.762	0.021	**0.018**	11.569	0.135	**0.125**
1	1/13/2012	24	2.861	0.032	**0.018**	12.448	0.141	**0.126**
1	1/14/2012	24	1.890	0.024	**0.018**	10.322	0.131	**0.126**
1	1/15/2012	24	1.440	0.023	**0.018**	7.313	0.117	**0.125**
1	1/16/2012	24	1.484	0.025	**0.017**	7.207	0.120	**0.124**
1	1/17/2012	24	2.135	0.026	**0.017**	11.419	0.134	**0.124**
1	1/18/2012	24	1.908	0.025	**0.017**	9.727	0.128	**0.124**
1	1/19/2012	24	1.898	0.024	**0.017**	10.368	0.129	**0.124**
1	1/20/2012	24	2.097	0.024	**0.017**	12.779	0.141	**0.124**
1	1/21/2012	24	2.223	0.024	**0.017**	13.353	0.145	**0.125**
1	1/22/2012	24	1.180	0.023	**0.017**	5.657	0.109	**0.124**
1	1/23/2012	24	1.616	0.024	**0.018**	8.381	0.119	**0.124**
1	1/24/2012	24	1.830	0.023	**0.018**	10.106	0.126	**0.124**
1	1/25/2012	24	1.937	0.024	**0.019**	10.665	0.129	**0.124**
1	1/26/2012	24	1.740	0.023	**0.019**	9.694	0.127	**0.125**
1	1/27/2012	24	1.218	0.020	**0.020**	6.842	0.113	**0.124**
1	1/28/2012	24	1.909	0.026	**0.020**	9.084	0.123	**0.124**
1	1/29/2012	24	1.283	0.022	**0.021**	6.597	0.111	**0.124**
1	1/30/2012	24	1.364	0.024	**0.021**	6.747	0.115	**0.125**
1	1/31/2012	24	2.015	0.029	**0.022**	8.832	0.125	**0.125**
1	2/1/2012	24	1.931	0.025	**0.022**	10.431	0.133	**0.125**
1	2/2/2012	24	1.924	0.027	**0.023**	9.026	0.124	**0.125**
1	2/3/2012	24	1.384	0.020	**0.022**	8.703	0.124	**0.125**
1	2/4/2012	24	1.384	0.022	**0.023**	7.763	0.122	**0.125**
1	2/5/2012	24	1.881	0.025	**0.023**	9.998	0.133	**0.126**
1	2/6/2012	24	2.348	0.030	**0.024**	10.738	0.136	**0.126**
1	2/7/2012	24	1.616	0.023	**0.025**	9.174	0.129	**0.127**
1	2/8/2012	24	1.282	0.015	**0.024**	12.041	0.139	**0.127**
1	2/9/2012	24	1.376	0.018	**0.024**	10.230	0.129	**0.127**
1	2/10/2012	24	1.209	0.018	**0.024**	8.213	0.120	**0.127**
1	2/11/2012	24	2.081	0.025	**0.024**	11.680	0.140	**0.127**
1	2/12/2012	24	1.860	0.025	**0.024**	9.539	0.127	**0.127**
1	2/13/2012	23.9	2.336	0.028	**0.024**	12.139	0.143	**0.127**
1	2/14/2012	0			**0.024**			**0.127**
1	2/15/2012	12.6	0.274	0.015	**0.023**	2.367	0.100	**0.127**
1	2/16/2012	24	1.013	0.016	**0.023**	7.457	0.116	**0.126**
1	2/17/2012	24	1.201	0.016	**0.023**	9.985	0.128	**0.126**
1	2/18/2012	24	1.638	0.020	**0.023**	11.385	0.136	**0.126**
1	2/19/2012	24	0.897	0.014	**0.022**	7.355	0.115	**0.125**
1	2/20/2012	24	0.921	0.015	**0.022**	7.190	0.116	**0.124**
1	2/21/2012	24	1.282	0.018	**0.022**	9.513	0.129	**0.125**
1	2/22/2012	24	1.330	0.019	**0.022**	8.887	0.125	**0.125**
1	2/23/2012	24	1.047	0.018	**0.021**	6.657	0.114	**0.125**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	2/24/2012	20.95	1.133	0.018	**0.021**	8.028	0.127	**0.125**
1	2/25/2012	0						
1	2/26/2012	0						
1	2/27/2012	0						
1	2/28/2012	0						
1	2/29/2012	0						
1	3/1/2012	0						
1	3/2/2012	0						
1	3/3/2012	0						
1	3/4/2012	0						
1	3/5/2012	0						
1	3/6/2012	0						
1	3/7/2012	0						
1	3/8/2012	0						
1	3/9/2012	0						
1	3/10/2012	0						
1	3/11/2012	0						
1	3/12/2012	0						
1	3/13/2012	0						
1	3/14/2012	0						
1	3/15/2012	0						
1	3/16/2012	0						
1	3/17/2012	0						
1	3/18/2012	0						
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1	3/21/2012	0						
1	3/22/2012	0						
1	3/23/2012	0						
1	3/24/2012	0						
1	3/25/2012	0						
1	3/26/2012	0						
1	3/27/2012	0						
1	3/28/2012	0						
1	3/29/2012	0						
1	3/30/2012	0						
1	3/31/2012	0						
1	4/1/2012	0						
1	4/2/2012	0						
1	4/3/2012	0						
1	4/4/2012	0						
1	4/5/2012	0						
1	4/6/2012	0						

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	4/7/2012	0						
1	4/8/2012	0						
1	4/9/2012	0						
1	4/10/2012	0						
1	4/11/2012	0						
1	4/12/2012	0						
1	4/13/2012	0						
1	4/14/2012	0						
1	4/15/2012	0						
1	4/16/2012	0						
1	4/17/2012	0						
1	4/18/2012	0						
1	4/19/2012	0						
1	4/20/2012	0						
1	4/21/2012	0						
1	4/22/2012	0						
1	4/23/2012	0						
1	4/24/2012	0						
1	4/25/2012	0						
1	4/26/2012	4.62	0.010	0.007		0.046	0.019	
1	4/27/2012	22.06	0.175	0.009		3.539	0.135	
1	4/28/2012	24	1.071	0.020		11.107	0.206	
1	4/29/2012	24	1.992	0.031		14.404	0.212	
1	4/30/2012	24	2.408	0.036		10.795	0.161	
1	5/1/2012	24	2.868	0.046		8.409	0.133	
1	5/2/2012	24	4.053	0.056		10.273	0.136	
1	5/3/2012	24	4.434	0.056		11.840	0.141	
1	5/4/2012	24	1.806	0.026		10.260	0.141	
1	5/5/2012	24	1.035	0.019		6.139	0.110	
1	5/6/2012	24	1.409	0.022		8.320	0.131	
1	5/7/2012	24	1.694	0.024		11.525	0.161	
1	5/8/2012	24	1.428	0.023		9.151	0.147	
1	5/9/2012	24	1.635	0.024		9.448	0.133	
1	5/10/2012	24	1.399	0.020		9.480	0.134	
1	5/11/2012	24	1.405	0.019		9.567	0.128	
1	5/12/2012	24	1.262	0.016		10.462	0.132	
1	5/13/2012	24	1.031	0.014		9.442	0.127	
1	5/14/2012	24	1.705	0.021		12.418	0.144	
1	5/15/2012	24	1.710	0.020		13.063	0.151	
1	5/16/2012	24	1.575	0.020		11.385	0.143	
1	5/17/2012	24	1.556	0.020		12.145	0.146	
1	5/18/2012	24	1.824	0.022		13.284	0.152	
1	5/19/2012	24	1.467	0.018		11.590	0.137	

