Iowa State Implementation Plan for the Regional Haze Five-Year Review

Iowa Department of Natural Resources
Environmental Services Division
Air Quality Bureau
7900 Hickman Rd Suite 1
Windsor Heights, IA 50324

July 9, 2013

Table of Contents

Fields of Opportunities

STATE OF IOWA

TERRY E. BRANSTAD, GOVERNOR
KIM REYNOLDS, LT. GOVERNOR

DEPARTMENT OF NATURAL RESOURCES
CHUCK GIPP, DIRECTOR

July 9, 2013

Karl Brooks
Regional Administrator
Environmental Protection Agency Region VII
11201 Renner Blvd.
Lenexa, KS 66219

Dear Regional Administrator Brooks:

In accordance with the provisions of 40 CFR 51.308, this letter and enclosures constitute the submittal of the Iowa State Implementation Plan (SIP) for the regional haze five-year review.

The DNR submitted the initial regional haze SIP on March 25, 2008. This SIP submittal addresses the actions the Iowa Department of Natural Resources (DNR) has taken to fulfill the requirements of 51.308(g) for periodic progress reports. In accordance with 51.308(h) (1), the state is submitting a negative declaration. The DNR has determined that the initial regional haze SIP requires no further substantive revision at this time.

The regional haze five-year review SIP was provided to the Federal Land Managers on April 4, 2013. The notice of public comment period and public hearing was published in the Legal Notices section of the Des Moines Register on May 9, 2013. The public was also notified by posting of the announcement on the State of Iowa's Public Events Calendar on May 9, 2013. A public hearing was held on June 11, 2013, at the Air Quality Bureau in Windsor Heights. The public comment period ended on June 12, 2013. Responses to public comments can be found in Appendix D.

Please approve this revision as part of the official regional haze program of the State of Iowa. If you have any questions regarding this submittal, please contact Matthew Johnson at matthew.johnson@dnr.iowa.gov, or Jim McGraw at jim.mcgraw@dnr.iowa.gov. These contacts may also be reached by calling (515) 242-5100.

Sincerely,

Chuck Gipp Director

Enclosures: Iowa State Implementation Plan for the Regional Haze Five-Year Review

ii. Executive Summary

Congress added the national goal of preventing any future and remedying any existing impairment of visibility at mandatory Class I Federal areas in the 1977 Clean Air Act Amendments. The Regional Haze Rule (RHR) was promulgated in July 1999 (64 FR 35714, July 1, 1999) to further Congress's national goal, and established regulations to eliminate manmade visibility impairment in Class I areas by 2064.

Nationally there are 156 mandatory Class I Federal areas (Class I areas) but none are located in Iowa. This does not exempt Iowa from regional haze regulations as the pollutants which contribute to visibility impairment can be transported long distances.

Regional haze is a form of visibility impairment not directly attributable to a single source but occurs as a result of emissions of air pollutants from numerous sources located over a wide geographic area. The Regional Haze Rule and related regulations (40 CFR 51.308 and Appendix Y to Part 51) contained provisions that encouraged state, local, and tribal agencies to work cooperatively within regional planning organizations (RPOs) to address visibility impairment. Five RPOs were created for this purpose. Iowa was part of the Central Regional Air Planning Association (CENRAP), originally comprised of nine states in the central U.S.

On March 25, 2008, the Iowa Department of Natural Resources (DNR) submitted to the U.S. Environmental Protection Agency (EPA) a state implementation plan (SIP) for the initial period of the Regional Haze Rule. The DNR concluded emissions in Iowa may contribute to visibility impairment at the Northern Midwest Class I areas, which consist of two Class I areas in Minnesota (Boundary Waters Canoe Area Wilderness and Voyageurs National Park) and two Class I areas in Michigan (Seney Wilderness Area and Isle Royale National Park). The initial regional haze SIP was developed considering the reasonable progress goals of the Northern Midwest Class I areas, consultation with stakeholders including Federal Land Managers and the states of Minnesota and Michigan, Iowa's role in visibility impairment, and applicable regulations.

Emissions of sulfur dioxide (SO2) and nitrogen oxides (NOx) from larger point sources were generally identified as the types of sources contributing to the average worst visibility impairment in Class I areas in the Midwest. Iowa's participation in the Clean Air Interstate Rule (CAIR), a cap and trade program affecting larger fossil-fuel fired power plants, was a significant component of the state's long-term strategy. The initial regional haze SIP also relied upon CAIR to satisfy Best Available Retrofit Technology (BART) requirements for electrical generating unit (EGU) SO2 and NOx emissions. A review of other BART eligible sources and emissions concluded that no source specific BART emissions limits were needed.

Provisions of the Regional Haze Rule contained in 40 CFR 51.308(g) and (h) require that each state 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 regional haze SIP. The DNR concludes the current regional haze SIP is sufficient to address the reasonable progress goals of the Northern Midwest Class I areas. The DNR is also providing to EPA a negative declaration that further revision of the existing implementation plan is not needed at this time. This finding is based upon reductions in Iowa of anthropogenic NOx and SO2 emissions, the magnitude of these reductions, and existing federal regulations.

iii. Introduction

On March 25, 2008, the Iowa Department of Natural Resources (DNR) submitted to the U.S. Environmental Protection Agency (EPA) a revision to Iowa's state implementation plan (SIP) to address the first implementation period of the regional haze program[1]. The Regional Haze Rule was promulgated in July 1, 1999 (64 FR 35714) and established the first regulations governing visibility impairment attributable to widespread and numerous sources. Previous visibility regulations addressed nearby sources by regulating plume blight. The Regional Haze Rule encompassed all types of sources significantly contributing to visibility impairment.

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 mandatory Class I Federal areas. A map of the 156 mandatory Class I Federal areas (Class I areas) is provided in Figure 1-1. There are no Class I areas in Iowa, nor are there any Class I areas within 300 km of Iowa's borders. However, the pollutants which contribute to regional haze can originate over diverse geographical regions and travel many hundreds of miles. While sources nearer to Class I areas are initially expected to be more important contributors to visibility degradation than similar sources located further away, the regional haze regulations (see 40 CFR 51.308) cover a time horizon of many decades, until at least 2064, at which point manmade visibility impacts are to be mitigated at Class I areas. Simply stated, the goals of the regional haze program are achieved when visibility conditions at Class I areas have returned to natural conditions. The prospective longevity and scope of the regional haze regulations cast a broad range of potential obligations across an extended timeline. It is therefore possible for the requirements of the regional haze regulations to include states, such as Iowa, which are not near any Class I areas.

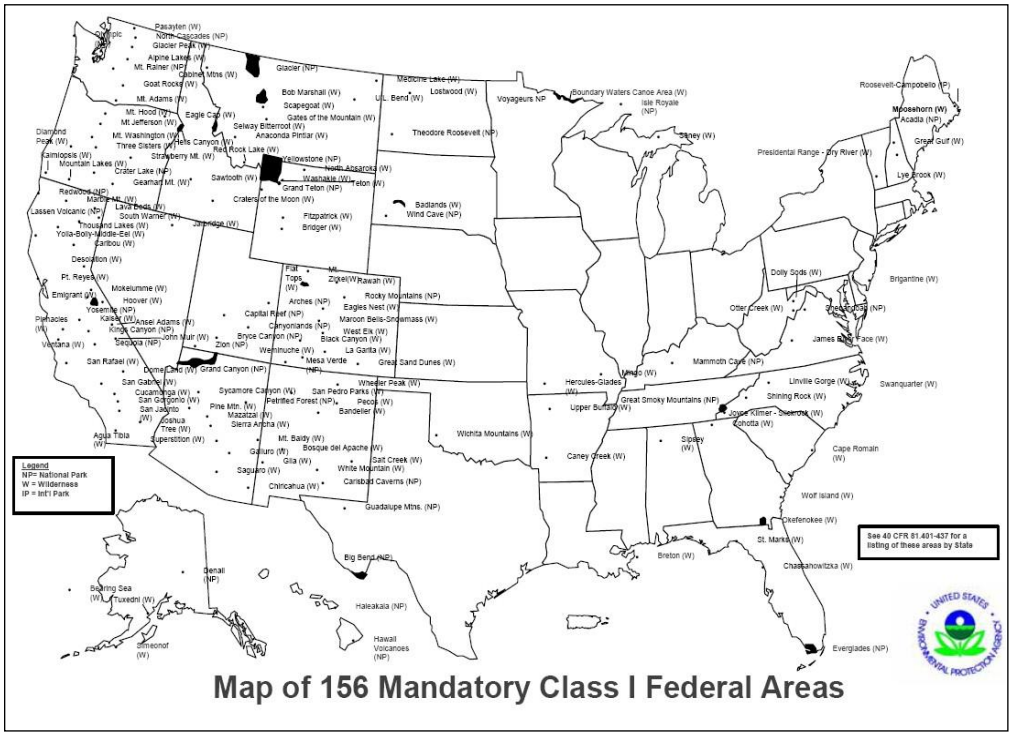

Figure 1-1. Map showing the location of the mandatory Class I Federal areas.

The Regional Haze Rule called for a cooperative approach involving state, federal, and tribal participants to address visibility impairment. Five regional planning organizations (RPOs), shown in Figure 1-2, 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 Iowa and eight other states (Arkansas, Kansas, Louisiana, Minnesota, Missouri, Nebraska, Oklahoma, and Texas) in the central portion of the U.S.

[1] Available at: http://www.iowadnr.gov/InsideDNR/RegulatoryAir/RulesPlanning.aspx

Figure 1-2. Geographical areas of Regional Planning Organizations.

Technical analyses and interstate consultation forums provided through CENRAP and other RPOs assisted the DNR in the development its initial regional haze SIP. Within the initial regional haze SIP the DNR provided a long-term strategy to fulfill the requirement of 40 CFR 51.308(d)(3), addressed the Best Available Retrofit Technology (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 the DNR's five-year progress report on the initial regional haze SIP. It is in the form of a SIP revision and fulfills 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.

iv. Summary of the Initial Regional Haze SIP

Two significant components of Iowa's initial regional haze SIP included Best Available Retrofit Technology (BART) requirements and the state's long-term strategy. A combination of federal equivalency determinations and local analyses were used to conclude that no BART-eligible sources in the state were subject to source specific BART limits. On July 6, 2005, EPA published a final rule (*Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations*, 70 FR 39104) which allowed electrical generating units (EGUs) participating in the cap and trade provisions of the Clean Air Interstate Rule (CAIR) (70 FR 25162, May 12, 2005) to serve as a substitute for BART for EGU NOx and SO2 emissions. The state utilized this option to satisfy most BART requirements associated with EGUs and also included participation in CAIR as a component of the state's long-term strategy. Direct particulate matter emissions from EGUs were reviewed separately and found not to cause or contribute to visibly impairment at a Class I area. BART requirements for non-EGU sources were evaluated using a variety of analyses. The weight-of-evidence BART analysis concluded that no non-EGU BART eligible sources were subject to BART.

The state developed a long-term strategy to address Class I areas located outside the state which may be affected by emissions from Iowa, 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. The state participated in discussions involving Class I areas in the states of Missouri and Arkansas and was invited to discussions led by Oklahoma. Emissions in Iowa were determined not to be contributing to visibility impairment in the Class I areas in Oklahoma or to any Class I area in either Missouri or Arkansas.

The DNR also participated in the Northern Midwest Class I Area Consultation Group, which was coordinated by the states of Minnesota and Michigan. Two Class I areas are located in Minnesota, the Boundary Waters Canoe Area Wilderness (BOWA) and Voyagers National Park (VOYA). Michigan also contains two Class I areas, Isle Royale National Park (ISLE) and Seney Wilderness Area (SENE). Collectively these four class I areas are referred to as the Northern Midwest Class I areas.

Photochemical modeling conducted by CENRAP, using particulate matter source apportionment (PSAT) techniques, indicated approximately 4-5% of the total modeled visibility impairment in both 2002 and 2018 in each of the four Northern Midwest Class I areas was associated with emissions in Iowa. These limited contributions were primarily attributable to SO2 and NOx emissions from elevated point sources. A review of the source apportionment results is provided in Appendix A for convenience.

The DNR concluded emissions in Iowa may contribute to visibility impairment at the Northern Midwest Class I areas. Iowa's long-term strategy relied upon a combination of existing state and federal regulations to achieve a 'fair share' of emissions reductions necessary to meet the reasonable progress goal (RPG) established for each Northern Midwest Class I area. On-going emission control programs considered in the long-term strategy included, for example, the state's minor and major new source review (NSR) programs, and measures mitigating the impacts of construction activities. Federal programs considered in development of the long-term strategy included the 2007 heavy-duty highway diesel rule, Tier 2 vehicle and gasoline sulfur program, clean air nonroad diesel rule, pertinent new source performance standards (NSPS), national emissions standards for hazardous air pollutants (NESHAP) and associated maximum achievable control technology (MACT) standards, and CAIR. These lists are not exhaustive but compromise the substantial components of the long-term strategy. A comprehensive discussion of the long-term strategy can be found in the initial regional haze SIP.

v. Federal Actions Affecting the Initial Regional Haze SIP

On December 23, 2008, roughly nine months after the DNR submitted the initial regional haze SIP, the U.S. Court of Appeals for the District of Columbia (DC Circuit Court of Appeals) issued a ruling remanding CAIR. The remand left CAIR in place while directing EPA to development a replacement rule. The Court's ruling was significant to Iowa's regional haze SIP as CAIR was used to satisfy the BART requirements related to SO2 and NOx emissions from EGUs and was also relied upon as a component of the state's long-term strategy.

During the interim period when CAIR remained in place, while a replacement rule was being developed, EPA did not take action on the state's regional haze SIP. On August 8, 2011 (76 FR 48208), the final rule *"Federal Implementation Plans: Interstate Transport of Fine Particulate Matter and Ozone and Correction of SIP Approvals"* was promulgated as the CAIR replace rule. This rule, commonly referred to as the Cross State Air Pollution Rule (CSAPR), also used a cap-and-trade approach to reduce emissions of NOx and SO2 from EGUs in the (mostly) eastern portions of the U.S.

On November 9, 2011, EPA agreed to a schedule for taking action on 45 regional haze SIPS. The final Consent Decree required EPA to propose action on Iowa's regional haze SIP by February 15, 2012, and take final action by June 15, 2012. On June 7, 2012 (77 FR 33642) EPA published a final rule providing limited disapproval of Iowa's (and many other state's) regional haze SIP. The limited disapproval applied only to those portions of the regional haze SIP tied to (the remand of) CAIR; EPA disapproved the state's use of CAIR as a substitute for BART for NOx and SO2 emissions from EGUs, and the use of CAIR in the long-term strategy.

In the same final rule (77 FR 3364, June 7, 2012) EPA promulgated a Federal Implementation Plan (FIP) for Iowa which addressed the portions of the regional haze SIP disapproved for their reliance upon CAIR. The FIP essentially substituted CSAPR in lieu of CAIR in the long-term strategy and to satisfy EGU BART obligations related to NOx and SO2 emissions. On June 26, 2012 (77 FR 38006), EPA finalized a limited approval of Iowa's SIP for all other regional haze elements not addressed in the June 7, 2012 action. The final rule approved the BART determinations for non-EGUs and EGU direct particulate matter emissions, and components of the long-term strategy not associated with CAIR.

On August 21, 2012, a three judge panel of the DC Circuit Court of Appeals issued a 2-1 ruling which vacated CSAPR and remanded the rule to EPA, while leaving CAIR in place until supplanted. On October 5, 2012, EPA filed a petition with the U.S. Circuit Court of Appeals for the DC Circuit for a rehearing en banc of the court's August 21, 2012, CSAPR decision. Three additional petitions for rehearing were also filed by other parties. On January 24, 2013, the D.C. Circuit Court of Appeals denied all petitions for rehearing en banc. Consequently the CSAPR vacature currently stands and CAIR continues to remain in effect. Despite the litigation and the ongoing uncertainty associated with the appeal to the U.S. Supreme Court, the DNR is still required to submit a five-year progress report on the initial regional haze SIP.

1. Regional Haze Periodic Reports

The general purpose of the five-year review is to evaluate progress towards the reasonable progress goals of each mandatory Class I Federal area (Class I area) which may be affected by emissions from within the State. The 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 comprehensive regional haze SIP revision. The progress report must be in the form of an implementation plan revision that complies with the procedural requirements of 40 CFR 51.102 and 51.103. The regulatory criteria for the progress reports are codified in 40 CFR 51.308(g) and (h). While Iowa does not contain a Class I area, this reduces but does not eliminate the applicable requirements. The specific elements which must be addressed in the five-year progress report for a state without a Class I area are addressed throughout the remainder of this document.

40 CFR 51.308(g)(1): Status of Measures in SIP

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. Iowa's 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. 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 Iowa's long-term strategy are expected to significantly influence visibility impairment in a Class I area but were included for completeness. A review of all applicable measures either specifically[2] identified by the regional haze regulations or of greatest relevance to the reasonable progress goals of the Northern Midwest Class I areas is provided below.[3]

BART and CAIR

Compliance with the BART requirements for NOx and SO2 emissions from EGUs was sought through participation in CAIR. Participation in the CAIR cap and trade program was also a significant component of the state's long-term strategy and was expected to yield EGU NOx emissions reductions and moderate, if not reduce, SO2 emissions. While CAIR was remanded by the DC Circuit Court of Appeals, as previously discussed the CAIR rule remains in effect and sources in Iowa continue to comply with the state (see 567 Iowa Administrative Code Chapter 34) and federal requirements associated with CAIR. No non-EGU BART sources were found to be BART eligible and therefore no BART specific emissions limits were developed.

State Programs

No source specific or unit specific emissions limits or compliance schedules were developed for the regional haze SIP. The DNR continues to implement a major source Prevention of Significant Deterioration (PSD) permitting program and a minor source review program. The DNR's rules on fugitive dust (567 IAC 23.3(2)"c"), which apply to construction activities, continue to require that reasonable precautions shall be taken to prevent the discharge of visible emissions of airborne dust beyond the lot line of the property from which the emissions originate.

The DNR has developed a prescribed fire policy to address how the DNR conducts prescribed burning on state, federal, and private lands for which the agency has management authority. The fire policy addresses smoke monitoring and minimizing the impacts from smoke and requires a smoke management plan. However, Iowa currently burns less than

[2] Such as the requirement that long-term strategies must consider measures to mitigate emissions from construction activities (51.308(d)(3)(v)(B)) and smoke management plans (51.308(d)(3)(v)(E)).

[3] Not all measures reviewed are considered significant in terms of visibility impairment, but are once again included for completeness.

approximately 30,000 acres per year on average, which is considerably less than most other states, and fires in Iowa were not identified as contributing to visibility impairment in Class I areas. Within the context of the Regional Haze Rule changes in emissions resulting from smoke management plans for prescribed fires in Iowa are not significant and are expected to have no discernible impact on visibility impairment in Class I areas.

Federal Programs[4]

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. A discussion of Maximum Achievable Control Technology (MACT) standards is provided in Appendix B.

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 NOx and non-methane hydrocarbons (NMHC) of 0.20 g/bhp-hr and 0.14 g/bhp-hr, respectively. These diesel engine NOx 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). 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 emissions ranging from relatively dirty to very clean, but the mix of vehicles a manufacturer sells each year must have average NOx 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 89; 40 CFR 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.

[4] The majority of the text for this section courtesy of the South Carolina Department of Health and Environmental Control, "Regional Haze State Implementation Plan Periodic Report," December 28, 2012.

2. 40 CFR 51.308(g)(2): Emissions Reductions

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."

The requirements of 51.308(g)(2) are best met quantitatively by a review of changes in NOx and SO2 emissions from EGUs.[5] The CAIR rule encompasses significant aspects of the state's initial regional haze SIP.[6] Emissions of SO2 and NOx from elevated point sources are responsible for most visibility impairment attributable to Iowa at the Northern Midwest Class I areas on the 20% worst impaired days (see Appendix A); and based upon an emissions inventory review of the 2008 NEI (version 2), most point source NOx and SO2 emissions in Iowa are associated with EGUs (see Chapter 4).

Emissions data for EGUs affected by CAIR were obtained from EPA's Clean Air Markets Division (CAMD) air markets program data website (http://ampd.epa.gov/ampd/). Annual EGU SO2 and NOx emissions in Iowa for 2002, 2008, and 2011 are shown in Table 2-1 and compared with the 2018 projections from the Integrated Planning Model (IPM) utilized in the initial regional haze SIP. The units are in tons[7] per year.

Table 2-1. Actual annual SO2 and NOx emissions in tons per year for 2002, 2008, and 2011 from all EGU units reporting to CAMD, and projected 2018 EGU emissions from the initial regional haze SIP.

	2002 Emissions	2008 Emissions	2011 Emissions	2018 Projections
SO2	127,847	109,293	95,946	151,354
NOx	78,956	49,023	38,574	65,629

The IPM projections for 2018 include increases in EGU SO2 emissions (23,507 tons) and decreases in EGU NOx emissions (-13,327 tons) across the 2002 to 2018 planning period. Interpreting these predictions in the context of CAIR it appears that IPM concluded more sources in Iowa would choose to purchase SO2 allowances rather than reduce emissions, while modest NOx controls would be added.

Between 2002 and 2008 EGU SO2 and NOx emissions reported to CAMD declined by 18,554 and 29,933 tons, respectively. Table 2-1 shows that in 2011 SO2 and NOx emissions continued to decline and were below the 2002 levels by 31,901 and 40,382 tons, respectively, which represent decreases of 25% and 51%.

The 2011 actual SO2 and NOx EGU emissions were significantly below the projected 2018 values, by 55,408 and 27,055 respectively, which represents SO2 and NOx emissions that are 37% and 41% below their 2018 projections. Figure 2-1 shows that decreases in NOx and SO2 emissions between the 2002 base year and 2011 have occurred while actual heat input has increased, indicating the reductions reflect cleaner generation and not merely decreased demand.

[5] Accurately calculating the emissions reductions from many of the state and federal measures mentioned in Chapter 1 requires data not routinely collected. Qualitatively, the continued implementation of those federal and state measures not affecting point sources are expected to reduce emissions, including NOx and SO2 emissions.

[6] As discussed previously CAIR is relied upon to satisfy most BART requirements for BART-eligible EGUs and is a significant component of the long-term strategy.

[7] All tonnage values in this report use short tons.