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	5/20/2012	24	1.327	0.017		11.135	0.135	
1	5/21/2012	24	1.349	0.016		11.775	0.135	
1	5/22/2012	10.07	0.295	0.013		2.533	0.132	
1	5/23/2012	1.1	0.000	0.000		0.001	0.005	
1	5/24/2012	9.43	0.037	0.004		1.420	0.144	
1	5/25/2012	1.45	0.000	0.000	**0.021**	0.004	0.010	**0.131**
1	5/26/2012	24	0.845	0.014	**0.022**	8.067	0.133	**0.134**
1	5/27/2012	24	1.093	0.015	**0.022**	8.932	0.125	**0.134**
1	5/28/2012	24	1.206	0.015	**0.022**	10.883	0.132	**0.132**
1	5/29/2012	24	1.170	0.014	**0.021**	10.909	0.131	**0.129**
1	5/30/2012	24	1.385	0.018	**0.020**	9.962	0.128	**0.128**
1	5/31/2012	24	0.816	0.013	**0.019**	6.876	0.111	**0.127**
1	6/1/2012	24	0.651	0.011	**0.018**	5.962	0.105	**0.126**
1	6/2/2012	24	1.227	0.017	**0.017**	9.283	0.122	**0.125**
1	6/3/2012	24	1.380	0.018	**0.016**	10.208	0.128	**0.125**
1	6/4/2012	24	1.357	0.017	**0.016**	10.231	0.129	**0.126**
1	6/5/2012	24	1.368	0.016	**0.016**	12.494	0.142	**0.126**
1	6/6/2012	24	1.440	0.018	**0.016**	10.782	0.130	**0.125**
1	6/7/2012	24	1.019	0.016	**0.016**	7.309	0.114	**0.124**
1	6/8/2012	24	1.132	0.015	**0.015**	9.410	0.123	**0.124**
1	6/9/2012	24	1.385	0.019	**0.015**	9.219	0.124	**0.123**
1	6/10/2012	24	1.687	0.022	**0.015**	10.422	0.132	**0.123**
1	6/11/2012	24	1.613	0.021	**0.015**	9.892	0.130	**0.123**
1	6/12/2012	24	1.163	0.016	**0.016**	8.385	0.118	**0.123**
1	6/13/2012	24	1.286	0.019	**0.015**	7.864	0.114	**0.122**
1	6/14/2012	24	1.257	0.017	**0.015**	8.591	0.117	**0.121**
1	6/15/2012	24	1.025	0.015	**0.015**	8.487	0.117	**0.120**
1	6/16/2012	24	1.046	0.014	**0.015**	10.652	0.131	**0.119**
1	6/17/2012	24	1.034	0.015	**0.015**	8.548	0.116	**0.118**
1	6/18/2012	24	0.849	0.013	**0.015**	7.563	0.117	**0.118**
1	6/19/2012	24	1.155	0.016	**0.015**	10.401	0.136	**0.118**
1	6/20/2012	24	1.313	0.018	**0.015**	11.486	0.147	**0.118**
1	6/21/2012	24	1.644	0.020	**0.015**	13.137	0.152	**0.119**
1	6/22/2012	24	3.303	0.039	**0.016**	12.257	0.141	**0.123**
1	6/23/2012	24	1.110	0.016	**0.017**	10.243	0.138	**0.123**
1	6/24/2012	24	1.229	0.015	**0.017**	11.835	0.141	**0.127**
1	6/25/2012	24	1.510	0.018	**0.017**	13.335	0.152	**0.128**
1	6/26/2012	24	1.506	0.018	**0.017**	11.894	0.139	**0.129**
1	6/27/2012	24	1.472	0.018	**0.017**	11.841	0.142	**0.129**
1	6/28/2012	24	2.058	0.025	**0.018**	12.869	0.150	**0.129**
1	6/29/2012	24	1.779	0.021	**0.018**	12.177	0.142	**0.130**
1	6/30/2012	24	1.404	0.017	**0.018**	11.913	0.143	**0.131**
1	7/1/2012	24	1.472	0.018	**0.018**	11.224	0.133	**0.132**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	7/2/2012	24	1.401	0.017	**0.018**	11.684	0.135	**0.132**
1	7/3/2012	24	1.376	0.017	**0.018**	11.195	0.135	**0.133**
1	7/4/2012	24	1.399	0.018	**0.018**	10.405	0.129	**0.133**
1	7/5/2012	24	1.310	0.016	**0.018**	11.462	0.135	**0.132**
1	7/6/2012	24	1.579	0.018	**0.018**	12.455	0.143	**0.133**
1	7/7/2012	24	1.677	0.019	**0.018**	12.842	0.144	**0.134**
1	7/8/2012	24	1.386	0.017	**0.018**	11.121	0.131	**0.134**
1	7/9/2012	24	1.018	0.012	**0.018**	12.016	0.137	**0.135**
1	7/10/2012	24	0.994	0.012	**0.018**	12.136	0.138	**0.135**
1	7/11/2012	24	1.153	0.013	**0.018**	12.541	0.138	**0.135**
1	7/12/2012	23.4	0.775	0.010	**0.017**	10.723	0.131	**0.136**
1	7/13/2012	24	1.021	0.012	**0.017**	11.096	0.128	**0.136**
1	7/14/2012	24	0.892	0.011	**0.017**	10.330	0.126	**0.136**
1	7/15/2012	24	1.217	0.015	**0.017**	10.613	0.125	**0.137**
1	7/16/2012	24	1.172	0.014	**0.017**	11.199	0.129	**0.136**
1	7/17/2012	24	1.306	0.016	**0.017**	10.051	0.123	**0.137**
1	7/18/2012	24	1.183	0.014	**0.017**	12.194	0.137	**0.137**
1	7/19/2012	24	1.270	0.015	**0.017**	11.874	0.140	**0.137**
1	7/20/2012	24	1.336	0.015	**0.017**	13.629	0.153	**0.138**
1	7/21/2012	24	1.290	0.016	**0.017**	12.079	0.142	**0.137**
1	7/22/2012	24	1.316	0.016	**0.016**	11.047	0.131	**0.137**
1	7/23/2012	24	1.084	0.013	**0.016**	12.038	0.142	**0.137**
1	7/24/2012	24	0.952	0.011	**0.016**	13.828	0.152	**0.138**
1	7/25/2012	24	1.398	0.016	**0.016**	14.179	0.156	**0.138**
1	7/26/2012	24	1.138	0.012	**0.015**	14.086	0.147	**0.138**
1	7/27/2012	24	1.148	0.012	**0.015**	14.252	0.150	**0.138**
1	7/28/2012	24	1.188	0.014	**0.015**	12.948	0.149	**0.138**
1	7/29/2012	24	1.174	0.014	**0.015**	12.539	0.144	**0.138**
1	7/30/2012	24	1.097	0.013	**0.015**	12.903	0.145	**0.138**
1	7/31/2012	24	1.232	0.013	**0.014**	13.808	0.147	**0.139**
1	8/1/2012	24	1.145	0.013	**0.014**	11.841	0.131	**0.139**
1	8/2/2012	24	1.097	0.012	**0.014**	13.152	0.143	**0.139**
1	8/3/2012	24	1.241	0.013	**0.014**	13.915	0.150	**0.140**
1	8/4/2012	24	1.466	0.017	**0.014**	11.577	0.132	**0.139**
1	8/5/2012	24	1.419	0.017	**0.014**	10.647	0.126	**0.139**
1	8/6/2012	24	1.389	0.016	**0.014**	11.268	0.130	**0.138**
1	8/7/2012	20.5	1.005	0.015	**0.014**	9.315	0.139	**0.139**
1	8/8/2012	24	1.272	0.014	**0.014**	13.390	0.148	**0.139**
1	8/9/2012	24	1.145	0.013	**0.014**	12.902	0.147	**0.139**
1	8/10/2012	24	1.494	0.018	**0.014**	11.532	0.135	**0.139**
1	8/11/2012	24	1.070	0.014	**0.014**	9.899	0.128	**0.139**
1	8/12/2012	24	1.036	0.013	**0.014**	10.472	0.126	**0.139**
1	8/13/2012	24	1.032	0.012	**0.014**	11.376	0.130	**0.139**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	8/14/2012	24	0.864	0.013	**0.014**	8.102	0.116	**0.139**
1	8/15/2012	24	0.558	0.007	**0.014**	11.474	0.134	**0.139**
1	8/16/2012	24	0.658	0.007	**0.014**	12.225	0.135	**0.140**
1	8/17/2012	24	0.986	0.012	**0.014**	11.094	0.133	**0.139**
1	8/18/2012	24	0.859	0.011	**0.013**	10.555	0.130	**0.139**
1	8/19/2012	24	0.647	0.008	**0.013**	10.372	0.129	**0.138**
1	8/20/2012	24	0.856	0.010	**0.013**	11.062	0.127	**0.138**
1	8/21/2012	24	1.553	0.018	**0.013**	11.342	0.133	**0.138**
1	8/22/2012	24	1.763	0.022	**0.013**	10.571	0.130	**0.137**
1	8/23/2012	24	1.456	0.020	**0.014**	10.360	0.136	**0.137**
1	8/24/2012	24	0.799	0.010	**0.013**	10.386	0.131	**0.136**
1	8/25/2012	24	1.019	0.012	**0.013**	11.899	0.137	**0.136**
1	8/26/2012	24	0.839	0.010	**0.013**	11.946	0.137	**0.135**
1	8/27/2012	24	0.967	0.011	**0.013**	11.683	0.133	**0.135**
1	8/28/2012	24	0.920	0.011	**0.013**	11.104	0.132	**0.134**
1	8/29/2012	24	1.061	0.013	**0.013**	10.917	0.132	**0.134**
1	8/30/2012	24	1.041	0.012	**0.013**	11.688	0.134	**0.133**
1	8/31/2012	24	1.226	0.013	**0.013**	13.161	0.142	**0.134**
1	9/1/2012	24	0.996	0.012	**0.013**	11.598	0.138	**0.134**
1	9/2/2012	24	1.146	0.015	**0.013**	10.739	0.134	**0.133**
1	9/3/2012	24	1.195	0.015	**0.013**	11.377	0.136	**0.133**
1	9/4/2012	24	1.467	0.016	**0.013**	12.881	0.141	**0.134**
1	9/5/2012	24	1.188	0.014	**0.013**	11.744	0.137	**0.134**
1	9/6/2012	24	1.173	0.014	**0.013**	11.729	0.138	**0.134**
1	9/7/2012	24	0.982	0.012	**0.013**	10.542	0.131	**0.133**
1	9/8/2012	24	0.703	0.009	**0.013**	9.392	0.120	**0.133**
1	9/9/2012	24	0.766	0.010	**0.013**	9.329	0.121	**0.132**
1	9/10/2012	24	0.877	0.012	**0.012**	8.914	0.119	**0.132**
1	9/11/2012	24	0.856	0.012	**0.012**	9.440	0.127	**0.132**
1	9/12/2012	24	0.746	0.010	**0.012**	10.359	0.131	**0.132**
1	9/13/2012	24	0.856	0.011	**0.012**	11.847	0.145	**0.133**
1	9/14/2012	24	0.761	0.011	**0.012**	8.691	0.125	**0.132**
1	9/15/2012	24	1.067	0.014	**0.013**	11.336	0.141	**0.133**
1	9/16/2012	24	1.041	0.015	**0.013**	9.789	0.142	**0.133**
1	9/17/2012	24	1.314	0.018	**0.013**	11.139	0.148	**0.134**
1	9/18/2012	24	0.921	0.014	**0.013**	9.390	0.147	**0.134**
1	9/19/2012	24	0.729	0.013	**0.013**	7.996	0.140	**0.135**
1	9/20/2012	24	0.891	0.013	**0.013**	9.831	0.140	**0.135**
1	9/21/2012	24	0.955	0.013	**0.013**	10.906	0.144	**0.135**
1	9/22/2012	24	0.964	0.013	**0.013**	10.367	0.142	**0.135**
1	9/23/2012	24	0.830	0.013	**0.013**	9.326	0.140	**0.136**
1	9/24/2012	24	1.033	0.014	**0.013**	10.536	0.136	**0.136**
1	9/25/2012	24	1.631	0.019	**0.013**	12.427	0.144	**0.136**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	9/26/2012	24	1.530	0.018	**0.013**	13.302	0.152	**0.137**
1	9/27/2012	24	2.055	0.023	**0.014**	12.704	0.142	**0.137**
1	9/28/2012	22.02	1.417	0.018	**0.014**	10.811	0.131	**0.137**
1	9/29/2012	0						
1	9/30/2012	7.3	0.002	0.001	**0.014**	0.615	0.088	**0.135**
1	10/1/2012	24	0.723	0.010	**0.013**	8.918	0.121	**0.135**
1	10/2/2012	24	1.163	0.015	**0.014**	9.937	0.127	**0.134**
1	10/3/2012	24	1.073	0.015	**0.014**	9.233	0.131	**0.134**
1	10/4/2012	24	1.185	0.015	**0.014**	10.129	0.127	**0.134**
1	10/5/2012	24	1.144	0.015	**0.013**	9.964	0.124	**0.133**
1	10/6/2012	24	1.287	0.016	**0.014**	10.528	0.126	**0.133**
1	10/7/2012	24	0.993	0.013	**0.014**	9.040	0.121	**0.132**
1	10/8/2012	24	0.962	0.014	**0.014**	8.648	0.121	**0.132**
1	10/9/2012	24	0.729	0.012	**0.014**	6.820	0.111	**0.132**
1	10/10/2012	24	0.904	0.014	**0.014**	7.451	0.113	**0.131**
1	10/11/2012	24	1.256	0.017	**0.014**	9.461	0.124	**0.132**
1	10/12/2012	24	0.850	0.013	**0.014**	7.805	0.114	**0.131**
1	10/13/2012	24	0.723	0.010	**0.014**	8.778	0.127	**0.131**
1	10/14/2012	24	0.741	0.012	**0.014**	7.321	0.113	**0.130**
1	10/15/2012	24	1.025	0.015	**0.014**	8.460	0.119	**0.130**
1	10/16/2012	24	1.016	0.014	**0.014**	8.982	0.121	**0.129**
1	10/17/2012	24	0.880	0.014	**0.014**	7.332	0.114	**0.128**
1	10/18/2012	24	0.650	0.012	**0.014**	6.225	0.112	**0.127**
1	10/19/2012	24	0.784	0.013	**0.014**	6.480	0.109	**0.126**
1	10/20/2012	24	0.745	0.013	**0.014**	6.508	0.110	**0.125**
1	10/21/2012	24	0.814	0.015	**0.014**	6.268	0.114	**0.124**
1	10/22/2012	24	0.956	0.015	**0.014**	7.697	0.117	**0.123**
1	10/23/2012	24	0.889	0.015	**0.014**	6.824	0.114	**0.122**
1	10/24/2012	24	0.579	0.010	**0.014**	6.718	0.116	**0.121**
1	10/25/2012	24	0.696	0.012	**0.014**	6.793	0.113	**0.120**
1	10/26/2012	24	0.901	0.012	**0.014**	9.024	0.118	**0.120**
1	10/27/2012	24	0.582	0.008	**0.013**	8.043	0.112	**0.118**
1	10/28/2012	24	0.385	0.007	**0.013**	6.428	0.112	**0.117**
1	10/29/2012	24	0.489	0.008	**0.013**	7.269	0.115	**0.117**
1	10/30/2012	24	0.999	0.013	**0.013**	10.044	0.124	**0.118**
1	10/31/2012	24	1.722	0.020	**0.013**	11.860	0.135	**0.118**
1	11/1/2012	24	1.372	0.017	**0.013**	10.435	0.128	**0.118**
1	11/2/2012	24	1.292	0.019	**0.013**	8.692	0.124	**0.118**
1	11/3/2012	24	1.088	0.014	**0.013**	9.692	0.120	**0.118**
1	11/4/2012	24	1.252	0.016	**0.013**	10.246	0.129	**0.118**
1	11/5/2012	24	1.334	0.016	**0.013**	11.363	0.132	**0.118**
1	11/6/2012	24	1.239	0.016	**0.014**	9.957	0.123	**0.118**
1	11/7/2012	24	1.332	0.017	**0.014**	10.517	0.129	**0.119**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	11/8/2012	24	1.614	0.022	**0.014**	10.156	0.137	**0.120**
1	11/9/2012	24	1.241	0.020	**0.014**	8.146	0.134	**0.120**
1	11/10/2012	24	0.403	0.009	**0.014**	6.258	0.145	**0.121**
1	11/11/2012	24	1.456	0.021	**0.014**	8.958	0.127	**0.121**
1	11/12/2012	24	1.912	0.021	**0.015**	12.037	0.133	**0.122**
1	11/13/2012	24	1.294	0.017	**0.015**	9.116	0.123	**0.122**
1	11/14/2012	24	1.268	0.017	**0.015**	9.652	0.128	**0.122**
1	11/15/2012	24	1.418	0.018	**0.015**	10.251	0.125	**0.122**
1	11/16/2012	24	1.296	0.016	**0.015**	10.407	0.124	**0.123**
1	11/17/2012	24	0.466	0.010	**0.015**	6.212	0.133	**0.123**
1	11/18/2012	24	0.500	0.011	**0.015**	6.033	0.128	**0.124**
1	11/19/2012	24	2.790	0.034	**0.016**	10.394	0.127	**0.125**
1	11/20/2012	24	2.867	0.033	**0.016**	11.099	0.127	**0.125**
1	11/21/2012	24	1.538	0.031	**0.017**	6.257	0.129	**0.125**
1	11/22/2012	24	1.590	0.035	**0.017**	5.429	0.121	**0.126**
1	11/23/2012	24	2.606	0.041	**0.018**	7.249	0.113	**0.126**
1	11/24/2012	24	2.289	0.040	**0.019**	6.897	0.123	**0.126**
1	11/25/2012	24	2.962	0.041	**0.020**	8.869	0.123	**0.126**
1	11/26/2012	24	2.459	0.037	**0.021**	7.730	0.114	**0.126**
1	11/27/2012	24	4.110	0.045	**0.023**	11.650	0.128	**0.127**
1	11/28/2012	24	1.920	0.023	**0.023**	10.871	0.126	**0.127**
1	11/29/2012	24	1.302	0.015	**0.023**	11.608	0.131	**0.127**
1	11/30/2012	24	1.438	0.018	**0.023**	10.205	0.126	**0.127**
1	12/1/2012	24	1.145	0.017	**0.023**	8.462	0.120	**0.127**
1	12/2/2012	24	1.033	0.016	**0.023**	7.690	0.117	**0.126**
1	12/3/2012	24	1.586	0.023	**0.023**	8.611	0.123	**0.127**
1	12/4/2012	24	2.026	0.025	**0.024**	10.932	0.133	**0.127**
1	12/5/2012	24	1.098	0.018	**0.024**	6.936	0.110	**0.126**
1	12/6/2012	24	1.540	0.022	**0.024**	9.076	0.132	**0.126**
1	12/7/2012	24	1.497	0.016	**0.024**	12.492	0.133	**0.126**
1	12/8/2012	24	1.137	0.014	**0.023**	10.504	0.127	**0.126**
1	12/9/2012	24	0.524	0.011	**0.023**	6.965	0.151	**0.127**
1	12/10/2012	24	1.157	0.015	**0.023**	9.216	0.118	**0.126**
1	12/11/2012	24	1.575	0.020	**0.023**	9.671	0.120	**0.126**
1	12/12/2012	24	0.792	0.014	**0.023**	6.677	0.120	**0.125**
1	12/13/2012	24	1.080	0.016	**0.023**	8.271	0.126	**0.125**
1	12/14/2012	24	0.347	0.009	**0.023**	5.168	0.135	**0.125**
1	12/15/2012	24	1.141	0.017	**0.023**	8.061	0.119	**0.125**
1	12/16/2012	24	1.306	0.018	**0.023**	9.047	0.122	**0.125**
1	12/17/2012	24	1.370	0.019	**0.023**	9.006	0.124	**0.125**
1	12/18/2012	24	0.974	0.014	**0.023**	8.576	0.129	**0.125**
1	12/19/2012	24	0.902	0.014	**0.023**	7.858	0.120	**0.125**
1	12/20/2012	24	1.025	0.015	**0.022**	8.237	0.122	**0.124**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
1	12/21/2012	24	1.186	0.015	**0.021**	9.464	0.120	**0.124**
1	12/22/2012	24	0.518	0.012	**0.021**	5.326	0.120	**0.124**
1	12/23/2012	24	1.282	0.019	**0.020**	8.170	0.117	**0.124**
1	12/24/2012	24	1.083	0.015	**0.019**	8.879	0.120	**0.124**
1	12/25/2012	24	0.709	0.012	**0.018**	6.735	0.116	**0.124**
1	12/26/2012	24	1.433	0.017	**0.017**	11.483	0.132	**0.125**
1	12/27/2012	24	1.998	0.021	**0.017**	13.366	0.140	**0.125**
1	12/28/2012	24	1.615	0.018	**0.017**	12.084	0.136	**0.125**
1	12/29/2012	24	1.296	0.015	**0.017**	10.535	0.125	**0.125**
1	12/30/2012	24	0.810	0.013	**0.016**	6.746	0.106	**0.124**
1	12/31/2012	24	1.688	0.019	**0.016**	11.600	0.130	**0.125**
2	12/3/11	24	1.445	0.019		11.147	0.140	
2	12/4/11	24	1.639	0.019		12.352	0.142	
2	12/5/11	24	1.796	0.022		11.955	0.141	
2	12/6/11	24	1.881	0.021		13.219	0.147	
2	12/7/11	24	1.831	0.021		12.883	0.149	
2	12/8/11	24	1.632	0.019		12.252	0.142	
2	12/9/11	24	1.880	0.021		12.872	0.144	
2	12/10/11	24	1.692	0.020		12.046	0.140	
2	12/11/11	24	1.225	0.018		8.564	0.122	
2	12/12/11	24	1.468	0.020		9.893	0.130	
2	12/13/11	24	1.595	0.020		11.706	0.145	
2	12/14/11	24	1.235	0.019		8.607	0.131	
2	12/15/11	24	1.313	0.018		9.816	0.132	
2	12/16/11	24	1.777	0.022		11.553	0.142	
2	12/17/11	24	2.068	0.024		12.912	0.148	
2	12/18/11	24	1.170	0.020		7.286	0.120	
2	12/19/11	24	1.268	0.019		8.951	0.127	
2	12/20/11	24	1.691	0.021		12.225	0.146	
2	12/21/11	24	2.018	0.025		11.999	0.147	
2	12/22/11	24	1.179	0.018		8.571	0.127	
2	12/23/11	24	1.383	0.017		12.122	0.146	
2	12/24/11	24	1.310	0.016		11.175	0.139	
2	12/25/11	24	0.942	0.016		7.110	0.118	
2	12/26/11	24	1.761	0.027		8.862	0.132	
2	12/27/11	24	0.960	0.016		7.857	0.127	
2	12/28/11	24	1.177	0.016		9.958	0.132	
2	12/29/11	24	0.735	0.014		6.492	0.118	
2	12/30/11	24	0.406	0.010		4.152	0.101	
2	12/31/11	24	0.677	0.017		4.174	0.106	
2	1/1/2012	24	0.733	0.015	**0.019**	5.396	0.107	**0.133**
2	1/2/2012	24	1.342	0.018	**0.019**	10.624	0.135	**0.133**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	1/3/2012	24	0.961	0.016	**0.019**	7.907	0.123	**0.132**
2	1/4/2012	24	0.721	0.014	**0.019**	6.213	0.116	**0.131**
2	1/5/2012	24	3.165	0.066	**0.020**	6.931	0.142	**0.131**
2	1/6/2012	24	1.375	0.034	**0.021**	5.433	0.138	**0.131**
2	1/7/2012	24	0.931	0.016	**0.020**	7.255	0.118	**0.130**
2	1/8/2012	24	0.927	0.019	**0.020**	5.945	0.119	**0.129**
2	1/9/2012	24	1.417	0.019	**0.020**	10.930	0.142	**0.129**
2	1/10/2012	24	1.560	0.019	**0.020**	12.053	0.144	**0.130**
2	1/11/2012	24	0.541	0.010	**0.020**	6.467	0.115	**0.129**
2	1/12/2012	24	1.893	0.024	**0.020**	11.715	0.142	**0.129**
2	1/13/2012	24	1.891	0.021	**0.020**	12.922	0.145	**0.130**
2	1/14/2012	24	1.493	0.021	**0.020**	9.224	0.130	**0.130**
2	1/15/2012	24	0.598	0.012	**0.020**	5.859	0.116	**0.129**
2	1/16/2012	24	0.470	0.010	**0.020**	5.935	0.128	**0.128**
2	1/17/2012	24	1.121	0.016	**0.019**	10.265	0.142	**0.129**
2	1/18/2012	24	2.422	0.033	**0.020**	10.411	0.141	**0.129**
2	1/19/2012	22.97	1.720	0.027	**0.020**	9.358	0.145	**0.129**
2	1/20/2012	0						
2	1/21/2012	4.82	0.157	0.235	**0.027**	0.035	0.039	**0.126**
2	1/22/2012	24	0.477	0.013	**0.027**	5.170	0.144	**0.126**
2	1/23/2012	24	0.772	0.013	**0.027**	7.684	0.134	**0.126**
2	1/24/2012	24	0.922	0.013	**0.027**	9.376	0.127	**0.126**
2	1/25/2012	24	1.143	0.015	**0.027**	10.493	0.135	**0.126**
2	1/26/2012	24	0.933	0.013	**0.026**	8.969	0.124	**0.126**
2	1/27/2012	24	0.438	0.009	**0.026**	5.363	0.107	**0.125**
2	1/28/2012	24	1.829	0.029	**0.026**	8.746	0.133	**0.125**
2	1/29/2012	24	0.513	0.011	**0.026**	5.050	0.108	**0.125**
2	1/30/2012	24	0.453	0.009	**0.026**	5.222	0.105	**0.125**
2	1/31/2012	24	0.892	0.014	**0.026**	7.585	0.114	**0.125**
2	2/1/2012	24	1.017	0.014	**0.026**	9.601	0.125	**0.126**
2	2/2/2012	24	0.989	0.015	**0.026**	8.126	0.121	**0.125**
2	2/3/2012	24	0.924	0.015	**0.026**	7.958	0.121	**0.125**
2	2/4/2012	24	0.505	0.011	**0.026**	5.347	0.109	**0.125**
2	2/5/2012	24	0.997	0.015	**0.024**	8.466	0.123	**0.124**
2	2/6/2012	24	1.515	0.022	**0.024**	9.289	0.130	**0.124**
2	2/7/2012	24	1.694	0.022	**0.024**	10.375	0.133	**0.125**
2	2/8/2012	24	2.212	0.025	**0.024**	13.874	0.154	**0.126**
2	2/9/2012	24	1.465	0.018	**0.024**	11.541	0.143	**0.126**
2	2/10/2012	24	1.256	0.019	**0.024**	9.253	0.136	**0.126**
2	2/11/2012	23.58	1.687	0.021	**0.025**	12.432	0.152	**0.127**
2	2/12/2012	24	1.018	0.013	**0.024**	10.567	0.136	**0.127**
2	2/13/2012	24	1.281	0.016	**0.024**	11.544	0.141	**0.127**
2	2/14/2012	24	1.064	0.013	**0.024**	11.651	0.144	**0.127**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	2/15/2012	24	0.874	0.012	**0.024**	10.068	0.135	**0.128**
2	2/16/2012	24	0.581	0.011	**0.024**	6.593	0.116	**0.127**
2	2/17/2012	24	0.760	0.013	**0.024**	7.610	0.123	**0.127**
2	2/18/2012	24	1.016	0.015	**0.023**	9.255	0.129	**0.126**
2	2/19/2012	24	0.604	0.011	**0.023**	6.264	0.116	**0.125**
2	2/20/2012	24	0.549	0.010	**0.015**	6.201	0.116	**0.128**
2	2/21/2012	24	0.882	0.013	**0.015**	8.751	0.128	**0.127**
2	2/22/2012	24	0.811	0.013	**0.015**	8.332	0.129	**0.127**
2	2/23/2012	24	0.311	0.007	**0.015**	4.819	0.110	**0.126**
2	2/24/2012	24	0.944	0.013	**0.015**	10.089	0.134	**0.126**
2	2/25/2012	24	0.773	0.011	**0.015**	9.769	0.140	**0.127**
2	2/26/2012	24	0.734	0.013	**0.015**	7.204	0.119	**0.127**
2	2/27/2012	24	1.125	0.015	**0.014**	10.638	0.135	**0.127**
2	2/28/2012	24	1.005	0.016	**0.015**	8.416	0.128	**0.128**
2	2/29/2012	24	1.090	0.018	**0.015**	8.037	0.130	**0.129**
2	3/1/2012	24	0.502	0.011	**0.015**	5.888	0.126	**0.129**
2	3/2/2012	24	1.417	0.021	**0.015**	9.478	0.138	**0.130**
2	3/3/2012	24	1.170	0.015	**0.015**	11.466	0.142	**0.130**
2	3/4/2012	24	0.798	0.012	**0.015**	9.203	0.141	**0.131**
2	3/5/2012	24	0.551	0.010	**0.015**	6.775	0.117	**0.131**
2	3/6/2012	24	0.230	0.006	**0.015**	4.225	0.101	**0.131**
2	3/7/2012	24	0.398	0.008	**0.014**	6.636	0.130	**0.131**
2	3/8/2012	24	1.199	0.018	**0.014**	9.315	0.139	**0.131**
2	3/9/2012	24	0.882	0.011	**0.013**	10.209	0.133	**0.130**
2	3/10/2012	24	0.796	0.011	**0.013**	8.839	0.127	**0.130**
2	3/11/2012	24	1.489	0.022	**0.013**	9.370	0.135	**0.130**
2	3/12/2012	24	0.845	0.014	**0.013**	7.807	0.126	**0.129**
2	3/13/2012	24	1.223	0.022	**0.013**	6.986	0.126	**0.128**
2	3/14/2012	24	1.985	0.032	**0.014**	8.411	0.133	**0.128**
2	3/15/2012	24	1.834	0.028	**0.014**	8.915	0.138	**0.128**
2	3/16/2012	24	2.023	0.039	**0.015**	6.856	0.131	**0.128**
2	3/17/2012	24	1.900	0.033	**0.016**	7.703	0.139	**0.129**
2	3/18/2012	24	1.316	0.025	**0.016**	7.058	0.136	**0.129**
2	3/19/2012	24	1.869	0.024	**0.017**	11.020	0.138	**0.129**
2	3/20/2012	24	1.202	0.017	**0.017**	9.416	0.129	**0.130**
2	3/21/2012	24	2.661	0.031	**0.018**	12.195	0.142	**0.131**
2	3/22/2012	24	1.244	0.017	**0.018**	9.890	0.132	**0.131**
2	3/23/2012	24	1.022	0.013	**0.018**	12.250	0.147	**0.131**
2	3/24/2012	24	0.714	0.012	**0.018**	7.206	0.121	**0.132**
2	3/25/2012	24	0.510	0.010	**0.018**	5.963	0.119	**0.131**
2	3/26/2012	24	0.805	0.013	**0.018**	7.794	0.120	**0.130**
2	3/27/2012	24	1.070	0.015	**0.018**	9.649	0.130	**0.131**
2	3/28/2012	24	1.142	0.017	**0.018**	8.626	0.127	**0.131**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	3/29/2012	24	1.118	0.016	**0.018**	8.814	0.126	**0.130**
2	3/30/2012	24	1.145	0.015	**0.018**	10.089	0.131	**0.131**
2	3/31/2012	24	0.774	0.012	**0.018**	8.202	0.119	**0.130**
2	4/1/2012	24	1.037	0.016	**0.018**	8.297	0.127	**0.130**
2	4/2/2012	24	1.173	0.023	**0.018**	6.399	0.125	**0.129**
2	4/3/2012	24	0.799	0.019	**0.018**	4.495	0.108	**0.128**
2	4/4/2012	24	0.447	0.009	**0.018**	4.887	0.103	**0.128**
2	4/5/2012	24	0.565	0.012	**0.018**	5.147	0.107	**0.128**
2	4/6/2012	24	0.318	0.008	**0.018**	3.910	0.098	**0.127**
2	4/7/2012	24	0.360	0.009	**0.018**	4.448	0.110	**0.126**
2	4/8/2012	24	0.391	0.009	**0.018**	4.235	0.101	**0.125**
2	4/9/2012	24	1.165	0.025	**0.019**	5.478	0.117	**0.125**
2	4/10/2012	24	1.555	0.027	**0.019**	6.914	0.119	**0.124**
2	4/11/2012	24	0.814	0.018	**0.019**	5.001	0.110	**0.124**
2	4/12/2012	24	0.416	0.010	**0.018**	4.699	0.116	**0.123**
2	4/13/2012	24	0.719	0.014	**0.018**	6.312	0.124	**0.123**
2	4/14/2012	24	0.510	0.012	**0.017**	5.596	0.136	**0.123**
2	4/15/2012	24	0.673	0.014	**0.017**	5.892	0.123	**0.123**
2	4/16/2012	24	0.888	0.013	**0.016**	9.492	0.130	**0.122**
2	4/17/2012	24	0.902	0.014	**0.015**	8.108	0.126	**0.122**
2	4/18/2012	24	0.637	0.012	**0.015**	7.185	0.135	**0.122**
2	4/19/2012	24	0.764	0.014	**0.015**	7.431	0.132	**0.122**
2	4/20/2012	24	1.470	0.032	**0.015**	5.716	0.122	**0.121**
2	4/21/2012	24	1.401	0.022	**0.015**	8.135	0.127	**0.121**
2	4/22/2012	24	0.847	0.015	**0.015**	6.655	0.111	**0.120**
2	4/23/2012	24	1.722	0.022	**0.016**	10.618	0.134	**0.120**
2	4/24/2012	24	1.182	0.018	**0.016**	9.093	0.131	**0.121**
2	4/25/2012	24	1.216	0.016	**0.016**	10.904	0.136	**0.121**
2	4/26/2012	24	1.341	0.017	**0.016**	12.109	0.149	**0.122**
2	4/27/2012	24	1.395	0.021	**0.016**	9.455	0.138	**0.122**
2	4/28/2012	24	1.307	0.018	**0.016**	10.639	0.143	**0.123**
2	4/29/2012	24	1.156	0.017	**0.016**	9.743	0.136	**0.123**
2	4/30/2012	24	1.070	0.016	**0.016**	9.677	0.142	**0.124**
2	5/1/2012	24	1.027	0.015	**0.016**	9.871	0.137	**0.124**
2	5/2/2012	24	2.038	0.028	**0.017**	10.690	0.144	**0.125**
2	5/3/2012	24	1.432	0.022	**0.017**	10.299	0.150	**0.126**
2	5/4/2012	24	0.992	0.016	**0.017**	9.005	0.135	**0.127**
2	5/5/2012	24	1.086	0.016	**0.017**	9.864	0.139	**0.128**
2	5/6/2012	24	1.229	0.017	**0.017**	10.808	0.144	**0.130**
2	5/7/2012	24	1.211	0.017	**0.018**	10.524	0.139	**0.131**
2	5/8/2012	24	1.403	0.019	**0.018**	10.682	0.140	**0.132**
2	5/9/2012	24	1.284	0.018	**0.018**	9.943	0.138	**0.133**
2	5/10/2012	24	1.182	0.018	**0.017**	9.362	0.131	**0.133**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	5/11/2012	24	1.071	0.016	**0.017**	9.150	0.136	**0.134**
2	5/12/2012	24	0.820	0.012	**0.017**	8.953	0.131	**0.135**
2	5/13/2012	24	0.777	0.011	**0.017**	9.738	0.134	**0.135**
2	5/14/2012	24	1.187	0.016	**0.017**	10.894	0.140	**0.135**
2	5/15/2012	23.62	1.005	0.014	**0.017**	10.915	0.147	**0.136**
2	5/16/2012	24	1.193	0.016	**0.018**	11.349	0.147	**0.136**
2	5/17/2012	24	1.102	0.016	**0.018**	10.550	0.139	**0.137**
2	5/18/2012	24	1.378	0.018	**0.018**	11.650	0.149	**0.137**
2	5/19/2012	24	1.253	0.017	**0.018**	10.994	0.146	**0.138**
2	5/20/2012	24	1.040	0.015	**0.017**	10.590	0.144	**0.138**
2	5/21/2012	24	1.211	0.016	**0.017**	11.691	0.148	**0.139**
2	5/22/2012	24	1.092	0.016	**0.017**	10.420	0.143	**0.140**
2	5/23/2012	24	1.044	0.015	**0.017**	10.597	0.142	**0.141**
2	5/24/2012	24	1.204	0.016	**0.017**	11.814	0.152	**0.141**
2	5/25/2012	24	1.730	0.022	**0.017**	13.278	0.160	**0.142**
2	5/26/2012	24	0.961	0.015	**0.017**	9.072	0.140	**0.142**
2	5/27/2012	24	1.006	0.016	**0.017**	8.529	0.136	**0.142**
2	5/28/2012	24	1.392	0.019	**0.017**	11.582	0.152	**0.142**
2	5/29/2012	24	1.514	0.020	**0.017**	12.242	0.154	**0.143**
2	5/30/2012	24	1.740	0.025	**0.017**	10.366	0.143	**0.143**
2	5/31/2012	24	0.728	0.013	**0.017**	6.617	0.120	**0.142**
2	6/1/2012	24	0.718	0.017	**0.017**	4.580	0.109	**0.141**
2	6/2/2012	24	1.459	0.023	**0.017**	8.361	0.126	**0.140**
2	6/3/2012	24	1.566	0.022	**0.017**	10.102	0.138	**0.140**
2	6/4/2012	24	1.548	0.022	**0.017**	10.084	0.137	**0.140**
2	6/5/2012	24	0.932	0.016	**0.017**	7.442	0.123	**0.139**
2	6/6/2012	24	0.811	0.015	**0.017**	6.483	0.121	**0.139**
2	6/7/2012	24	1.147	0.022	**0.017**	6.159	0.119	**0.138**
2	6/8/2012	24	0.971	0.015	**0.017**	8.575	0.129	**0.138**
2	6/9/2012	24	1.159	0.019	**0.017**	8.744	0.144	**0.138**
2	6/10/2012	24	1.572	0.023	**0.017**	10.418	0.142	**0.138**
2	6/11/2012	24	1.465	0.021	**0.018**	9.630	0.135	**0.139**
2	6/12/2012	23.54	0.582	0.012	**0.018**	6.492	0.130	**0.138**
2	6/13/2012	24	0.808	0.015	**0.018**	7.368	0.130	**0.138**
2	6/14/2012	24	1.061	0.017	**0.018**	8.369	0.129	**0.137**
2	6/15/2012	24	0.850	0.016	**0.018**	6.973	0.123	**0.137**
2	6/16/2012	24	1.152	0.018	**0.018**	8.782	0.129	**0.136**
2	6/17/2012	24	1.164	0.018	**0.018**	9.192	0.136	**0.136**
2	6/18/2012	24	0.687	0.013	**0.018**	6.441	0.119	**0.135**
2	6/19/2012	24	1.775	0.029	**0.018**	9.198	0.142	**0.135**
2	6/20/2012	24	1.842	0.029	**0.019**	9.872	0.155	**0.135**
2	6/21/2012	24	1.641	0.024	**0.019**	9.831	0.136	**0.135**
2	6/22/2012	24	2.076	0.030	**0.019**	10.315	0.142	**0.135**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	6/23/2012	24	5.082	0.073	**0.021**	10.345	0.141	**0.135**
2	6/24/2012	24	4.605	0.065	**0.023**	11.452	0.153	**0.134**
2	6/25/2012	24	4.434	0.061	**0.024**	11.022	0.144	**0.134**
2	6/26/2012	24	3.958	0.052	**0.025**	10.799	0.136	**0.134**
2	6/27/2012	24	3.851	0.052	**0.027**	11.550	0.149	**0.134**
2	6/28/2012	24	4.501	0.059	**0.028**	11.677	0.147	**0.134**
2	6/29/2012	24	1.905	0.024	**0.028**	12.785	0.156	**0.135**
2	6/30/2012	24	1.067	0.014	**0.028**	11.606	0.144	**0.135**
2	7/1/2012	24	0.891	0.012	**0.028**	10.540	0.140	**0.136**
2	7/2/2012	24	0.627	0.009	**0.027**	10.357	0.136	**0.137**
2	7/3/2012	24	0.642	0.009	**0.027**	10.595	0.143	**0.137**
2	7/4/2012	24	0.717	0.011	**0.026**	9.262	0.133	**0.137**
2	7/5/2012	24	0.761	0.011	**0.026**	10.255	0.138	**0.137**
2	7/6/2012	24	0.912	0.012	**0.026**	11.229	0.145	**0.138**
2	7/7/2012	24	1.093	0.013	**0.026**	11.821	0.143	**0.139**
2	7/8/2012	24	0.945	0.013	**0.026**	10.128	0.135	**0.139**
2	7/9/2012	24	0.884	0.012	**0.026**	10.564	0.137	**0.139**
2	7/10/2012	24	1.139	0.016	**0.025**	10.059	0.134	**0.139**
2	7/11/2012	24	1.847	0.024	**0.025**	10.784	0.137	**0.139**
2	7/12/2012	24	1.723	0.021	**0.026**	11.955	0.145	**0.139**
2	7/13/2012	24	1.294	0.018	**0.026**	9.876	0.135	**0.139**
2	7/14/2012	24	0.949	0.016	**0.026**	8.380	0.133	**0.140**
2	7/15/2012	24	1.549	0.024	**0.026**	9.731	0.151	**0.140**
2	7/16/2012	24	1.771	0.027	**0.026**	9.905	0.149	**0.141**
2	7/17/2012	24	1.949	0.029	**0.027**	9.121	0.137	**0.141**
2	7/18/2012	24	1.510	0.020	**0.027**	11.013	0.141	**0.142**
2	7/19/2012	24	2.063	0.027	**0.027**	10.427	0.135	**0.142**
2	7/20/2012	24	2.081	0.026	**0.027**	11.805	0.141	**0.141**
2	7/21/2012	24	2.164	0.029	**0.027**	10.369	0.135	**0.141**
2	7/22/2012	24	2.285	0.030	**0.027**	11.149	0.140	**0.141**
2	7/23/2012	24	1.793	0.025	**0.025**	10.151	0.138	**0.141**
2	7/24/2012	24	2.063	0.025	**0.024**	12.391	0.147	**0.141**
2	7/25/2012	24	3.151	0.038	**0.023**	11.977	0.143	**0.141**
2	7/26/2012	5.35	0.874	0.051	**0.023**	2.674	0.177	**0.142**
2	7/27/2012	0						
2	7/28/2012	18.68	1.110	0.024	**0.022**	6.543	0.121	**0.141**
2	7/29/2012	24	1.997	0.029	**0.021**	10.087	0.139	**0.141**
2	7/30/2012	24	2.209	0.028	**0.021**	11.498	0.143	**0.140**
2	7/31/2012	24	2.977	0.035	**0.022**	12.921	0.148	**0.141**
2	8/1/2012	24	2.776	0.033	**0.023**	12.692	0.149	**0.141**
2	8/2/2012	24	2.211	0.026	**0.023**	13.115	0.153	**0.141**
2	8/3/2012	24	1.412	0.016	**0.024**	12.813	0.148	**0.142**
2	8/4/2012	24	1.050	0.014	**0.024**	12.019	0.155	**0.142**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	8/5/2012	24	0.950	0.014	**0.024**	10.334	0.151	**0.143**
2	8/6/2012	24	1.151	0.016	**0.024**	10.092	0.143	**0.143**
2	8/7/2012	24	0.857	0.012	**0.024**	10.681	0.146	**0.143**
2	8/8/2012	24	1.010	0.013	**0.024**	10.948	0.141	**0.143**
2	8/9/2012	23.53	0.612	0.010	**0.024**	9.153	0.143	**0.143**
2	8/10/2012	24	0.972	0.013	**0.024**	10.171	0.135	**0.143**
2	8/11/2012	24	0.594	0.010	**0.023**	8.824	0.142	**0.143**
2	8/12/2012	24	0.586	0.009	**0.023**	9.515	0.136	**0.143**
2	8/13/2012	24	0.562	0.007	**0.023**	10.543	0.133	**0.143**
2	8/14/2012	24	0.874	0.013	**0.022**	8.348	0.120	**0.143**
2	8/15/2012	18.08	1.036	0.019	**0.022**	7.716	0.141	**0.142**
2	8/16/2012	0						
2	8/17/2012	0						
2	8/18/2012	1.38	0.000			0.000		
2	8/19/2012	21.31	0.103	0.003	**0.021**	5.074	0.099	**0.141**
2	8/20/2012	24	0.393	0.005	**0.021**	10.506	0.136	**0.141**
2	8/21/2012	24	0.492	0.007	**0.020**	10.654	0.141	**0.141**
2	8/22/2012	24	0.555	0.008	**0.020**	11.950	0.154	**0.141**
2	8/23/2012	24	0.516	0.008	**0.019**	9.324	0.133	**0.141**
2	8/24/2012	24	0.513	0.007	**0.018**	10.312	0.135	**0.141**
2	8/25/2012	24	0.637	0.008	**0.018**	11.472	0.141	**0.141**
2	8/26/2012	24	0.576	0.007	**0.017**	11.633	0.139	**0.141**
2	8/27/2012	24	0.656	0.008	**0.016**	11.022	0.133	**0.141**
2	8/28/2012	24	0.649	0.008	**0.015**	11.521	0.138	**0.140**
2	8/29/2012	24	0.816	0.010	**0.014**	10.727	0.133	**0.139**
2	8/30/2012	24	0.795	0.010	**0.014**	10.687	0.133	**0.139**
2	8/31/2012	24	0.813	0.011	**0.013**	10.964	0.144	**0.139**
2	9/1/2012	24	0.783	0.011	**0.012**	9.781	0.127	**0.139**
2	9/2/2012	24	0.846	0.012	**0.012**	9.057	0.122	**0.138**
2	9/3/2012	24	0.879	0.012	**0.011**	10.542	0.136	**0.138**
2	9/4/2012	24	1.218	0.014	**0.011**	12.972	0.148	**0.137**
2	9/5/2012	24	0.882	0.011	**0.010**	11.561	0.139	**0.137**
2	9/6/2012	24	0.975	0.012	**0.010**	11.195	0.136	**0.137**
2	9/7/2012	24	1.458	0.019	**0.010**	10.557	0.140	**0.136**
2	9/8/2012	24	0.532	0.008	**0.010**	10.081	0.144	**0.136**
2	9/9/2012	24	0.497	0.008	**0.010**	9.127	0.141	**0.136**
2	9/10/2012	24	1.060	0.017	**0.010**	8.845	0.139	**0.136**
2	9/11/2012	24	0.957	0.014	**0.010**	9.687	0.141	**0.136**
2	9/12/2012	24	0.854	0.013	**0.010**	8.682	0.126	**0.136**
2	9/13/2012	24	0.304	0.007	**0.010**	5.174	0.109	**0.134**
2	9/14/2012	24	0.520	0.009	**0.010**	7.581	0.125	**0.134**
2	9/15/2012	24	0.795	0.011	**0.010**	10.310	0.136	**0.134**
2	9/16/2012	24	0.898	0.014	**0.010**	9.256	0.135	**0.135**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	9/17/2012	24	1.076	0.015	**0.010**	10.261	0.138	**0.135**
2	9/18/2012	24	1.014	0.017	**0.011**	8.484	0.135	**0.136**
2	9/19/2012	24	0.652	0.012	**0.011**	7.251	0.129	**0.136**
2	9/20/2012	24	0.713	0.011	**0.011**	8.366	0.124	**0.135**
2	9/21/2012	24	0.792	0.011	**0.011**	9.309	0.129	**0.134**
2	9/22/2012	24	0.710	0.011	**0.011**	9.721	0.136	**0.134**
2	9/23/2012	24	0.640	0.010	**0.011**	8.618	0.131	**0.134**
2	9/24/2012	24	0.854	0.012	**0.012**	10.028	0.137	**0.134**
2	9/25/2012	24	2.080	0.026	**0.012**	11.016	0.138	**0.134**
2	9/26/2012	24	1.097	0.014	**0.012**	11.468	0.139	**0.134**
2	9/27/2012	24	1.371	0.017	**0.013**	11.695	0.141	**0.134**
2	9/28/2012	24	1.394	0.017	**0.013**	12.017	0.144	**0.135**
2	9/29/2012	24	1.568	0.018	**0.013**	13.669	0.157	**0.136**
2	9/30/2012	24	1.452	0.018	**0.013**	12.251	0.153	**0.136**
2	10/1/2012	24	1.149	0.016	**0.014**	9.970	0.138	**0.136**
2	10/2/2012	24	1.281	0.018	**0.014**	9.887	0.136	**0.137**
2	10/3/2012	24	1.079	0.016	**0.014**	9.625	0.136	**0.137**
2	10/4/2012	24	0.974	0.015	**0.014**	8.260	0.122	**0.136**
2	10/5/2012	24	0.784	0.013	**0.014**	7.772	0.122	**0.135**
2	10/6/2012	24	1.019	0.014	**0.014**	10.806	0.144	**0.136**
2	10/7/2012	24	0.751	0.012	**0.014**	7.663	0.120	**0.135**
2	10/8/2012	24	0.729	0.011	**0.014**	8.190	0.122	**0.134**
2	10/9/2012	24	0.502	0.009	**0.014**	6.052	0.109	**0.133**
2	10/10/2012	24	0.615	0.011	**0.014**	6.813	0.112	**0.132**
2	10/11/2012	24	0.842	0.013	**0.014**	8.200	0.120	**0.131**
2	10/12/2012	24	0.520	0.009	**0.014**	6.643	0.111	**0.131**
2	10/13/2012	24	0.506	0.008	**0.014**	7.807	0.119	**0.131**
2	10/14/2012	24	0.581	0.010	**0.014**	6.620	0.114	**0.131**
2	10/15/2012	24	0.857	0.013	**0.014**	8.009	0.120	**0.130**
2	10/16/2012	24	0.815	0.012	**0.014**	8.956	0.124	**0.130**
2	10/17/2012	24	0.644	0.011	**0.014**	6.362	0.111	**0.129**
2	10/18/2012	24	0.775	0.013	**0.013**	7.336	0.116	**0.128**
2	10/19/2012	24	0.894	0.014	**0.013**	8.052	0.120	**0.128**
2	10/20/2012	24	0.792	0.013	**0.014**	7.881	0.122	**0.128**
2	10/21/2012	24	1.030	0.016	**0.014**	8.383	0.123	**0.128**
2	10/22/2012	24	0.879	0.013	**0.014**	8.906	0.128	**0.128**
2	10/23/2012	24	0.709	0.014	**0.014**	6.088	0.121	**0.127**
2	10/24/2012	24	0.340	0.008	**0.014**	4.483	0.109	**0.126**
2	10/25/2012	24	0.668	0.013	**0.013**	5.958	0.109	**0.125**
2	10/26/2012	24	0.581	0.011	**0.013**	6.409	0.113	**0.124**
2	10/27/2012	24	0.415	0.008	**0.013**	5.437	0.107	**0.123**
2	10/28/2012	24	0.312	0.007	**0.013**	4.401	0.101	**0.122**
2	10/29/2012	24	0.527	0.010	**0.012**	5.963	0.110	**0.120**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	10/30/2012	24	0.604	0.009	**0.012**	9.492	0.132	**0.120**
2	10/31/2012	24	1.036	0.013	**0.012**	12.312	0.148	**0.120**
2	11/1/2012	24	0.905	0.012	**0.012**	11.278	0.143	**0.120**
2	11/2/2012	24	1.047	0.015	**0.012**	9.192	0.131	**0.120**
2	11/3/2012	24	0.867	0.013	**0.012**	9.172	0.131	**0.120**
2	11/4/2012	24	1.125	0.016	**0.012**	9.714	0.134	**0.121**
2	11/5/2012	24	0.827	0.012	**0.012**	9.694	0.136	**0.120**
2	11/6/2012	24	0.937	0.013	**0.012**	9.877	0.134	**0.121**
2	11/7/2012	24	1.031	0.014	**0.012**	10.884	0.141	**0.122**
2	11/8/2012	24	1.281	0.019	**0.012**	9.442	0.133	**0.122**
2	11/9/2012	24	1.041	0.017	**0.012**	7.853	0.125	**0.123**
2	11/10/2012	24	0.359	0.008	**0.012**	4.911	0.115	**0.123**
2	11/11/2012	24	1.019	0.017	**0.012**	8.122	0.126	**0.123**
2	11/12/2012	24	1.442	0.018	**0.013**	13.271	0.163	**0.125**
2	11/13/2012	24	1.177	0.016	**0.013**	10.211	0.136	**0.125**
2	11/14/2012	24	0.955	0.014	**0.013**	10.108	0.136	**0.126**
2	11/15/2012	24	0.970	0.014	**0.013**	9.685	0.133	**0.126**
2	11/16/2012	24	1.053	0.013	**0.013**	12.146	0.149	**0.127**
2	11/17/2012	24	0.309	0.008	**0.013**	3.948	0.106	**0.127**
2	11/18/2012	24	0.838	0.013	**0.013**	9.317	0.133	**0.128**
2	11/19/2012	24	0.962	0.013	**0.013**	10.606	0.139	**0.128**
2	11/20/2012	24	0.927	0.012	**0.013**	11.378	0.140	**0.129**
2	11/21/2012	24	0.827	0.012	**0.013**	8.907	0.127	**0.129**
2	11/22/2012	24	0.909	0.014	**0.013**	9.201	0.133	**0.129**
2	11/23/2012	24	0.925	0.014	**0.013**	8.804	0.128	**0.130**
2	11/24/2012	24	0.496	0.011	**0.013**	4.820	0.107	**0.130**
2	11/25/2012	24	0.808	0.013	**0.013**	8.114	0.124	**0.130**
2	11/26/2012	24	0.569	0.011	**0.013**	6.285	0.114	**0.130**
2	11/27/2012	24	1.135	0.015	**0.013**	10.365	0.140	**0.132**
2	11/28/2012	24	1.173	0.016	**0.014**	10.577	0.140	**0.133**
2	11/29/2012	24	0.860	0.012	**0.014**	10.123	0.139	**0.133**
2	11/30/2012	24	0.806	0.012	**0.014**	9.886	0.138	**0.132**
2	12/1/2012	24	0.570	0.009	**0.013**	8.336	0.130	**0.132**
2	12/2/2012	24	0.564	0.011	**0.013**	6.360	0.119	**0.132**
2	12/3/2012	24	1.037	0.017	**0.013**	8.254	0.130	**0.132**
2	12/4/2012	24	1.332	0.018	**0.014**	10.148	0.134	**0.132**
2	12/5/2012	24	0.688	0.013	**0.014**	5.744	0.110	**0.131**
2	12/6/2012	24	0.862	0.015	**0.014**	7.450	0.128	**0.131**
2	12/7/2012	24	0.903	0.012	**0.014**	11.312	0.143	**0.131**
2	12/8/2012	24	0.760	0.011	**0.013**	9.452	0.134	**0.131**
2	12/9/2012	24	0.293	0.007	**0.013**	4.420	0.114	**0.130**
2	12/10/2012	24	0.803	0.012	**0.013**	9.685	0.132	**0.131**
2	12/11/2012	24	1.179	0.016	**0.013**	10.682	0.142	**0.131**