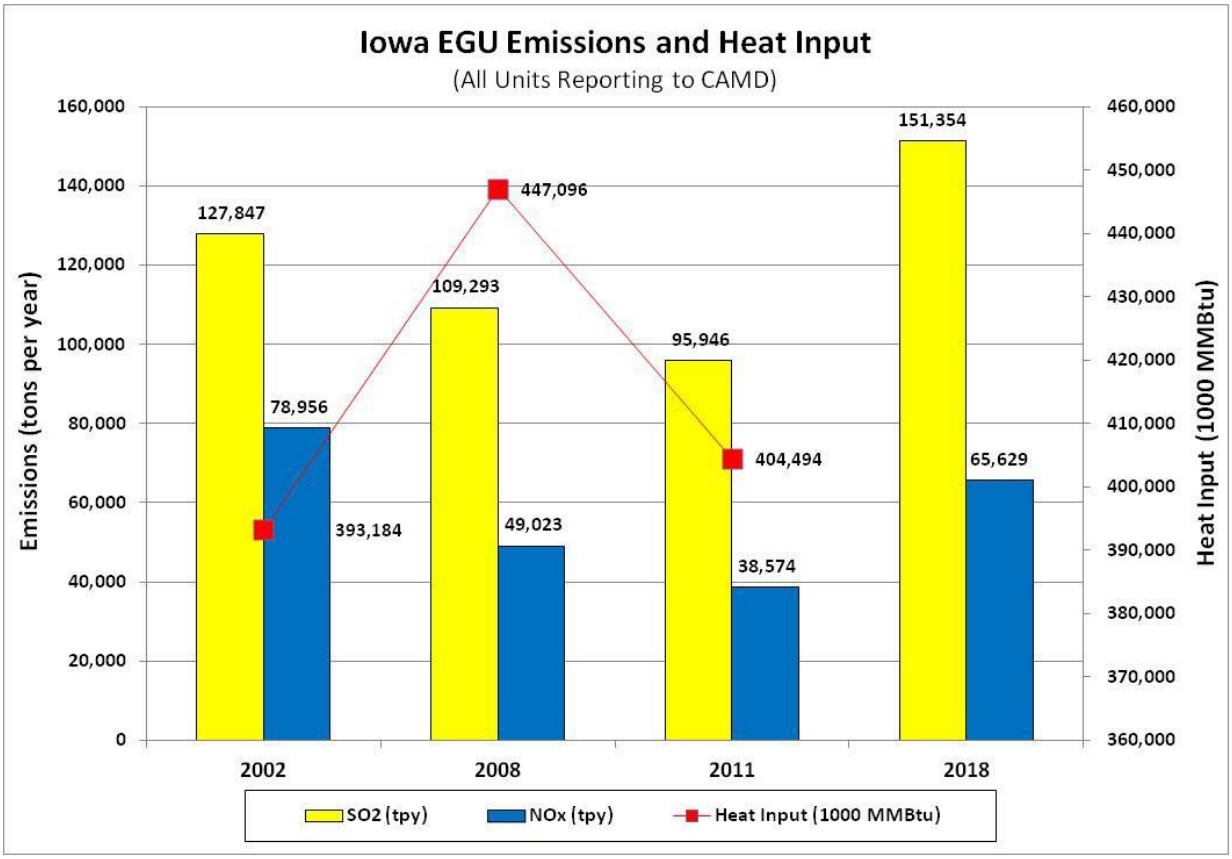

Figure 2-1. Actual annual emissions of SO2 and NOx and heat input (in 1000 MMBtu) in 2002, 2008, and 2011 as reported to CAMD (includes all units reporting to CAMD), and projected 2018 emissions.

3. 40 CFR 51.308(g)(3): Visibility Conditions

The requirements of 40 CFR 51.308(g)(3) relate to assessments of visibility conditions and apply only to states that contain Class I areas.

4. 40 CFR 51.308(g)(4): Emissions Tracking

40 CFR 51.308(g)(4) requires: "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 in any Class I area was required to be included in the initial regional haze SIP (40 CFR 51.308(d)(4)(v)). While not all emissions in Iowa contribute to visibility impairment at a Class I area, Iowa chose to comply with this requirement by including a complete statewide inventory containing emission rates for all anthropogenic and biogenic sources.[8]

The initial regional haze SIP used a baseline year of 2002 (see Chapter 7 of the initial regional haze SIP). The 2002 point source inventory was derived from the 2002 NEI and state-specific updates. The remaining source categories were developed from a variety of data sources and inventory development techniques. Emissions were classified into ten source categories: ammonia, area, fugitive dust, offroad, onroad, point EGU, point non-EGU, road dust, fires, and biogenic. A detailed description of these ten source categories can be found in Appendix C. The species considered were: volatile organic compounds (VOC), nitrogen oxides[9] (NOx), fine particulate matter (PM2.5), coarse particulate matter (PM10), ammonia (NH3), and sulfur dioxide (SO2).

All species and source types summarized in the initial regional haze SIP are reviewed in this five-year progress report. A comprehensive emissions review is provided to be consistent with the initial regional haze SIP. The most recent comprehensive inventory is the 2008 National Emissions Inventory (NEI), version 2 (version dated April 10, 2012)[10], or simply the 2008 NEIv2. The 2008 inventory offers a recent and nationally uniform platform for emissions comparisons and is the logical data source to meet the requirements of 40 CFR 51.308(g)(4). While technically providing a six, and not five year time horizon from the original SIP's baseline inventory, the 2008 NEIv2 does not require any forward projections to fulfill the obligations of 40 CFR 51.308(g)(4).

A summary of the 2002 inventory from the initial regional haze SIP is provided in Table 4-1.[11] Table 4-2 provides a summary of 2008 NEIv2 inventory data. All units are tons per year. The biogenic source category is not included in the subtotals to focus on anthropogenic emissions. Differences between the 2002 and 2008 inventories are summarized in Table 4-3, with positive values representing emissions growth from 2002 to 2008. Note that the 2008 NEIv2 data have been categorized using methods to help ensure the comparison with the 2002 data is consistent. Additional details on the 2008 NEIv2 data categorization process are provided in Appendix C.

[8] In the Midwest point source emissions of NOx and SO2 are often more closely evaluated in the context of regional haze.
[9] NOx is defined as the sum of NO2 and NO, this definition is used throughout this document.
[10] All 2008 NEI emissions data included in this report are associated with version 2 of the 2008 NEI, version dated April 10, 2012. For simplicity, this version will be referred to as the 2008 NEIv2.
[11] For reference the data is that reported in Table 7.1 of the initial regional haze SIP, available at http://www.iowadnr.gov/InsideDNR/RegulatoryAir/RulesPlanning.aspx.

Table 4-1. Summary of Iowa emissions for the 2002 baseline year (tons).

Category	VOC	NO_x	PM2.5	PM_{10}	NH_3	SO_2
Ammonia	0	0	0	0	258,915	0
Area	106,712	6,782	11,540	12,182	6,560	3,184
Fugitive Dust a	0	0	38,666	193,331	0	0
Offroad	63,694	92,595	8,904	9,707	79	9,037
Onroad	87,392	120,621	1,747	2,373	3,064	3,200
Point EGU	1,075	81,761	4,527	9,424	0	135,833
Point Non-EGU	41,184	35,812	7,651	17,495	3,317	51,836
Road Dust a	0	0	19,525	127,882	0	0
Fires b	1,670	200	5,493	5,817	48	203
Subtotal	301,727	337,771	98,053	378,211	271,983	203,293
Biogenic	408,291	25,732	0	0	0	0

[a]Fugitive dust and road dust emission rates reflect what remains after the application of transport factors.

[b]Represents the sum of the 2002 'Area Fire,' Point Fire,' and 'Wildfire' categories.

Table 4-2. Summary of Iowa emissions from the 2008 NEIv2 (tons).

Category	VOC	NO_x	PM2.5	PM_{10}	NH_3	SO_2
Ammonia	0	0	0	0	295,549	0
Area	68,399	5,163	6,967	7,288	892	2,155
Fugitive Dust a	0	0	70,238	365,960	0	0
Offroad	38,837	85,831	5,918	6,228	65	1,481
Onroad	41,293	90,630	3,666	4,234	1,515	1,229
Point EGU	686	51,347	6,007	8,586	31	117,692
Point Non-EGU	21,480	35,933	5,357	8,372	3,387	43,166
Road Dust a	0	0	17,354	147,591	0	0
Fires	4,361	758	2,865	3,099	237	189
Subtotal	175,055	269,662	118,371	551,358	301,676	165,913
Biogenic	289,743	35,620	0	0	0	0

[a]Transport factors were not applied to the 2008 fugitive dust or road dust emissions.

Table 4-3. Changes in emissions from 2002 to 2008 (tons). Positive values indicate growth.

Category	VOC	NO_x	PM2.5	PM_{10}	NH_3	SO_2
Ammonia					36,634	
Area	-38,313	-1,619	-4,573	-4,894	-5,668	-1,029
Fugitive Dust a			31,572	172,629		
Offroad	-24,857	-6,764	-2,986	-3,479	-14	-7,556
Onroad	-46,099	-29,991	1,919	1,861	-1,549	-1,971
Point EGU	-389	-30,414	1,480	-838	31	-18,141
Point Non-EGU	-19,704	121	-2,294	-9,123	70	-8,670
Road Dust a			-2,171	19,709		
Fires	2,691	558	-2,628	-2,718	189	-14
Subtotal	-126,672	-68,109	20,318	173,147	29,693	-37,380
Biogenic	-118,548	9,888				

[a]Apparent increases in PM10 and PM2.5 emissions from the fugitive dust and road dust categories are predominantly, if not wholly, attributable to the 2008 emissions not being reduced by transport factors.

Iowa's emissions of anthropogenic SO2 and NOx, which may contribute to visibility impairment at the Northern Midwest Class I areas, decreased by 37,380 and 68,109 tons, respectively, from 2002 to 2008. Restated as a percentage the SO2 and NOx decreases between 2002 and 2008 represent reductions of 18.4 and 20.2%, respectively. The NOx emissions reductions are predominantly associated with offroad and onroad[12] sources (potentially a result of ongoing federal programs) and point EGU sources. Sulfur dioxide emissions have declined from all applicable categories, with nearly half the total SO2 emissions reductions attributed to point source EGU emissions. Reductions from non-EGU point sources and offroad sources account for most of the remaining SO2 reductions. A significant decrease in total anthropogenic VOC emissions of 126,672 tons (40%) is estimated to have occurred between the 2002 and 2008 emissions inventories, associated with reductions from nearly all sectors.

Total anthropogenic PM2.5 and PM10 emissions show increases of 20,318 and 173,147 tons per year, respectively, between 2002 and 2008. These increases are driven almost entirely by the fugitive dust category, and to a lesser extent the road dust sector for PM10 emissions. It is imperative to note that the 2002 fugitive dust and road dust emissions estimates provided in Table 4-1 represent the values that remain after the application of transport factors, while the 2008 data (see Table 4-2) have not been similarly adjusted. Transport factors are reductions applied to fugitive dust and road dust emissions to account for the removal of particles near their emission source by vegetation and surface features, a removal mechanism that photochemical grid models do not accurately capture. The near-source capture transport factors were based on county-level vegetative cover and were applied to the 2002 raw fugitive dust and road dust inventories to prepare them for input to the air quality models used in development of the initial regional haze SIP.

The transport factors used in the 2002 data inventory were applied within the emissions modeling system and are not readily available. While the transport factor discrepancy does not permit a precise comparison of the 2002 and 2008 fugitive and road dust emissions, a crude evaluation is possible assuming a simple 50% reduction of the 2008 fugitive dust and road dust emissions as a surrogate for the application of county-level transport factors. This simple reduction would bring the 2008 PM2.5 and PM10 fugitive and road dust[13] emissions in line and generally below the 2002 values. Regardless of the actual differences between the 2002 and 2008 fugitive dust and road dust emissions, such emissions from Iowa are not known to contribute significantly to visibility impairment at Class I areas, and soil impacts at IMPROVE monitors are likely mainly due to local dust sources.[14]

[12] A meaningful comparison between the CENRAP 2002/2018 and the 2008 NEI on road emissions is complicated by the significantly different methods used to estimate onroad emissions. The 2002/2018 data are based upon use of the MOBILE6 model while the 2008 NEI are derived from EPA's application of the new Motor Vehicle Emissions Simulator (MOVES) mobile source model. The extent to which the different methodologies influence the change in emissions is not readily quantifiable but could be significant. However, this discrepancy does not influence other source sector emissions and does not alter any substantive conclusions.

[13] While the PM2.5 road dust emissions are lower in 2008 than 2002, despite the 2002 data being reduced by the application of the transport factors, it is not known if these changes represent real-world modification or are simply the result of changes in the methods used to estimate emissions from this source category.

[14] Environ International Corporation (ENVIRON), September 12, 2007. Technical Support Document for CENRAP Emissions and Air Quality Modeling to Support Regional Haze State Implementation Plans. Prepared for the Central Regional Air Planning Association. (Appendix 7.1 of the initial regional haze SIP.)

5. 40 CFR 51.308(g)(5): Progress Assessment

40 CFR 51.308(g)(5) requires: "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."

The 2018 emissions projections from the initial regional haze SIP are provided in Table 5-1.[15] Table 5-2 provides the differences between the 2018 projections and the 2008 NEIv2 summary (Table 4-2). Negative values in Table 5-2 indicate the 2008 NEIv2 emissions estimates are below the 2018 projections. Figure 5-1 provides a graphical representation of the anthropogenic emissions for 2002, 2008, and the projected 2018 inventory.

Table 5-1. Summary of Iowa emissions projected to 2018 (tons).

Category	VOC	NO_x	PM2.5	PM_{10}	NH_3	SO_2
Ammonia	0	0	0	0	302,012	0
Area	127,849	7,476	10,677	11,510	13,304	3,224
Fugitive dust a	0	0	40,608	203,044	0	0
Offroad	37,143	60,210	5,582	6,088	101	220
Onroad	36,404	33,975	708	708	4,225	400
Point EGU	1,802	65,629	9,578	11,232	713	151,354 b
Point Non-EGU	56,714	40,964	10,151	21,737	5,763	42,862
Road dust a	0	0	17,712	114,889	0	0
Fires	1,672	200	5,495	5,819	49	204
TOTAL	261,584	208,454	100,511	375,027	326,167	198,264
Biogenic	408,291	25,732	0	0	0	0

[a]The 2018 fugitive dust and road dust emissions were adjusted by the 2002 transport factors.
[b]Reflects use of the "Modified" SO2 value from Table 7.2 of the initial regional haze SIP.

Table 5-2. Differences in emissions between the 2008 NEIv2 data and 2018 projections (tons).[a]

Category	VOC	NO_x	PM2.5	PM_{10}	NH_3	SO_2
Ammonia	0	0	0	0	-6,463	0
Area	-59,450	-2,313	-3,710	-4,222	-12,412	-1,069
Fugitive Dust b	0	0	29,630	162,916	0	0
Offroad	1,694	25,621	336	140	-36	1,261
Onroad	4,889	56,655	2,958	3,526	-2,710	829
Point EGU	-1,116	-14,282	-3,571	-2,646	-682	-33,662
Point Non-EGU	-35,234	-5,031	-4,794	-13,365	-2,376	304
Road Dust b	0	0	-358	32,702	0	0
Fires	2,689	558	-2,630	-2,720	188	-15
TOTAL	-86,529	61,208	17,860	176,331	-24,491	-32,351
Biogenic	-118,548	9,888	0	0	0	0

[a]Negative values indicate the 2008 emissions are lower than 2018 projections.
[b]The 2008 fugitive dust and road dust emissions estimates were not reduced by a transport factor.
Apparent increases in PM10 and PM2.5 emissions from these categories are predominantly, if not wholly, attributable to this inconsistency.

[15] From Table 7.2 of the initial regional haze SIP.

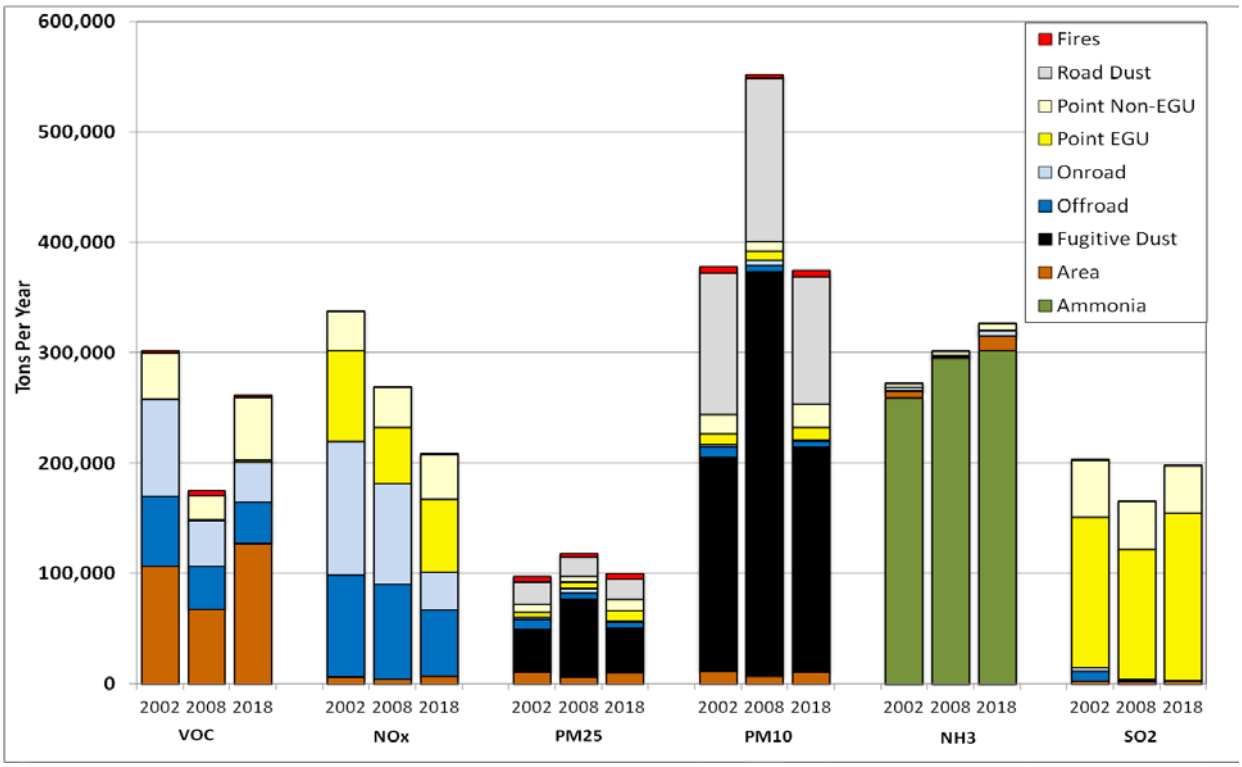

Figure 5-1. Comparison of Iowa's actual emissions for 2002 and 2008, and the 2018 projections. (For reference and convenience the data in this chart have been consolidated into a table in Appendix C.)

Total anthropogenic SO2 emissions in 2008 were below 2018 projections by 32,351 tons. Between 2002 and 2018 total anthropogenic NOx emission reductions of 129,317 tons were forecast. According to the 2008 NEIv2, over half this reduction has already been achieved (68,109 tons, see Table 4-3). While NH3 emissions increases were estimated to be about 14% between 2002 and 2008, the increase does not exceed the 2018 forecast. It is not known if the NH3 increase is a reasonable representation of actual emissions increases between 2002 and 2008 or is computational in nature—the result of using different versions of and inputs to the Carnegie Mellon University (CMU) NH3 emissions model. The 2008 estimate appears reasonable in comparison to the 2002 and 2018 data and further review of the ammonia emissions estimates is currently not warranted. At this time VOC emissions have not been widely targeted for reductions in the context of regional haze SIPs, however it may be of interest to note total VOC emissions were significantly lower in 2008 than the 2018 projections, by 86,529 tons.

Total PM2.5 and PM10 emissions are noticeably higher in 2008 than either the 2002 or projected 2018 emissions. This apparent increase is not impeding progress in reducing pollutant emissions as it is mostly, if not completely, an artifact of the transport factor discrepancy discussed above.[16] Many other 2008 PM2.5 and PM10 source category emissions estimates are below the 2018 projections.

In summary, emissions reductions in 2008 were generally ahead of schedule or greater than the 2018 projections. No changes in anthropogenic emissions within the state have occurred that have limited or impeded progress in reducing pollutant emissions and improving visibility.

[16] To summarize, the 2002 and 2018 PM2.5 and PM10 fugitive dust and road dust emissions were reduced by a transport factor (which, for example, may be on the order of a 50% reduction) while the 2008 data were not similarly adjusted.

6. 40 CFR 51.308(g)(6): Assessment of Elements to Meet RPG

40 CFR 51.308(g)(6) requires: "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."

In the initial regional haze SIP the DNR concluded emissions in Iowa may contribute to visibility impairment at the Northern Midwest Class I areas, which consist of two Class I areas in Minnesota (Boundary Waters Canoe Area Wilderness and Voyageurs National Park) and two Class I areas in Michigan (Seney Wilderness Area and Isle Royale National Park).

According to photochemical source apportionment modeling conducted for the initial regional haze SIP (Appendix A) Iowa's visibility impacts in the Northern Midwest Class I areas were primarily associated with elevated point source SO2 and NOx emissions. Elevated point source emissions are split among two categories in the inventory, EGUs and non-EGUs. Based upon the 2002 and 2008 actual emissions data, about 70% of the elevated point source SO2 emissions are associated with EGUs, with the remainder from non-EGUs. For elevated point source NOx emissions, about 60-70% are associated with EGUs, with the remainder again associated with non-EGUs. It can be inferred that any significant changes in EGU emissions will inform whether the current implementation plan is sufficient to meet the reasonable progress goals of the Northern Midwest Class I areas.

Electricity Generation

Based upon the emissions data discussed previously it was shown Iowa's 2011 EGU SO2 and NOx emissions are substantially lower than projected 2018 EGU emissions, by 55,408 and 27,055 tons, respectively. A brief review of the recent 2012 Iowa specific CAMD data (not shown) indicates NOx and SO2 emissions have continued to decline. Despite uncertainty that exists regarding the future of CAIR and any potential replacement rules, the declines are not entirely unexpected.

CAIR will continue to be implemented in Iowa until supplanted, but its importance for influencing EGU SO2 and NOx emission reductions appears diminished. A significant or prolonged upswing in SO2 and NOx emissions from the electrical generating sector is not anticipated before a comprehensive regional haze SIP revision is required (by July 31, 2018). This assumption is supported by projections of electricity generation from coal and natural gas provided in the 2012 Annual Energy Outlook (AEO) reference case developed by the U.S. Energy Information Agency.[17] Figure 6-1 shows that coal use for purposes of electricity generation is predicted to continue decreasing nationwide beyond 2011 through 2016. The decrease in coal use largely occurs as a result of an increasing reliance upon natural gas usage for electricity generation. Decreases in NOx and SO2 emissions from EGUs are expected to accompany these trends. While the trends change slightly after 2015, coal usage remains well below recent levels. This information provides a national perspective that should represent likely patterns within the state of Iowa.

[17] http://www.eia.gov/forecasts/aeo/er/index.cfm

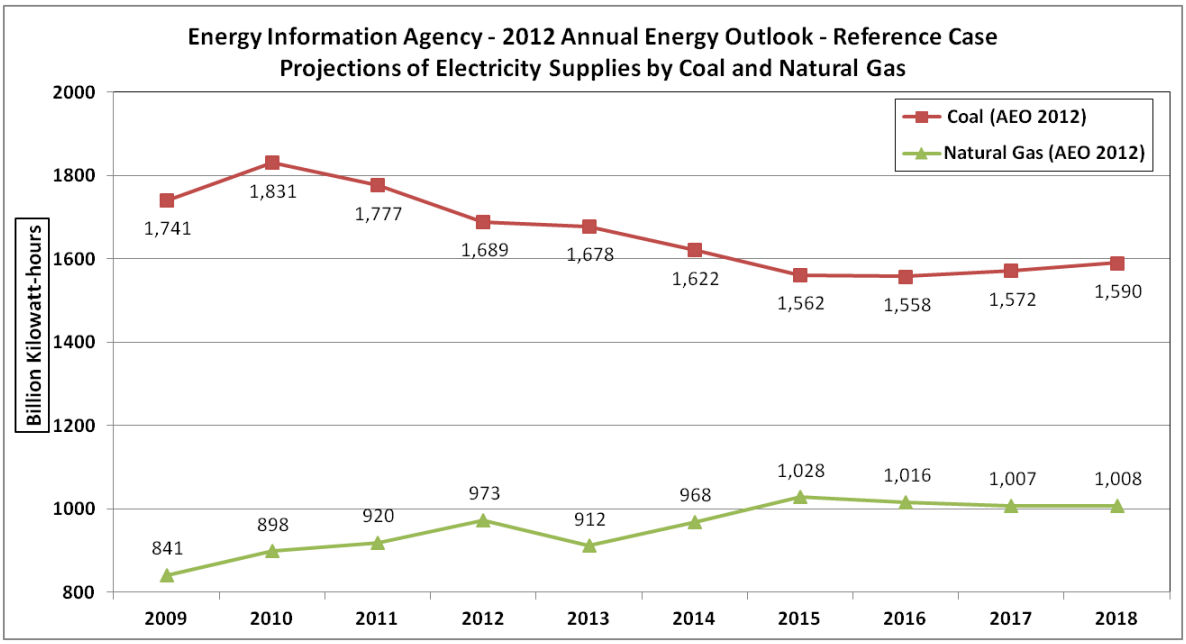

Figure 6-1. Nationwide projected net coal and natural gas electricity generation supply. Includes plants that only produce electricity for sale and combined heat and power plants whose primary business is to sell electricity and heat to the public.

Although NOx and SO2 emissions estimates for all non-EGU source categories (including point non-EGU, area, offroad, onroad, etc.) were not readily available for 2011, emissions increases between 2008 and 2011 from non-EGU sources which could significantly offset reductions from the EGU sector are not expected. This assessment is based upon the magnitude of the EGU reductions, declining emissions trends between 2002 and 2008 from other source sectors, and ongoing implementation of federal and state regulations.

New Regulations

Since the development of the state's initial regional haze SIP EPA has promulgated standards which are anticipated to yield new emissions reductions. Based upon the 2008 NEIv2, total anthropogenic SO2 emissions have already declined ahead of the 2018 projections by 32,351 tons. Total anthropogenic NOx emissions in 2008 were 68,109 tons below the 2002 baseyear, achieving 53% of the 129,317 tons of NOx emissions projected to occur over the 16-year timeframe between 2002 and 2018. The following new regulations have the potential to further reduce emissions associated with visibility impairment in the Northern Midwest Class I areas.[18]

Mercury and Air Toxics Standard (MATS)

On December 16, 2011, the EPA signed a rule to reduce emissions of toxic air pollutants from power plants. Specifically, the mercury and air toxics standards for power plants will reduce emissions from new and existing coal and oil-fired electric utility steam generating units. The final rule establishes power plant emission standards for mercury, acid gases, and non-mercury metallic toxic pollutants. EPA estimates MATS will reduce acid gas emissions by 88% from power plants, and is also expected to reduce SO2 emissions.

Portland Cement Air Toxics Standards

On December 20, 2012, EPA signed the final amendments to the air toxics rules for Portland cement manufacturing. The amended rule will maintain dramatic reductions of acid gases, particulate matter, and total hydrocarbons from existing cement kilns across the country, while ensuring that emissions from new kilns remain low. Existing kilns must comply with the standards by Sept. 9, 2015, and if needed, may request an additional year. Nationwide EPA anticipates the rule will reduce hydrochloric acid emissions by 96 percent, particulate matter by 91 percent, and total hydrocarbons by 82

[18] Quantitatively evaluating the relationships between the new regulations, subsequent emissions reductions in Iowa, and any related visibility improvement within the Northern Midwest Class I areas is beyond the scope of the five-year review. Additionally, the DNR is currently not relying upon the new regulations as a source of emissions reductions necessary to meet regional haze obligations.

percent.

National Ambient Air Quality Standards (NAAQS)
On January 22, 2010, EPA strengthened the health-based NAAQS for NO2, establishing a new 1-hour standard at a level of 100 ppb. On January 20, 2012 EPA designated all areas of the country as "unclassifiable/attainment" for the 2010 NO2 NAAQS.

On June 3, 2010, the EPA promulgated a new 1-hour SO2 standard at a level of 75 ppb. Areas not meeting the standard are expected to be designated nonattainment in the June 2013 timeframe. Within 18 months of a nonattainment designation states are required to submit a plan demonstrating compliance (as expeditiously as practicable) with the standards.

On December 14, 2012, EPA strengthened the PM2.5 NAAQS, reducing the level of the annual standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. EPA is expected to finalize designations by December 14, 2014. Projections provided by EPA suggest 99% of counties with monitors will meet the revised standard by 2020.[19]

Conclusions

Substantial EGU SO2 and NOx emissions reductions have occurred that were not anticipated in the initial regional haze SIP. Total anthropogenic NOx and SO2 emissions have also declined significantly since 2002. Offsetting future increases are not anticipated based upon existing regulations and current market forces. These factors demonstrate that the state's current plan elements and strategies are sufficient to meet our obligations related to the reasonable progress goals of the Northern Midwest Class I areas.

[19] Map provided at: http://www.epa.gov/air/particlepollution/actions.html.

7. 40 CFR 51.308(g)(7): Visibility Monitoring

40 CFR 51.308(g)(7) requires: "A review of the State's visibility monitoring strategy and any modifications to the strategy as necessary."

The DNR currently operates two IMPROVE Protocol sampling sites, one at Viking Lake State Park in southwestern Iowa, and the other at the Lake Sugema Wildlife Management Area in southeastern Iowa. The monitors began operation in June 2002. Additional monitoring equipment located at these two locations provides supplemental information on fine particles and their precursors. Data from IMPROVE and IMPROVE protocol monitors is analyzed by a national laboratory (funded via an interagency agreement between EPA and the National Park Service) and uploaded by the laboratory into two publicly available databases at http://vista.cira.colostate.edu/improve and http://vista.cira.colostate.edu/views/. The supplemental monitoring data is publicly available at http://www.epa.gov/airdata/ad_maps.html and at http://www.epa.gov/ttn/airs/airsaqs. The DNR intends to continue to operate the two IMPROVE protocol monitors as long as the interagency agreement is in place and funding is available.

8. 40 CFR 51.308(h): Determination of Plan Adequacy

40 CFR 51.308(h) requires: "…At the same time the State is required to submit any 5-year progress report to 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.

(2) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State must provide notification to the Administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

(3) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator.

(4) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan's deficiencies within one year."

Based upon the evidence presented in this document and the options above the DNR has determined that further revision of the existing implementation plan is not needed at this time. A negative declaration to this effect, as required by 40 CFR 51.308(h), is included in the transmittal letter for this SIP (see Chapter i).

9. Stakeholder Input

FLM Consultation

The Federal Land Managers (FLMs) were provided a copy of the draft SIP on April 4, 2013. The public hearing was held on June 11, 2013, which is in accordance with the FLM coordination requirements of 51.308)(i)(2). Comments received from the FLMs are summarized and addressed in Appendix D.

The DNR will continue to coordinate and consult with the FLMs during development of future plan provisions and progress reports, as well as during the implementation of programs having the potential to contribute to visibility impairment in Class I areas. The DNR will continue to communicate with the FLMs individually, through interagency or other coordinated efforts, or both to meet the requirements of 51.308(i)(4), which requires procedures for consultation during:

- Development and review of implementation plan revisions,
- Review of 5-year progress reports,
- Development and implementation of other programs that may contribute to impairment of visibility in Class I areas.

To enhance interstate consultation efforts, the states of Minnesota and Michigan were each provided a copy of the draft SIP concurrent with the FLM review period. The DNR has and continues to be available for consultation concerning the Northern Midwest Class I areas. No requests for continued discussions have been received since the DNR submitted its initial regional haze SIP.

Public Notice

The DNR provided public notice of the opportunity to comment on the SIP revision. Public comments received on the draft SIP are summarized and addressed in Appendix D. The DNR has the authority to adopt this SIP revision (see Appendix E) and has adopted this revision in accordance with State laws and rules.

A copy of this report is available at the Iowa Department of Natural Resources – Air Quality Bureau, Records Center, 7900 Hickman Rd, Ste 1, Windsor Heights, IA 50324, and on our website at www.iowacleanair.gov.

Appendix A. Source Apportionment Review

This appendix provides a brief review of visibility degradation source apportionment results for the 20% worst visibility days from the 2002 basecase and 2018 Base-E CAMx particulate matter source apportionment (PSAT) modeling conducted for the initial regional haze SIP.[20] The source apportionment results provided estimates of the contributions to visibility impairment at Class I areas by source regions (*e.g.* states) and source categories. The modeled concentrations from the PSAT results were converted to light extinction values (a measure of visibility impairment with units of inverse megameters, Mm^{-1}) using the new[21] IMPROVE equation.

The intent of the CENRAP PSAT analysis was to obtain separate contributions due to onroad mobile, nonroad mobile, area, natural (biogenic), EGU point, and non-EGU point source categories. However, separate source apportionment modeling of EGU and non-EGU point sources was not possible for all states due to technical considerations. The six source categories that were separately tracked in the PSAT modeling were:

- Elevated point sources (*i.e.* larger industrial sources and power plants),
- Low-level point sources (*i.e.* point source emissions emitted into layer 1 of the model),
- Onroad Mobile Sources,
- Nonroad Mobile Sources,
- Area Sources, and
- Natural Sources (e.g. biogenic).

According to the PSAT results the combined effect of all Iowa emissions upon the total modeled visibility impairment at the four Northern Midwest Class I is approximately 4 – 5 % in both 2002 and 2018. This represents a contribution of ~2.0 – 4.5 Mm^{-1} to the total modeled light extinction at the northern Midwest Class I areas. These results are reviewed in Table A-1.

Table A-1. Iowa's contributions to modeled visibility impairment (using the new IMPROVE equation) for the 20% worst days at the Northern Midwest Class I areas.[22]

Site	Iowa's Percentage Contribution		Iowa's Total Modeled Contribution (Mm^{-1})		Class I Area Total Modeled Impairment (Mm^{-1})	
	2002	2018	2002	2018	2002	2018
BOWA	3.7%	3.9%	2.39	2.08	64.87	53.44
VOYA	3.8%	4.0%	2.16	1.97	56.45	48.84
ISLE	4.5%	4.9%	3.23	3.02	71.40	61.26
SENE	4.2 %	4.8 %	4.54	3.95	107.92	82.00

The above results focus solely upon contributions attributable to sources in Iowa. The charts below provide a graphical representation comparing how all source regions (e.g. states) contribute to the total modeled visibility impairment at the Northern Midwest Class I areas.[23] The results are also apportioned by pollutant and source categories. There are four charts per Class I area, two plots each for the 2002 and 2018 results (Figures A-1 through A-16). The first chart provides results for the worst 20% visibility days in 2002 for Boundary Waters Canoe Area Wilderness (BOWA) in Minnesota. In this chart the visibility impairment is apportioned by state and source category. The same visibility

[20] The PSAT modeling was funded by CENRAP and conducted by ENVIRON. The PSAT results were consolidated within and evaluated using ENVIRON's PSAT Tool (Microsoft Access based). See Appendix 7.1 of Iowa's initial regional haze SIP for additional information.

[21] Note, Appendix 7.1 of the initial regional haze SIP (see page 5-14 of the appendix) states that the original IMPROVE equation was used to convert modeled concentrations to light extinction. However, an updated version of the PSAT Tool (version 1.2, dated August 27, 2007) was used for both the initial regional haze SIP and this progress report. The updated PSAT Tool used the new, and not the original, IMPROVE equation.

[22] The data are from Tables 11.1 and 11.2 of the initial regional haze SIP.

[23] The 2018 data plotted below are the same as shown in Figures 11.1 – 11.4 of the initial regional haze SIP. Additional charts are included here for an expanded review, to include the 2002 results and PSAT contributions by source categories.

impairment data (worst 20% days in 2002 at BOWA) form the basis for the second plot but the results are apportioned by pollutant (and state). Source apportionment results for the worst 20% visibility days in 2018 at BOWA are similarly plotted in the next two charts. The remaining charts pertain to Voyageurs National Park (VOYA) in Minnesota, and Isle Royale National Park (ISLE) and Seney Wilderness Area (SENE) in Michigan.

For simplicity only the raw modeled 2002 and 2018 PSAT results are provided.[24] While the total modeled visibility degradation is provided in the title of each chart, contributions from initial conditions (IC), boundary conditions (BC), anthropogenic secondary organic aerosol (SOAA), and biogenic secondary organic aerosol (SOAB) are only shown when results are apportioned by pollutant.

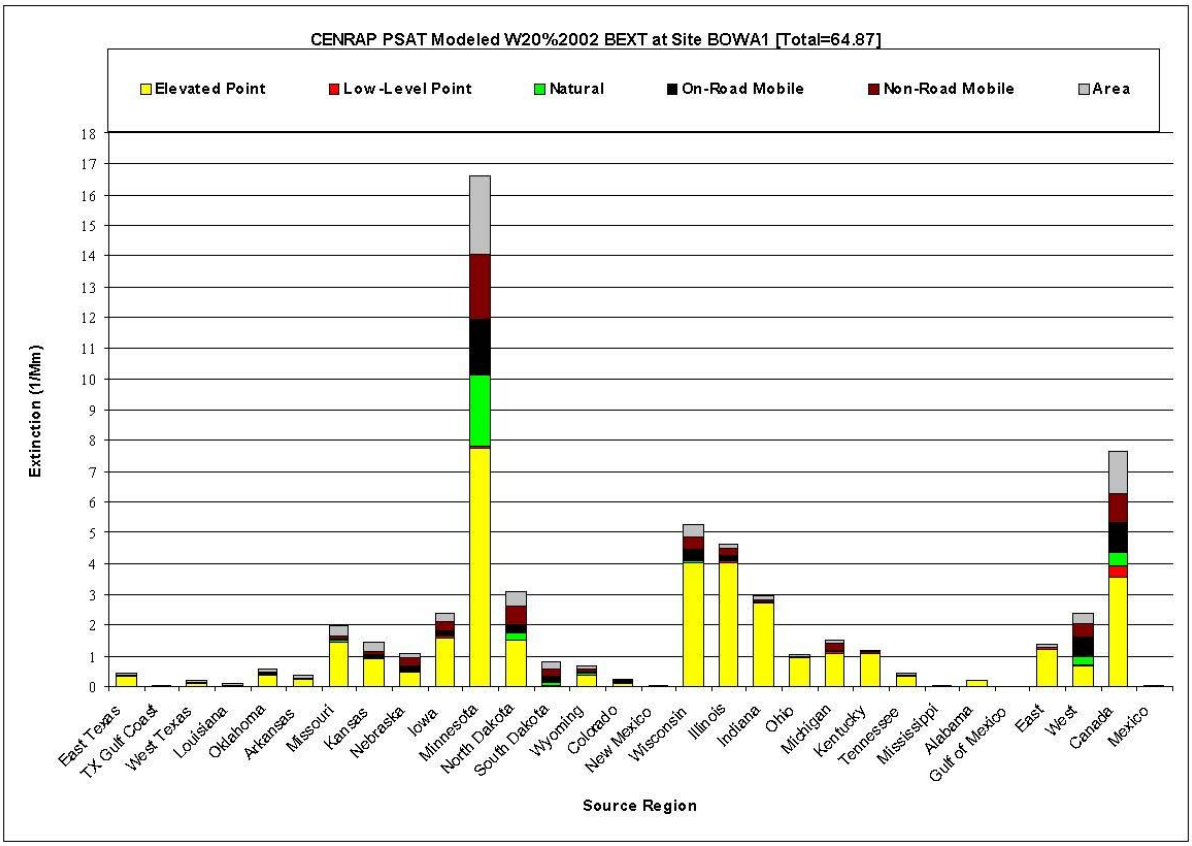

Figure A-1. CENRAP PSAT source region by source category contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Boundary Waters (BOWA), Minnesota.

[24] The PSAT results that were scaled according to observed species ratios (referred to as the "Projected" results within the PSAT tool) are not utilized in this review.

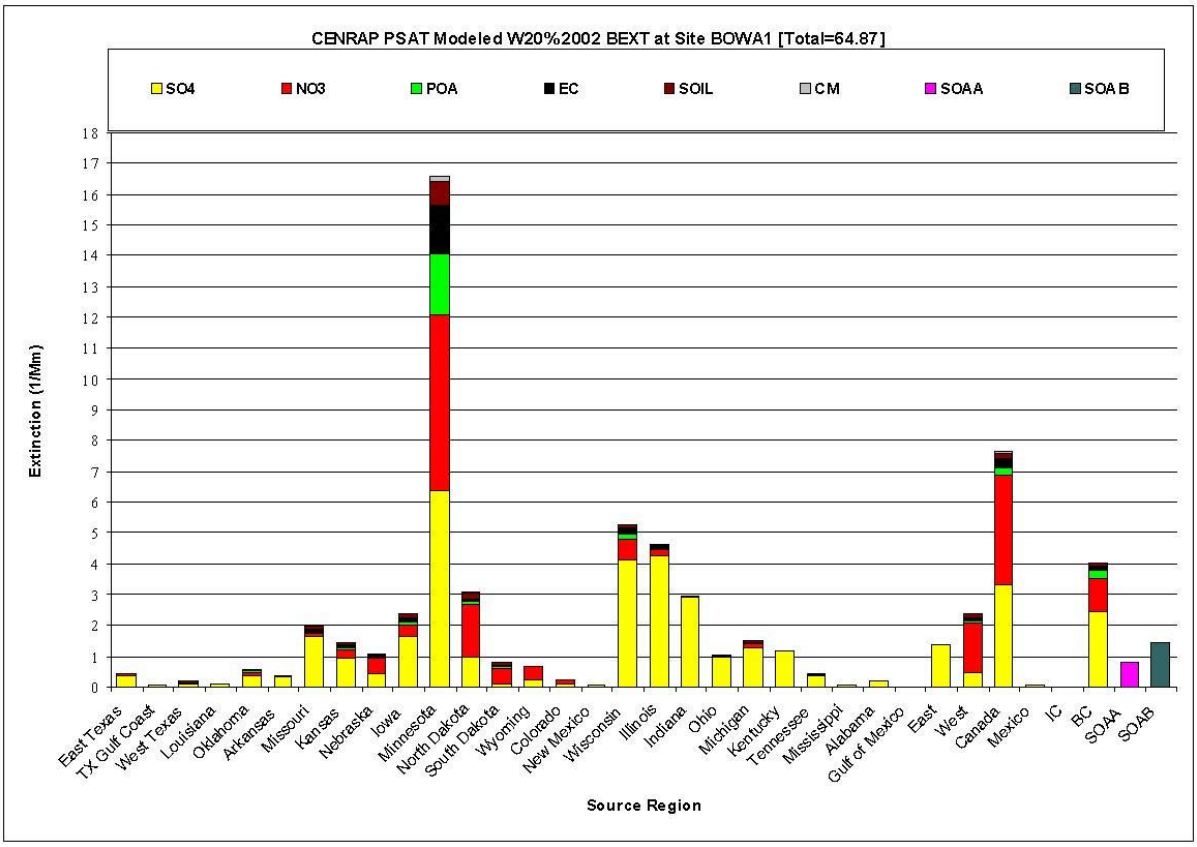

Figure A-2. CENRAP PSAT source region by pollutant contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Boundary Waters (BOWA), Minnesota.