Westar - Jeffrey Unit	Date	Op. hrs	SO_2 (tons)	SO_2 lb/MMBtu	SO_2 30-day rolling avg.	NO_x (tons)	NO_x lb/MMBtu	NO_x 30-day rolling avg.
2	12/12/2012	24	1.033	0.016	**0.013**	9.152	0.131	**0.130**
2	12/13/2012	24	0.838	0.014	**0.013**	7.891	0.124	**0.130**
2	12/14/2012	24	0.625	0.014	**0.013**	5.161	0.111	**0.129**
2	12/15/2012	24	0.843	0.015	**0.013**	7.605	0.125	**0.129**
2	12/16/2012	24	0.969	0.016	**0.013**	8.007	0.123	**0.128**
2	12/17/2012	24	1.157	0.018	**0.013**	8.610	0.127	**0.129**
2	12/18/2012	24	0.842	0.014	**0.013**	7.903	0.123	**0.128**
2	12/19/2012	24	0.623	0.011	**0.013**	6.635	0.119	**0.128**
2	12/20/2012	24	0.846	0.014	**0.013**	8.400	0.135	**0.128**
2	12/21/2012	24	1.015	0.014	**0.014**	10.357	0.137	**0.128**
2	12/22/2012	24	0.464	0.011	**0.013**	4.463	0.109	**0.127**
2	12/23/2012	24	0.733	0.014	**0.013**	6.318	0.119	**0.127**
2	12/24/2012	24	0.531	0.011	**0.013**	5.316	0.107	**0.127**
2	12/25/2012	24	0.393	0.009	**0.013**	5.072	0.112	**0.126**
2	12/26/2012	22.88	1.119	0.015	**0.013**	10.945	0.142	**0.127**
2	12/27/2012	7.35	0.077	0.013	**0.013**	0.800	0.101	**0.126**
2	12/28/2012	24	2.237	0.033	**0.014**	9.145	0.128	**0.126**
2	12/29/2012	24	2.431	0.028	**0.014**	13.167	0.149	**0.126**
2	12/30/2012	24	1.136	0.023	**0.015**	5.358	0.109	**0.125**
2	12/31/2012	24	2.737	0.034	**0.016**	11.057	0.135	**0.125**

Appendix D: Maximum Achievable Control Technology (MACT) Standards

MACT standards (all for area sources) in effect beginning in 2009 (cf. http://www.epa.gov/ttn/atw/mactfnlalph.html and http://www.epa.gov/ttn/atw/area/arearules.html)

6J MACT: Area NESHAP for Industrial, Commercial and Institutional Boilers
Compliance date: 3/21/2014
Affected sources NAICS codes: 33152x
Nominal/average PM control: 95% (existing sources); 99% (new sources)

6V MACT: Area NESHAP for Chemical Manufacturing
Compliance date: 10/29/2012
Affected sources NAICS codes: n/a
Nominal/average PM control: n/a

6W MACT: Area NESHAP for Plating and Polishing Operations
Compliance date 7/1/2010
Affected sources NAICS codes: n/a
Nominal/average PM control: n/a (control is improved management practices)

6X MACT: Area NESHAP for Nine Metal Fabrication and Finishing Source Categories
Compliance date: 7/25/2011
Affected sources NAICS codes: 33211x, 332312, 332313, 332410, 332420, 332618, 332919, 332999, 333120, 333132, 333911, 335312, 335999
Nominal/average PM control: 98%

6Z MACT: Area NESHAP for Aluminum, Copper, and Other Nonferrous Foundries
Compliance date: 6/27/2011
Affected sources NAICS codes: 331521, 331522, 331524, 331525, 331528
Nominal/average PM control: 95%

7A MACT: Area NESHAP for Asphalt Processing and Asphalt Roofing Manufacturing
Compliance date: 12/2/2010
Affected sources NAICS codes: 324110, 324122
Nominal/average PM control: (Estimated) 95%

7B MACT: Area NESHAP for Chemical Preparations Industry
Compliance date: 12/30/2010
Affected sources NAICS codes:
Nominal/average PM control: 95%

7C MACT: Area NESHAP for Paints and Allied Products Manufacturing
Compliance date: 12/3/2012
Affected sources NAICS codes: n/a
Nominal/average PM control: n/a (control is for benzene and/or methylene chloride)

7D MACT: Area NESHAP for Prepared Feeds Manufacturing
Compliance date 1/5/2012

Affected sources NAICS codes: 311111, 311119
Nominal/average PM control: 95%

Estimated Kansas PM_{10} reductions from area source MACT standards with compliance dates after January 1, 2009

MACT	Facility	Source ID	Applicable source(s)	Actual/est. PM_{10}* (tpy)	PM reduction	Est. PM_{10} tons saved
6J	Wolf Creek Nuclear Operating Corp.	0310021	122.73 MMBtu/hr #2 fuel oil boiler	0.33	95%	0.3
6J	Tyson Fresh Meats - Holcomb	0550043	2-52.3 MMBtu/hr, 2-42 MMBtu/hr, 1-35 MMBtu/hr NG/fuel oil/yellow grease boilers	3.00	95%	2.9
6J	Cargill Meat Solutions	0570030	3-25.2 MMBtu/hr bio gas, NG, tallow & #2 fuel oil, 2-42 MMBtu/hr NG, tallow & #2 fuel oil, 1-33.5 MMBtu/hr bio gas, NG, tallow & #2 fuel oil boilers	2.32	95%	2.2
6J	Day & Zimmermann (Kansas Army Ammo)	0990010	EU-BLR1002A, B & C 9.99 MMBtu/hr can run on RDO	0.18	95%	0.2
6J	Cargill (Salt Div.) - Hutchinson	1550022	44 MMBtu/hr & 66 MMBtu/hr NG/fuel oil boilers	3.37	95%	3.2
6J	Hutchinson Regional Medical Center	1550107	3 12.6 MMBtu/hr NG/#2 fuel oil boilers	0.28	95%	0.3
6J	Frito-Lay	1770018	78.3 MMBtu/hr pallet, wood & tire derived fuel, 2-75 MMBtu/hr	1.19	95%	1.1
6J	Procter & Gamble	2090011	84.3 MMBtu/hr nat gas/#2 fuel oil boiler	2.00	95%	1.9
6J	General Motors	2090046	(5) 99 MMBTU/hr NG, SNG, or No. 6 Fuel Oil fired EU-Boiler/SV-Boil; and (1) 0.142 MMBTU/hr. NG fired IA-HWBOIL/SV-HWBOIL	1.98	95%	1.9
6J	Kincaid High School Community Center	003-1	(1) 1.445 MMBtu/hr Burnham boiler #2 fuel	*0.01*	95%	0.0
6J	Hallowell Manufacturing, Inc.	021-1	(1) 3.34 MMBtu/hr fire tube Cleaver Brooks (KS05065); (1) 2.51 MMBtu/hr fire tube Superior Boiler Works (KS45275); (1) (1) 6.27 MMBtu/hr fire tube Cleaver Brooks (KS30740)	*0.09*	95%	0.1
6X	Taylor Forge Engineered Systems - Garnett	0030027	dry blasting, dry machining, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Wilde Tool	0130023	dry blasting, dry machining, dry grinding	0.70	98%	0.7
6X	Valmont Newmark Industries	0150065	dry machining, welding > 2000 lb	1.75	98%	1.7
6X	Tank Connection - Baxter Springs	0210047	dry abrasive blasting (vented enclosures), welding >2000 lb	*5.00*	98%	4.9
6X	Alstom Power Air Preheater	0290003	dry blasting, welding > 2000 lb	0.00	98%	0.0
6X	Snorkel International	0430017	dry blasting, dry machining, welding	*5.00*	98%	4.9

MACT	Facility	Source ID	Applicable source(s)	Actual/est. PM_{10}* (tpy)	PM reduction	Est. PM_{10} tons saved
6X	Midland Steel	0430026	dry blasting, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Hammersmith Mfg. & Sales	0850019	dry blasting, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Broderson Mfg.	0910067	dry blasting, dry machining, dry grinding, spray painting, welding < 2000 lb	*1.00*	98%	1.0
6X	Western Chemical Pumps	0910160	dry machining	*1.00*	98%	1.0
6X	CST Industries dba CST Storage	0990037	dry blasting, dry machining, welding > 2000 lb	7.89	98%	7.7
6X	Boss Industries	0990060	dry blasting, spray painting, welding > 2000 lb	*0.11*	98%	0.1
6X	Tank Connection	0990061	dry blasting, welding > 2000 lb	*5.00*	98%	
6X	Taylor Forge Engineered Systems - Garnett	1210006	dry blasting, spray painting, welding > 2000 lb	0.11	98%	0.1
6X	Doherty Steel	1210035	dry blasting, spray painting, welding > 2000 lb	5.20	98%	5.1
6X	Jensen International	1250045	welding	*1.00*	98%	1.0
6X	Chanute Mfg. Co.	1330026	dry machining, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Caterpillar Work Tools	1490021	dry blasting, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	PKM Steel Service - Salina (E Ave A)	1690041	dry blasting, dry machining, dry grinding, spray painting, welding >2000 lb	11.20	98%	11.0
6X	ICM Inc. - Colwich	1730315	dry blasting, dry grinding, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Koch-Glitsch	1730325	dry machining, welding	*1.00*	98%	1.0
6X	Topeka Metal Specialties	1770175	dry blasting, dry grinding, spray painting, welding < 2000 lb	16.10	98%	15.8
6X	Midwestern Metals	1770241	dry blasting, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Bradford Built	2010038	welding, dry machining/blasting/grinding	*5.00*	98%	4.9
6X	Atec Steel	021-1	dry blasting, spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Leon's Welding & Fabrication	051-1	dry blasting, dry machining, welding > 2000 lb	*5.00*	98%	4.9
6X	Broce Mfg.	057-1	spray painting, welding > 2000 lb	*5.00*	98%	4.9
6X	Invena Corp. - Plant 4	073-1	dry abrasive blasting, dry grinding, spray painting, welding <2000 lb	*0.50*	98%	0.5
6X	Mackey & Sons	079-1	spray painting, welding < 2000 lb	*0.50*	98%	0.5
6X	US Towers	105-1	dry machining, welding > 2000 lb	*5.00*	98%	4.9
6X	Sauder Custom Fabrication	111-1	welding > 2000 lb	*1.00*	98%	1.0
6X	Welco Services	113-1	dry blasting, spray painting, welding >2000 lb	*5.00*	98%	4.9
6X	Cook Pump Company	125-1	spray painting, welding >2000 lb	*2.00*	98%	2.0