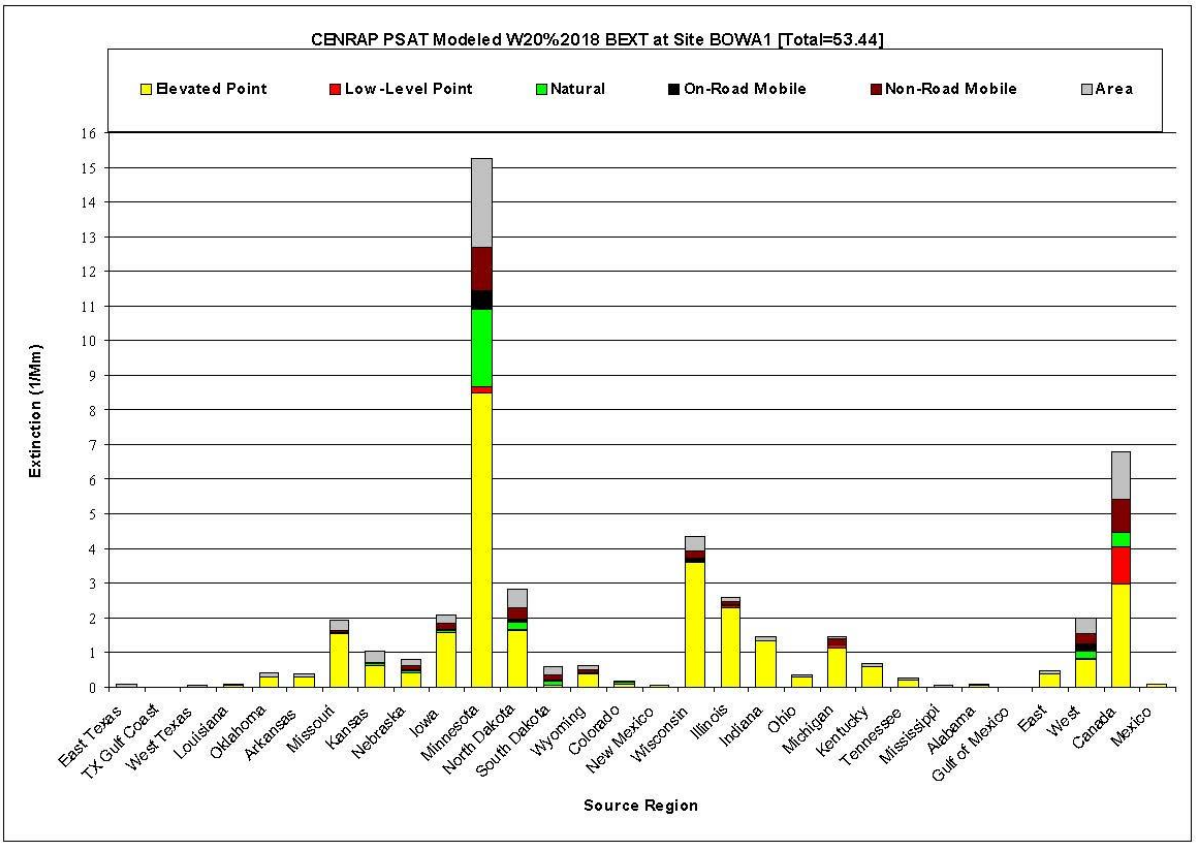

Figure A-3. CENRAP PSAT source region by source category contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Boundary Waters (BOWA), Minnesota.

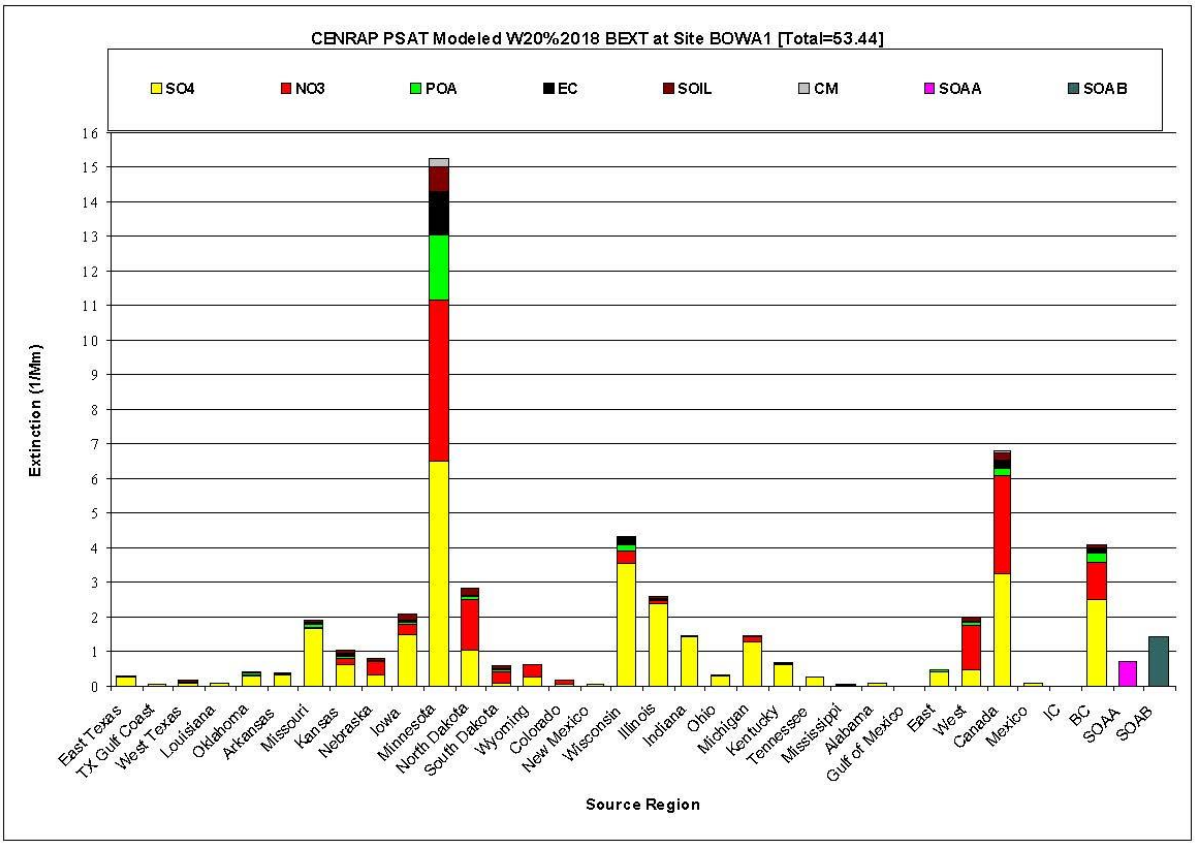

Figure A-4. CENRAP PSAT source region by pollutant contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Boundary Waters (BOWA), Minnesota.

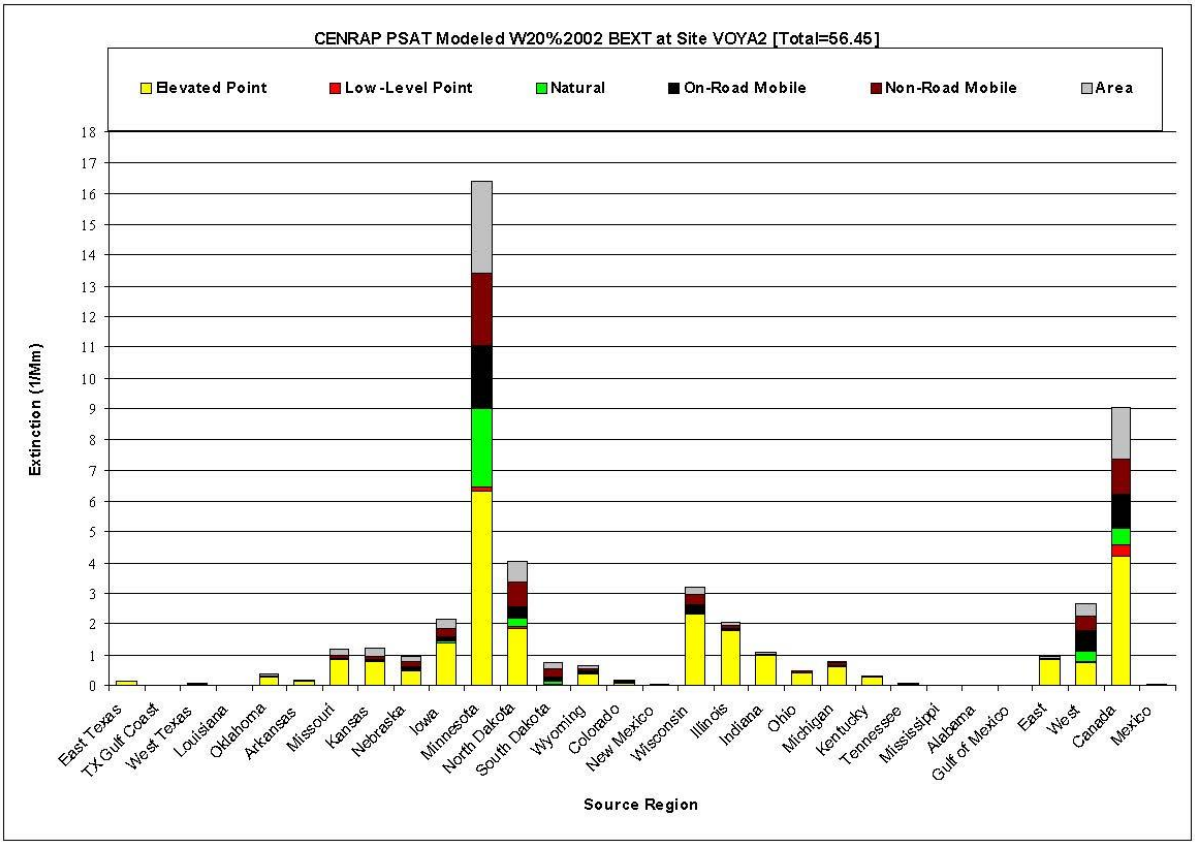

Figure A-5. CENRAP PSAT source region by source category contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Voyageurs (VOYA), Minnesota.

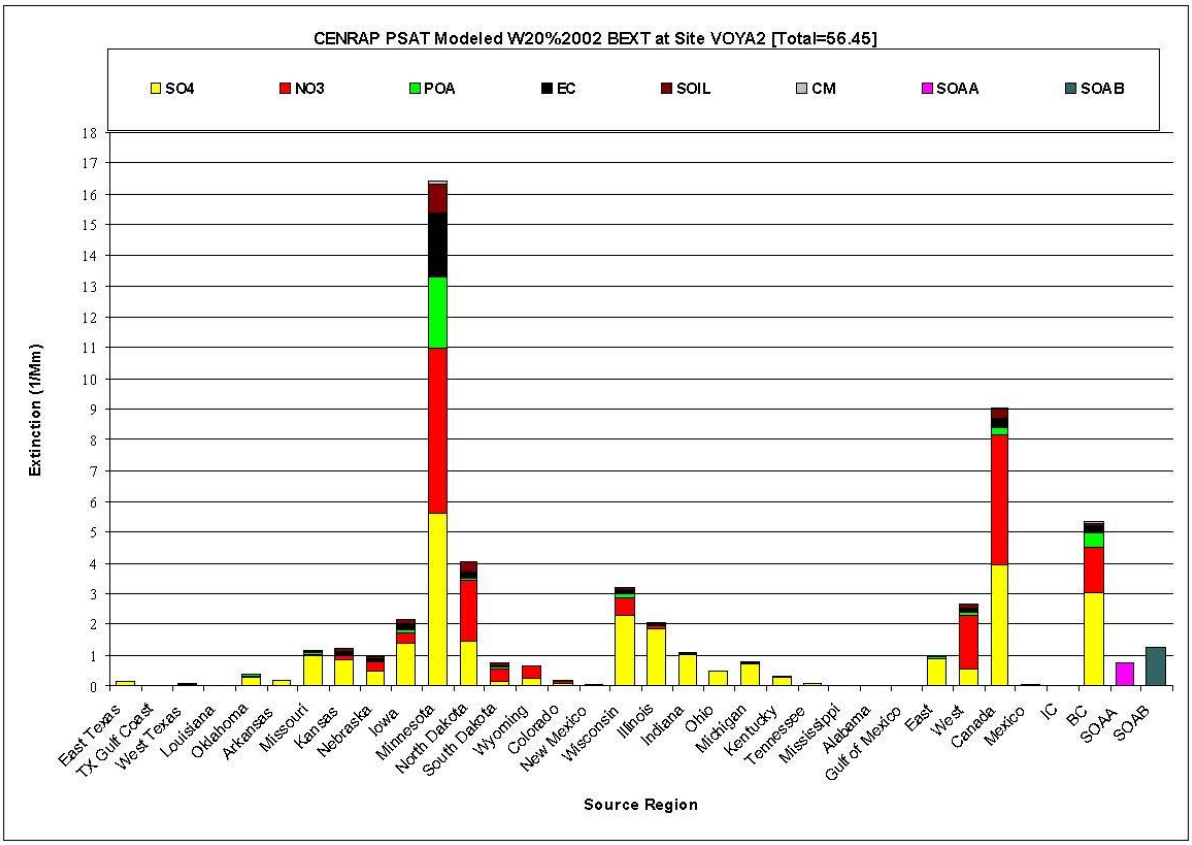

Figure A-6. CENRAP PSAT source region by pollutant contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Voyageurs (VOYA), Minnesota.

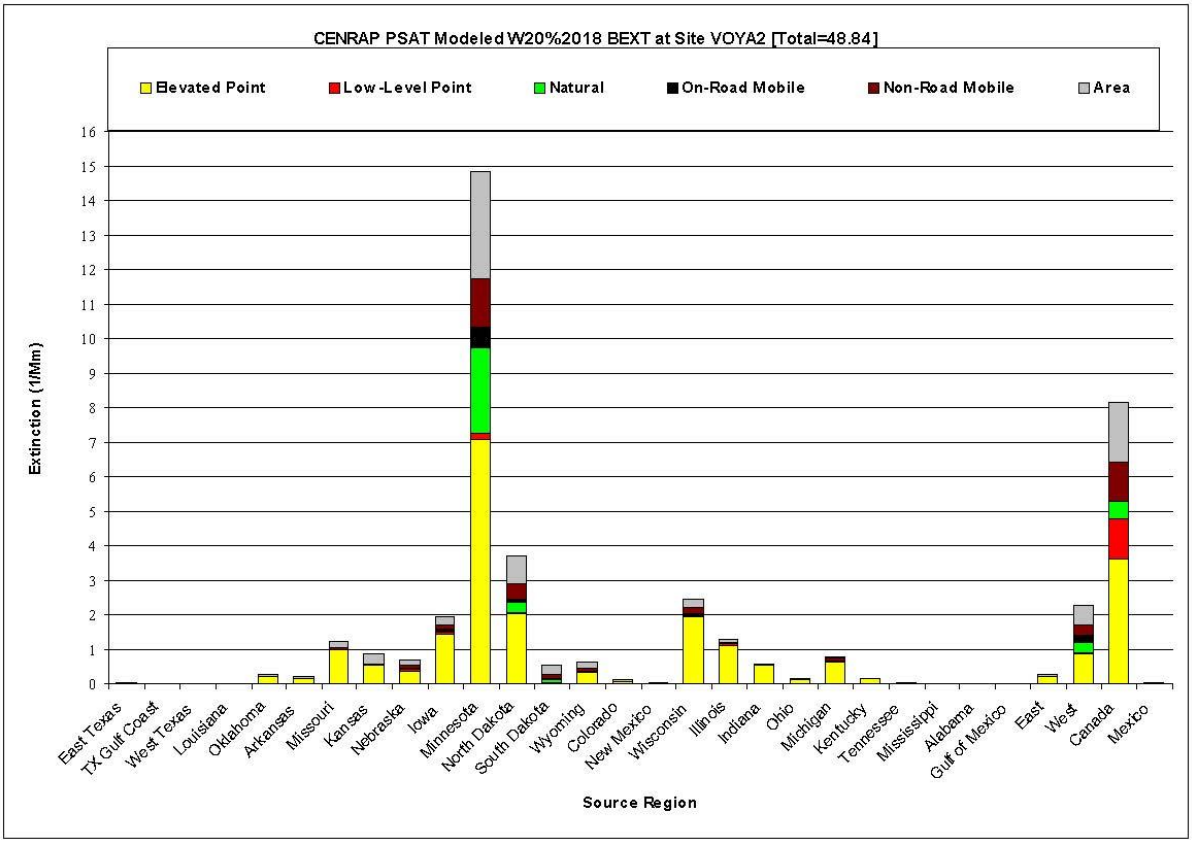

Figure A-7. CENRAP PSAT source region by source category contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Voyageurs (VOYA), Minnesota.

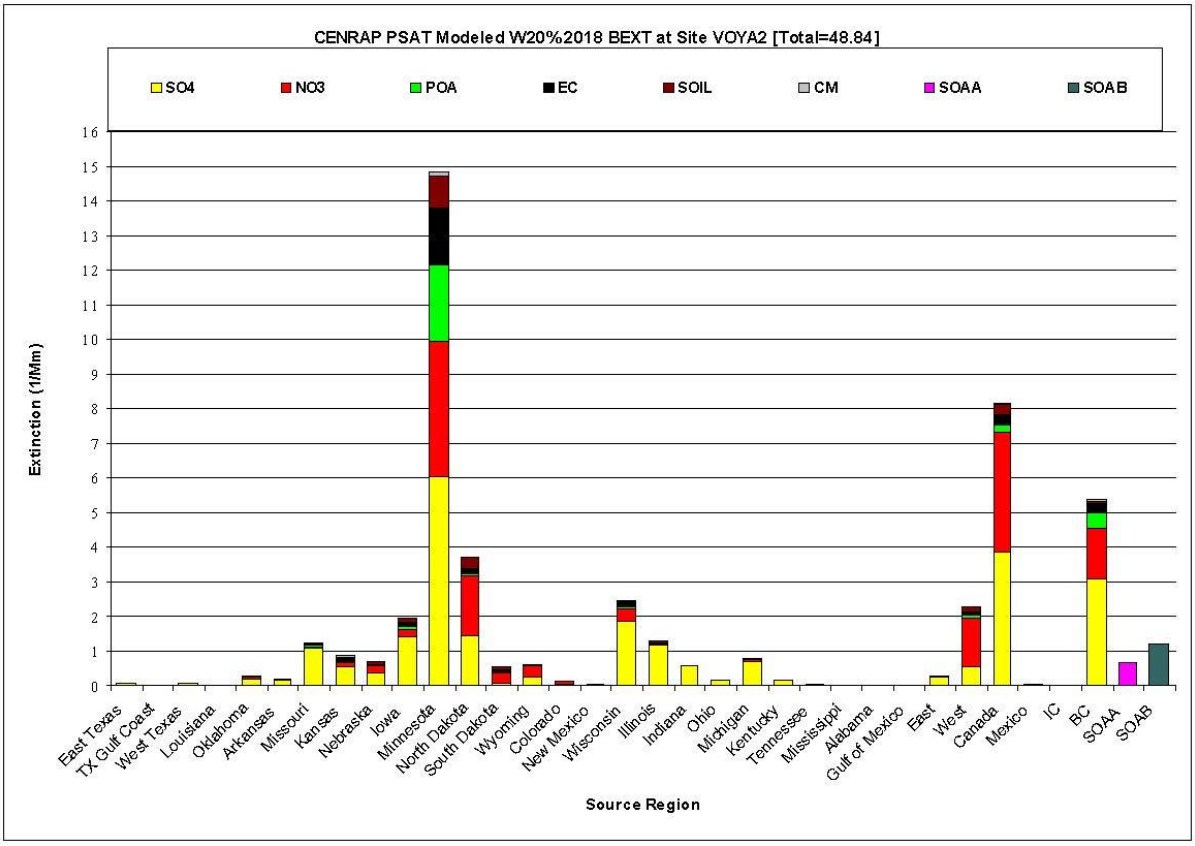

Figure A-8. CENRAP PSAT source region by pollutant contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Voyageurs (VOYA), Minnesota.

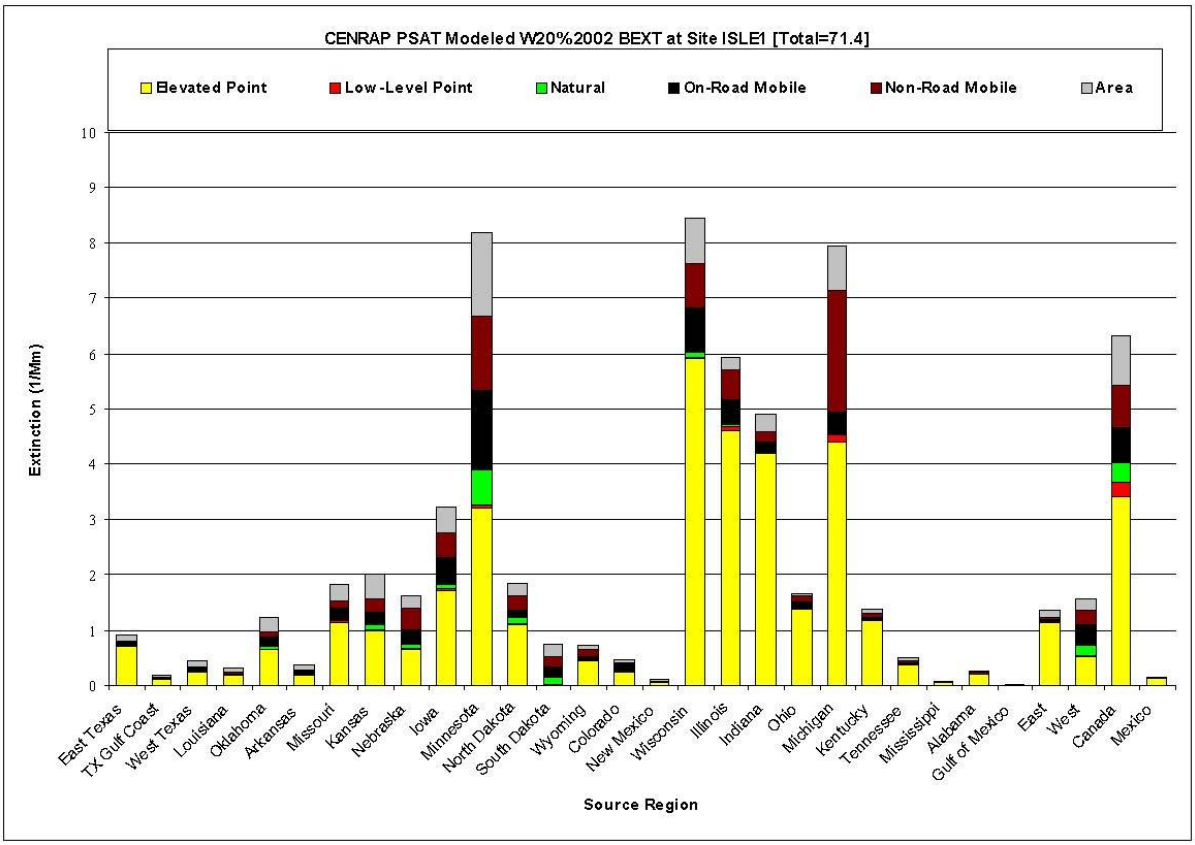

Figure A-9. CENRAP PSAT source region by source category contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Isle Royale (ISLE), Michigan.