MACT	Facility	Source ID	Applicable source(s)	Actual/est. PM_{10}* (tpy)	PM reduction	Est. PM_{10} tons saved
6X	Genuine Jacks	125-2	welding > 2000 lb	*1.00*	98%	1.0
6X	Double T Industries	129-1	welding > 2000 lb	*1.00*	98%	1.0
6X	Bergkamp, Inc	169-1	welding > 2000 lb	*1.00*	98%	1.0
6X	JR Custom Metal Products	173-1	dry blasting, welding > 2000 lb	*2.00*	98%	2.0
6X	R.K. Fabrication, Inc.	205-1	spray painting, welding >2000 lb	*2.00*	98%	2.0
6X	T-Kennel	209-1	dry machining, dry grinding, welding < 2000 lb	*0.50*	98%	0.5
6X	Shor-line	209-2	dry machining, dry grinding, welding < 2000 lb	*0.50*	98%	0.5
6X	A & E Custom Mfg.	209-3	dry blasting, dry grinding, welding >2000 lb	*5.00*	98%	4.9
7A	Tamko Roofing Products - Columbus	0210033		*1.00*	95%	1.0
7A	Tamko Building Products - Phillipsburg	1470004	Coater - only roofing production line, units (coater, vertical mixer, horizontal mixer) controlled with mist eliminator	1.39	95%	1.3
7B	North American Salt	1590005		44.02	95%	41.8
7D	Blair Milling & Elevator Co. - Atchison	0050015	< 50 tons per day	3.37	95%	3.2
7D	Butterball LLC	0210032	> 50 tons per day	29.21	95%	27.7
7D	Alliance Nutrition	0410028	pelleting operation >50 tpd	4.80	95%	4.6
7D	Cargill Animal Nutrition - Garden City	0550003	> 50 tons per day	5.40	95%	5.1
7D	Cargill Feed & Nutrition - Emporia	1110023	pelleting operation >50 tpd	0.00	95%	0.0
7D	Cargill Animal Nutrition - McPherson	1130005	> 50 tons per day	2.51	95%	2.4
7D	Countryside Feed	1150035	pelleting operation >50 tpd	3.52	95%	3.3
7D	Seaboard Foods - Hugoton	1890103	pelleting operation >50 tpd	45.02	95%	42.8
7D	Seaboard Foods - Leoti	2030016	pelleting operation >50 tpd	42.29	95%	40.2
7D	Cargill (Nutrena Feed Div.) - Kansas City	2090043	> 50 tons per day	24.00	95%	22.8
7D	Manna Pro	2090116	pelleting operation >50 tpd	2.58	95%	2.5
7D	Hubbard Feeds	123-1	pelleting operation >50 tpd	*2.00*	95%	1.9
					Total	**350.8**

** Values are larger of 2012 or 2008 (or older) Kansas Emissions Inventory values, or are estimates (in italics)*

Appendix E: Kansas NO_x and SO_2 Reasonable Progress Unit Emissions 2002–2018

NO_x emission unit	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	tons NO_x																
Reasonable progress (selected 500 ton) units not subject to BART																	
KC BPU - Nearman Unit 1	3,860	4,629	4,316	4,137	3,829	4,647	3,595	3,231	3,856	4,214	2,104	2,104	2,104	2,104	2,104	210	210
Lafarge Midwest - Fredonia Kiln 1	596	518	600	644	657	1,244	784	526	831	1,329	258	0	0	0	0	0	0
Lafarge Midwest - Fredonia Kiln 2	883	807	805	525	443	1,099	1,137	837	1,405	1,640	382	0	0	0	0	0	0
Westar - Gordon Evans Unit 1	259	322	385	465	203	129	233	223	179	200	131	170	170	170	170	170	170
Westar - Jeffrey Unit 3	10,807	11,419	10,532	10,882	4,351	3,939	4,253	4,416	4,322	4,489	2,601	3,804	2,282	2,282	2,282	2,282	2,282
Westar - Lawrence Unit 3	728	668	795	722	504	564	696	546	655	631	588	625	625	625	625	625	625
Westar - Lawrence Unit 4	1,987	1,775	1,821	1,832	1,646	1,764	1,271	1,347	1,129	1,380	1,053	1,187	1,187	1,187	1,187	1,187	1,187
Westar - Lawrence Unit 5	3,546	3,196	3,255	2,598	2,521	2,318	2,348	2,108	2,503	3,051	1,886	2,480	2,480	2,480	2,480	2,480	2,480
Westar - Tecumseh Unit 7/9	1,531	1,156	1,240	1,413	1,430	1,335	834	534	423	419	318	387	387	387	387	387	387
Westar - Tecumseh Unit 8/10	2,222	1,663	1,612	1,941	1,764	1,839	1,780	1,744	1,442	1,414	1,341	672	672	672	672	672	672
Totals	***26,419***	***26,153***	***25,361***	***25,160***	***17,348***	***18,876***	***16,931***	***15,511***	***16,745***	***18,767***	***10,662***	***11,429***	***9,907***	***9,907***	***9,907***	***8,013***	***8,013***

Notes for future year NO_x emissions estimates

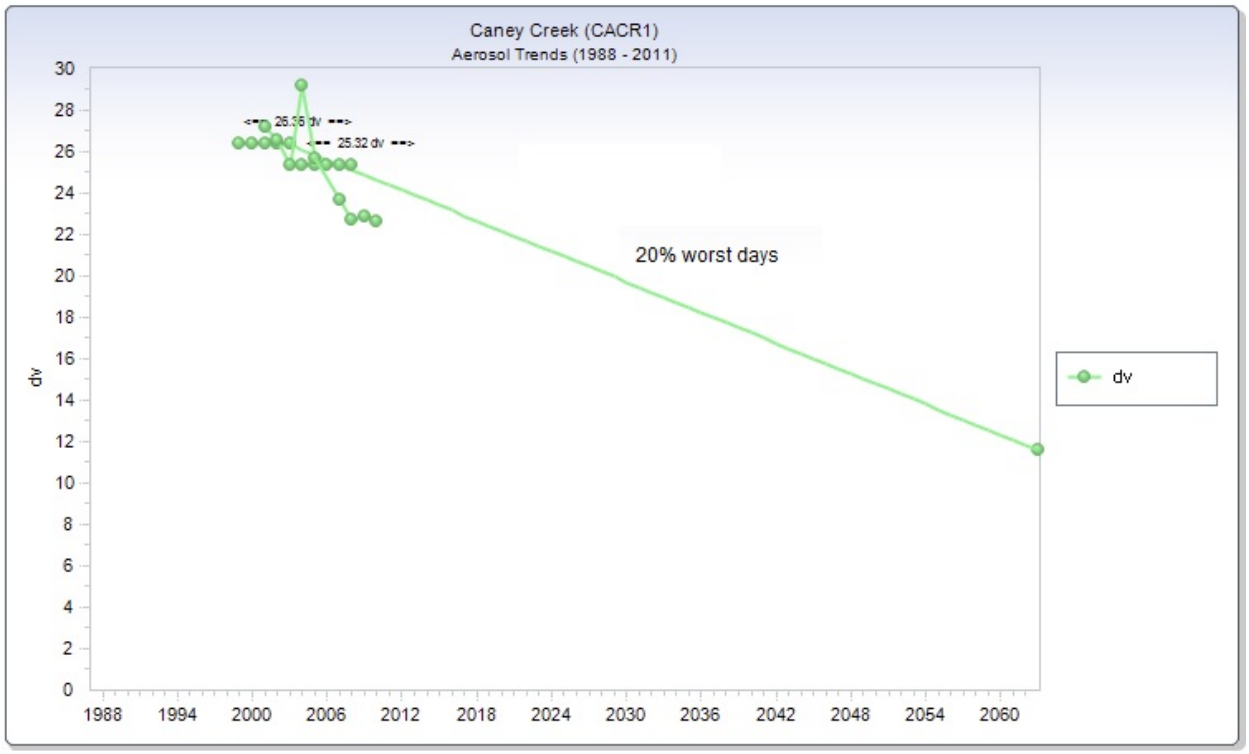
- 2013 values (or nominal values) are averages of 2010-2012 emissions
- Reductions in emissions are calculated based on generic percentages:
  SCR - 90% reduction (La Cygne 2 Jun 2015, Jeffrey 1 Jan 2014, KC BPU Nearman 1 2017)
  SNCR - 40% reduction (Jeffrey 3 Jan 2014, Jeffrey 2 assumed Jan 2015)
  LNB w/ SOFA plus low temperature superheater replacement - net 52% reduction (Tecumseh 8/10 2013)
- Lafarge Midwest - Fredonia was permanently closed in 2012

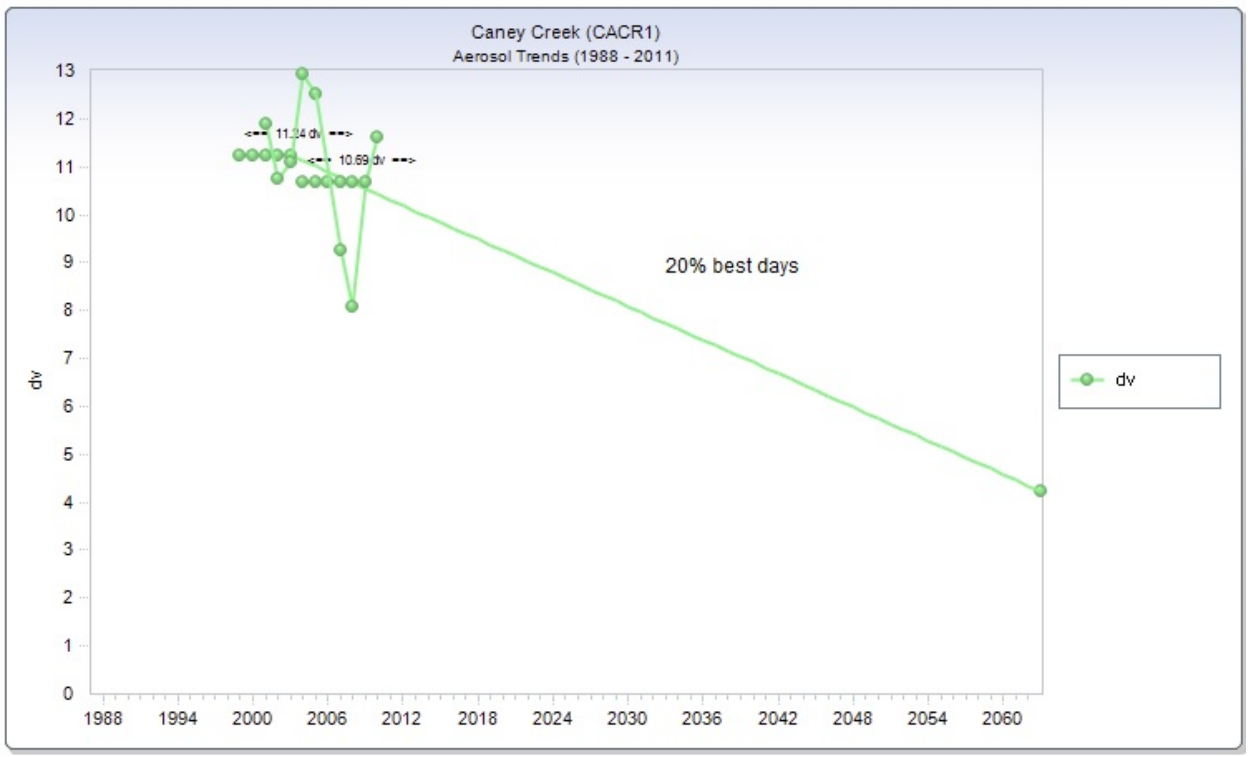
SO_2 emission unit	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
	tons SO_2																
Reasonable progress (selected 500 ton) units not subject to BART																	
KC BPU - Nearman Unit 1	7,625	8,727	8,024	7,242	6,020	7,327	5,992	5,931	6,126	5,988	4,136	5,417	5,417	5,417	5,417	921	921
Lafarge Midwest - Fredonia Kiln 1	660	574	665	454	915	543	339	44	192	386	74	0	0	0	0	0	0
Lafarge Midwest - Fredonia Kiln 2	978	894	892	187	604	744	74	175	285	711	41	0	0	0	0	0	0
Westar - Gordon Evans Unit 1	618	1,186	1,428	2,464	0	0	1	1	1	1	0	1	1	1	1	1	1
Westar - Jeffrey Unit 3	23,206	22,412	18,454	20,295	23,035	19,428	17,434	1,287	358	659	523	514	514	514	514	514	514
Westar - Lawrence Unit 3	1,965	1,855	1,583	1,456	1,101	1,258	1,281	1,162	1,379	1,188	1,181	1,249	1,249	1,249	1,249	1,249	1,249
Westar - Lawrence Unit 4	1,430	619	439	475	296	275	197	260	217	168	108	16	16	16	16	16	16
Westar - Lawrence Unit 5	4,354	4,028	2,003	1,831	1,216	1,005	1,226	1,350	1,595	1,437	746	126	126	126	126	126	126
Westar - Tecumseh Unit 7/9	2,693	2,320	2,038	2,096	1,625	1,782	1,666	1,926	1,722	1,580	1,264	1,522	1,522	1,522	1,522	1,522	1,522
Westar - Tecumseh Unit 8/10	3,624	4,073	3,174	3,127	2,501	2,620	2,816	3,101	2,675	2,282	2,714	2,557	2,557	2,557	2,557	2,557	2,557
	47,153	***46,687***	***38,701***	***39,627***	***37,312***	***34,983***	***31,025***	***15,236***	***14,550***	***14,400***	***10,787***	***11,402***	***11,402***	***11,402***	***11,402***	***6,906***	***6,906***

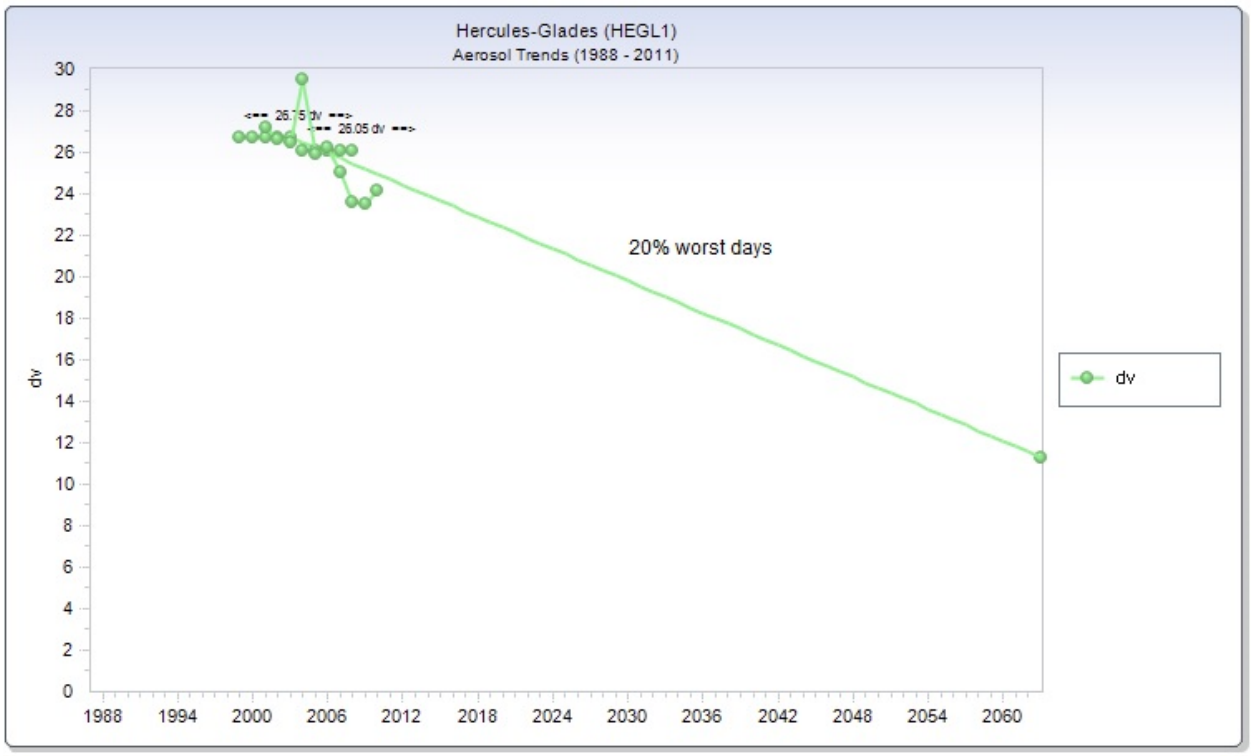
Notes for future year SO_2 emissions estimates

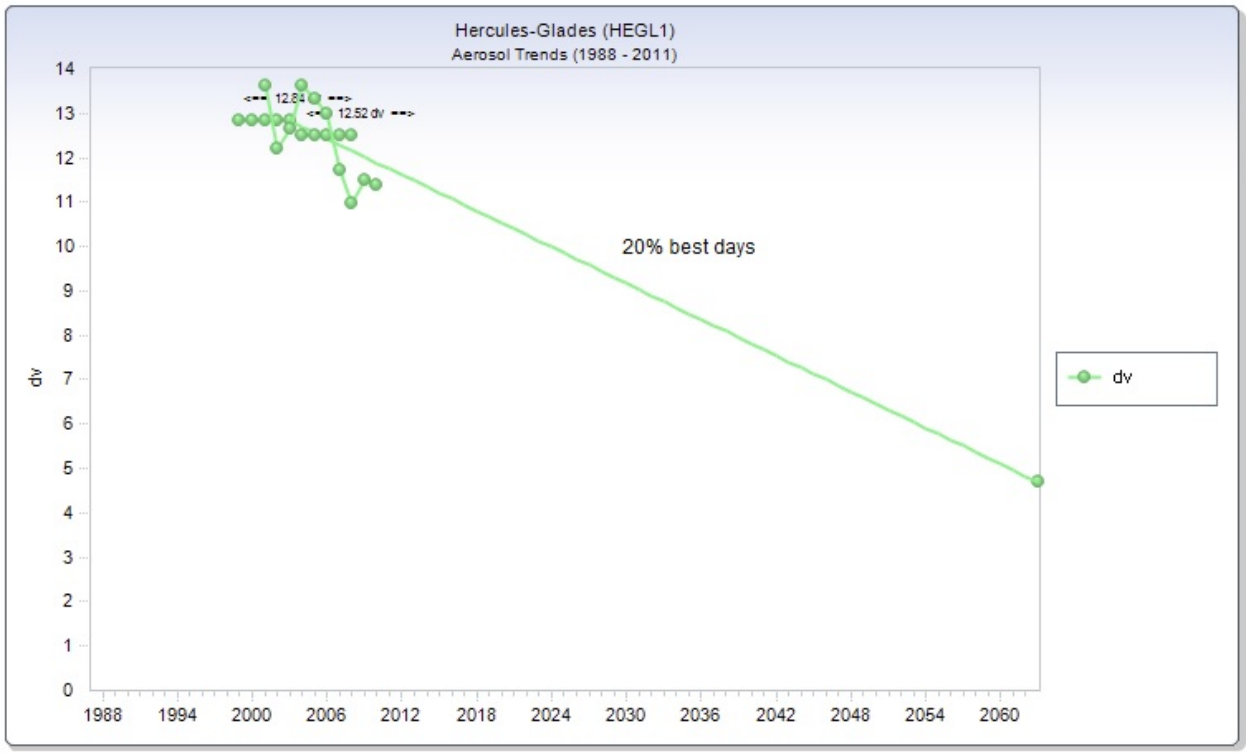
- 2013 values (or nominal values) are averages of 2010-2012 emissions
- Reductions in emissions are calculated based on generic percentages:
  Wet scrubber - 90% reduction (La Cygne 2 Jun 2015, Lawrence 4 and 5 2013)
  Dry scrubber - 83% reduction (Nearman 1 2016)
- Lafarge Midwest - Fredonia was permanently closed in 2012

Appendix F: Data Tables and Glide Paths for Caney Creek, Hercules-Glades, and Mingo Wilderness Areas






Hercules-Glades (HEGL1)
Aerosol Trends (1988 - 2011)
<-- 26.75 dv -->
<-- 26.05 dv -->
20% worst days
dv
dv
0
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
1988
1994
2000
2006
2012
2018
2024
2030
2036
2042
2048
2054
2060


Hercules-Glades (HEGL1)
Aerosol Trends (1988 - 2011)
<-- 12.84 -->
<-- 12.52 dv -->
20% best days
dv
dv
0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
1988
1994
2000
2006
2012
2018
2024
2030
2036
2042
2048
2054
2060

Graphic not available for the Mingo Wilderness Area at http://views.cira.colostate.edu/fed/DataWizard/Default.aspx. Following is a table showing tabular data generated at the same website.

Category	Site	Year	Worst 20% days (dv)	Best 20% days (dv)
Base Data	Mingo (MING1)	1988	0	0
Base Data	Mingo (MING1)	1989	0	0
Base Data	Mingo (MING1)	1990	0	0
Base Data	Mingo (MING1)	1991	0	0
Base Data	Mingo (MING1)	1992	0	0
Base Data	Mingo (MING1)	1993	0	0
Base Data	Mingo (MING1)	1994	0	0
Base Data	Mingo (MING1)	1995	0	0
Base Data	Mingo (MING1)	1996	0	0
Base Data	Mingo (MING1)	1997	0	0
Base Data	Mingo (MING1)	1998	0	0
Base Data	Mingo (MING1)	1999	0	0
Base Data	Mingo (MING1)	2000	0	0
Base Data	Mingo (MING1)	2001	29.54	13.67
Base Data	Mingo (MING1)	2002	0	0
Base Data	Mingo (MING1)	2003	0	0
Base Data	Mingo (MING1)	2004	0	0
5yr Avg	Mingo (MING1)	2004	29.54	13.67
Base Data	Mingo (MING1)	2005	0	0
Base Data	Mingo (MING1)	2006	27.26	14.2
Base Data	Mingo (MING1)	2007	29.12	15.13
Base Data	Mingo (MING1)	2008	26.8	13.93
Base Data	Mingo (MING1)	2009	25.13	12.33
5yr Avg	Mingo (MING1)	2009	27.08	13.9
Base Data	Mingo (MING1)	2010	25.73	13.48
Base Data	Mingo (MING1)	2011	25.17	12.51
Natural Conditions	Mingo (MING1)	2064	11.62	5.35

Appendix G: Five-Year Average Visibility Impairment for Caney Creek, Hercules-Glades, and Mingo Wilderness Areas

Data table and charts for Caney Creek Wilderness Area

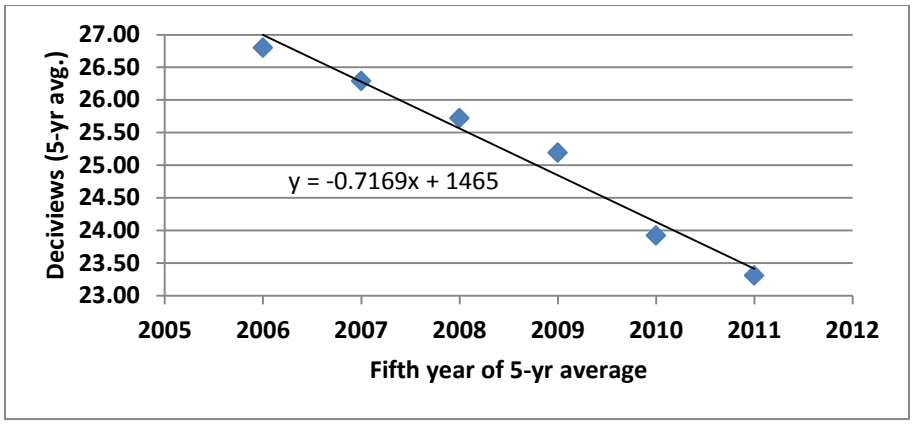
20% worst and 20% best aerosol extinction days (in deciviews) for years 2002-2011 - Caney Creek						
Site	**Year**	**Parameter**	**Avg. 20% worst days**	**5-year average**	**Avg. 20% best days**	**5-year average**
CACR1	2002	dv	27.21		11.88	
CACR1	2003	dv	26.54		10.74	
CACR1	2004	dv	25.34		11.11	
CACR1	2005	dv	29.21		12.93	
CACR1	2006	dv	25.68	26.80	12.51	11.83
CACR1	2007	dv	24.69*	26.29	10.88*	11.63
CACR1	2008	dv	23.70	25.72	9.24	11.33
CACR1	2009	dv	22.68	25.19	8.09	10.73
CACR1	2010	dv	22.87	23.92	10.66	10.28
CACR1	2011	dv	22.62	23.31	11.63	10.10
CACR1	*Baseline*	*dv*	*26.36*		*11.24*	
CACR1	*2064*	*dv*	*11.58*		*4.23*	

* *Value shown is deciview average of years 2006 and 2008 (2007 annual average not supplied by source)*

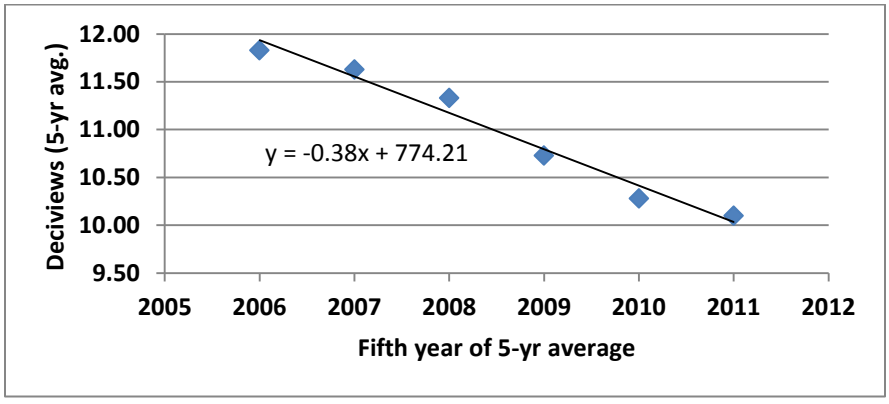
Data source: http://views.cira.colostate.edu/fed/Tools/RegionalHazeSummary.aspx

Glide path slopes	*-0.2463*	*-0.1168*

Five-Year Average Visibility Impairment (in deciviews) for 20% Worst Days over Years 2002-2011 – Caney Creek Wilderness Area



Five-Year Average Visibility Impairment (in deciviews) for 20% Best Days over Years 2002-2011 – Caney Creek Wilderness Area



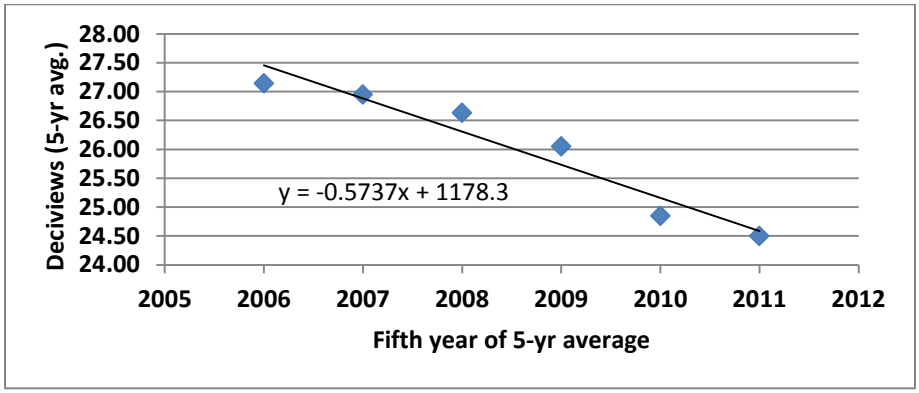
Data table and charts for Hercules-Glades Wilderness Area

20% worst and 20% best aerosol extinction days (in deciviews) for years 2002-2011 - Hercules-Glades						
Site	**Year**	**Parameter**	**Avg. worst 20% days**	**5-year average**	**Avg. 20% best days**	**5-year average**
HEGL1	2002	dv	27.17		13.64	
HEGL1	2003	dv	26.61		12.22	
HEGL1	2004	dv	26.47		12.66	
HEGL1	2005	dv	29.52		13.62	
HEGL1	2006	dv	25.91	27.14	13.34	13.10
HEGL1	2007	dv	26.23	26.95	12.99	12.97
HEGL1	2008	dv	25.01	26.63	11.71	12.86
HEGL1	2009	dv	23.57	26.05	10.96	12.52
HEGL1	2010	dv	23.55	24.85	11.51	12.10
HEGL1	2011	dv	24.15	24.50	11.37	11.71
HEGL1	*Baseline*	*dv*	*26.75*		*12.84*	
HEGL1	*2064*	*dv*	*11.30*		*4.69*	

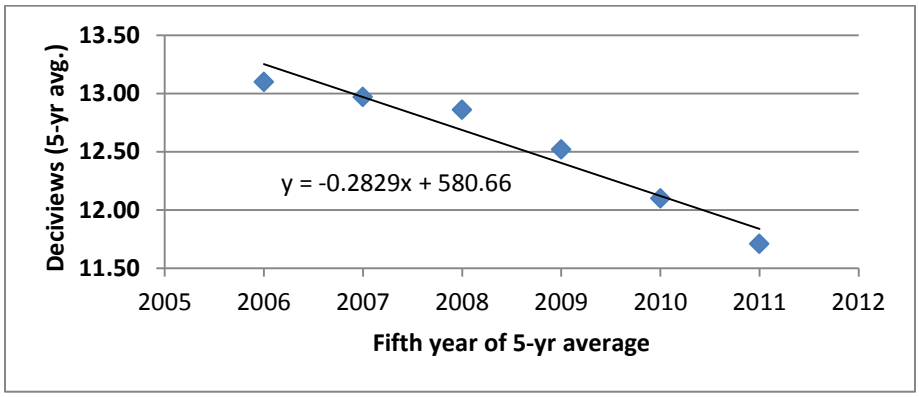
Data source: http://views.cira.colostate.edu/fed/Tools/RegionalHazeSummary.aspx

Glide path slopes	*-0.2575*	*-0.1358*

Five-Year Average Visibility Impairment (in deciviews) for 20% Worst Days over Years 2002-2011 – Hercules-Glades Wilderness Area



Five-Year Average Visibility Impairment (in deciviews) for 20% Best Days over Years 2002-2011 – Hercules-Glades Wilderness Area



Data table and charts for Mingo Wilderness Area

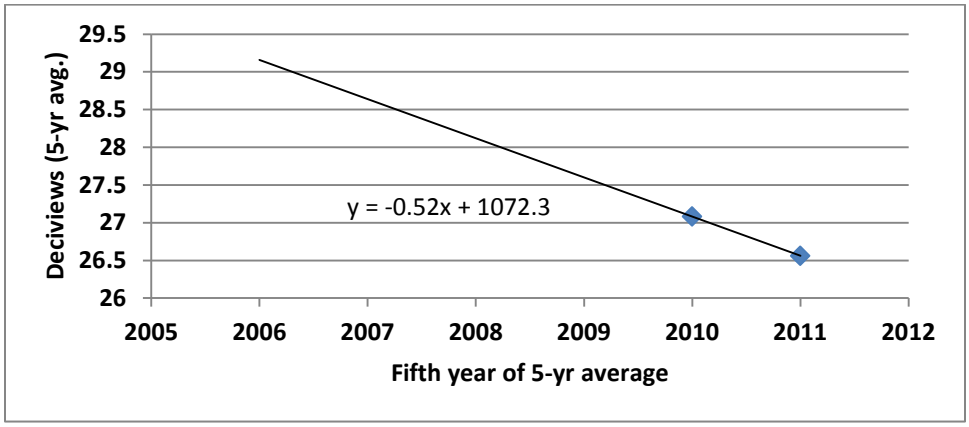
20% worst and 20% best aerosol extinction days (in deciviews) for years 2002-2011 - Mingo						
Site	**Year**	**Parameter**	**Avg. 20% worst days**	**5-year average**	**Avg. 20% best days**	**5-year average**
MING1	2002	dv				
MING1	2003	dv				
MING1	2004	dv				
MING1	2005	dv				
MING1	2006	dv	27.26		14.20	
MING1	2007	dv	29.12		15.13	
MING1	2008	dv	26.80		13.93	
MING1	2009	dv	25.13		12.33	
MING1	2010	dv	25.73	27.08	13.48	13.90
MING1	2011	dv	25.17	26.56	12.51	13.48
MING1	*Baseline*	*dv*	*29.54*		*13.67*	
MING1	*2064*	*dv*	*11.62*		*5.35*	

* *Value shown is deciview average of years 2009 and 2011 (2010 annual average not supplied by source)*

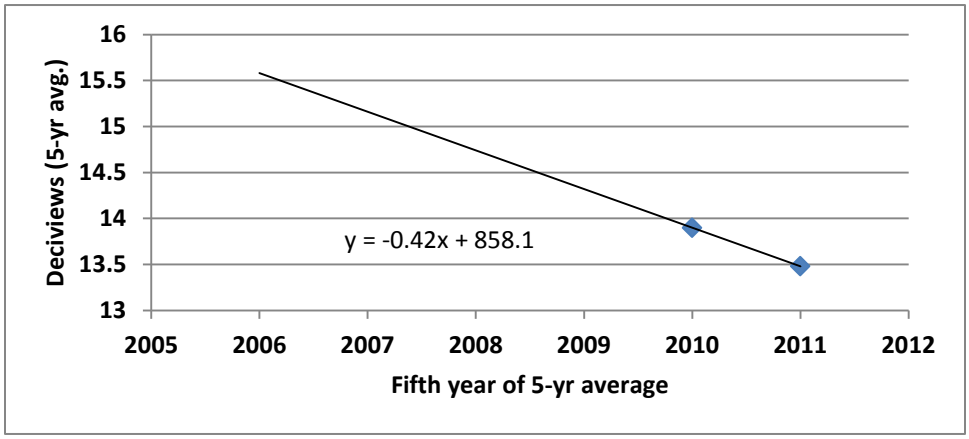
Data source: http://views.cira.colostate.edu/fed/Tools/RegionalHazeSummary.aspx

Glide path slopes	*-0.2987*	*-0.1387*

Five-Year Average Visibility Impairment (in deciviews) for 20% Worst Days over Years 2002-2011 – Mingo Wilderness Area



Five-Year Average Visibility Impairment (in deciviews) for 20% Best Days over Years 2002-2011 – Mingo Wilderness Area



Appendix H: Data Tables for the 2002, 2005, 2008, and 2011 National Emissions Inventory (NEI) for Kansas Nonpoint Sources

Data summary by sector and pollutant (note discrepancies in fire emissions, in red text)

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Fires - Prescribed Fires	CO		741.7	741.7	505,480.3	848,646.5
Mobile - On-Road Gasoline Light Duty Vehicles	CO		648,862.3	512,721.8	356,894.2	245,152.5
Biogenics - Vegetation and Soil	CO				133,414.4	155,758.1
Fires - Agricultural Field Burning	CO		805,524.6	805,524.6	49,560.0	146,377.5
Mobile - Non-Road Equipment - Gasoline	CO		201,475.4	174,105.5	146,688.7	128,997.0
Industrial Processes - Oil & Gas Production	CO		6.1	6.1	1.1	74,836.8
Fuel Comb - Residential - Wood	CO		30,602.4	30,602.4	16,872.8	34,770.8
Fires - Wildfires	CO		508.7	508.7	23,067.0	28,636.4
Fuel Comb - Electric Generation - Coal	CO		5,651.0	5,390.3	7,388.3	20,354.3
Mobile - On-Road Gasoline Heavy Duty Vehicles	CO		25,517.6	16,824.7	27,410.1	18,382.6
Mobile - Non-Road Equipment - Diesel	CO		24,021.2	21,587.8	19,712.9	17,553.5
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	CO		22,159.3	22,158.7	15,481.0	15,041.2
Mobile - On-Road Diesel Heavy Duty Vehicles	CO		9,437.5	8,416.6	9,684.3	9,158.5
Mobile - Non-Road Equipment - Other	CO		15,007.0	15,629.9	12,831.6	8,846.1
Mobile - Aircraft	CO		4,733.5	4,733.5	4,288.2	5,545.7
Mobile - Locomotives	CO		4,340.0	4,340.0	5,300.3	5,286.9
Waste Disposal	CO		7,476.6	7,476.6	5,150.4	4,751.5
Industrial Processes - Chemical Manuf	CO		49,755.6	49,755.6	3,116.8	1,926.5
Industrial Processes - NEC	CO		2,652.5	2,652.5	2,918.2	1,640.2
Fuel Comb - Residential - Natural Gas	CO		1,411.2	1,411.2	1,406.2	1,488.1
Industrial Processes - Petroleum Refineries	CO		685.1	685.1	1,131.8	1,426.4
Industrial Processes - Cement Manuf	CO		1,469.1	1,469.1	552.6	1,364.6
Fuel Comb - Comm/Institutional - Natural Gas	CO		1,598.0	1,598.0	1,384.5	1,331.4
Fuel Comb - Electric Generation - Natural Gas	CO		485.9	475.8	774.1	1,100.0
Industrial Processes - Ferrous Metals	CO		522.0	522.0	733.7	766.5
Fuel Comb - Industrial Boilers, ICEs - Other	CO		43.9	43.9	1,934.1	663.2
Fuel Comb - Industrial Boilers, ICEs - Oil	CO		521.2	521.2	527.2	449.9
Mobile - On-Road Diesel Light Duty Vehicles	CO		118.7	96.8	472.4	431.1
Commercial Cooking	CO					273.0
Fuel Comb - Electric Generation - Other	CO		372.3	376.2	252.9	211.4
Fuel Comb - Comm/Institutional - Biomass	CO					196.1
Fuel Comb - Residential - Other	CO		329.3	329.3	220.7	171.1
Industrial Processes - Storage and Transfer	CO		109.9	109.9	39.2	60.1
Solvent - Industrial Surface Coating & Solvent Use	CO		2.0	2.0	7.3	59.9
Fuel Comb - Industrial Boilers, ICEs - Biomass	CO					52.7
Fuel Comb - Electric Generation - Oil	CO		8.7	8.2	10.3	19.0
Industrial Processes - Non-ferrous Metals	CO		1.0	1.0	2.2	13.6
Fuel Comb - Comm/Institutional - Other	CO		112.5	112.5	98.6	10.3
Bulk Gasoline Terminals	CO		0.8	0.8	3.9	9.4
Solvent - Degreasing	CO		0.0	0.0	0.0	3.4
Fuel Comb - Comm/Institutional - Oil	CO		97.9	97.9	31.1	3.3
Mobile - Commercial Marine Vessels	CO		44.3	44.3	1.9	1.2
Fuel Comb - Residential - Oil	CO		1.5	1.5	0.4	0.4
Solvent - Graphic Arts	CO		1.7	1.7	5.4	0.1

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Miscellaneous Non-Industrial NEC	CO		172.3	172.3	173.7	0.0
Fuel Comb - Comm/Institutional - Coal	CO					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	CO		409.2	409.2	29.0	0.0
Industrial Processes - Mining	CO		1.8	1.8	0.0	0.0
Agriculture - Livestock Waste	NH3		33,455.8	33,455.8	92,100.7	101,760.9
Agriculture - Fertilizer Application	NH3		64,132.6	64,132.6	66,343.0	69,251.2
Fires - Prescribed Fires	NH3		11.8	11.8	8,441.8	14,144.0
Industrial Processes - Chemical Manuf	NH3		427.3	427.3	1,141.9	1,193.2
Mobile - On-Road Gasoline Light Duty Vehicles	NH3		2,755.2	2,904.7	1,239.7	1,025.6
Fuel Comb - Residential - Natural Gas	NH3					744.0
Fires - Wildfires	NH3		7.4	7.4	385.0	475.3
Industrial Processes - NEC	NH3		58,988.7	58,988.7	4,311.6	429.8
Fuel Comb - Residential - Wood	NH3				138.7	305.3
Fuel Comb - Electric Generation - Coal	NH3		305.8	288.2	325.4	302.8
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	NH3		206.0	206.0	211.1	85.6
Mobile - On-Road Diesel Heavy Duty Vehicles	NH3		73.0	75.4	60.4	68.2
Industrial Processes - Petroleum Refineries	NH3		434.6	434.6	6.5	42.7
Mobile - On-Road Gasoline Heavy Duty Vehicles	NH3		40.7	40.5	37.3	37.2
Fuel Comb - Electric Generation - Natural Gas	NH3		101.0	98.3	32.6	36.2
Mobile - Non-Road Equipment - Diesel	NH3		25.8	27.7	29.8	31.7
Industrial Processes - Cement Manuf	NH3		7.1	7.1		16.5
Mobile - Locomotives	NH3		10.6	10.6	16.5	16.5
Fuel Comb - Industrial Boilers, ICEs - Other	NH3		5.6	5.6	28.7	14.7
Waste Disposal	NH3		823.0	823.0	17.2	10.6
Solvent - Graphic Arts	NH3		0.2	0.2	5.6	8.0
Fuel Comb - Comm/Institutional - Natural Gas	NH3		9.3	9.3	9.0	7.6
Mobile - Non-Road Equipment - Gasoline	NH3		6.7	6.8	6.9	7.1
Mobile - On-Road Diesel Light Duty Vehicles	NH3		0.5	0.5	3.3	3.6
Fuel Comb - Residential - Other	NH3				4.0	2.1
Industrial Processes - Oil & Gas Production	NH3		0.0	0.0	0.0	1.9
Solvent - Industrial Surface Coating & Solvent Use	NH3		0.0	0.0	0.4	1.9
Industrial Processes - Ferrous Metals	NH3		3.7	3.7	2.5	1.7
Fuel Comb - Comm/Institutional - Biomass	NH3					1.6
Fuel Comb - Electric Generation - Oil	NH3		0.4	0.4	1.5	1.3
Fuel Comb - Industrial Boilers, ICEs - Oil	NH3		82.1	82.1	84.4	0.7
Industrial Processes - Storage and Transfer	NH3		125.8	125.8	0.7	0.7
Fuel Comb - Industrial Boilers, ICEs - Biomass	NH3					0.1
Fuel Comb - Residential - Oil	NH3				0.1	0.1
Fuel Comb - Comm/Institutional - Oil	NH3		13.6	13.6	4.7	0.1
Fuel Comb - Comm/Institutional - Other	NH3		0.4	0.4	0.5	0.1
Mobile - Commercial Marine Vessels	NH3		0.0	0.0	0.0	0.0
Fuel Comb - Comm/Institutional - Coal	NH3					0.0
Fuel Comb - Electric Generation - Oil	NH3		11.8	12.8	0.0	0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	NH3		2.5	2.5	0.0	0.0
Fires - Agricultural Field Burning	NH3		11,436.3	11,436.3		
Industrial Processes - Oil & Gas Production	NOx		6.5	6.5	1.4	56,612.5
Biogenics - Vegetation and Soil	NOx				60,081.3	55,495.4
Fuel Comb - Electric Generation - Coal	NOx		91,146.9	84,801.0	50,225.9	40,323.3

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	NOx		62,911.9	62,909.5	44,388.5	39,161.8
Mobile - Locomotives	NOx		40,822.2	40,822.2	37,329.8	37,220.3
Mobile - Non-Road Equipment - Diesel	NOx		41,960.4	40,291.7	37,614.5	34,279.4
Mobile - On-Road Diesel Heavy Duty Vehicles	NOx		40,096.9	29,879.6	34,003.0	29,798.9
Mobile - On-Road Gasoline Light Duty Vehicles	NOx		41,056.3	34,507.0	42,078.4	29,569.3
Fires - Prescribed Fires	NOx		4.3	4.3	14,389.1	22,675.2
Fires - Agricultural Field Burning	NOx		29,094.7	29,094.7	2,065.0	5,884.8
Industrial Processes - Cement Manuf	NOx		5,316.9	5,316.9	2,269.8	5,166.5
Fuel Comb - Residential - Natural Gas	NOx		3,317.1	3,317.1	3,304.3	3,496.9
Fuel Comb - Electric Generation - Natural Gas	NOx		3,454.7	3,418.2	2,566.1	2,588.4
Mobile - On-Road Gasoline Heavy Duty Vehicles	NOx		4,352.2	3,702.8	2,759.5	2,243.0
Industrial Processes - Petroleum Refineries	NOx		1,050.7	1,050.7	1,157.8	2,242.6
Mobile - Non-Road Equipment - Gasoline	NOx		1,939.1	1,998.5	2,098.6	2,001.2
Industrial Processes - NEC	NOx		2,926.1	2,926.1	5,174.4	1,921.4
Fuel Comb - Comm/Institutional - Natural Gas	NOx		1,905.4	1,905.40	1,624.80	1,599.5
Mobile - Non-Road Equipment - Other	NOx		3,753.9	3,253.5	2,302.4	1,366.8
Industrial Processes - Chemical Manuf	NOx		867.4	867.4	3,110.3	1,337.9
Fuel Comb - Industrial Boilers, ICEs - Oil	NOx		2,058.7	2,058.7	2,109.9	1,289.8
Fuel Comb - Industrial Boilers, ICEs - Other	NOx		365.2	365.2	3,394.7	1,212.9
Fires - Wildfires	NOx		5.9	5.9	643.6	662.8
Mobile - On-Road Diesel Light Duty Vehicles	NOx		110.9	86.9	732.5	643.6
Fuel Comb - Residential - Other	NOx		457.8	457.8	796.0	603.5
Fuel Comb - Residential - Wood	NOx		423.9	423.9	269.2	529.9
Waste Disposal	NOx		526.3	526.3	413.6	278.8
Fuel Comb - Electric Generation - Oil	NOx		36.4	33.5	13.2	240.0
Mobile - Aircraft	NOx		90.9	90.9	200.4	232.2
Fuel Comb - Electric Generation - Other	NOx		1,762.5	1,674.4	0.0	111.0
Fuel Comb - Comm/Institutional - Biomass	NOx					73.2
Fuel Comb - Industrial Boilers, ICEs - Biomass	NOx					66.1
Industrial Processes - Ferrous Metals	NOx		32.9	32.9	43.1	47.7
Solvent - Industrial Surface Coating & Solvent Use	NOx		7.1	7.1	7.7	25.2
Industrial Processes - Storage and Transfer	NOx		93.1	93.1	19.7	23.7
Fuel Comb - Comm/Institutional - Other	NOx		119.2	119.2	147	23.3
Industrial Processes - Non-ferrous Metals	NOx		8.6	8.6	2.7	16.5
Fuel Comb - Comm/Institutional - Oil	NOx		351.6	351.6	125.5	10.9
Industrial Processes - Mining	NOx		19.7	19.7	0.0	9.9
Miscellaneous Non-Industrial NEC	NOx		12.2	12.2	12.3	9.8
Bulk Gasoline Terminals	NOx		0.40	0.40	0.2	8.5
Mobile - Commercial Marine Vessels	NOx		234.2	234.2	10.0	5.9
Fuel Comb - Residential - Oil	NOx		6.1	6.1	1.4	1.4
Solvent - Graphic Arts	NOx		2.0	2.0	0.0	0.1
Fuel Comb - Comm/Institutional - Coal	NOx					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	NOx		905.9	905.9	51.1	0.0
Solvent - Non-Industrial Surface Coating	NOx		6.3	6.3	4.4	
Agriculture - Crops & Livestock Dust	PM10-FIL		253,845.3	253,845.3	413,968.2	417,427.9
Dust - Unpaved Road Dust	PM10-FIL		275,025.9	275,025.9	280,603.0	282,328.0
Dust - Construction Dust	PM10-FIL		48,050.0	48,050.0	41,618.1	32,562.3
Fires - Agricultural Field Burning	PM10-FIL					23,904.2