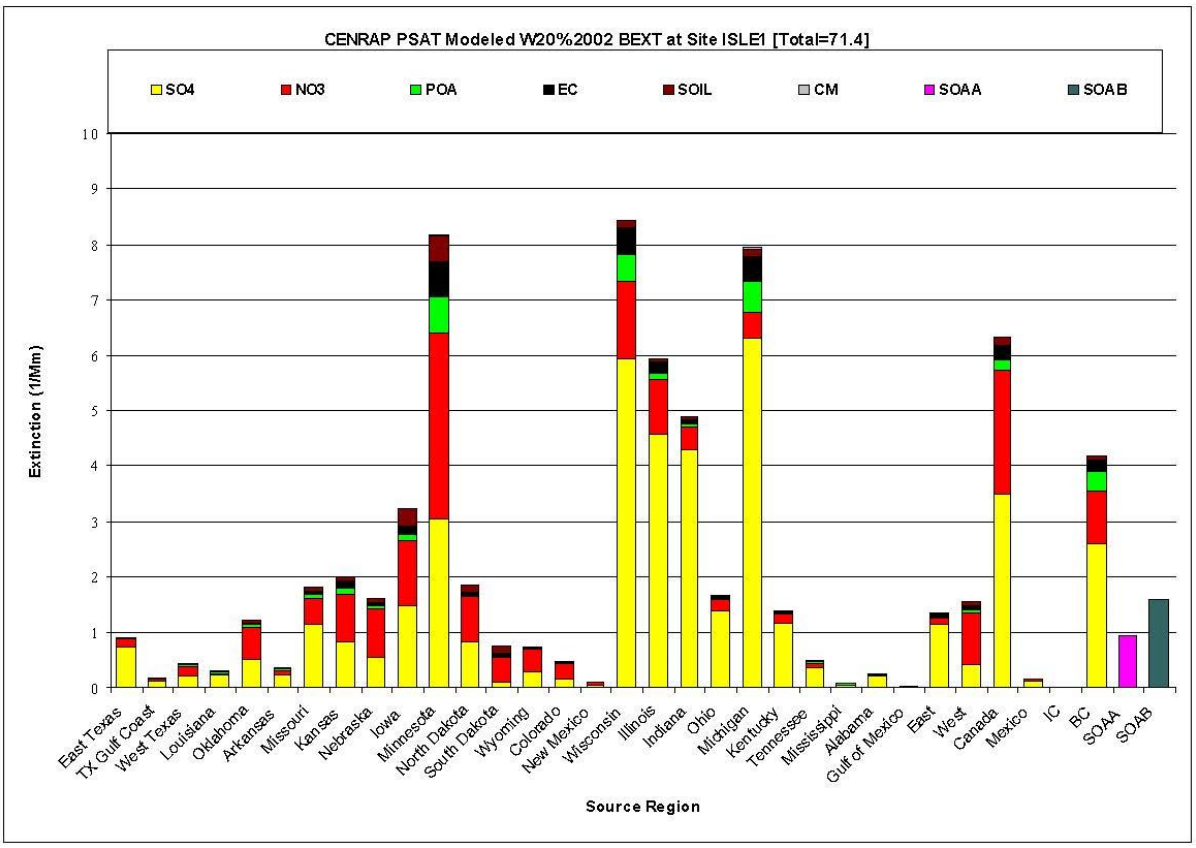

Figure A-10. CENRAP PSAT source region by pollutant contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Isle Royale (ISLE), Michigan.

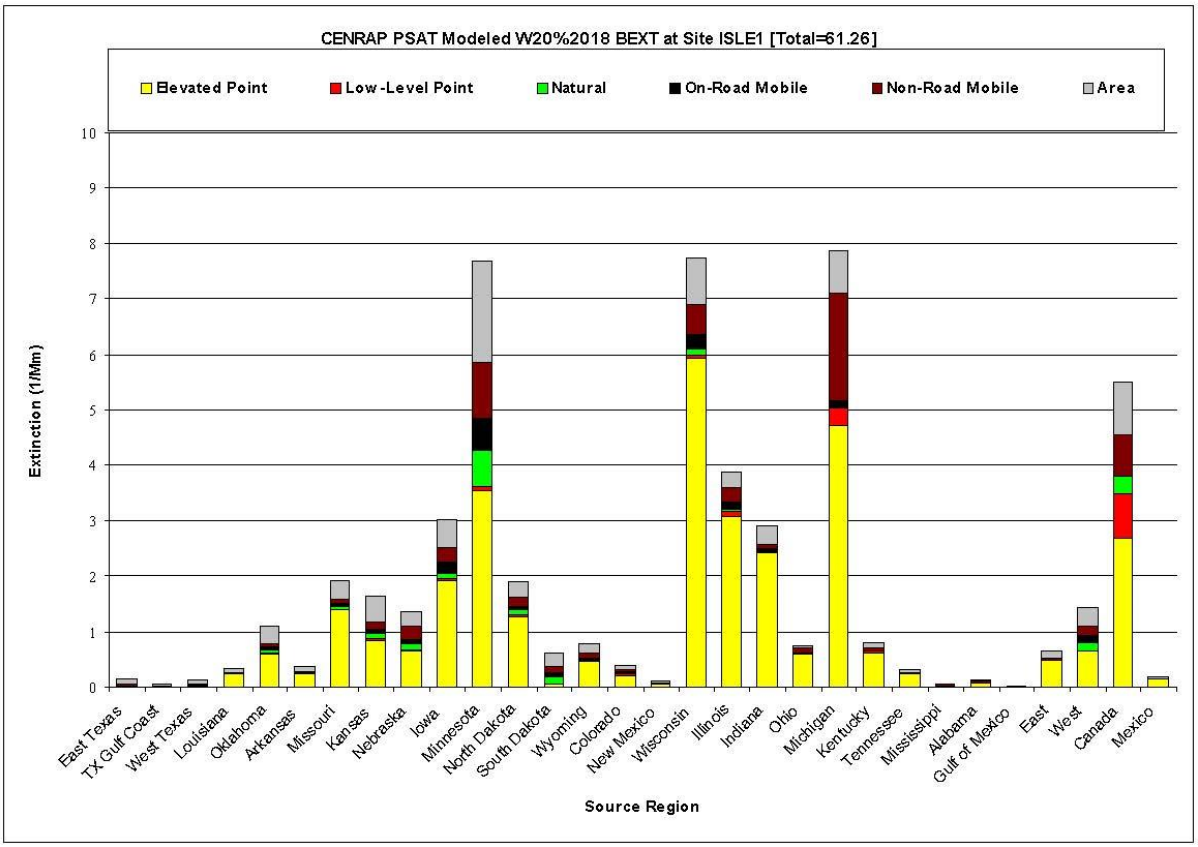

Figure A-11. CENRAP PSAT source region by source category contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Isle Royale (ISLE), Michigan.

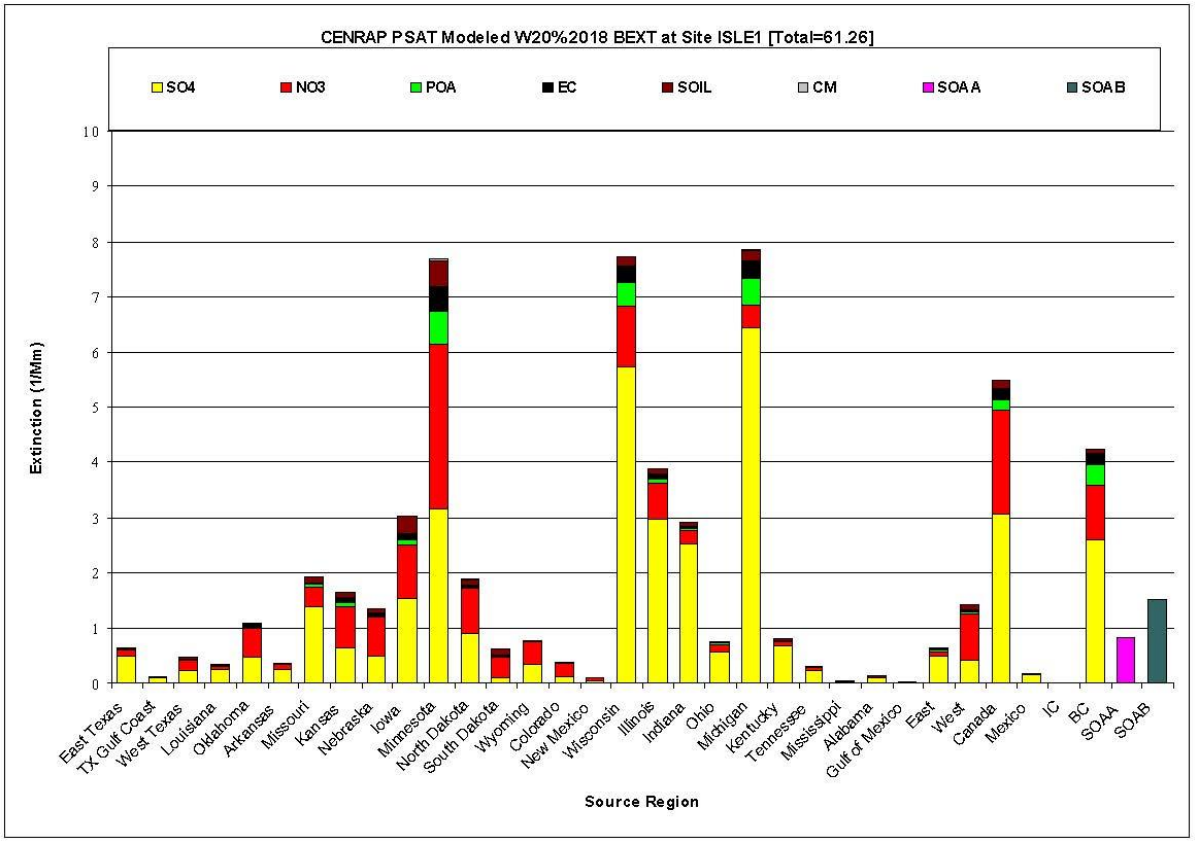

Figure A-12. CENRAP PSAT source region by pollutant contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Isle Royale (ISLE), Michigan.

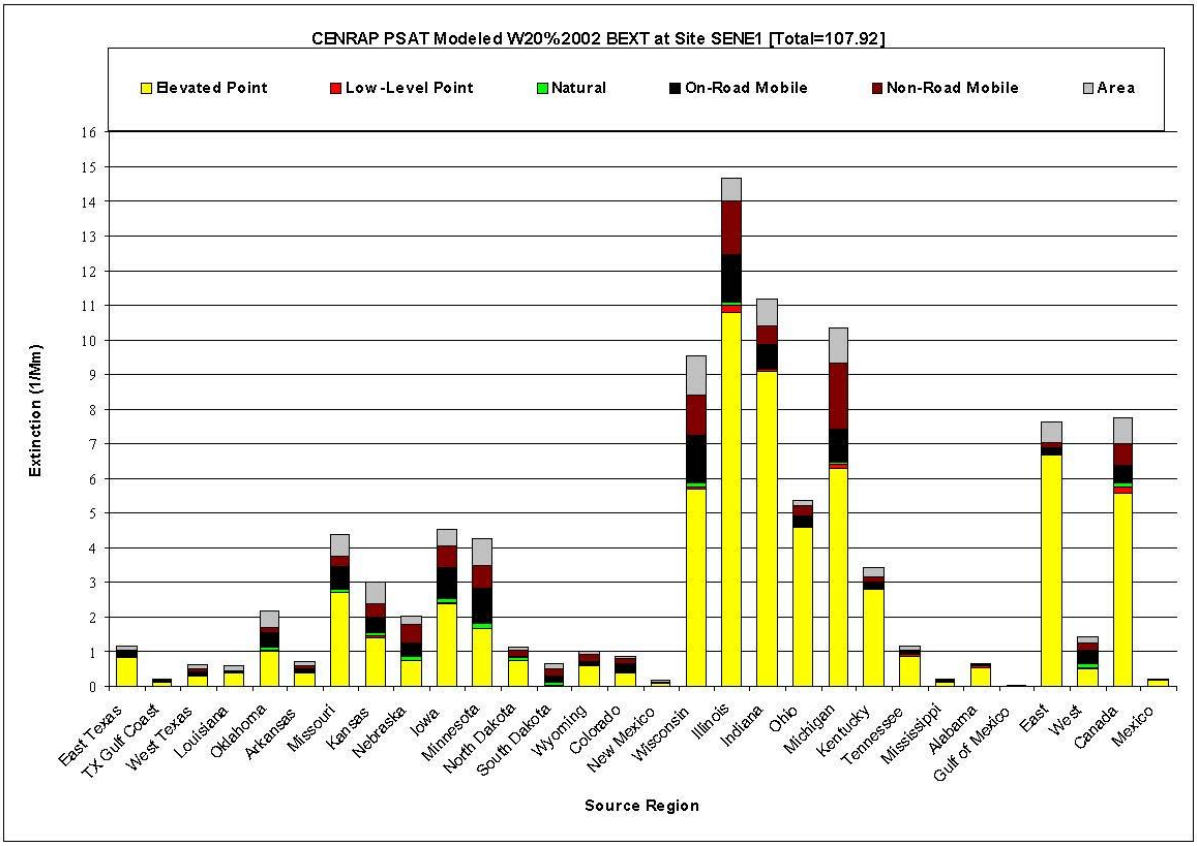

Figure A-13. CENRAP PSAT source region by source category contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Seney (SENE), Michigan.

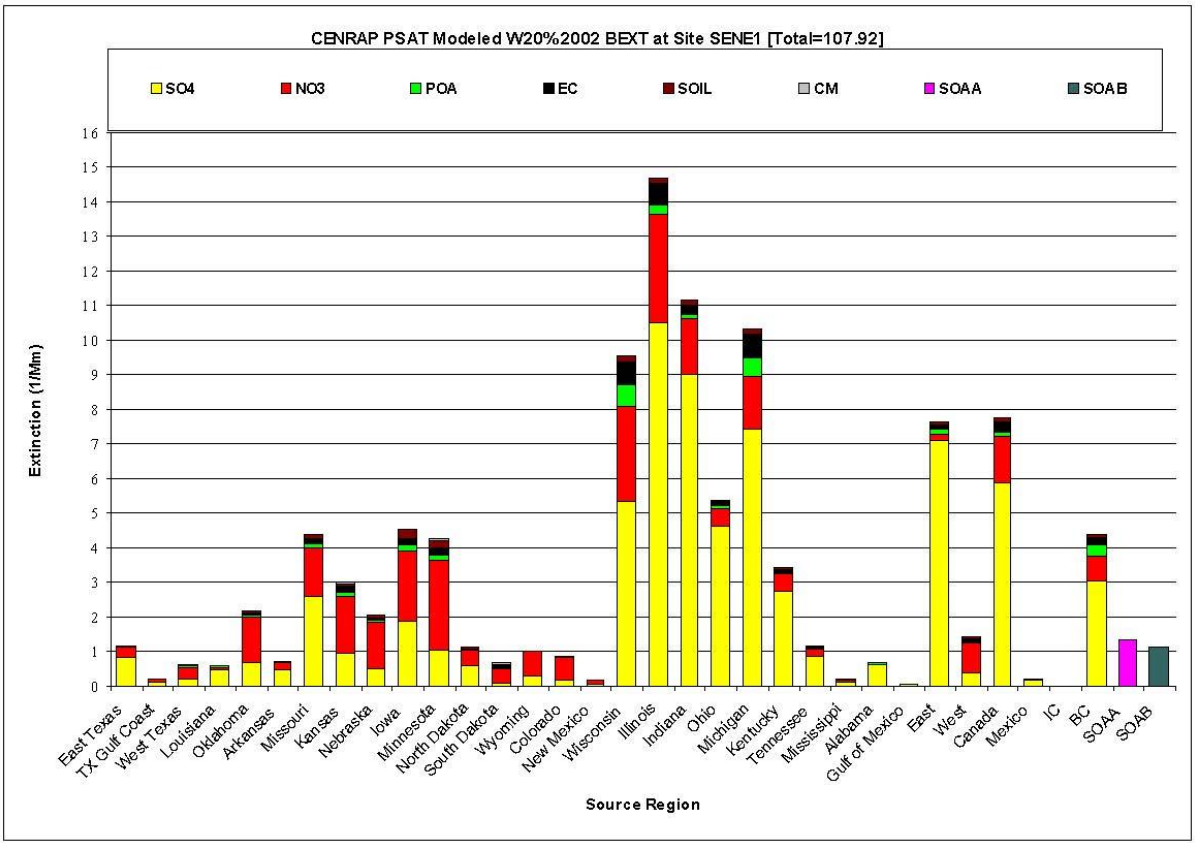

Figure A-14. CENRAP PSAT source region by pollutant contributions to the average 2002 extinction (Mm^{-1}) for the worst 20% visibility days at Seney (SENE), Michigan

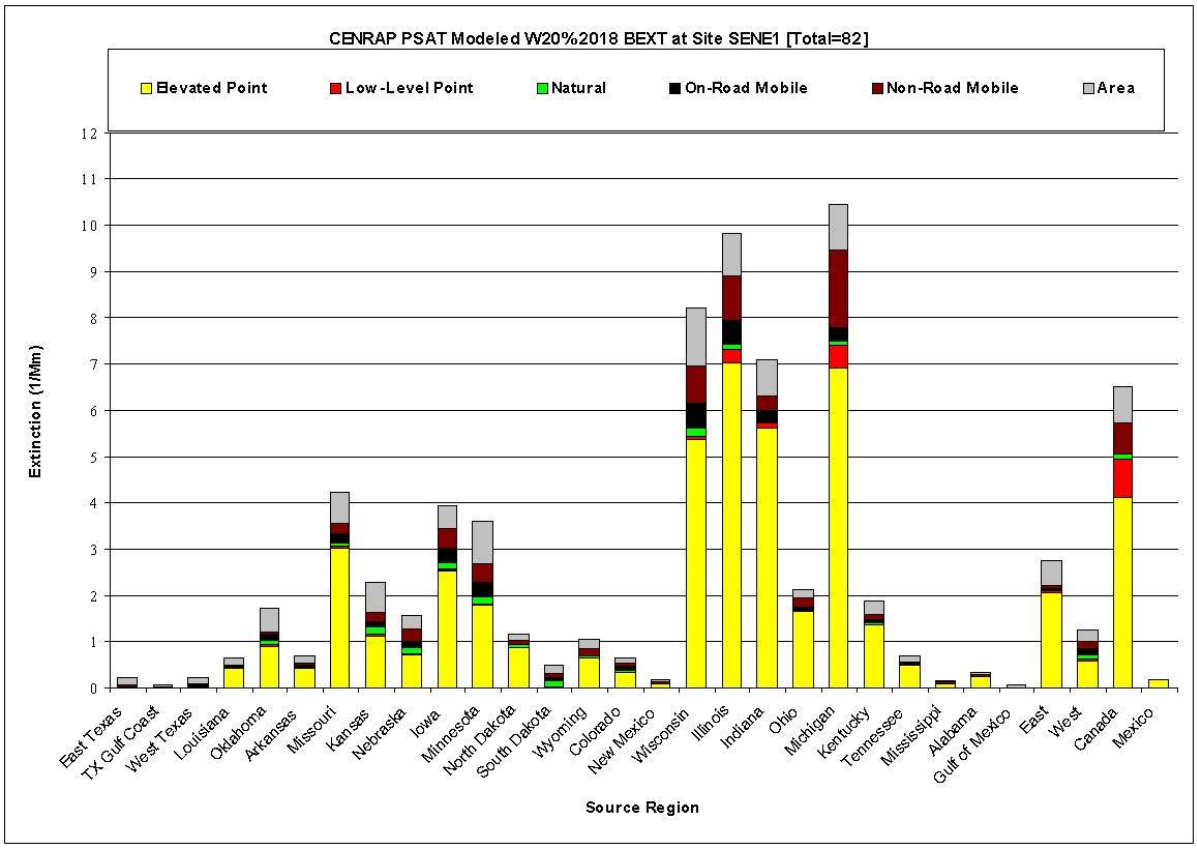

Figure A-15. CENRAP PSAT source region by source category contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Seney (SENE), Michigan.