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Dust - Paved Road Dust	PM10-FIL		32,892.2	32,892.2	32,114.3	18,344.1
Industrial Processes - NEC	PM10-FIL		2,414.3	2,414.3	1,452.2	4,090.0
Industrial Processes - Mining	PM10-FIL		10,621.6	10,621.6	2,113.7	1,699.6
Fuel Comb - Electric Generation - Coal	PM10-FIL		3,900.6	3,708.2	2,693.0	1,568.5
Waste Disposal	PM10-FIL		2,397.4	2,397.4	1,453.7	1,388.8
Industrial Processes - Oil & Gas Production	PM10-FIL		0.2	0.2	0.1	841.1
Industrial Processes - Storage and Transfer	PM10-FIL		804.6	804.6	350.6	617.2
Industrial Processes - Chemical Manuf	PM10-FIL		149.0	149.0	129.0	570.3
Industrial Processes - Ferrous Metals	PM10-FIL		370.2	370.2	144.5	449.1
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	PM10-FIL		645.8	645.7	326.3	310.3
Industrial Processes - Petroleum Refineries	PM10-FIL		625.4	625.4	423.8	307.3
Industrial Processes - Cement Manuf	PM10-FIL		767.0	767.0	142.1	208.0
Solvent - Industrial Surface Coating & Solvent Use	PM10-FIL		110.5	110.5	9.5	186.1
Fuel Comb - Comm/Institutional - Biomass	PM10-FIL					162.4
Industrial Processes - Non-ferrous Metals	PM10-FIL		57.7	57.7	0.1	125.2
Fuel Comb - Industrial Boilers, ICEs - Oil	PM10-FIL		103.7	103.7	0.2	54.2
Fuel Comb - Electric Generation - Natural Gas	PM10-FIL		140.4	135.8	38.9	28.9
Fuel Comb - Industrial Boilers, ICEs - Biomass	PM10-FIL					15.7
Fuel Comb - Industrial Boilers, ICEs - Other	PM10-FIL		155.3	155.3	4.4	11.3
Fuel Comb - Residential - Natural Gas	PM10-FIL		6.5	6.5	5.7	7.4
Fuel Comb - Comm/Institutional - Natural Gas	PM10-FIL		16.50	16.5	2.2	7.2
Fuel Comb - Electric Generation - Oil	PM10-FIL		1.3	1.3	2.5	5.5
Solvent - Degreasing	PM10-FIL		0.2	0.2	0.1	3.4
Commercial Cooking	PM10-FIL					2.2
Fuel Comb - Electric Generation - Other	PM10-FIL		377.9	394.5	3.1	1.5
Fuel Comb - Comm/Institutional - Other	PM10-FIL		1.3	1.3	1.4	1.2
Fuel Comb - Residential - Other	PM10-FIL		4.3	4.3	0.6	0.9
Fuel Comb - Comm/Institutional - Oil	PM10-FIL		20.8	20.8	0.6	0.7
Fuel Comb - Residential - Oil	PM10-FIL		0.4	0.4	0.1	0.1
Industrial Processes - Pulp & Paper	PM10-FIL		8.1	8.1	0.7	0.1
Solvent - Graphic Arts	PM10-FIL		0.0	0.0		0.0
Fuel Comb - Comm/Institutional - Coal	PM10-FIL					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	PM10-FIL		992.0	992.0	3.6	0.0
Solvent - Non-Industrial Surface Coating	PM10-FIL		54.5	54.5		
Agriculture - Crops & Livestock Dust	PM10-PRI		253,845.3	253,845.3	413,968.2	417,427.9
Dust - Unpaved Road Dust	PM10-PRI		275,025.9	275,025.9	280,603.0	282,328.1
Fires - Prescribed Fires	PM10-PRI		69.1	69.1	58,112.7	96,240.8
Dust - Construction Dust	PM10-PRI		48,050.0	48,050.0	41,618.1	32,562.3
Fires - Agricultural Field Burning	PM10-PRI		99,222.8	99,222.8	6,195.0	23,904.2
Dust - Paved Road Dust	PM10-PRI		32,892.2	32,892.2	32,114.3	18,344.1
Fuel Comb - Residential - Wood	PM10-PRI		4,464.0	4,464.0	2,419.6	5,048.3
Industrial Processes - NEC	PM10-PRI		3,458.6	3,458.6	6,726.7	4,304.3
Fires - Wildfires	PM10-PRI		48.5	48.5	2,640.2	3,156.1
Mobile - Non-Road Equipment - Diesel	PM10-PRI		4,940.1	4,310.4	3,484.0	2,990.0
Fuel Comb - Electric Generation - Coal	PM10-PRI		6,593.4	6,229.2	3,100.0	2,225.6
Industrial Processes - Mining	PM10-PRI		10,883.9	10,883.9	2,137.7	1,702.2
Industrial Processes - Oil & Gas Production	PM10-PRI		1.4	1.4	1.9	1,644.9
Mobile - On-Road Diesel Heavy Duty Vehicles	PM10-PRI		1,273.0	1,056.6	1,889.2	1,617.3

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Waste Disposal	PM10-PRI		2,415.3	2,415.3	2,297.0	1,416.7
Mobile - On-Road Gasoline Light Duty Vehicles	PM10-PRI		816.8	766.4	1,495.9	1,256.3
Mobile - Locomotives	PM10-PRI		1,127.7	1,127.7	1,217.5	1,214.1
Industrial Processes - Ferrous Metals	PM10-PRI		411.8	411.8	373.3	1,186.1
Commercial Cooking	PM10-PRI					736.0
Industrial Processes - Chemical Manuf	PM10-PRI		160.7	160.7	1,314.0	635.2
Industrial Processes - Storage and Transfer	PM10-PRI		872.9	872.9	430.7	626.9
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	PM10-PRI		906.2	906.2	679.8	558.9
Industrial Processes - Petroleum Refineries	PM10-PRI		678.7	678.7	746.9	551.2
Mobile - Non-Road Equipment - Gasoline	PM10-PRI		401.8	419.8	424.7	420.7
Industrial Processes - Cement Manuf	PM10-PRI		832.3	832.3	155.5	240.0
Solvent - Industrial Surface Coating & Solvent Use	PM10-PRI		118.9	118.9	103.3	187.7
Fuel Comb - Comm/Institutional - Biomass	PM10-PRI					168.0
Industrial Processes - Non-ferrous Metals	PM10-PRI		62.8	62.8	273.6	167.0
Mobile - Aircraft	PM10-PRI		101.1	101.1	93.5	120.8
Fuel Comb - Electric Generation - Natural Gas	PM10-PRI		82.0	73.7	95.6	109.9
Mobile - On-Road Gasoline Heavy Duty Vehicles	PM10-PRI		93.7	81.0	78.9	63.5
Fuel Comb - Industrial Boilers, ICEs - Oil	PM10-PRI		237.9	237.9	242.7	58.3
Mobile - On-Road Diesel Light Duty Vehicles	PM10-PRI		16.6	11.4	54.8	40.6
Fuel Comb - Industrial Boilers, ICEs - Other	PM10-PRI		164.2	164.2	842.0	38.8
Fuel Comb - Comm/Institutional - Natural Gas	PM10-PRI		18.80	18.8	12.8	24.6
Mobile - Non-Road Equipment - Other	PM10-PRI		17.8	19.1	20.6	22.8
Fuel Comb - Residential - Natural Gas	PM10-PRI		17.8	17.8	18.3	19.3
Fuel Comb - Industrial Boilers, ICEs - Biomass	PM10-PRI					16.3
Fuel Comb - Electric Generation - Oil	PM10-PRI		3.6	3.5	5.0	8.0
Fuel Comb - Electric Generation - Other	PM10-PRI		416.1	434.4	4.2	4.9
Solvent - Degreasing	PM10-PRI		0.2	0.2	0.1	3.4
Fuel Comb - Comm/Institutional - Other	PM10-PRI		1.7	1.7	18.5	3.1
Fuel Comb - Residential - Other	PM10-PRI		7.0	7.0	61.0	2.2
Fuel Comb - Comm/Institutional - Oil	PM10-PRI		43.1	43.1	19.4	0.9
Miscellaneous Non-Industrial NEC	PM10-PRI		31.0	31.0	31.3	0.6
Mobile - Commercial Marine Vessels	PM10-PRI		8.0	8.0	0.4	0.2
Fuel Comb - Residential - Oil	PM10-PRI		0.7	0.7	0.2	0.2
Industrial Processes - Pulp & Paper	PM10-PRI		8.8	8.8	1.0	0.1
Solvent - Graphic Arts	PM10-PRI		0.0	0.0		0.0
Fuel Comb - Comm/Institutional - Coal	PM10-PRI					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	PM10-PRI		1,077.1	1,077.1	3.8	0.0
Solvent - Non-Industrial Surface Coating	PM10-PRI		54.5	54.5		
Agriculture - Crops & Livestock Dust	PM25-FIL		38,076.3	38,076.3	82,792.6	83,381.5
Dust - Unpaved Road Dust	PM25-FIL		27,547.2	27,547.2	27,898.7	28,081.8
Fires - Agricultural Field Burning	PM25-FIL					14,252.9
Dust - Paved Road Dust	PM25-FIL		2,553.4	2,553.4	2,486.0	4,586.0
Dust - Construction Dust	PM25-FIL		4,827.8	4,827.8	4,161.8	3,256.2
Industrial Processes - NEC	PM25-FIL		1,423.7	1,423.7	920.8	1,432.8
Waste Disposal	PM25-FIL		2,181.0	2,181.0	1,235.5	1,244.9
Fuel Comb - Electric Generation - Coal	PM25-FIL		2,804.0	2,715.0	1,259.3	1,018.2
Industrial Processes - Oil & Gas Production	PM25-FIL		1.2	1.2	1.2	835.9
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	PM25-FIL		607.2	607.1	325.5	307.6

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Industrial Processes - Petroleum Refineries	PM25-FIL		606.0	606.0	423.8	292.9
Industrial Processes - Ferrous Metals	PM25-FIL		216.2	216.2	37.1	233.1
Industrial Processes - Mining	PM25-FIL		2,073.4	2,073.4	405.0	232.4
Industrial Processes - Chemical Manuf	PM25-FIL		120.4	120.4	99.2	229.7
Solvent - Industrial Surface Coating & Solvent Use	PM25-FIL		92.4	92.4	0.0	157.7
Industrial Processes - Storage and Transfer	PM25-FIL		308.8	308.8	101.3	142.1
Fuel Comb - Comm/Institutional - Biomass	PM25-FIL					139.7
Industrial Processes - Cement Manuf	PM25-FIL		322.1	322.1	74.5	94.2
Fuel Comb - Industrial Boilers, ICEs - Oil	PM25-FIL		26.0	26.0	0.0	51.6
Industrial Processes - Non-ferrous Metals	PM25-FIL		31.4	31.4	0.1	50.6
Fuel Comb - Electric Generation - Natural Gas	PM25-FIL		131.9	130.9	38.8	28.8
Fuel Comb - Industrial Boilers, ICEs - Biomass	PM25-FIL					13.4
Fuel Comb - Industrial Boilers, ICEs - Other	PM25-FIL		101.1	101.1	3.6	10.9
Fuel Comb - Comm/Institutional - Natural Gas	PM25-FIL		14.3	14.3	2.2	6.0
Fuel Comb - Residential - Natural Gas	PM25-FIL		3.6	3.6	3.1	4.1
Fuel Comb - Electric Generation - Oil	PM25-FIL		0.3	0.3	0.9	4.0
Solvent - Degreasing	PM25-FIL		0.2	0.2	0.1	3.4
Commercial Cooking	PM25-FIL					2.0
Fuel Comb - Comm/Institutional - Other	PM25-FIL		1.2	1.2	1.2	1.2
Fuel Comb - Electric Generation - Other	PM25-FIL		182.9	195.2	1.8	0.9
Fuel Comb - Comm/Institutional - Oil	PM25-FIL		15.2	15.2	0.6	0.7
Fuel Comb - Residential - Other	PM25-FIL		2.7	2.7	0.3	0.5
Fuel Comb - Residential - Oil	PM25-FIL		0.3	0.3	0.1	0.1
Industrial Processes - Pulp & Paper	PM25-FIL		4.0	4.0	0.2	0.1
Solvent - Graphic Arts	PM25-FIL		0.0	0.0		0.0
Fuel Comb - Comm/Institutional - Coal	PM25-FIL					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	PM25-FIL		119.3	119.3	3.6	0.0
Solvent - Non-Industrial Surface Coating	PM25-FIL		54.5	54.5		
Agriculture - Crops & Livestock Dust	PM25-PRI		38,076.3	38,076.3	82,792.6	83,381.2
Fires - Prescribed Fires	PM25-PRI		58.6	58.6	49,248.0	81,560.0
Dust - Unpaved Road Dust	PM25-PRI		27,547.2	27,547.2	27,898.7	28,082.3
Fires - Agricultural Field Burning	PM25-PRI		75,108.0	75,108.0	6,195.0	14,252.9
Fuel Comb - Residential - Wood	PM25-PRI		4,464.0	4,464.0	2,417.0	5,046.3
Dust - Paved Road Dust	PM25-PRI		2,553.4	2,553.4	2,486.0	4,586.0
Dust - Construction Dust	PM25-PRI		4,827.8	4,827.8	4,161.8	3,256.2
Mobile - Non-Road Equipment - Diesel	PM25-PRI		4,791.8	4,181.0	3,379.5	2,900.3
Fires - Wildfires	PM25-PRI		41.1	41.1	2,237.5	2,674.6
Industrial Processes - NEC	PM25-PRI		2,407.3	2,407.3	2,019.9	1,735.3
Fuel Comb - Electric Generation - Coal	PM25-PRI		5,496.9	5,235.9	1,666.3	1,675.3
Industrial Processes - Oil & Gas Production	PM25-PRI		1.3	1.3	1.7	1,639.8
Mobile - On-Road Diesel Heavy Duty Vehicles	PM25-PRI		1,110.7	909.8	1,713.8	1,444.8
Waste Disposal	PM25-PRI		2,199.0	2,199.0	1,247.2	1,274.5
Mobile - Locomotives	PM25-PRI		1,127.3	1,127.3	1,117.3	1,120.7
Industrial Processes - Ferrous Metals	PM25-PRI		257.8	257.8	265.8	977.1
Commercial Cooking	PM25-PRI					735.8
Mobile - On-Road Gasoline Light Duty Vehicles	PM25-PRI		435.0	373.5	925.2	708.8
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	PM25-PRI		780.9	780.8	678.5	556.0
Industrial Processes - Petroleum Refineries	PM25-PRI		659.2	659.2	656.4	536.8

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Mobile - Non-Road Equipment - Gasoline	PM25-PRI		369.6	386.3	390.7	387.0
Industrial Processes - Chemical Manuf	PM25-PRI		153.1	132.0	189.2	340.5
Industrial Processes - Mining	PM25-PRI		2,335.8	2,335.8	429.0	235.0
Industrial Processes - Storage and Transfer	PM25-PRI		377.4	377.4	171.9	168.2
Solvent - Industrial Surface Coating & Solvent Use	PM25-PRI		100.8	100.8	102.6	159.4
Fuel Comb - Comm/Institutional - Biomass	PM25-PRI					145.3
Industrial Processes - Cement Manuf	PM25-PRI		387.4	387.4	88.0	127.5
Fuel Comb - Electric Generation - Natural Gas	PM25-PRI		73.4	68.8	95.5	109.9
Industrial Processes - Non-ferrous Metals	PM25-PRI		36.3	36.3	0.9	104.3
Mobile - Aircraft	PM25-PRI		72.2	72.2	16.8	97.6
Fuel Comb - Industrial Boilers, ICEs - Oil	PM25-PRI		160.2	160.2	163.4	55.7
Fuel Comb - Industrial Boilers, ICEs - Other	PM25-PRI		110.1	110.1	684.6	38.4
Mobile - On-Road Diesel Light Duty Vehicles	PM25-PRI		14.5	9.7	49.4	35.5
Mobile - On-Road Gasoline Heavy Duty Vehicles	PM25-PRI		68.6	59.6	48.3	33.6
Fuel Comb - Comm/Institutional - Natural Gas	PM25-PRI		16.2	16.2	12.5	23.4
Mobile - Non-Road Equipment - Other	PM25-PRI		17.8	19.1	20.6	22.8
Fuel Comb - Residential - Natural Gas	PM25-PRI		14.6	14.6	15.1	16.0
Fuel Comb - Industrial Boilers, ICEs - Biomass	PM25-PRI					14.0
Fuel Comb - Electric Generation - Oil	PM25-PRI		2.7	2.5	3.4	6.5
Fuel Comb - Electric Generation - Other	PM25-PRI		221.0	235.0	2.9	4.3
Solvent - Degreasing	PM25-PRI		0.2	0.2	0.1	3.4
Fuel Comb - Comm/Institutional - Other	PM25-PRI		1.6	1.6	17.5	3.1
Fuel Comb - Residential - Other	PM25-PRI		5.3	5.3	60.1	1.8
Fuel Comb - Comm/Institutional - Oil	PM25-PRI		37.6	37.6	13.1	0.9
Miscellaneous Non-Industrial NEC	PM25-PRI		28.3	28.3	28.5	0.6
Mobile - Commercial Marine Vessels	PM25-PRI		7.70	7.70	0.3	0.2
Fuel Comb - Residential - Oil	PM25-PRI		0.7	0.7	0.2	0.2
Industrial Processes - Pulp & Paper	PM25-PRI		4.7	4.7	0.5	0.1
Solvent - Graphic Arts	PM25-PRI		0.0	0.0		0.0
Fuel Comb - Comm/Institutional - Coal	PM25-PRI					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	PM25-PRI		204.3	204.3	3.8	0.0
Solvent - Non-Industrial Surface Coating	PM25-PRI		54.5	54.5		
Fuel Comb - Electric Generation - Coal	SO2		124,386.2	125,294.8	95,894.5	39,375.4
Fires - Prescribed Fires	SO2		11.8	11.8	6,089.6	9,770.4
Industrial Processes - Chemical Manuf	SO2		108.4	108.4	3,457.0	3,063.5
Fires - Agricultural Field Burning	SO2		10,937.3	10,937.3	330.4	2,287.5
Industrial Processes - Petroleum Refineries	SO2		3,665.5	3,665.5	2,295.6	1,919.6
Industrial Processes - Cement Manuf	SO2		3,694.9	3,694.9	790.9	1,650.3
Industrial Processes - NEC	SO2		1,259.2	1,259.2	407.4	502.4
Mobile - Locomotives	SO2		2,838.7	2,838.7	384.8	372.3
Fires - Wildfires	SO2		3.2	3.2	273.9	298.4
Mobile - On-Road Gasoline Light Duty Vehicles	SO2		1,803.1	792.0	636.9	247.4
Industrial Processes - Oil & Gas Production	SO2		112.7	112.7	4.8	196.3
Fuel Comb - Industrial Boilers, ICEs - Other	SO2		2,747.5	2,747.5	6,574.1	155.0
Fuel Comb - Residential - Wood	SO2		64.9	64.9	49.2	89.7
Mobile - Non-Road Equipment - Diesel	SO2		4,781.8	5,151.2	797.0	73.6
Mobile - On-Road Diesel Heavy Duty Vehicles	SO2		947.9	969.0	46.9	51.2
Fuel Comb - Industrial Boilers, ICEs - Oil	SO2		4,396.8	4,396.8	191.2	47.0

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Industrial Processes - Ferrous Metals	SO2		21.8	21.8	32.5	44.3
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	SO2		429.1	429.1	386.5	41.6
Waste Disposal	SO2		136.1	136.1	61.6	35.5
Mobile - Aircraft	SO2		11.0	11.0	29.0	34.6
Fuel Comb - Residential - Natural Gas	SO2		20.6	20.6	21.1	22.3
Fuel Comb - Electric Generation - Other	SO2		5,346.7	11,110.8	0.0	15.2
Mobile - On-Road Gasoline Heavy Duty Vehicles	SO2		133.5	54.9	33.3	13.1
Fuel Comb - Electric Generation - Natural Gas	SO2		35.8	42.6	11.6	10.7
Fuel Comb - Comm/Institutional - Natural Gas	SO2		11.4	11.4	9.9	9.9
Mobile - Non-Road Equipment - Gasoline	SO2		72.2	30.5	14.8	9.5
Fuel Comb - Electric Generation - Oil	SO2		48.8	50.4	3.1	9.1
Fuel Comb - Comm/Institutional - Biomass	SO2					8.2
Fuel Comb - Industrial Boilers, ICEs - Biomass	SO2					5.6
Mobile - Non-Road Equipment - Other	SO2		4.0	4.1	4.1	4.9
Fuel Comb - Comm/Institutional - Oil	SO2		768.5	768.5	8.9	3.1
Industrial Processes - Mining	SO2		3.0	3.0	0.0	2.6
Fuel Comb - Residential - Other	SO2		110.3	110.3	10.1	2.6
Industrial Processes - Non-ferrous Metals	SO2		6.5	6.5	0.0	2.1
Fuel Comb - Residential - Oil	SO2		14.8	14.8	3.3	2.0
Miscellaneous Non-Industrial NEC	SO2					1.5
Mobile - On-Road Diesel Light Duty Vehicles	SO2		8.1	8.0	1.3	1.4
Fuel Comb - Comm/Institutional - Other	SO2		9.7	9.7	5.8	0.7
Industrial Processes - Storage and Transfer	SO2		0.6	0.6	0.1	0.5
Solvent - Industrial Surface Coating & Solvent Use	SO2		0.3	0.4	0.4	0.1
Mobile - Commercial Marine Vessels	SO2		45.4	45.4	0.6	0.1
Bulk Gasoline Terminals	SO2					0.1
Solvent - Graphic Arts	SO2		0.0	0.0	0.8	0.0
Fuel Comb - Comm/Institutional - Coal	SO2					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	SO2		18,134.7	18,134.7	105.7	0.0
Biogenics - Vegetation and Soil	VOC				495,008.9	599,015.5
Fires - Prescribed Fires	VOC		168.0	168.0	121,350.4	203,320.2
Industrial Processes - Oil & Gas Production	VOC		2,880.0	2,880.0	609.8	94,166.9
Solvent - Consumer & Commercial Solvent Use	VOC					31,905.1
Mobile - On-Road Gasoline Light Duty Vehicles	VOC		48,809.3	40,765.2	31,203.1	21,120.6
Mobile - Non-Road Equipment - Gasoline	VOC		18,765.5	17,324.1	15,262.5	13,752.7
Gas Stations	VOC		11,302.6	11,302.6	10,399.3	10,930.9
Fires - Agricultural Field Burning	VOC		54,890.0	54,890.0	3,717.0	10,433.1
Solvent - Industrial Surface Coating & Solvent Use	VOC		16,454.5	16,454.5	14,611.8	7,941.9
Bulk Gasoline Terminals	VOC		2,510.6	2,510.6	7,482.8	7,674.7
Fires - Wildfires	VOC		99.1	99.1	5,534.1	6,832.2
Fuel Comb - Residential - Wood	VOC		18,535.4	18,535.4	3,039.5	6,101.9
Industrial Processes - NEC	VOC		4,006.3	4,006.3	6,199.2	5,430.2
Solvent - Non-Industrial Surface Coating	VOC		19,214.9	19,214.9	14,723.8	3,373.7
Mobile - Non-Road Equipment - Diesel	VOC		5,079.1	4,438.2	3,825.0	3,236.0
Solvent - Degreasing	VOC		1,626.2	1,626.2	2,696.1	2,836.5
Industrial Processes - Storage and Transfer	VOC		6,562.9	6,562.9	6,661.7	2,565.5
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	VOC		4,020.0	4,020.0	3,058.8	2,282.7