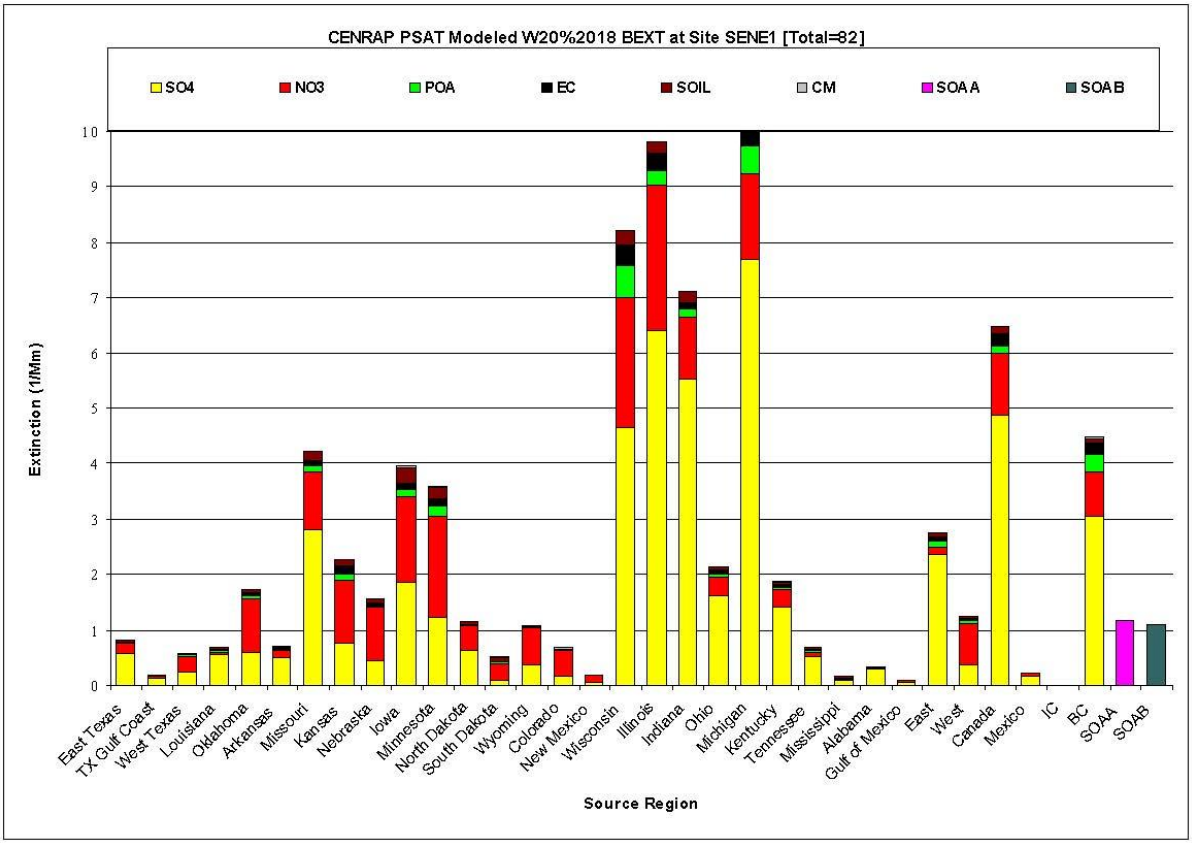

Figure A-16. CENRAP PSAT source region by pollutant contributions to the average 2018 extinction (Mm^{-1}) for the worst 20% visibility days at Seney (SENE), Michigan

Appendix B. MACT Review

Numerous Maximum Achievable Control Technology (MACT) standards have been promulgated pursuant to Section 112 of Title I of the Clean Air Act. MACT standards are designed to reduce emissions of air toxics, also known as hazardous air pollutants (HAPs), from stationary sources of air pollution. A significant percentage of the MACT standards yield VOC reductions since many HAPs are also VOCs. While VOC emissions were not specifically targeted for reduction in the initial regional haze SIP, NOx emissions reductions were expected from the 2004 Reciprocating Internal Combustion Engines (RICE) standards. PM reductions were also possible from a subset of the applicable standards.

CENRAP estimated emissions reductions from the MACT standards for source categories with a post- 2002 compliance data. MACT standards not achieving significant VOC emission reductions were excluded. A list of the MACT standards considered in development of the 2018 inventory for the initial regional haze SIP is provided in Table B-1. This table also provides the associated CFR subpart containing the regulations, the compliance date for existing sources, and the pollutants reduced in the 2018 inventory. Not all source categories listed in Table B-1 are found in Iowa, the list is based upon the data developed by E.H. Pechan and Associates.[25] It is likely that the MACT standards did not significantly impact any relationships between emission in Iowa and visibility impairment in a Class I area. Their review is provided only as a courtesy and for future reference.

Table B-1. Post-2002 MACT standards considered in the 2018 emissions inventory

MACT Standard - Source Category	CFR Subpart	Promulgation (Federal Register)	Compliance Date (existing sources)	Pollutants Affected
Asphalt (Roofing Manufacturing & Asphalt Processing)	LLLLL	4/29/2003	5/1/2006	VOC
Auto and Light Duty Trucks	IIII	4/26/2004	4/26/2007	VOC
Coke Ovens: Pushing, Quenching and Battery Stacks	CCCCC	4/14/2003	4/14/2006	VOC
Fabric Printing, Coating &Dyeing	OOOO	5/29/2003	5/29/2006	VOC
Friction Products Manufacturing	QQQQQ	10/18/2002	10/18/2005	VOC
Integrated Iron and Steel	FFFFF	5/20/2003	5/20/2006	VOC, PM
Large Appliances	NNNN	7/23/2002	7/23/2005	VOC
Leather Finishing Operations	TTTT	2/27/2002	2/27/2005	VOC
Lime Manufacturing	AAAAA	1/5/2004	1/5/2007	PM
Manufacturing Nutritional Yeast	CCCC	5/21/2001	5/21/2004	VOC
Metal Can (Surface Coating)	KKKK	11/13/2003	11/13/2006	VOC
Metal Coil (Surface Coating)	SSSS	6/10/2002	6/10/2005	VOC
Metal Furniture	RRRR	5/23/2003	5/23/2006	VOC
Misc. Coating Manufacturing	HHHHH	12/11/2003	12/11/2006	VOC
Misc. Metal Parts and Products (Surface Coating)	MMMM	1/2/2004	1/2/2007	VOC
Misc. Organic Chemical Production and Processes (MON)	FFFF	11/10/2003	11/10/2006	VOC
Paper and Other Web	JJJJ	12/4/2002	12/4/2005	VOC
Pesticide Active Ingredient Production	MMM	6/23/1999	12/23/2003	VOC
Petroleum Refineries	UUU	4/11/2002	4/11/2005	VOC

[25] Development of Growth and Control Inputs for CENRAP 2018 Emissions, Draft Technical Support Document. EH Pechan and Associates, Inc. Durham, North Carolina. Carolina Environmental Program, University of North Carolina, Chapel, Hill, North Carolina. 2005, May.

Plastic Parts	PPPP	4/19/2004	4/19/2007	VOC
Plywood and Composite Wood Products	DDDD	7/30/2004	10/1/2007	VOC
Polymers and Resins III	OOO	1/20/2000	1/20/2003	VOC
Reciprocating Internal Combustion Engines (RICE)	ZZZZ	6/15/2004	6/15/2007	VOC, NOx
Rubber Tire Manufacturing	XXXX	7/9/2002	7/11/2005	VOC
Secondary Aluminum Production	RRR	3/23/2000	3/24/2003	PM
Site Remediation	GGGGG	10/8/2003	10/8/2006	VOC
Solvent Extraction for Vegetable Oil Production	GGGG	4/12/2001	4/12/2004	VOC
Stationary Combustion Turbines	YYYY	3/5/2004	3/5/2007	VOC
Taconite Iron Ore Processing	RRRRR	10/30/2003	10/30/2006	PM
Wet Formed Fiberglass Mat Production	HHHH	4/11/2002	4/11/2005	VOC
Wood Building Products (Surface Coating)	QQQQ	5/28/2003	5/28/2006	VOC

2004 Industrial/Commercial/Institutional Boiler NESHAP

The original regional haze SIP indicated that the future year 2018 emissions inventory included emissions reductions associated with the industrial, commercial, and institutional (ICI) boiler MACT.[26] Upon further review it does not appear any such adjustments were actually incorporated. The vacature and remand of the ICI boiler MACT issued by the DC Circuit court of Appeals on July 30, 2007, would have called into question the accuracy of any previous attempts to quantify the effects of the ICI boiler MACT. On January 31, 2013, EPA published the final reconsideration amendments of the ICI boiler MACT. The compliance dates for the rule are January 31, 2016, for existing sources and January 31, 2013, or upon startup, whichever is later, for new sources. Additional review of the potential effects of the boiler MACT can better be assessed during the comprehensive regional haze SIP review due July 31, 2018.

[26] The ICI boiler MACT was published in the Federal Register September 13, 2004, affecting 40 CFR 63 subpart DDDDD.

Appendix C. Emissions Data Compilation

A meaningful comparison of the 2008 NEI version 2 (version dated April 10, 2012)[27] emission data with the 2002 and 2018 data requires the underlying data be similarly categorized. A review of the source categories used in the initial regional haze SIP is provided below. A detailed accounting of how the 2008 NEIv2 data was processed to ensure emission were consolidated using a classification system highly similar to 2002/2018 categories will follow.

Categories from the Initial Regional Haze SIP

Historically emissions were classified according to five basic source categories: area, offroad, onroad, point, and biogenic sources.[28] This basic classification scheme was expanded in the 2002 and 2018 regional haze emissions inventories developed for CENRAP to include specialized source categories for road dust, fugitive dust, ammonia, three distinct fire categories, and the separation of the point sector into emissions from electrical generating units (EGUs) and non-EGUs. For this five-year progress report the three fire categories used in the 2002/2018 inventories have been summed into a single fires category. This results in ten source categories: ammonia, area, fugitive dust, offroad, onroad, point EGU, point non-EGU, road dust, fires, and biogenics. A simple summary of these categories and the types of sources they included (in the 2002 and 2018 regional haze inventories) is provided in Table C-1.

Table C-1. Identification and description of the source categories used to classify the 2002 and 2018 emissions in the initial regional haze SIP.

Ammonia	Essentially an area source category that pertained only to NH3 emissions. Emissions sources considered included agricultural livestock waste, agricultural fertilizer application, landfills, wildlife (deer), domestic pets, and human perspiration and respiration. This is not an exhaustive list but includes the most significant sources. Agricultural livestock and fertilizer applications accounted for over 95% of the 2002 Ammonia category emissions.
Area	Included a wide variety of emissions types and was intended to include all emissions not otherwise represented by one of the other nine categories. Common examples of area sources include gas stations, solvent utilization, and residential wood combustion.
Fugitive Dust	Included only PM10 and PM2.5 fugitive emissions associated with mining, construction, crop production, and dust kicked up by hooves at beef feedlots (drylots).
Offroad	Generally included all nonroad mobile source activities, such as: airport; marine; rail (locomotive); residential (*e.g.* lawn care); agricultural equipment; construction and mining equipment (not associated with fugitive dust); and recreational equipment. This is not an exhaustive list.
Onroad	Included emissions resulting from rural and urban roadway traffic from cars, trucks, buses, motorcycles, etc.
Point EGU	Emissions from large facilities producing electricity for sale. For example, this category commonly included facilities that have units subject to the Acid Rain Program or the Clean Air Interstate Rule (CAIR).
Point non-EGU	Emissions from large industrial activities not associated with electricity generation.
Road Dust	Included only PM10 and PM2.5 emissions from paved and unpaved roads.
Fires	Included emissions from prescribed fires, agricultural field burning, and wildfires. (Larger prescribed fires were categorized as 'Point Fire' in the 2002/2018 inventories, with the 'Area Fire' category consisting of smaller prescribed fires and agricultural field burning. Wildfire and agricultural burning are not common in Iowa.)
Biogenic	Included NOx and VOC emissions produced by the BEIS3 biogenic emissions model.

2008 NEI Data Categories

The classification system used by EPA in the 2008 NEI has changed in some respects compared to the allocation methods

[27] This inventory will be referred to simply as the 2008 NEIv2. It was the most recent comprehensive NEI dataset available. All 2008 NEI data used in this document is from this version.

[28] The area source category is also referred to as the nonpoint source category and the offroad source category referred to as the as nonroad source category. For purposes of this document the respective terms are considered to be interchangeable.

used in initial regional haze SIP.[29] For example, certain emissions from aircraft, locomotives, and commercial marine vessels that were considered offroad emissions in the initial regional haze SIP are associated with point sources or nonpoint sources in the 2008 NEI.[30]

To help ensure the 2008 NEIv2 data were consolidated into categories comparable to the 2002 inventory, the 2008 NEIv2 data were processed using the full detail SCC (source classification code) Data Files provided by EPA for the Point, OnRoad, NonRoad (offroad), and NonPoint (area) data categories.

The Iowa specific 2008 emissions were first extracted from the SCC Data Files and the resultant data reclassified where necessary to align the 2002/2018 and 2008 source categories as closely as possible. For example, aircraft and rail emissions were extracted from the Point SCC Data File and reclassified as offroad sources. Commercial marine emissions in the 2008 NonPoint SCC Data File were extracted and reclassified as offroad sources. The fugitive dust category was defined by including emissions from agricultural activities, construction dust, and mining emissions from the NonPoint SCC Data File. A lookup table is provided below which provides additional detail regarding how the 2008 NEIv2 data were cataloged for comparison to the ten source categories utilized in the initial regional haze SIP.

A minor complicating factor arises between the comparison of the 2002/2018 and 2008 ammonia category data. The 2002/2018 and 2008 inventories both include emissions from livestock waste and fertilizer applications, but only the 2002/2018 inventories include other source types such as waste disposal, miscellaneous, and biogenics. However, these exclusions are not expected to significantly compromise the legitimacy of the comparison as livestock waste and fertilizer application sources accounted for over 95% of the total emissions in the 2002 ammonia category and similar conditions would be expected of 2008.

Changes and transitions in the methods, datasets, and models used to estimate emissions are expected to create additional, but unavoidable, discontinuities between the 2002/2018 and 2008 NEI data. For example, Chapter 4 and Chapter 5 discuss updates in the onroad and NH3 emissions methodologies, respectively. Such differences may moderate the comparability of some source categories but are not known to affect any substantive conclusions in this document. Significant inter-annual discrepancies in the point source categories, which are important components of this five year review, are not expected.

2008 Emissions Classifications Lookup Table

The first column in Table C-2 identifies the 2008 NIEv2 SCC Data File (Point, NonPoint, OnRoad, or Nonroad)[31] from which the Iowa data were extracted, with the following caveats:

- An 'AirRail' identifier was created to denote aircraft and locomotive emissions extracted from the Point SCC Data File.
- The 'Biogenics' identifier reflects emissions data obtained from the "Biogenics - Vegetation and Soils" Emissions Inventory System (EIS) Sector summary file. (Biogenic emissions were not included in any SCC Data File.)
- The 'Fire' identifier represents prescribed fire emissions from the "Fires - Prescribed Fires" EIS Sector summary file in addition to agricultural burning emissions contained in the NonPoint SCC Data File.

The second column in Table C-2 groups emissions from the SCC Data Files by EPA's EIS Sectors.[32]

---

[29] EPA's descriptions of the 2008 NEI source categories are included at the end of this appendix.

[30] Aircraft engine emissions occurring during landing and takeoff operations and the ground support equipment and auxiliary power units associated with the aircraft are considered point sources associated with individual airports in the 2008 NEI. Emissions from locomotives that occur at rail yards are also included as point sources. Commercial marine vessel emissions are considered nonpoint sources.

[31] The four SCC Data Files were large (potentially many hundreds of megabytes) national scale datasets, obtained from EPA's website: http://www.epa.gov/ttnchie1/net/2008inventory.html.

[32] For the 2008 NEIv2 EPA developed convenient summaries (*e.g.* pollutant emissions summed by state) using 60 different EIS Sector Summary files. Unfortunately, the EIS Sector summaries could not be distributed in a manner which would cleanly recreate the ten categories used in the initial regional haze SIP. For example, EPA's "Industrial Processes - Mining" EIS Sector summary consolidated emissions that under the 2002/2018 classifications would consist of both fugitive dust and point source (non-EGU) emissions. While such discrepancies may not always be significant, such errors were avoided by instead processing the emissions data from the four

The 2008 NEIv2 emissions estimates are reported in columns 3 through 8 of Table C-2, in tons per year. The PM25-PRI and PM10-PRI data represent the sum of filterable and condensable (if any) emission.

The last column in Table C-2 identifies which category (of the ten source categories used in the initial regional haze SIP) was selected to classify those 2008 emissions. Note, the classification system used to process the 2008 NEIv2 data could not recreate the categories used in the initial regional haze SIP perfectly (most notable for the Ammonia category) but other classification discrepancies are not known to be significant.

Additional information about the ten categories as they pertain to the 2008 NEIv2 data follows:

- The **Ammonia** category includes only NH3 emissions from agricultural livestock waste and agricultural fertilizer applications (nonpoint emissions). The 2002/2018 inventories included additional sectors (examples provided in Table C-1) but these additional sources either could not be segregated from the 2008 SCC Data Files in an efficient manner or were not present (such as emissions associated with human respiration and perspiration) in the 2008 NEIv2 data. These exclusions do not compromise the comparison as they are expected to contribute only a small percentage (approximately 5% or less) of the total ammonia emissions in this category.
- The **Area** category includes all other emissions from the NonPoint SCC Data File not otherwise classified.
- The **Fugitive Dust** category includes agricultural crop and livestock dust, construction dust, and nonpoint mining dust. Transport factors have not been applied to these emissions.
- The **Offroad** category includes aircraft and locomotive emissions from the Point SCC Data File, commercial marine and locomotive emissions from the NonPoint SCC Data File, and all emissions in the NonRoad SCC Data File.
- The **Onroad** category includes all emissions from the OnRoad SCC Data File.
- The **Point-EGU** category includes all emissions from the Point SCC Data File that are categorized with one of the following EIS Sectors: Fuel Comb - Electric Generation - Biomass, Fuel Comb - Electric Generation - Coal, Fuel Comb - Electric Generation - Natural Gas, Fuel Comb - Electric Generation - Oil, Fuel Comb - Electric Generation - Other.
- The **Point non-EGU** category includes all other industrial point source emissions.
- The **Road Dust** category includes paved and unpaved road dust from the NonPoint SCC Data File.
- The **Fires** category includes agricultural field burning from the NonPoint SCC Data File, and prescribed fire from the EIS Sector file: “Fires- Prescribed fires” (classified as an Event category under the 2008 nomenclature). As a reasonable assumption, no wildfire emissions were estimated in Iowa.
- The **Biogenics** category includes emissions obtained from the EIS-Sector File: “Biogenics - Vegetation and soil”

SCC Data Files. Additional information regarding the data and processing steps follows.

Every emissions record in each of the four SCC Data Files contains a source classification code. For the 2008 NEIv2 EPA developed a crosswalk file (ftp://ftp.epa.gov/EmisInventory/2008v2/doc/scc_eissector_xwalk_2008neiv2.xlsx) that maps every source classification code to one of 60 EIS sectors. By first processing the SCC Data Files separately (and then reviewing the descriptions associated with source classification codes where uncertainty remained regarding the appropriate classification) it was possible to utilize the EIS Sectors classifications while still ensuring emissions could be appropriately assigned into one of the ten categories used in the initial regional haze SIP. For example, this process helped to ensure mining related emissions from the NonPoint SCC Data File could be appropriately identified as “Fugitive Dust” emissions and kept separate from mining emissions from the Point SCC Data File which needed to be categorized as “Point non-EGU” emissions. This explains why an EIS Sector, e.g. “Industrial Processes-Mining,” may be listed more than once in Table C-2.

Table C-2. Lookup table defining how emissions from the 2008 NEIv2 SCC Data Files were categorized for comparison with the 2002/2018 emissions data from the initial regional haze SIP. Emissions data also provided (tons).

2008 NEIv2 SCC Data File	2008 NEIv2 EIS Sector	VOC	NOX	PM25-PRI	PM10-PRI	NH3	SO2	Categorization
NonPoint	Agriculture - Crops & Livestock Dust			66,996	334,982			Fugitive Dust
NonPoint	Agriculture - Fertilizer Application					89,461		Ammonia
NonPoint	Agriculture - Livestock Waste					206,087		Ammonia
Biogenics	Biogenics - Vegetation and soil	289,743	35,620					Biogenic
Point	Bulk Gasoline Terminals	631	5	0	0	-	-	Point Non-EGU
NonPoint	Commercial Cooking	109	-	769	770		-	Area
NonPoint	Dust - Construction Dust			2,523	25,230			Fugitive Dust
NonPoint	Dust - Paved Road Dust			4,507	18,027			Road Dust
NonPoint	Dust - Unpaved Road Dust			12,847	129,564			Road Dust
NonPoint	Fires - Agricultural Field Burning	951	475	1,562	1,562		54	Fires
Fire	Fires - Prescribed Fires	3,410	283	1,303	1,538	237	134	Fires
Point	Fuel Comb - Comm/Institutional - Biomass	-	-	-	-		-	Point Non-EGU
Point	Fuel Comb - Comm/Institutional - Coal	27	817	56	85	30	4,126	Point Non-EGU
Point	Fuel Comb - Comm/Institutional - Natural Gas	24	200	19	21	6	2	Point Non-EGU
Point	Fuel Comb - Comm/Institutional - Oil	3	46	5	5	0	99	Point Non-EGU
Point	Fuel Comb - Comm/Institutional - Other	0	5	1	2	0	6	Point Non-EGU
Point	Fuel Comb - Electric Generation - Biomass	-	-	1	1	-	-	Point EGU
Point	Fuel Comb - Electric Generation - Coal	659	50,795	5,913	8,459	7	117,622	Point EGU
Point	Fuel Comb - Electric Generation - Natural Gas	17	328	67	77	19	13	Point EGU
Point	Fuel Comb - Electric Generation - Oil	8	205	12	18	5	15	Point EGU
Point	Fuel Comb - Electric Generation - Other	2	20	14	31	0	41	Point EGU
Point	Fuel Comb - Industrial Boilers, ICEs - Biomass	6	134	31	64	-	11	Point Non-EGU
Point	Fuel Comb - Industrial Boilers, ICEs - Coal	63	7,891	540	1,216	130	30,805	Point Non-EGU
Point	Fuel Comb - Industrial Boilers, ICEs - Natural Gas	622	15,984	319	323	52	19	Point Non-EGU
Point	Fuel Comb - Industrial Boilers, ICEs - Oil	26	509	19	21	4	121	Point Non-EGU
Point	Fuel Comb - Industrial Boilers, ICEs - Other	27	301	20	24	3	72	Point Non-EGU
NonPoint	Fuel Comb - Residential - Natural Gas	170	2,907	13	16	618	19	Area
NonPoint	Fuel Comb - Residential - Oil	4	97	11	13	5	229	Area
NonPoint	Fuel Comb - Residential - Other	167	1,273	50	80	28	1,750	Area

NonPoint	Fuel Comb - Residential - Wood	4,643	416	3,933	3,936	229	102	Area
NonPoint	Gas Stations	13,952						Area
Point	Gas Stations[33]	4	-	-	-	-	-	Point Non-EGU
Point	Industrial Processes - Cement Manuf	250	5,293	399	633	37	5,156	Point Non-EGU
Point	Industrial Processes - Chemical Manuf	2,117	1,370	190	213	1,129	483	Point Non-EGU
Point	Industrial Processes - Ferrous Metals	535	695	509	654	8	490	Point Non-EGU
NonPoint	Industrial Processes - Mining			718	5,748			Fugitive Dust
Point	Industrial Processes - Mining	-	-	816	1,243	-	-	Point Non-EGU
Point	Industrial Processes - NEC	10,208	2,264	1,567	2,623	613	1,754	Point Non-EGU
Point	Industrial Processes - Non-ferrous Metals	318	49	232	239	3	1	Point Non-EGU
Point	Industrial Processes - Oil & Gas Production	62	0	0	0	-	-	Point Non-EGU
Point	Industrial Processes - Petroleum Refineries	1	1	21	21	-	-	Point Non-EGU
Point	Industrial Processes - Pulp & Paper	151	3	100	110	25	-	Point Non-EGU
NonPoint	Industrial Processes - Storage and Transfer	800						Area
Point	Industrial Processes - Storage and Transfer	1,500	26	330	559	1,311	5	Point Non-EGU
NonPoint	Miscellaneous Non-Industrial NEC	2,597	10	1	1		2	Area
Point	Miscellaneous Non-Industrial NEC	-	-	0	0	-	-	Point Non-EGU
AirRail	Mobile - Aircraft	120	272	13	59		37	Offroad
NonPoint	Mobile - Commercial Marine Vessels	46	2,111	73	75	2	125	Offroad
AirRail	Mobile - Locomotives	138	2,140	58	60	1	18	Offroad
NonPoint	Mobile - Locomotives	1,211	24,167	748	814	11	248	Offroad
AirRail	Mobile - Non-Road Equipment - Diesel[34]	10	28	1	1		1	Offroad
NonRoad	Mobile - Non-Road Equipment - Diesel	4,850	48,455	4,294	4,427	38	1,016	Offroad
AirRail	Mobile - Non-Road Equipment - Gasoline[34]	2	6	0	0		0	Offroad
NonRoad	Mobile - Non-Road Equipment - Gasoline	31,753	5,904	705	767	14	29	Offroad
AirRail	Mobile - Non-Road Equipment - Other[35]	2	9	2	2		2	Offroad
NonRoad	Mobile - Non-Road Equipment - Other	706	2,738	24	24		5	Offroad
OnRoad	Mobile - On-Road Diesel Heavy Duty Vehicles	2,822	41,364	2,216	2,382	87	962	Onroad
OnRoad	Mobile - On-Road Diesel Light Duty Vehicles	116	661	57	61	4	23	Onroad

[33] These emissions are associated with three Magellan Pipeline Co, LLC facilities (located in Des Moines, Sioux City, and Iowa City), not consumer gas stations.
[34] Airport/Aircraft ground support activities, extracted from the Point SCC Data File.
[35] Aircraft auxiliary power units, extracted from the Point SCC Data File.