Sector *(2011 naming convention)*	**Pollutant**		**2002 tons**	**2005 tons**	**2008 tons**	**2011 tons**
Miscellaneous Non-Industrial NEC	VOC		96.0	96.0	96.8	2,259.7
Industrial Processes - Chemical Manuf	VOC		1,527.0	1,527.0	3,757.2	2,001.1
Mobile - On-Road Diesel Heavy Duty Vehicles	VOC		1,943.4	1,615.3	2,169.0	1,943.0
Mobile - Locomotives	VOC		1,935.3	1,935.3	1,852.3	1,882.1
Industrial Processes - Petroleum Refineries	VOC		7,881.9	7,881.9	2,220.1	1,722.2
Solvent - Graphic Arts	VOC		7,333.2	7,333.2	9,516.1	1,492.0
Mobile - On-Road Gasoline Heavy Duty Vehicles	VOC		1,966.4	1,468.1	1,701.6	1,161.1
Fuel Comb - Electric Generation - Coal	VOC		768.8	724.2	685.9	622.6
Waste Disposal	VOC		2,073.6	2,073.6	924.5	575.0
Solvent - Dry Cleaning	VOC		118.8	118.8	687.9	566.7
Industrial Processes - Ferrous Metals	VOC		221.9	221.9	458.8	487.9
Mobile - Non-Road Equipment - Other	VOC		883.9	806.4	587.8	337.5
Mobile - Aircraft	VOC		194.9	194.9	181.6	223.7
Fuel Comb - Residential - Natural Gas	VOC		193.6	193.6	193.4	204.6
Commercial Cooking	VOC					103.8
Mobile - On-Road Diesel Light Duty Vehicles	VOC		61.6	49.3	105.7	87.5
Fuel Comb - Comm/Institutional - Natural Gas	VOC		112	112	90.7	86.9
Fuel Comb - Electric Generation - Natural Gas	VOC		78.8	75.8	72.4	72.0
Fuel Comb - Industrial Boilers, ICEs - Oil	VOC		31.1	31.1	21.1	67.9
Industrial Processes - Cement Manuf	VOC		38.6	38.6	19.3	57.3
Fuel Comb - Industrial Boilers, ICEs - Other	VOC		8.2	8.2	125.9	46.4
Fuel Comb - Residential - Other	VOC		31.4	31.4	30.9	23.5
Fuel Comb - Electric Generation - Other	VOC		11.2	12.2	1.8	15.9
Fuel Comb - Industrial Boilers, ICEs - Biomass	VOC					10.6
Industrial Processes - Pulp & Paper	VOC		7.9	7.9	9.1	9.7
Industrial Processes - Non-ferrous Metals	VOC		18.2	18.2	132.4	9.2
Industrial Processes - Mining	VOC		0.6	0.6	0.0	6.1
Fuel Comb - Comm/Institutional - Biomass	VOC					5.6
Fuel Comb - Electric Generation - Oil	VOC		0.4	0.4	0.4	5.3
Fuel Comb - Comm/Institutional - Other	VOC		26.2	26.2	111.2	1.0
Fuel Comb - Comm/Institutional - Oil	VOC		7	7	2.6	1.0
Mobile - Commercial Marine Vessels	VOC		3.2	3.2	0.2	0.1
Fuel Comb - Residential - Oil	VOC		0.2	0.2	0.1	0.1
Fuel Comb - Comm/Institutional - Coal	VOC					0.0
Fuel Comb - Industrial Boilers, ICEs - Coal	VOC		4.3	4.3	0.3	0.0

Tables showing top five anthropogenic NEI sectors for NH_3, NO_x, PM_{10}, $PM_{2.5}$, and SO_2

Top five sectors for NH_3	**2002**	**2005**	**2008**	**2011**
Agriculture - Livestock Waste	33,456	33,456	92,101	101,761
Agriculture - Fertilizer Application	64,133	64,133	66,343	69,251
Fires - Prescribed Fires	12	12	8,442	14,144
Industrial Processes - Chemical Manuf	427	427	1,142	1,193
Mobile - On-Road Gasoline Light Duty Vehicles	2,755	2,905	1,240	1,026

Top five sectors for NO_x	2002	2005	2008	2011
Industrial Processes - Oil & Gas Production	7	7	1	56,613
Fuel Comb - Electric Generation - Coal	91,147	84,801	50,226	40,323
Fuel Comb - Industrial Boilers, ICEs - Natural Gas	62,912	62,910	44,389	39,162
Mobile - Locomotives	40,822	40,822	37,330	37,220
Mobile - Non-Road Equipment - Diesel	41,960	40,292	37,615	34,279

Top five sectors for primary PM_{10}	2002	2005	2008	2011
Agriculture - Crops & Livestock Dust	253,845	253,845	413,968	417,428
Dust - Unpaved Road Dust	275,026	275,026	280,603	282,328
Fires - Prescribed Fires	69	69	58,113	96,241
Dust - Construction Dust	48,050	48,050	41,618	32,562
Fires - Agricultural Field Burning	99,223	99,223	6,195	23,904

Top five sectors for primary $PM_{2.5}$	2002	2005	2008	2011
Agriculture - Crops & Livestock Dust	38,076	38,076	82,793	83,381
Fires - Prescribed Fires	59	59	49,248	81,560
Dust - Unpaved Road Dust	27,547	27,547	27,899	28,082
Fires - Agricultural Field Burning	75,108	75,108	6,195	14,253
Fuel Comb - Residential - Wood	4,464	4,464	2,417	5,046

Top five sectors for SO_2	2002	2005	2008	2011
Fuel Comb - Electric Generation - Coal	124,386	125,295	95,895	39,375
Fires - Prescribed Fires	12	12	6,090	9,770
Industrial Processes - Chemical Manuf	108	108	3,457	3,064
Fires - Agricultural Field Burning	10,937	10,937	330	2,287
Industrial Processes - Petroleum Refineries	3,666	3,666	2,296	1,920

Appendix I: Responsiveness Summary

Kansas 2014 Regional Haze SIP Revision with First Five-Year Progress Report

Notice of public hearing with required thirty-day comment period was published in the Kansas Register on October 23, 2014 (Vol. 33, No. 43, October 23, 2014, 1091-1092). No request for a hearing was received by November 25th so the scheduled hearing was cancelled and announced on the KDHE website at http://www.kdheks.gov/bar/planning/pnplanning/html. The public notice and cancellation announcement are included in Attachment A to this summary.

In a collaborative effort, comments were provided to KDHE by two federal land managers (FLM) after reviewing our Regional Haze SIP Revision with First 5-Year Progress Report. Their input was accepted and incorporated into Sections 3.2 (Emissions Reductions) and Section 3.4 (Emissions Trend Analysis) of the final SIP revision where appropriate. The comment documents received are included as Attachment B along with a letter of support received from the USDA Forest Service endorsing Kansas' efforts to implement and maintain attainment of air quality standards for regional haze reduction.

KDHE responses to the FLM's comments are included below.

Bret Anderson, Federal Land Manager, U.S.D.A. Forest Service, National Atmospheric Modeling/Regional Haze Coordinator, Fort Collins, CO, provided the following comments.

COMMENT: Section 3.2 (Emissions Reductions)

On page 11 of this section, the KDHE briefly describes the approach that was taken for analyzing reasonable progress or "beyond BART" sources. We recommend that the KDHE expand the description to include methods used to construct the delta-deciview (ddv) numbers and any "bright line" decision points used with The $/ddv metric.

We amended the final draft of the progress report by adding text within the list describing the selection of reasonable progress units as follows (added text in brackets under step 4):

Sources not subject to BART ("reasonable progress units")

In section 10.2 of its initial implementation plan, titled "Selection of Kansas Sources for Reasonable Progress Evaluation," Kansas developed a process to fairly select stationary sources not subject to BART that could contribute to reasonable progress goals. This process was:

1. *Identify all Kansas emission units that had greater than or equal to 500 tons for NOx and/or SO2*
2. *Identify the most effective control technologies and screen for excessive cost*
3. *Model visibility impacts and screen for low-impact facilities*
4. *Calculate, screen, and rank based on cost per ton per deciview difference (delta deciview, or* Δdv*)* [Note cost of controls were taken from EPA's AirControlNET tool (http://www.epa.gov/ttn/ecas/AirControlNET.htm), while

Δdv values were found by running the CALPUFF model twice (with pre- and post-control emissions inputs) and finding the difference in deciview outputs.]

5. *Screen for non-cost statutory factors, i.e., time necessary for compliance, energy and non-air quality environmental impacts of compliance, and remaining useful life*

6. *Re-sort and make final ranked list of potential facilities*

The results of this process were summarized in Table 10.12 of the SIP, and sources are presented in Table 3.

Although we recall looking to find "bright line" break points in our search for "reasonable" reasonable progress units, this need was basically rendered moot by using the process as finally developed.

COMMENT: Section 3.3 (Visibility Conditions)

While Kansas has no Class I and much of the documentation focuses upon conditions at closest Class I area, Wichita Mountains located in Oklahoma, we also recommend that KDHE consider inclusion of a discussion on the apparent trend of increasing deciviews for years 2010-2011 for the 20% best days at other neighboring Class I areas such as Caney Creek (CACR) and Hercules Glades (HEGL). While the 5-year moving average at CACR and HEGL shows a consistent trend down, we conjecture that the trend down may be more related to economic conditions of the time period of 2008–2009 and how these affect the 5-year average rather than the realization of emissions reductions, and that conditions on the 20% best days may return to values closer to the pre-2006 timeframe once these years are not factored into the 5-year moving average. This trend should also be monitored as you move into the 2018 planning cycle.

As mentioned in the progress report, "Kansas emission sources were identified by Oklahoma as potential contributors" to visibility impairment at Wichita Mountains in our consultation for the original SIP. No other state with Class I areas did the same. This was the primary reason for our focus on Wichita Mountains, and why WIMO got the "prime spot" in the report. Information for the other Class I areas of interest was included in the progress report—but in Appendix F (Data Tables and Glide Paths for Caney Creek, Hercules-Glades, and Mingo Wilderness Areas) and Appendix G (Five-Year Average Visibility Impairment for Caney Creek, Hercules-Glades, and Mingo Wilderness Areas).

As to the conjecture about economics driving the downward trend in visibility impairment at sites in Missouri and Arkansas, we would respectfully decline adding that discussion to the progress report at this time, but instead consider it in the 2018 SIP.

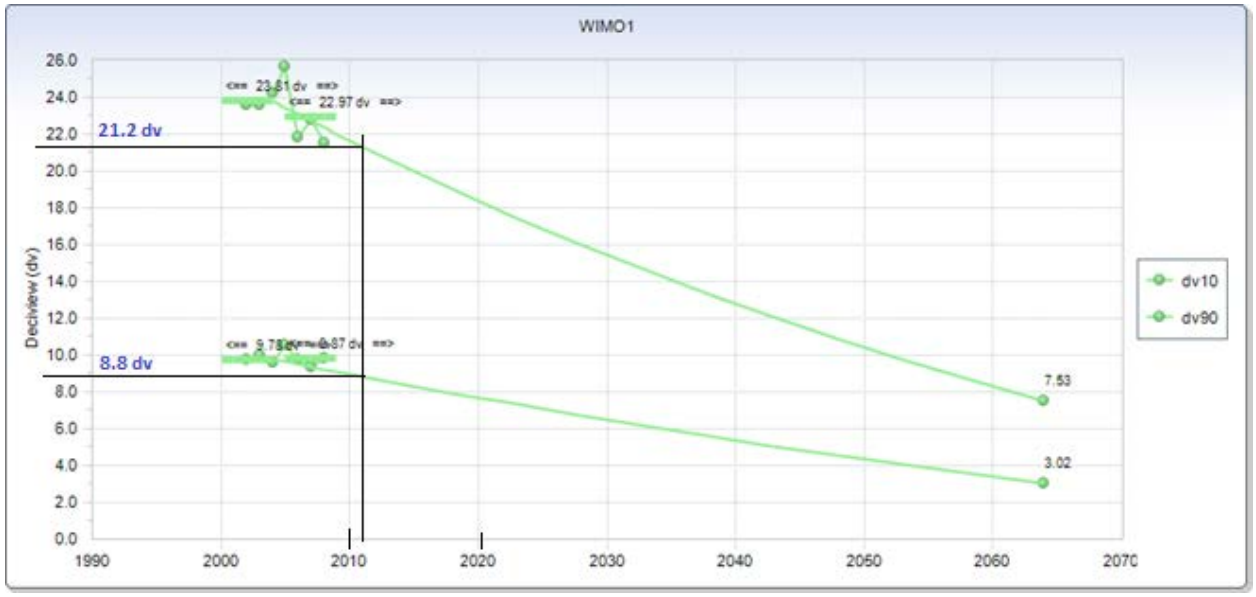
Patricia Brewer, Federal Land Manager, U.S. Department of the Interior, National Park Service, Air Resources Division, Denver, CO, provided the following comments.

COMMENT 1. (Section 3.3 Visibility Conditions)
Define Oklahoma's 2018 visibility reasonable progress goal for the 20% worst days at Wichita Mountains and compare current visibility to the 2018 goal.

In the Kansas progress report, we showed the current visibility values for Wichita Mountains in Figures 5a and 5b (SIP p. 15); and the glide path for haze at Wichita Mountains (SIP p. 16) in Figure 6 Wichita Mountains natural levels of haze and its composition on the 20% best and 20% worst haze days.

The report did not present a table comparing current (i.e., the most recent 2011) deciview values with the corresponding "natural level" on the glide path, since the "natural" value lies along an artificially nonlinear path, and has to be found by graphical interpolation. Instead, we focused on comparing actual vs. natural slopes of the deciview values, which are more informative.

To address your question, here are estimates for 2011 20% best- and worst-day values, found using the following adaptation of Figure 6:



Thus, actual vs. natural for 20% best days are approximately 9.6 dv vs. 8.8 dv, and for 20% worst days are approximately 22.1 dv vs. 21.2 dv—meaning 2011 actuals are slightly above natural values (0.8 dv for 20% best days and 0.9 dv for 20% worst days).

COMMENT 2. (Section 3.3 Visibility Conditions)
In addition to the visibility trends reported for the 20% best visibility days at Wichita Mountains, it would be helpful to define pollutant contributions to haze and changes in pollutant contributions over the past decade. An example is enclosed for your consideration.

Agreed. In preparing the progress report we did run several queries—including aerosol trends—at http://views.cira.colostate.edu/fed/. We concluded, however, that the discussions of trends longer than the five years being looked at for the report would be more appropriate for the 2018 SIP, particularly in terms of seeing differences over ten years' time (i.e., from SIP to SIP).

COMMENT 3. (Section 3.4 Emissions Trend Analysis)
In the first paragraph on page 20 that describes Table 7, isn't the reduction for sulfur dioxide 60 percent and not 6.0 percent?

Thank you for the correction. The sentence will be amended to read: "Emissions of NO_x and SO_2—the primary contributors to visibility impairment from anthropogenic sources—are down significantly (10.0 percent for NO_x and 59.6 percent for SO_2), thanks to the Regional Haze agreements made with Westar Energy and KCP&L as discussed above."

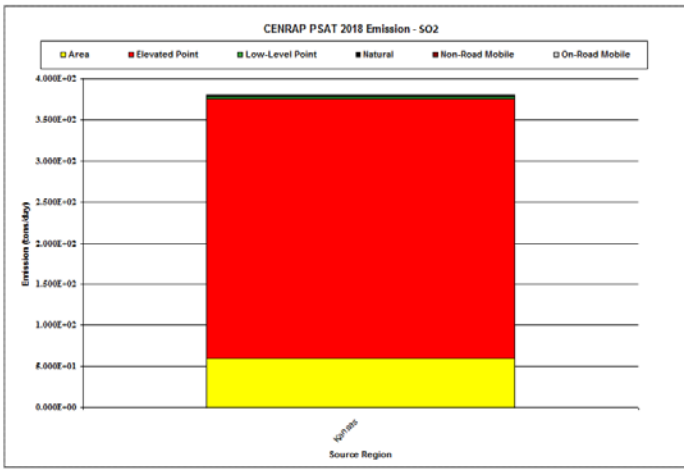
COMMENT 4. (Section 3.4 Emissions Trend Analysis)
In addition to Table 7 and Figures 12 through 16, please provide a summary of emissions for each of the five major pollutants, by major emission sectors (point, area, mobile onroad, mobile nonroad) for 2002, 2008, 2011, and 2018.

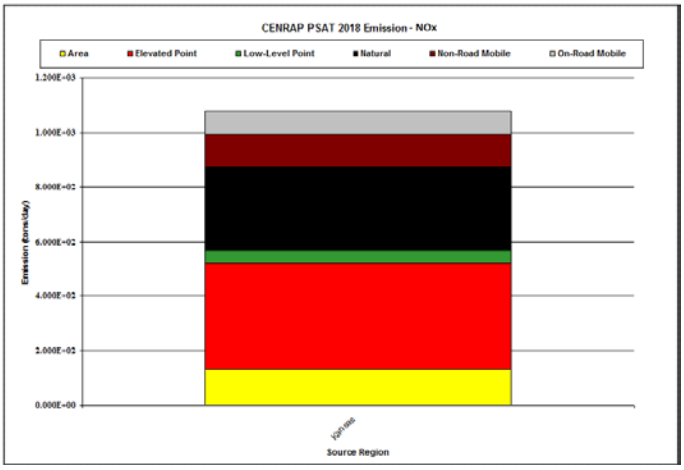
Please refer to the progress report's Appendix H, "Data Tables for the 2002, 2005, 2008, and 2011 National Emissions Inventory (NEI) for Kansas Nonpoint Sources." With the development of the EIS, EPA has begun releasing emissions via 60 "EIS emission sectors," which do not always align with the major (but now older) point/nonpoint/onroad/nonroad NEI sectors. Since the newer EIS sectors are significantly more refined than the older system (and since EPA will apparently be using these going forward in time), we are using them as well.

Also, we recognize that we did not provide emissions estimates for 2018 as you request. In this regard, our understanding was that the last year for the period under study in this progress report was 2013, which we surmised would be best estimated via linear regression using NEI years 2002, 2005, 2008, and 2011.

COMMENT 5. (Section 3.4 Emissions Trend Analysis)
Presenting the 2018 emissions that were used in regional modeling to set 2018 visibility reasonable progress goals will support the conclusion that emissions reductions are on track to meet 2018 projections.

Agreed. Actually, we didn't think about using the Access PSAT tool for support in the progress report. Doing so now shows the following, based on tool-charted output for 2018 Kansas total SO_2 and NO_x:





From the tool-created charts:

Est. 2018 SO_2 from point sources ~ 3,200 tons/day = 1,168,000 tons/yr
Est. 2018 SO_2 from nonpoint sources ~ 510 tons/day = 186,200 tons/yr
Est. 2018 NO_x from point sources ~ 430 tons/day = 157,000 tons/yr
Est. 2018 NO_x from nonpoint sources ~ 120 tons/day = 43,800 tons/yr
Est. 2018 NO_x from onroad sources ~ 70 tons/day = 25,600 tons/yr
Est. 2018 NO_x from nonroad sources ~ 110 tons/day = 40,200 tons/yr

Compare and contrast these with actual 2011 NEI emissions (anthropogenic emissions crosswalked to 4 sectors):

Actual 2011 SO_2 from point sources = 46,900 tons/yr (*1,121,100 tons less than predicted*)
Actual 2011 SO_2 from nonpoint sources = 3,000 tons/yr (*183,200 tons less than predicted*)
Actual 2011 NO_x from point sources = 93,300 tons/yr (*63,700 tons less than predicted*)
Actual 2011 NO_x from nonpoint sources = 107,000 tons/yr (*63,200 tons more than predicted — but note 2011 saw a large jump in NO_x from oil & gas production with introduction of EPA inventory tool*)

Actual 2011 NO_x from onroad sources = 62,300 tons/yr (*36,700 tons more than predicted — but note change to MOVES model increased NO_x estimates*)

Actual 2011 NO_x from nonroad sources = 37,600 tons/yr (*2,600 tons less than predicted*)

Attachment A

Notice of Public Hearing

- Kansas Register publication (October 23, 2014)
- Regional Newspaper publications (October 23, 2014)
- Notification letter (electronic) e-mailed to EPA and regional contacts (October 24, 2014)
- KDHE Website Cancellation Announcement (November 25, 2014)

Kansas Register

Kris W. Kobach, Secretary of State

Vol. 33, No. 43 **October 23, 2014** **Pages 1085-1112**

In this issue . . . Page

State of Kansas

Department of Health and Environment

Request for Comments

The Kansas Department of Health and Environment is soliciting comments regarding a proposed air quality operating permit. Regency Field Services, LLC – Greenwood #2 Compressor Station has applied for a Class I operating permit renewal in accordance with the provisions of K.A.R. 28-19-510 et al. The purpose of a Class I permit is to identify the sources and types of regulated air pollutants emitted from the facility; the emission limitations, standards and requirements applicable to each source; and the monitoring, record keeping and reporting requirements applicable to each source as of the effective date of permit issuance.

Regency Field Services, LLC, 401 Edwards St., Suite 1305, Shreveport, LA 71101, owns and operates the Greenwood #2 Compressor Station, a natural gas compressor station located at Section 21, T33S, R43W, Morton County, Kansas.

A copy of the proposed permit, permit application, all supporting documentation and all information relied upon during the permit application review process is available for public review during normal business hours, 8 a.m. to 5 p.m., at the KDHE, Bureau of Air, 1000 S.W. Jackson, Suite 310, Topeka, and at the KDHE Southwest District Office, 302 W. McArtor Road, Dodge City. To obtain or review the proposed permit and supporting documentation contact Cathy Richardson, 785-296-1947, at the KDHE central office, or Ethel Evans, 620-356-1075, at the KDHE Southwest District Office. The standard departmental cost will be assessed for any copies requested.

Direct written comments or questions regarding the proposed permit to Cathy Richardson, KDHE, Bureau of Air, 1000 S.W. Jackson, Suite 310, Topeka, 66612-1366. In order to be considered in formulating a final permit decision, written comments must be received not later than noon November 24.

A person may request a public hearing be held on the proposed permit. The request for a public hearing shall be in writing and set forth the basis for the request. The written request must be submitted to Cathy Richardson, KDHE, Bureau of Air, not later than noon November 24 in order for the secretary of health and environment to consider the request.

The U.S. Environmental Protection Agency has a 45-day review period, which will start concurrently with the public comment period, within which to object to the proposed permit. If the EPA has not objected in writing to the issuance of the permit within the 45-day review period, any person may petition the administrator of the EPA to review the permit. The 60-day public petition period will directly follow the EPA's 45-day review period. Interested parties may contact KDHE to determine if the EPA's 45-day review period has been waived.

Any such petition shall be based only on objections to the permit that were raised with reasonable specificity during the public comment period provided for in this notice, unless the petitioner demonstrates that it was impracticable to raise such objections within such period, or unless the grounds for such objection arose after such period. Contact Ward Burns, U.S. EPA, Region 7, Air Permitting and Compliance Branch, 11201 Renner Blvd., Lenexa, 66219, 913-551-7960, to determine when the 45-day EPA review period ends and the 60-day petition period commences.

Robert Moser, M.D.
Secretary of Health
and Environment

Doc. No. 042993

State of Kansas

Department of Health and Environment

Notice of Hearing

The Kansas Department of Health and Environment is proposing a 2014 State Implementation Plan (SIP) Update for the Attainment and Maintenance of National Ambient Air Quality Standards for Regional Haze. Pursuant to the EPA's 1999 Regional Haze Rule, KDHE is proposing to submit its first five-year progress report to update the 2009 Kansas Regional Haze Plan.

Any member of the public may request a public hearing or submit comments regarding this proposed action. If requested, a public hearing will be held at 10 a.m. Tuesday, November 25, in the Flint Hills Conference Room, third floor, Curtis State Office Building, 1000 S.W. Jackson, Topeka. If no request for a hearing is received by noon November 21 the tentatively scheduled hearing will be cancelled, with an announcement on the KDHE Bureau of Air website at http://www.kdheks.gov/bar/planning/pnplanning.html. Inquiries may be made to 785-291-3278 or pgibbs@kdheks.gov.

This SIP update fulfills the requirements of the Clean Air Act (CAA) and CFR Section 51.308, which require states to address the impacts of regional haze. The SIP update demonstrates Kansas' compliance with the requirements for "best available retrofit technology" and addresses reasonable progress goals and long-term emissions reduction strategies to reduce visibility impairment in Class I areas of neighboring states.

The proposed SIP update does not include any rulemaking action. Details concerning this action can be obtained by contacting Pat Gibbs, KDHE, Bureau of Air, 785-291-3278. Copies of the proposed plan also may be viewed at the following locations:

- Department of Air Quality, Unified Government of Wyandotte County/Kansas City, Kansas, Health Department 619 Ann Ave., Kansas City, Kansas
- Johnson County Environmental Department 11811 S. Sunset, Suite 2700, Olathe
- KDHE Northwest District Office 2301 E. 13th St., Hays
- KDHE North Central District Office 2501 Market Place, Suite D, Salina
- KDHE Northeast District Office 800 W. 24th St., Lawrence

(continued)

- KDHE Southeast District Office
  1500 W. 7th St., Chanute
- Wichita-Sedgwick County Dept. of Community Health
  1900 E. 9th St., Wichita
- KDHE Southwest District Office
  302 W. McArtor Road, Dodge City

The plan also is posted on the Bureau of Air's website at http://www.kdheks.gov/bar/planning/pnplanning.html.

Comments from the interested public may be mailed to KDHE, Bureau of Air, Attention: Pat Gibbs, 1000 S.W. Jackson, Suite 310, Topeka, 66612-1366, and must be received not later than November 25.

Any individual with a disability may request accommodation in order to participate in the public hearing and may request the proposed plan in accessible format. Requests for accommodation should be submitted to Pat Gibbs not later than November 17.

Robert Moser, M.D.
Secretary of Health
and Environment

Doc. No. 042996

State of Kansas

Department of Health and Environment

Notice Concerning Kansas/Federal Water Pollution Control Permits and Applications

In accordance with Kansas Administrative Regulations 28-16-57 through 63, 28-18-1 through 17, 28-18a-1 through 33, 28-16-150 through 154, 28-46-7, and the authority vested with the state by the administrator of the U.S. Environmental Protection Agency, various draft water pollution control documents (permits, notices to revoke and reissue, notices to terminate) have been prepared and/or permit applications have been received for discharges to waters of the United States and the state of Kansas for the class of discharges described below.

The proposed actions concerning the draft documents are based on staff review, applying the appropriate standards, regulations and effluent limitations of the state of Kansas and the Environmental Protection Agency. The final action will result in a Federal National Pollutant Discharge Elimination System Authorization and/or a Kansas Water Pollution Control permit being issued, subject to certain conditions, revocation and reissuance of the designated permit or termination of the designated permit.

Public Notice No. KS-AG-14-268/271
Pending Permits for Confined Feeding Facilities

Name and Address of Applicant	Legal Description	Receiving Water
Douglas S. Harter Smoky Hill Feedlot 553 R Road Pawnee Rock, KS 67567	SW/4 of Section 30 & NW/4 of Section 31, T16S, R04W, Saline County	Smoky Hill - Saline River Basin

Kansas Permit No. A-SHSA-C001 Federal Permit No. KS0045489

This is a renewal permit for an existing facility for 6,000 head (6,000 animal units) of cattle weighing greater than 700 pounds and 3,000 head (1,500 animal units) of cattle weighing less than 700 pounds. A freshwater diversion modification is proposed. This facility has an approved Nutrient Management Plan on file with KDHE.

Name and Address of Applicant	Legal Description	Receiving Water
Justin Reynolds Justin Reynolds – Main Yard P.O. Box 595 Abilene, KS 67410	SW/4 of Section 09, T13S, R01E, Dickinson County	Smoky Hill River Basin

Kansas Permit No. A-SHDK-B013

A permit is being reissued to the existing confined animal feeding facility with a maximum capacity of 950 head (475 animal units) of beef cattle weighing 700 pounds or less. The animal unit capacity has not changed since the previous permit.

Name and Address of Applicant	Legal Description	Receiving Water
Tom & Don Benoit Benoit Dairy Box 132 Damar, KS 67632	SE/4 of Section 29, T08S, R20W, Rooks County	Solomon River Basin

Kansas Permit No. A-SORO-B013

This permit is being reissued for an existing facility with a maximum capacity of 100 head (50 animal units) of cattle 700 pounds or less. There is no change in the permitted animal units.

Name and Address of Applicant	Legal Description	Receiving Water
Larry Hadachek Hadachek Joint Venture 2994 U.S. Highway 36 Cuba, KS 66940	SE/4 of Section 02, T03S, R01W, Republic County	Big Blue River Basin

Kansas Permit No. A-BBRP-BD01

A permit is being reissued to the existing confined animal feeding facility with a maximum capacity of 150 head (150 animal units) of beef cattle weighing more than 700 pounds. The animal unit capacity has not changed since the previous permit.

Public Notice No. KS-AG-R-14-033

Per K.S.A. 65-171d, the following registration has been received for a proposed confined feeding facility:

Name and Address of Registrant	Legal Description	County
Don Owens Seaboard Foods – Ladder Creek West 2801 Hurliman Road Guymon, OK 73942	Portions Out of NE/4 & SW/4 of Section 16 & Portions Out of S/2 of Section 17 & Portions Out of N/2 of Section 20, T16S, R41W	Greeley

Public Notice No. KS-Q-14-179/183

The requirements of the draft permits public noticed below are pursuant to the Kansas Surface Water Quality Standards, K.A.R. 28-16-28 (b-g), and Federal Surface Water Criteria:

Name and Address of Applicant	Receiving Stream	Type of Discharge
Archer Daniels Midland Company 1001 Brush College Road Decatur, IL 62521	Solomon River via Pipe Creek	Groundwater Remediation Project

Kansas Permit No. I-SO27-PO01 Federal Permit No. KS0098493

Legal Description: SW¼, S1, T11S, R4W, Ottawa County, KS

Facility Name: Ada Grain Elevator

The proposed action consists of reissuance of an existing permit for discharge during an existing groundwater remediation project. Groundwater in the shallow aquifer near the city of Minneapolis

(Published in the Salina Journal October 23, 2014)

State of Kansas Department of Health and Environment Notice of Public Hearing

The Kansas Department of Health and Environment (KDHE) is proposing a *2014 State Implementation Plan (SIP) Update for the Attainment and Maintenance of National Ambient Air Quality Standards for Regional Haze.* Pursuant to EPA's 1999 Regional Haze Rule, KDHE is proposing to submit our first five-year progress report to update the 2009 Kansas Regional Haze Plan.

Any member of the public may request a public hearing or submit comments regarding this proposed action. If requested, a public hearing will be held Tuesday, November 25, 2014 at 10:00 AM in the Curtis State Office Building Flint Hills Conference Room, 3rd Floor, 1000 SW Jackson, Topeka, Kansas. If no request for hearing is received by 12:00 noon on Friday, November 21, 2014, the tentatively scheduled hearing will be cancelled with an announcement on the KDHE Bureau of Air website at http://www.kdheks.gov/bar/planning/pnplanning.html. Inquiries may be made by phone to (785) 291-3278 or e-mailed to pgibbs@kdheks.gov.

This SIP update fulfills the requirements of the Clean Air Act (CAA) and CFR Section 51.308 which requires states to address the impacts of regional haze. The SIP update demonstrates Kansas compliance with the requirements for Best Available Retrofit Technology and addresses reasonable progress goals and long-term emissions reduction strategies to reduce visibility impairment in Class I areas of neighboring states.

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* KDHE Northeast District Office, 800 W. 24th St., Lawrence, KS

* KDHE Southeast District Office, 1500 W. 7th St., Chanute, KS

* Wichita-Sedgwick County Dept. of Community Health, 1900 E. 9th St., Wichita, KS

* KDHE Southwest District Office, 302 W. McArtor Rd., Dodge City, KS

The Plan is also posted on the Bureau of Air's website at: http://www.kdheks.gov/bar/planning/pnplanning.html.

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Robert Moser, M.D.
Secretary of Health and Environment

(1t)

Ad # 7549118 Date 10/20/2014 Time 12:01 PM

No. 959

(Published in the Topeka Capital-Journal on October 23, 2014)

State of Kansas
Department of Health and Environment
Notice of Public Hearing

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Robert Moser, M.D.
Secretary of Health and Environment

Ad shown is not actual print size

From:	Classifieds
To:	Pat Gibbs
Subject:	Re: [classifieds] Legal Classified Publication Request for October 23, 2014
Date:	Wednesday, October 22, 2014 11:34:26 AM

(Published in the Dodge City Daily Globe on Thursday, October 23, 2014)

State of Kansas

Department of Health and Environment

Notice of Public Hearing

The Kansas Department of Health and Environment (KDHE) is proposing a 2014 State Implementation Plan (SIP) Update for the Attainment and Maintenance of National Ambient Air Quality Standards for Regional Haze. Pursuant to EPA's 1999 Regional Haze Rule, KDHE is proposing to submit our first five-year progress report to update the 2009 Kansas Regional Haze Plan.

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on the KDHE Bureau of Air website at http://www.kdheks.gov/bar/planning/pnplanning.html. Inquiries may be made by phone to (785) 291-3278 or e-mailed to pgibbs@kdheks.gov.

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From:	Pat Gibbs
To:	"Tapp.Joshua@epa.gov"; "Kemp.Lachala@epa.gov"; "Jay.Michael@epa.gov"; Jennifer Nichols; Stan A. Marshall; Allison Herring; Pat A Simpson; Larissa Parker; David Butler; Doug Cole; Ethel Evans; "bandersen@wycokck.org"; "Michael.boothe@jocogov.org"; "rowen@wichita.gov"
Cc:	Miles Stotts
Subject:	Public Notice and Proposed 2014 Kansas Regional Haze Plan Update with First Five-Year Progress Report (Draft)
Date:	Friday, October 24, 2014 2:11:00 PM
Attachments:	KR RH PN.pdf 2014 Five-year progress report (final draft) title revision.pdf RH Ltr & Report.pdf

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Please find the Notice of Public Hearing that was published in the Kansas Register, the Salina, Chanute, Wichita, Hays, and Topeka newspapers yesterday. It was also published on the KDHE Bureau of Air website along with the Draft 2014 Kansas SIP Update with the First Five Year Progress Report document.

As noted, a Public Hearing is tentatively scheduled in the KDHE Curtis State Office Building, Flint Hills Conference Room, 3rd Floor, on Tuesday, November 25, 2014 at 10 a.m. IF requested by Friday, 12 noon, November 21, 2014. Cancellation of the tentatively scheduled meeting will be posted on the KDHE BOA website on that Friday, November 21st. Comments are encouraged and accepted until 5 p.m., November 25, 2014.

Please contact us for any further information needed.

Pat Gibbs
Air Planning and Regulations
Kansas Department of Health and Environment
1000 SW Jackson, Suite 310
Topeka, KS 66612
(785) 291-3278
Pgibbs@kdheks.gov

Bureau of Air
Curtis State Office Building
1000 SW Jackson, Suite 310
Topeka, KS 66612

Phone: 296-1551
Fax: 296-7455
rbrunetti@kdheks.gov
www.kdheks.gov/bar

Robert Moser, MD, Secretary

Department of Health & Environment

Sam Brownback, Governor

October 24, 2014

RE: Kansas' 2014 Regional Haze State Implementation Plan (SIP) Update with Five-Year Progress Report

The Kansas Department of Health and Environment (KDHE) is submitting the attached Kansas SIP update, specific to the initial five-year progress report for attainment of reasonable progress goals in regard to the Regional Haze Rule. If requested, a public hearing will be held on Tuesday, November 25, 2014 at 10:00 AM in the Curtis State Office Building, Flint Hills Conference Room, 3rd Floor, at 1000 SW Jackson, Topeka, Kansas.

In accordance with Section 110 of the 1990 Clean Air Act (CAAA) and 40 CFR 51.308, KDHE proposes this five-year progress report demonstrating reasonable progress to reduce toxic emissions, visibility improvement outcomes in Kansas and neighboring states, and adequacy of the existing implementation plan. KDHE continues progressive regional planning with state, tribe, and federal land manager efforts since 2009.

The tentatively scheduled public hearing and required thirty-day comment period was published in the *Kansas Register*; the KDHE Bureau of Air website at http://www.kdheks.gov/bar/pnplanning.html; the KDHE District Offices; and the Chanute, Dodge City, Hays, Salina, Topeka, and Wichita newspapers on Thursday, October 23, 2014.

Please refer to the enclosed Notice of Public Hearing and 2014 Regional Haze SIP Update and contact Pat Gibbs at (785) 291-3278 to let us know if you have questions concerning the proposed documents.

Sincerely,

Miles Stotts
Unit Supervisor
Air Planning and Regulations

Enclosure: 2014 SIP Update with Regional Haze Five-Year Progress Report

C: John Mitchell
Rick Brunetti
Tom Gross

PUBLIC HEARING CANCELLED – NO REQUESTS

Scheduled for November 25, 2014

Department of Health and Environment

Notice of Public Hearing

The Kansas Department of Health and Environment (KDHE) is proposing a *2014 State Implementation Plan (SIP) Update for the Attainment and Maintenance of National Ambient Air Quality Standards for Regional Haze.* Pursuant to EPA's 1999 Regional Haze Rule, KDHE is proposing to submit our first five-year progress report to update the 2009 Kansas Regional Haze Plan.

Any member of the public may request a public hearing or submit comments regarding this proposed action. If requested, a public hearing will be held Tuesday, November 25, 2014 at 10:00 AM in the Curtis State Office Building Flint Hills Conference Room, 3rd Floor, 1000 SW Jackson, Topeka, Kansas. If no request for hearing is received by 12:00 noon on Friday, November 21, 2014, the tentatively scheduled hearing will be cancelled with an announcement on the KDHE Bureau of Air website at http://www.kdheks.gov/bar/planning/pnplanning.html. Inquiries may be made by phone to (785) 291-3278 or e-mailed to pgibbs@kdheks.gov.

This SIP update fulfills the requirements of the Clean Air Act (CAA) and CFR Section 51.308 which requires states to address the impacts of regional haze. The SIP update demonstrates Kansas compliance with the requirements for Best Available Retrofit Technology and addresses reasonable progress goals and long-term emissions reduction strategies to reduce visibility impairment in Class I areas of neighboring states.

The proposed SIP update does not include any rulemaking action. Details concerning this action can be obtained by contacting Pat Gibbs, KDHE, Bureau of Air at (785) 291-3278. Copies of the proposed Plan may also be viewed at the following locations.

- Department of Air Quality, Unified Government of Wyandotte County - Kansas City, Kansas Health Department, 619 Ann Avenue, Kansas City, KS
- Johnson County Environmental Department, 11811 S. Sunset, Suite 2700, Olathe, KS
- KDHE Northwest District Office, 2301 E. 13th St., Hays, KS
- KDHE North Central District Office, 2501 Market Place Ste. D, Salina, KS
- KDHE Northeast District Office, 800 W. 24th St., Lawrence, KS
- KDHE Southeast District Office, 1500 W. 7th St., Chanute, KS
- Wichita-Sedgwick County Dept. of Community Health, 1900 E. 9th St., Wichita, KS
- KDHE Southwest District Office, 302 W. McArtor Rd., Dodge City, KS

The Plan is also posted on the Bureau of Air's website at: http://www.kdheks.gov/bar/planning/pnplanning.html.

Comments from the interested public may be mailed to KDHE, Bureau of Air, Attention: Pat Gibbs (contact information noted above) and must be received by the Bureau of Air no later than Tuesday, November 25, 2014.

Any individual with a disability may request accommodations in order to participate in the public hearing and may request the proposed plan in accessible format. Please submit requests for accommodation to Pat Gibbs by Monday, November 17, 2014.

Robert Moser, M.D.

Secretary of Health and Environment

Attachment B

Comment Documents

- Bret Anderson: Federal Land Manager, U.S.D.A. Forest Service, National Atmospheric Modeling/Regional Haze Coordinator, Fort Collins, CO

- Patricia Brewer: Federal Land Manager, U.S. Department of the Interior, National Park Service, Air Resources Division, Denver, CO

Letter of Support

- Daniel Jiron: Regional Forester, U.S.D.A. Forest Service, Rocky Mountain Region, Golden, CO

Hi Tom, Tue 1/27/2015 11:52 AM

On behalf of the USDA Forest Service, I would like to offer our thanks for the opportunity to review and comment upon your 5-year regional haze progress report. Overall, this document is well organized and provides a thorough review of visibility conditions and emissions. We commend the KDHE for their diligent efforts on the development of this document. We concur with KDHE's negative declaration and believe this report satisfies the requirements of both 40 CFR 51.308(g) and 51.308(h).

Identified below are several comments for the KDHE to consider which may help provide greater clarity in several sections in the report. Please feel free to contact me should you have any questions regarding our comments.

Sincerely,
Bret Anderson

Bret Anderson
National Atmospheric Modeling/Regional Haze Coordinator

Forest Service
WO-Watershed, Fish, Wildlife, Air & Rare Plants

p: 970-295-5981
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Caring for the land and serving people

Section 3.2 (Emissions Reductions)

On page 11 of this section, the KDHE briefly describes the approach that was taken for analyzing reasonable progress or "beyond BART" sources. We recommend that the KDHE expand the description to include methods used to construct the delta-deciview (ddv) numbers and any "bright line" decision points used with the $/ddv metric.

Section 3.3 (Visibility Conditions)

While Kansas has no Class I and much of the documentation focuses upon conditions at closest Class I area, Wichita Mountains located in Oklahoma, we also recommend that KDHE consider inclusion of a discussion on the apparent trend of increasing deciviews for years 2010-2011 for the 20% best days at other neighboring Class I areas such as Caney Creek (CACR) and Hercules Glades (HEGL). While the 5 – year moving average at CACR and HEGL shows a consistent trend down, we conjecture that the trend down may be more related to economic conditions of the time period of 2008 – 2009 and how these affect the 5-year average rather than the realization of emissions reductions, and that conditions on the 20% best days may return to values closer to the pre-2006 timeframe once these years are not factored into the 5-year moving average. This trend should also be monitored as you move into the 2018 planning cycle.

United States Department of the Interior

NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225-0287

TRANSMITTED VIA ELECTRONIC MAIL - NO HARDCOPY TO FOLLOW

N3615 (2350)

January 22, 2015

Mr. Rick Brunetti, Director
Bureau of Air
Kansas Department of Health and Environment
1000 SW Jackson, Suite 310
Topeka, KS 66612

Dear Mr. Brunetti:

Thank you for the opportunity to review and comment on Kansas' draft Regional Haze State Implementation Plan Revision for the First Five-Year Progress Report. We believe that Kansas Department of Health and Environment has addressed the requirements for the regional haze periodic progress report as outlined in 40 CFR 51.308(g) and (h). No Class I areas are located in Kansas. Wichita Mountains Wilderness Area in Oklahoma is the Class I area most impacted by emissions from Kansas. Below we have a few specific suggestions to improve the characterization of emissions reductions and visibility benefits.

Section 3.3 Visibility Conditions: Please define Oklahoma's 2018 visibility reasonable progress goal for the 20% worst days at Wichita Mountains and compare current visibility to the 2018 goal. In addition to the visibility trends reported for the 20% worst and 20% best visibility days at Wichita Mountains, it would be helpful to define pollutant contributions to haze and changes in pollutant contributions over the past decade. An example is enclosed for your consideration.[1]

Section 3.4 Emissions Trend Analysis: In the first paragraph on page 20 that describes Table 7, isn't the reduction for sulfur dioxide 60 percent not 6.0 percent? In addition to Table 7 and Figures 12 through 16, please provide a summary of emissions for each of the five major pollutants, by major emission sectors (point, area, mobile on road, mobile nonroad) for 2002, 2008, 2011, and 2018. Presenting the 2018 emissions that were used in regional modeling to set

[1] Federal Land Manager Environmental Database http://views.cira.colostate.edu/fed/

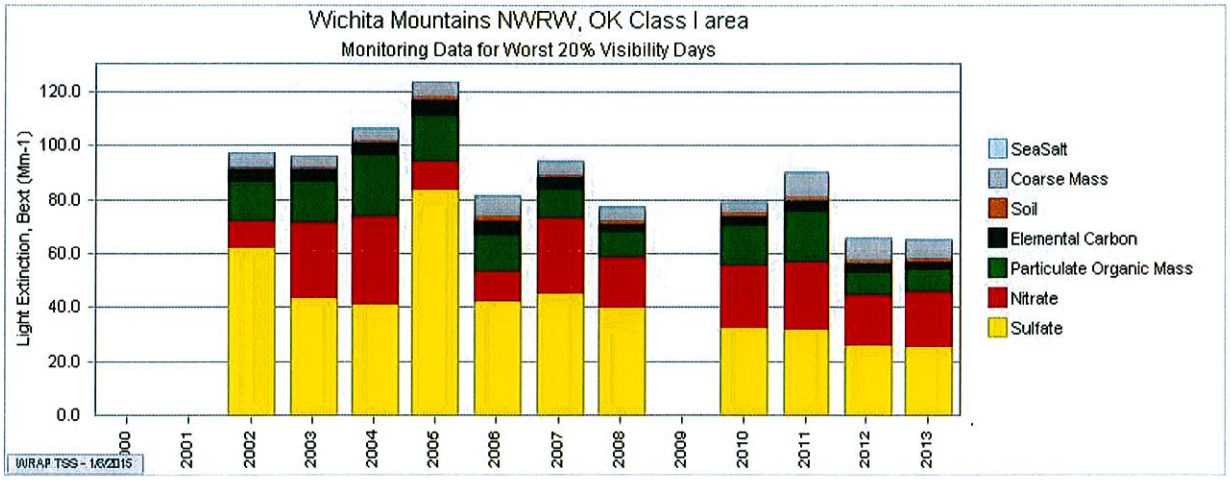
2018 visibility reasonable progress goals will support the conclusion that emissions reductions are on track to meet 2018 projections.

We appreciate the opportunity to work closely with Kansas to improve visibility in our Class I national parks and wilderness areas. If you have questions, please contact me at patricia_f_brewer@nps.gov or 303-969-2153.

Sincerely,

Pat Brewer

cc:
Josh Tapp, EPA Region 7



USDA United States Department of Agriculture Forest Service Rocky Mountain Region

740 Simms Street
Golden, CO 80401
303-275-5350
FAX: 303-275-5366

File Code: 2580
Date: FEB 13 2015

RECEIVED
FEB 23 2015
BUREAU OF AIR

Rick Brunetti
Director
Kansas Department of Health and Environment
Division of Environment, Bureau of Air
Curtis State Office Building
1000 SW Jackson, Suite 310
Topeka, KS 66612

Dear Mr. Brunetti:

This letter acknowledges that the US Forest Service has reviewed the State of Kansas 5-year regional haze progress report as documented in an email submitted by Bret Anderson to Tom Gross on January 27, 2015. Overall, the progress report document is well organized and provides a thorough review of visibility conditions and emissions. We commend the Kansas Department of Health and Environment (KDHE) for your diligent efforts on the development of this document. We concur with KDHE's negative declaration and believe your report satisfies the requirements of both 40 CFR 51.308(g) and 51.308(h). We look forward to reviewing future reports.

We appreciate the opportunity to continue working closely with the State of Kansas on achieving the Clean Air Act's goal of natural visibility conditions in mandatory Class I wilderness areas and parks. For further information, or if you have any questions, please contact Rocky Mountain Region Air Resource Program Manager, Jeff Sorkin at (303) 275-5759.

Sincerely,

Maribeth Gustafson

b.p. DANIEL JIRÓN
Regional Forester