OnRoad	Mobile - On-Road Gasoline Heavy Duty Vehicles	1,822	2,821	66	85	47	12	Onroad
OnRoad	Mobile - On-Road Gasoline Light Duty Vehicles	36,533	45,784	1,327	1,706	1,377	233	Onroad
NonPoint	Solvent - Consumer & Commercial Solvent Use	39,286						Area
Point	Solvent - Degreasing	55	-	1	1	-	-	Point Non-EGU
Point	Solvent - Dry Cleaning[36]	82	-	15	15	-	-	Point Non-EGU
Point	Solvent - Graphic Arts	154	2	0	0	0	0	Point Non-EGU
NonPoint	Solvent - Industrial Surface Coating & Solvent Use	1,262						Area
Point	Solvent - Industrial Surface Coating & Solvent Use	4,539	50	108	130	1	1	Point Non-EGU
NonPoint	Solvent - Non-Industrial Surface Coating	4,534						Area
NonPoint	Waste Disposal	875	460	2,189	2,473	11	54	Area
Point	Waste Disposal	76	288	62	171	35	17	Point Non-EGU
TOTAL[37]		464,798	305,282	118,371	551,358	301,676	165,913	

Consolidation of the 2002, 2008, and 2018 emissions data

Table C-3 provides a consolidated view of the 2002 base year, 2008 NEIv2 and projected 2018 emissions data. Note, the 2018 SO2 Point EGU emissions reflect the 'Modified' value listed in Table 7.2 in the initial regional haze SIP. The 'subtotal' category represents the sum of all source categories except the biogenic (vegetation and soil emissions) source category.

Table C-3. Consolidation of the 2002 base year inventory and the 2018 projected inventory from the initial regional haze SIP, and the 2008 NEIv2 emissions data.

Category	VOC			NOx			PM2.5			PM10			NH3			SO2		
	2002	2008	2018	2002	2008	2018	2002	2008	2018	2002	2008	2018	2002	2008	2018	2002	2008	2018
Ammonia	0	0	0	0	0	0	0	0	0	0	0	0	258,915	295,549	302,012	0	0	0
Area	106,712	68,399	127,849	6,782	5,163	7,476	11,540	6,967	10,677	12,182	7,288	11,510	6,560	892	13,304	3,184	2,155	3,224
Fugitive Dust	0	0	0	0	0	0	38,666	70,238	40,608	193,331	365,960	203,044	0	0	0	0	0	0
Offroad	63,694	38,837	37,143	92,595	85,831	60,210	8,904	5,918	5,582	9,707	6,228	6,088	79	65	101	9,037	1,481	220
Onroad	87,392	41,293	36,404	120,621	90,630	33,975	1,747	3,666	708	2,373	4,234	708	3,064	1,515	4,225	3,200	1,229	400
Point EGU	1,075	686	1,802	81,761	51,347	65,629	4,527	6,007	9,578	9,424	8,586	11,232	0	31	713	135,833	117,692	151,354
Point Non-EGU	41,184	21,480	56,714	35,812	35,933	40,964	7,651	5,357	10,151	17,495	8,372	21,737	3,317	3,387	5,763	51,836	43,166	42,862
Road Dust	0	0	0	0	0	0	19,525	17,354	17,712	127,882	147,591	114,889	0	0	0	0	0	0
Fires	1,670	4,361	1,672	200	758	200	5,493	2,865	5,495	5,817	3,099	5,819	48	237	49	203	189	204
Subtotal	301,727	175,055	261,584	337,771	269,662	208,454	98,053	118,371	100,511	378,211	551,358	375,027	271,983	301,676	326,167	203,293	165,913	198,264
Biogenic	408,291	289,743	408,291	25,732	35,620	25,732												

[36] These point source emissions are associated with the facility "Industrial Laminates/Norplex, Inc.," which is not a consumer dry cleaner.

[37] Note, due to rounding the sum of the numbers in this table may not equal the totals shown.

EPA's Descriptions of the 2008 NEI Source Categories

EPA's descriptions of the Point, NonPoint, OnRoad, and NonRoad source categories used in the 2008 NEI are provided below (from http://www.epa.gov/ttnchie1/net/2008inventory.html). As discussed above, where EPA's 2008 NEI source category assignments differ from those used for the 2002/2018 inventories in the initial regional haze SIP, the 2008 NEI data were re-classified to maximize consistency.

"The **NEI Point** data category contains emissions estimates for sources that are individually inventoried and usually located at a fixed, stationary location, although portable sources such as some asphalt or rock crushing operations are also included. Point sources include large industrial facilities and electric power plants, but also increasingly include many smaller industrial and commercial facilities, such as dry cleaners and gas stations, which had traditionally been included in nonpoint sources. The choice of whether these smaller sources are estimated individually and included as point sources or inventoried as a nonpoint source County or Tribal area aggregate is determined by the separate State, Local, or Tribal air agency." (Note, smaller source emissions are inventoried in the nonpoint source category in Iowa.)

"The **NEI NonPoint** data category contains emissions estimates for sources which individually are too small in magnitude or too numerous to inventory as individual point sources, and which can often be estimated more accurately as a single aggregate source for a County or Tribal area. Examples are residential heating and consumer solvent use.

The **NEI OnRoad and NonRoad** data categories contain mobile sources which are estimated for the 2008 NEI v2 via the MOVES and NONROAD models, respectively. NONROAD was run within the National Mobile Inventory Model (NMIM). Note that emissions data for aircraft, locomotives, and commercial marine vessels are NOT included in the NonRoad data category starting with the 2008 NEI. Aircraft engine emissions occurring during Landing and Takeoff operations and the Ground Support Equipment and Auxiliary Power Units associated with the aircraft are now included in the point data category at individual airports in the 2008 NEI. Emissions from locomotives that occur at rail yards are also included in the point data category. In-flight aircraft emissions, locomotive emissions outside of the rail yards, and commercial marine vessel emissions (both underway and port emissions) are included in the nonpoint data category.

The **Events** data category includes wildfires, wild land fire use and prescribed burns. Wild land fire use has been included in the "Fires - Wildfires" sector. Emissions for these are presented as county totals on this website."

Appendix D. FLM and Public Comments

The Federal Land Managers (FLMs) were provided a copy of the draft SIP on April 4, 2013, 69 days before the public hearing. Notices of the public comment period and public hearing were published in the Des Moines Register and posted on the State of Iowa's Public Meeting Calendar on May 9, 2013. A copy of the printed public notice is provided at the end of this appendix. The public hearing was held June 11, 2013. Comments received from the FLMs were available during the public hearing. No comments were received at the public hearing. Federal Land Manager comments were received from the USDA Forest service, and jointly from the National Park Service and U.S. Fish and Wildlife Service. Two additional comment letters were received before the public comment period closed on June 12, 2013. A summary of the comments and the Department's responses is provided below.

Comments from the USDA Forest Service

FS-1) Comment: Iowa did not incorporate the vast majority of the Forest Service comments when the initial Iowa regional haze SIP was finalized, and that many of their concerns were echoed by the National Park Service and Environmental Protection Agency. In the technical support documents, the Forest Service pointed out that emission controls were shown to be effective on a cost per ton basis, but these comments were not incorporated as Iowa determined there would be minimal visibility impact.

If Iowa, as the third largest contributor state, does not require controls because of minimal visibility impact, the burden of all the emission reductions to achieve the national visibility goal will fall primarily to the states containing Class I areas. The Forest Service encouraged the state to revisit their comments on Iowa's initial regional haze SIP Iowa SIP because they are as applicable today as they were in 2007

DNR Response: In the initial regional haze SIP submittal the Department appropriately responded to all comments

provided by the Forest Service and all other public and FLM comments. As was discussed in the initial haze SIP, considering costs only on a per ton basis ignores the visibility impairment component. To achieve the same level of visibility improvement, sources farther from a class I area would generally require more reductions than nearby sources. This can significantly elevate the costs of visibility improvement to remote sources, especially if their contributions are low. The initial regional haze SIP established Iowa's contribution to the northern class I areas as only 4-5% of the total modeled visibility impairment, a small percentage compared to the contributions from Minnesota. Significant shifts in the relative state-to-state contributions to visibility impairment have not been identified. Changes in the relative state-to-state contributions to visibility impairment are expected to be evaluated in the next comprehensive SIP review due July 31, 2018. No new information is provided which demonstrates controls are available for sources in Iowa which would be cost effective in terms of visibility improvement. The Department believes the original response to comments and the existing emissions reductions that have occurred since 2002 are sufficient to support existing conclusions and to meet the applicable obligations of the five year report.

FS-2) Comment: The Forest Service acknowledges that the 5-year report shows total emissions of NOx and SO2 from all Iowa sources in 2008 declined from the base year (2002). They also note non-EGU NOx point source emissions increased over the same period. In comparison to 2018 projections, the 2008 state emissions are lower for SO2 but over 60,000 tons higher for NOx.

The Forest Service believes more emission reductions in Iowa are appropriate and feasible, and that multiple commenters noted the technical information available in 2007 showed that further emission reductions in NOx and SO2 were cost effective for both EGUs and non-EGUs. The Forest Service provided the following related questions and examples:

- The Forest Service would like to know the current level of emission controls in place at the Holcim facility. The Forest Service believes Holcim should have been subject to a best available retrofit technology (BART) determination.
- The Forest Service notes industrial boilers were identified by the Northern Class I Area Workgroup as a class of sources with potential for cost effective controls. These sources are included in the point, non-EGU category where NOx emissions increased in Iowa.
- For EGUs, Minnesota asked Iowa to achieve an SO2 emission rate comparable to Minnesota's of 0.25 pounds per million BTU. Based on Figure 2-1, 2011 SO2 emission rates in Iowa are 0.47 pounds per million BTU.

DNR Response: The Department does not agree that more emissions reductions in Iowa are appropriate at this time or that cost effectiveness should be assessed only in terms of dollars per tons in the context of the Regional Haze Rule. The Forest Service does not identify specific controls or specific sources where emissions reductions would be feasible, nor are any potential visibility improvements provided.

- With respect to concerns over the Holcim Facility, a Portland cement manufacturing facility in Mason City, Iowa, manufacturing operations ceased at Holcim in 2009 and the plant has not operated since.
- The increase in non-EGU NOx emissions between 2002 and 2008 was 121 tons per year. The DNR does not consider this value significant in the context of regional haze. It is also unrealistic to expect that all NOx emissions reductions projected between 2002 and 2018 in the initial regional haze SIP would be achieved by 2008. However, the 2008 non-EGU NOx emissions were 5,031 tons below 2018 projections, and as of 2008 more than half of the projected 2002 to 2018 total NOx emissions reductions had been attained. Further emissions reductions from this sector are anticipated with the implementation of the Industrial, Commercial, Institutional (ICI) boiler MACT. Additional review of the potential effects of the ICI boiler MACT can be assessed during the comprehensive regional haze SIP review due July 31, 2018.

The Department concluded in the original regional haze SIP that additional review of the ICI boiler emissions was not warranted. This finding continues to be applicable, as does the original response (reproduced for convenience here): "Commensurate with the regional haze rule requirements for establishing reasonable progress goals, the Department considered the costs of controls in tandem with their potential for visibility improvement. Evaluating controls on a dollar per ton basis alone does not sufficiently justify their installation. Examining the Four Factor analysis report, the EGU cost effectiveness, in terms of dollars per deciview, across the nine-state region reached $2,994,000,000. This is 83% of the total estimated costs of $3,600,000,000 for CAIR. Coupling these values with both the latest MRPO and CENRAP

contribution analyses that link all Iowa point sources to approximately a 1 - 2 Mm^{-1} contribution in 2018, the statements are justified."

- The state's overall 2011 EGU SO2 lbs/MMBtu emission rate does not inform or quantify visibility impacts. No information was provided which demonstrates Iowa's overall EGU SO2 emission rate is significant in terms of visibility impairment. The lbs/MMBtu emission rate does not automatically correlate to visibility impairment, as there is no consideration of distance, transport, chemistry, or any other relevant atmospheric factors.

The Department concludes the significant decreases in statewide total SO2 and NOx emissions are sufficient to meet the relevant obligations of the five-year regional haze review.

FS-3) Comment: Decreases in emission rates from the 2002 baseline by themselves are not sufficient to determine if a state plan is adequate. The level of decrease must be enough to meet Reasonable Progress Goals (RPGs). The RPGs set by Minnesota for the BWCAW were above the uniform rate of progress line indicating the pace of emission reductions must increase in the future to achieve the national visibility goal.

Department Response: The Department's conclusions that the significant and unanticipated decreases in Iowa's emissions are sufficient to determine adequacy of a state plan are consistent with EPA's April 12, 2013, guidance memo for the five year reviews (*General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans*). As a small contributor to visibility impairment in the Northern Class I areas, Iowa's ability to effect significant improvements are limited, and additional changes to Iowa's implementation of regional haze requirements are not needed at this time. The Regional Haze Rule incorporates an extensive timeframe (to at least 2064) and Iowa intends to comply with those timeframes for comprehensive review of the regional haze state implementation plan.

Comments from the National Park Service

These comments were provided by the National Park Service (NPS) in consultation with the U.S. Fish & Wildlife Service (USFWS). The NPS/USFWS stated that overall Iowa has met the minimum requirements for the periodic progress report and concurred that Iowa is not required to discuss monitoring trends in the five year review because there are no Class I areas in Iowa. The two NPS/USFWS comments that require responses are addressed below.

NPS/USFWS-1) Comment: The NPS/USFWS believe it would be helpful to provide a table of specific EGUs in the state that shows what controls were added under CAIR.

DNR Response: For the five-year review the Department believes it is appropriate to evaluate EGU emissions comprehensively rather than adding facility-specific components. The addition of controls is not necessarily the best indicator of emissions reductions as it does not consider other factors such as facility curtailment, fuel-switching, or the degree of control technology utilization.

NPS/USFWS-2) Comment: The NPS/USFWS note that it may be appropriate to mention that the CENRAP 2002/2018 and the 2008 NEI mobile source inventory data are not directly comparable because the methodologies used to calculate the onroad emissions have changed.

DNR Response: The Department agrees that the use of MOBILE6 in development of the CENRAP inventory and the use of the Motor Vehicle Emissions Simulator (MOVES) model by EPA in developing the 2008 NEI are significantly different. Chapter 5 of the report has been modified to note the discrepancies and discuss potential implications. Appendix C has also been modified to include additional discussion regarding changes in emissions methodologies.

Comments from EPA Region 7

EPA-1) Comment: The increase in ammonia emissions (NH3) shown in section 4 of the report is not addressed in the narrative. EPA suggests it may be useful to include a brief narrative on the increase in ammonia emissions that occurred between 2002 and 2008, as the reason for the increase is not apparent to the reader. EPA also notes the 2008 NH3 emissions estimates did not exceed the 2018 projection.

DNR response: Modifications in the methods used to estimate NH3 emissions likely contribute to the differences between the 2002/2018 and 2008 estimates. Chapter 5 has been updated to include a brief discussion regarding these changes. Appendix C has also been modified to include additional discussion regarding changes in emissions methodologies.

EPA-2) Comment: The opening sentence of the conclusions section in Chapter 6 appears contradictory to the rest of the section and the rest of the conclusions.

DNR Response: The word "reductions" was inadvertently omitted from this sentence. The sentence has been corrected and is now consistent with the existing conclusions.

EPA-3) Comment: EPA suggests, but does not require, adding trend lines for each emissions category in Figure 5-1.

DNR Response: Figure 5-1 provides a comparison of Iowa's actual emissions for 2002 and 2008, and the 2018 projections. The scale for the emissions data used in the figure is adequate for readers to discern the pollutant trends for each source category. The Department does not believe adding trendlines is necessary for communication of the meaning of the data.

Comments from the Minnesota Pollution Control Agency (MPCA)

MPCA Comment: The Minnesota Pollution Control Agency (MPCA) continues to be interested in the progress made by sources in Iowa to reduce emissions that contribute to regional haze. The MPCA is pleased to note that SO2 and NOx emissions from EGUs in 2011 had decreased from 2008. MPCA also notes that 2011 levels are well below the projections for 2018. They also note that further reductions of SO2 will occur at EGUs that are either subject to a consent decree or will be retired.

Minnesota also noted that in a letter dated September 19, 2007, they identified a target of reducing SO2 emissions from EGUs in contributing states to 0.25 lbs/MMBtu to address the improvement goal for the 20% worst visibility days. Minnesota encourages the state to continue to work towards meeting this target. Minnesota also notes their EGU's have achieved a rate of approximately 0.17 lbs/MMBtu in 2012, and that they are now more concerned about the relative contribution from EGUs in other states.

DNR Response: The original regional haze modeling conducted by CENRAP indicated Minnesota's contributions to their class I area's 20% worst impaired visibility days ranged from 26-30%, while Iowa's contributions were five to six times lower (4-5%, see Table 11.1 of Iowa's initial regional haze SIP). The Department did not see a compelling argument from Minnesota that demonstrated how Iowa's adoption of the 0.25 lbs/MMBtu request would benefit Minnesota's Class I areas. Minnesota provides no causal linkage between visibility impairment and a statewide lb/MMBtu EGU emission rate, and provides no demonstration that SO2 lb/MMBtu emission rate reductions in Iowa will improve visibility in the Minnesota Class I areas. It is appropriate for Minnesota to seek and achieve greater in-state reductions as their contributions and source proximities to Class I areas greatly exceed those of Iowa. The significant SO2 and NOx emission reductions (tons per year) that have occurred in Iowa since 2002 are sufficient for Iowa to meet the applicable regional haze obligations.

Public Notice Documents

The following public notice was published in the May 9, 2013, edition of the Des Moines Register. Proof of publication date can be found in the next page ("0509" in the DATE column).

DES MOINES
REGISTER
MEDIA
A GANNETT COMPANY

Tearsheets from the Des Moines Register

R295 PUBLIC NOTICE
IOWA DEPARTMENT OF NATURAL RESOURCES

The Iowa Department of Natural Resources (DNR) is requesting public comment on a proposed revision to the state implementation plan (SIP) to address visibility protection at national parks and scenic areas, also referred to as mandatory Class I Federal areas. The United States Environmental Protection Agency (EPA), under the authority of Section 169(a) of the federal Clean Air Act (CAA), promulgated visibility goals in the federal Clean Air Visibility rules.

This SIP revision fulfills the requirements for periodic reporting on evaluating progress toward reasonable progress goals in the mandatory Class I Federal areas potentially impacted by Iowa's emissions. The mandatory Class I Federal areas were established by Congress under the 1977 Amendments to the CAA. Iowa does not have a mandatory Class I Federal area. Iowa may contribute to the visibility impairment at mandatory Class I Federal areas in Minnesota and Michigan. DNR has determined that additional emissions reductions of air pollutants that cause visibility impairment are not needed at this time. This decision is based upon the level of existing emissions controls, the reductions from recently mandated requirements, and other factors that have reduced emissions.

An electronic copy of the SIP may be viewed at www.iowacleanair.gov , click on Stakeholder Involvement, and select Public Input. Any person may make written comments on this proposed SIP revision on or before June 12, 2013. Written comments should be directed to Matthew Johnson, Department of Natural Resources, Air Quality Bureau, 7900 Hickman Road, Suite 1, Windsor Heights, Iowa, 50324, fax 515-242-5094, or by electronic mail to Matthew.Johnson@dnr.iowa.gov.

A public hearing will be held on 1:00 p.m. on June 11, 2013, in the conference rooms at the Iowa DNR's Air Quality Bureau office located at 7900 Hickman Road, Suite 1, Windsor Heights, Iowa 50324. All comments must be received no later than June 12, 2013.

Any person who intends to attend the public hearing and has special requirements such as those related to hearing or mobility impairments should contact Matthew Johnson at 515-242-5164 to advise of any specific needs.

A responsiveness summary will be prepared by the Iowa DNR following the close of the public comment period. The responsiveness summary will include any written or oral comments received during the public participation process and the Iowa DNR's response to the comments. The completed responsiveness summary will be forwarded to EPA and made available to the public upon request.

RECEIVED
MAY 14 2013
IDNR AIR QUALITY

715 Locust Street, Des Moines, Iowa 50309 • P.O. Box 957, Des Moines, Iowa 50306 • 515.284.8000

DES MOINES REGISTER MEDIA
A GANNETT COMPANY
715 Locust St.
Des Moines, IA 50309

Submittal for payment for 6-12-13 BD

CUSTOMER #	INVOICE #
22054401	0007076334
DUE DATE	AMOUNT DUE
06/17/13	350.71
FOR THE PERIOD	THRU
05/06/13	06/02/13

STATEMENT FOR ADVERTISING

CLIENT NAME:

IOWA D N R
ATTN: OFFICE MANAGER 1361
7900 HICKMAN RD STE 1
WINDSOR HEIGHTS IA 50324-4432

REGISTER MEDIA
P.O. BOX 677357
DALLAS, TX 75267-7357

2205440100000000000000707633400035071115O2

2194(10)

▲ PLEASE DETACH AND RETURN TOP PORTION WITH PAYMENT. ▲

DATE	EDT	CLASS	DESCRIPTION	TIMES RUN	COL	DEPTH	TOTAL SIZE	RATE	AMOUNT
0506			BALANCE FORWARD						160.1
0509	CSW	1000	CLASS I FEDE-R295PUBLICNOTIC	1	1	93.00	93.00		43.4
0522	CSW	1000	CURTIN/MUSCA-R673PUBLICNOTIC	1	1	136.00	136.00		63.5
0524	CSW	1000	SMITH/HOMELA-R739PUBLICNOTIC	1	1	60.00	60.00		28.0
0530	CSW	1000	ROLING/CFIND-R819PUBLICNOTIC	1	1	119.00	119.00		55.5

RECEIVED
JUN 17 2013
DNR/AIR QUALITY

0001 5462 7230 2352

Please pay the following amounts
43.43
63.51
28.02
55.57

6/17/13

CURRENT	OVER 30 DAYS	OVER 60 DAYS	OVER 90 DAYS	OVER 120 DAYS	TOTAL DUE
190.53	160.18	.00	.00	.00	350.71

CONTRACT TYPE	CONTRACT QUANTITY	EXPIRATION DATE	CURRENT USAGE	TOTAL USAGE	QUANTITY REMAINING	SALESPERSON
						WALSH

ALL ACCOUNTS ARE DUE 15 DAYS AFTER THE END OF THE BILLING PERIOD

CUSTOMER NUMBER	CUSTOMER NAME	INVOICE NUMBER	DUE DATE
22054401	IOWA D N R	0007076334	06/17/13

DES MOINES REGISTER MEDIA
A GANNETT COMPANY
715 Locust St.
Des Moines, IA 50309

BILLING INQUIRIES: (877)556-0332
E-MAIL: desm@ccc.gannett.com

A LATE PAYMENT FEE OF 1 1/2% PER BILLING PERIOD WILL BE ADDED FOR PAST DUE BALANCES.

The following information was posted to the State of Iowa's Public Meeting Calendar.

Public Hearing for the Regional Haze State Implementation Plan
June 11, 2013 at 1:00 p.m.
Department of Natural Resources

The Department of Natural Resources is requesting public comment on a proposed revision to the state implementation plan (SIP) to address visibility protection at national parks and scenic areas. DNR has determined that additional emissions reductions of air pollutants that cause visibility impairment are not needed at this time.

An electronic copy of the implementation plan may be viewed at the DNR's website below by clinking on Stakeholder Involvement and selecting Public Input. Direct written comments to Matthew Johnson, DNR, Air Quality Bureau, 7900 Hickman Road, Suite 1, Windsor Heights, Iowa, 50324, fax 515-242-5094, or by electronic mail to Matthew.Johnson@dnr.iowa.gov on or before June 12, 2013. Please call 515-281-5164 for special needs related to hearing or mobility impairments prior to attending the hearing.

Location: Iowa DNR's Air Quality Bureau – Conference Rooms, 7900 Hickman Road, Suite 1, Windsor Heights, Iowa.

url: www.iowacleanair.com

Appendix E. Legal Authority

The DNR is the primary state agency responsible for protecting the environment, as indicated in the Iowa Code § 455A. The Environmental Protection Commission, established in the Iowa Code § 455A.6, is the governing commission for the environmental protection portion of the DNR. The DNR's authority is provided under Iowa Code § 455B.133 and 455B.134 which are listed below. Additional information on the Iowa Code is at http://www.legis.iowa.gov/IowaLaw/statutoryLaw.aspx.

455B.133 Duties.

The commission shall:

1. Develop comprehensive plans and programs for the abatement, control, and prevention of air pollution in this state, recognizing varying requirements for different areas in the state. The plans may include emission limitations, schedules and timetables for compliance with the limitations, measures to prevent the significant deterioration of air quality and other measures as necessary to assure attainment and maintenance of ambient air quality standards.
2. Adopt, amend, or repeal rules pertaining to the evaluation, abatement, control, and prevention of air pollution. The rules may include those that are necessary to obtain approval of the state implementation plan under section 110 of the federal Clean Air Act as amended through January 1, 1991.
3. Adopt, amend, or repeal ambient air quality standards for the atmosphere of this state on the basis of providing air quality necessary to protect the public health and welfare and to reduce emissions contributing to acid rain pursuant to Tit. IV of the federal Clean Air Act Amendments of 1990.
4. Adopt, amend, or repeal emission limitations or standards relating to the maximum quantities of air contaminants that may be emitted from any air contaminant source. The standards or limitations adopted under this section shall not exceed the standards or limitations promulgated by the administrator of the United States environmental protection agency or the requirements of the federal Clean Air Act as amended through January 1, 1991. This does not prohibit the commission from adopting a standard for a source or class of sources for which the United States environmental protection agency has not promulgated a standard. This also does not prohibit the commission from adopting an emission standard or limitation for infectious medical waste treatment or disposal facilities which exceeds the standards or limitations promulgated by the administrator of the United States environmental protection agency or the requirements of the federal Clean Air Act as amended through January 1, 1991. The commission shall not adopt an emission standard or limitation for infectious medical waste treatment or disposal facilities prior to January 1, 1995, which exceeds the standards or limitations promulgated by the administrator of the United States environmental protection agency or the requirements of the federal Clean Air Act, as amended through January 1, 1991, for a hospital, or a group of hospitals, licensed under chapter 135B which has been operating an infectious medical waste treatment or disposal facility prior to January 1, 1991.
    a. (1) The commission shall establish standards of performance unless in the judgment of the commission it is not feasible to adopt or enforce a standard of performance. If it is not feasible to adopt or enforce a standard of performance, the commission may adopt a design, equipment, material, work practice or operational standard, or combination of those standards in order to establish reasonably available control technology or the lowest achievable emission rate in nonattainment areas, or in order to establish best available control technology in areas subject to prevention of significant deterioration review, or in order to adopt the emission limitations promulgated by the administrator of the United States environmental protection agency under section 111 or 112 of the federal Clean Air Act as amended through January 1, 1991.
    (2) If a person establishes to the satisfaction of the commission that an alternative means of emission limitation will achieve a reduction in emissions of an air pollutant at least equivalent to the reduction in emissions of the air pollutant achieved under the design, equipment, material, work practice or operational standard, the commission shall amend its rules to permit the use of the alternative by the source for purposes of compliance with this paragraph with respect to the pollutant.
    (3) A design, equipment, material, work practice or operational standard promulgated under this paragraph shall be promulgated in terms of a standard of performance when it becomes feasible to promulgate and enforce the standard in those terms.

(4) For the purpose of this paragraph, the phrase *"not feasible to adopt or enforce a standard of performance"* refers to a situation in which the commission determines that the application of measurement methodology to a particular class of sources is not practicable due to technological or economic limitations.

b. If the maximum standards for the emission of sulfur dioxide from solid fuels have to be reduced in an area to meet ambient air quality standards, a contract for coal produced in Iowa and burned by a facility in that area that met the sulfur dioxide emission standards in effect at the time the contract went into effect shall be exempted from the decreased requirement until the expiration of the contract period or December 31, 1983, whichever first occurs, if there is any other reasonable means available to satisfy the ambient air quality standards. To qualify under this subsection, the contract must be recorded with the county recorder of the county where the burning facility is located within thirty days after the signing of the contract.

c. The degree of emission limitation required for control of an air contaminant under an emission standard shall not be affected by that part of the stack height of a source that exceeds good engineering practice, as defined in rules, or any other dispersion technique. This paragraph shall not apply to stack heights in existence before December 30, 1970, or dispersion techniques implemented before that date.

5. Classify air contaminant sources according to levels and types of emissions, and other characteristics which relate to air pollution. The commission may require, by rule, the owner or operator of any air contaminant source to establish and maintain such records, make such reports, install, use and maintain such monitoring equipment or methods, sample such emissions in accordance with such methods at such locations and intervals, and using such procedures as the commission shall prescribe, and provide such other information as the commission may reasonably require. Such classifications may be for application to the state as a whole, or to any designated area of the state, and shall be made with special reference to effects on health, economic and social factors, and physical effects on property.

6. a. Require, by rules, notice of the construction of any air contaminant source which may cause or contribute to air pollution, and the submission of plans and specifications to the department, or other information deemed necessary, for the installation of air contaminant sources and related control equipment. The rules shall allow the owner or operator of a major stationary source to elect to obtain a conditional permit in lieu of a construction permit. The rules relating to a conditional permit for an electric power generating facility subject to chapter 476A and other major stationary sources shall allow the submission of engineering descriptions, flow diagrams and schematics that quantitatively and qualitatively identify emission streams and alternative control equipment that will provide compliance with emission standards. Such rules shall not specify any particular method to be used to reduce undesirable levels of emissions, nor type, design, or method of installation of any equipment to be used to reduce such levels of emissions, nor the type, design, or method of installation or type of construction of any manufacturing processes or kinds of equipment, nor specify the kind or composition of fuels permitted to be sold, stored, or used unless authorized by subsection 4 of this section.

   b. The commission may give technical advice pertaining to the construction or installation of the equipment or any other recommendation.

7. Commission rules establishing maximum permissible sulfate content shall not apply to an expansion of an industrial anaerobic lagoon facility which was constructed prior to February 22, 1979.

8. a. Adopt rules consistent with the federal Clean Air Act Amendments of 1990, Pub. L. No. 101-549, which require the owner or operator of an air contaminant source to obtain an operating permit prior to operation of the source. The rules shall specify the information required to be submitted with the application for a permit and the conditions under which a permit may be granted, modified, suspended, terminated, revoked, reissued, or denied. For sources subject to the provisions of Tit. IV of the federal Clean Air Act Amendments of 1990, permit conditions shall include emission allowances for sulfur dioxide emissions. The commission may impose fees, including fees upon regulated pollutants emitted from an air contaminant source, in an amount sufficient to cover all reasonable costs, direct and indirect, required to develop and administer the permit program in conformance with the federal Clean Air Act Amendments of 1990, Pub. L. No. 101-549. Affected units regulated under Tit. IV of the federal Clean Air Act Amendments of 1990, Pub. L. No. 101-549,

shall pay operating permit fees in the same manner as other sources subject to operating permit requirements, except as provided in section 408 of the federal Act. The fees collected pursuant to this subsection shall be deposited in the air contaminant source fund created pursuant to section 455B.133B, and shall be utilized solely to cover all reasonable costs required to develop and administer the programs required by Tit. V of the federal Clean Air Act Amendments of 1990, Pub. L. No. 101-549, including the permit program pursuant to section 502 of the federal Act and the small business stationary source technical and environmental assistance program pursuant to section 507 of the federal Act.

b. Adopt rules allowing the department to issue a state operating permit to an owner or operator of an air contaminant source. The state operating permit granted under this paragraph may only be issued at the request of an air contaminant source and will be used to limit its potential to emit to less than one hundred tons per year of a criteria pollutant as defined by the United States environmental protection agency or ten tons per year of a hazardous air pollutant or twenty-five tons of any combination of hazardous air pollutants.

c. Adopt rules for the issuance of a single general permit, after notice and opportunity for a public hearing. The single general permit shall cover numerous sources to the extent that the sources are representative of a class of facilities which can be identified and conditioned by a single permit.

9. Adopt rules allowing asphalt shingles to be burned in a fire set for the purpose of bona fide training of public or industrial employees in firefighting methods only if a notice is provided to the director containing testing results indicating that the asphalt shingles do not contain asbestos. Each fire department shall be permitted to host two fires per year as allowed under this subsection.
10. Adopt rules allowing a city to conduct a controlled burn of a demolished building subject to the requirements that are in effect for the proper removal of all asbestos-containing materials prior to demolition and burning. The rules shall include provisions that a burn site have controlled access, that a burn site be supervised by representatives of the city at all times, and that the burning be conducted only when weather conditions are favorable with respect to surrounding property. For a burn site located outside of a city, the rules shall include a provision that a city may undertake not more than one such controlled burn per day and that a burn site be limited to an area located at least six-tenths of a mile from any inhabited building. For burn sites located within a city, the rules shall include a provision that a city may undertake not more than one such controlled burn in every six-tenths-of-a-mile-radius circle in each calendar year. The rules shall prohibit a controlled burn of a demolished building in Cedar Rapids, Marion, Hiawatha, Council Bluffs, Carter Lake, Des Moines, West Des Moines, Clive, Windsor Heights, Urbandale, Pleasant Hill, Buffalo, Davenport, Mason City, or any other area where area-specific state implementation plans require the control of particulate matter.

[C71, §136B.4; C73, 75, 77, 79, 81, §455B.12; 82 Acts, ch 1124, §1] C83, §455B.133 91 Acts, ch 242, §1; 91 Acts, ch 255, §8; 92 Acts, ch 1163, §87 – 89; 93 Acts, ch 137, §3; 94 Acts, ch 1040, §1; 95 Acts, ch 2, §1; 2002 Acts, ch 1162, §45; 2002 Acts, 2nd Ex, ch 1003, §241, 262; 2004 Acts, ch 1138, §1; 2010 Acts, ch 1061, §180

455B.134 Director — duties — limitations.

The director shall:

1. Publish and administer the rules and standards established by the commission. The department shall furnish a copy of such rules or standards to any person upon request.
2. Provide technical, scientific, and other services required by the commission or for the effective administration of this division II and chapter 459, subchapter II.
3. Grant, modify, suspend, terminate, revoke, reissue or deny permits for the construction or operation of new, modified, or existing air contaminant sources and for related control equipment, and conditional permits for electric power generating facilities subject to chapter 476A and other major stationary sources, subject to the rules adopted by the commission. The department shall furnish necessary application forms for such permits.
   a. No air contaminant source shall be installed, altered so that it significantly affects emissions, or placed in use unless a construction or conditional permit has been issued for the source.
   b. The condition of expected performance shall be reasonably detailed in the construction or conditional permit.
   c. All applications for permits other than conditional permits for electric generating facilities shall be subject to

such notice and public participation as may be provided by rule by the commission. Upon denial or limitation of a permit other than a conditional permit for an electric generating facility, the applicant shall be notified of such denial and informed of the reason or reasons therefor, and such applicant shall be entitled to a hearing before the commission.

d. (1) All applications for conditional permits for electric power generating facilities shall be subject to such notice and opportunity for public participation as may be consistent with chapter 476A or any agreement pursuant thereto under chapter 28E. The applicant or intervenor may appeal to the commission from the denial of a conditional permit or any of its conditions. For the purposes of chapter 476A, the issuance or denial of a conditional permit by the director or by the commission upon appeal shall be a determination that the electric power generating facility does or does not meet the permit and licensing requirements of the commission. The issuance of a conditional permit shall not relieve the applicant of the responsibility to submit final and detailed construction plans and drawings and an application for a construction permit for control equipment that will meet the emission limitations established in the conditional permit.

(2) In applications for conditional permits for electric power generating facilities, the applicant shall quantify the potential to emit greenhouse gas emissions due to the proposed project.

e. A regulated air contaminant source for which a construction permit or conditional permit has been issued shall not be operated unless an operating permit also has been issued for the source. However, if the facility was in compliance with permit conditions prior to the requirement for an operating permit and has made timely application for an operating permit, the facility may continue operation until the operating permit is issued or denied. Operating permits shall contain the requisite conditions and compliance schedules to ensure conformance with state and federal requirements including emission allowances for sulfur dioxide emissions for sources subject to Tit. IV of the federal Clean Air Act Amendments of 1990. If construction of a new air contaminant source is proposed, the department may issue an operating permit concurrently with the construction permit, if possible and appropriate.

f. (1) Notwithstanding any other provision of division II of this chapter or chapter 459, subchapter II, the following siting requirements shall apply to anaerobic lagoons and earthen waste slurry storage basins:

(a) Anaerobic lagoons, constructed or expanded on or after June 20, 1979, but prior to May 31, 1995, or earthen waste slurry storage basins, constructed or expanded on or after July 1, 1990, but prior to May 31, 1995, which are used in connection with animal feeding operations containing less than six hundred twenty-five thousand pounds live animal weight capacity of animal species other than beef cattle or containing less than one million six hundred thousand pounds live animal weight capacity of beef cattle, shall be located at least one thousand two hundred fifty feet from a residence not owned by the owner of the feeding operation or from a public use area other than a public road. Anaerobic lagoons or earthen waste slurry storage basins, which are used in connection with animal feeding operations containing six hundred twenty-five thousand pounds or more live animal weight capacity of animal species other than beef cattle or containing one million six hundred thousand pounds or more live animal weight capacity of beef cattle, shall be located at least one thousand eight hundred seventy-five feet from a residence not owned by the owner of the feeding operation or from a public use area other than a public road. For the purpose of this paragraph the determination of live animal weight capacity shall be based on the average animal weight capacity during a production cycle and the maximum animal capacity of the animal feeding operation.

(b) Anaerobic lagoons which are used in connection with industrial treatment of wastewater where the average wastewater discharge flow is one hundred thousand gallons per day or less shall be located at least one thousand two hundred fifty feet from a residence not owned by the owner of the lagoon or from a public use area other than a public road. Anaerobic lagoons which are used in connection with industrial treatment of wastewater where the average wastewater discharge flow is greater than one hundred thousand gallons per day shall be located at least one thousand eight hundred seventy-five feet from a residence not owned by the owner of the lagoon or from a public use area other than a public road. These separation distances apply to the construction of new facilities and the expansion of existing facilities.

(2) A person may build or expand an anaerobic lagoon or an earthen waste slurry storage basin closer to a residence not owned by the owner of the anaerobic lagoon or to a public use area than is otherwise permitted by subparagraph (1) of this paragraph, if the affected landowners enter into a written agreement with the anaerobic lagoon owner to waive the separation distances under such terms the parties negotiate. The written agreement becomes effective only upon recording in the office of the recorder of deeds of the county in which the residence is located.

g. All applications for construction permits or prevention of significant deterioration permits shall quantify the potential to emit greenhouse gas emissions due to the proposed project.

4. Determine by field studies and sampling the quality of atmosphere and the degree of air pollution in this state or any part thereof.
5. Conduct and encourage studies, investigations, and research relating to air pollution and its causes, effects, abatement, control, and prevention.
6. Provide technical assistance to political subdivisions of this state requesting such aid for the furtherance of air pollution control.
7. Collect and disseminate information, and conduct educational and training programs, relating to air pollution and its abatement, prevention, and control.
8. Consider complaints of conditions reported to, or considered likely to, constitute air pollution, and investigate such complaints upon receipt of the written petition of any state agency, the governing body of a political subdivision, a local board of health, or twenty-five affected residents of the state.
9. Issue orders consistent with rules to cause the abatement or control of air pollution, or to secure compliance with permit conditions. In making the orders, the director shall consider the facts and circumstances bearing upon the reasonableness of the emissions involved, including but not limited to, the character and degree of injury to, or interference with, the protection of health and the physical property of the public, the practicability of reducing or limiting the emissions from the air pollution source, and the suitability or unsuitability of the air pollution source to the area where it is located. An order may include advisory recommendations for the control of emissions from an air contaminant source and the reduction of the emission of air contaminants.
10. Encourage voluntary cooperation by persons or affected groups in restoring and preserving a reasonable quality of air within the state.
11. Encourage political subdivisions to handle air pollution problems within their respective jurisdictions.
12. Review and evaluate air pollution control programs conducted by political subdivisions of the state with respect to whether the programs are consistent with the provisions of division II of this chapter and chapter 459, subchapter II, and rules adopted by the commission.
13. Hold public hearings, except when the evidence to be received is confidential pursuant to section 455B.137, necessary to accomplish the purposes of division II of this chapter and chapter 459, subchapter II. The director may issue subpoenas requiring the attendance of witnesses and the production of evidence pertinent to the hearings. A subpoena shall be issued and enforced in the same manner as in civil actions.
14. Convene meetings not later than June 1 during the second calendar year following the adoption of new or revised federal ambient air quality standards by the United States environmental protection agency to review emission limitations or standards relating to the maximum quantities of air contaminants that may be emitted from any air contaminant source as provided in section 455B.133, subsection 4. By November 1 of the same calendar year, the department shall submit a report to the governor and the general assembly regarding recommendations for law changes necessary for the attainment of the new or revised federal standards.

[C71, §136B.4, 136B.5; C73, 75, 77, 79, §455B.12, 455B.13; C81, §455B.13; 82 Acts, ch 1124, §2, 3] C83, §455B.134 86 Acts, ch 1245, §1899; 90 Acts, ch 1153, §2, 3; 91 Acts, ch 255, §11 - 13; 93 Acts, ch 137, §4; 95 Acts, ch 195, §14; 2007 Acts, ch 120, §2, 3; 2010 Acts, ch 1115, §1; 2011 Acts, ch 25, §49, 50 For regulations establishing separation distances between anaerobic lagoons or earthen manure storage structures constructed or expanded on or after May 31, 1995, and various locations and objects, see chapter 459 For regulations governing the construction of earthen storage structures within agricultural drainage well areas, see chapter 460 Subsection 3, paragraph d, subparagraph (2) amended Subsection 3, paragraph g amended

567 Iowa Administrative Code Chapters for Air Quality

Chapters 20-29, 31, and 33-34 of 567 Iowa Administrative Code contain the administrative rules that allow for the implementation of the relevant air quality laws contained in Iowa statute and the CAA, including Section 110.

- Chapter 20 provides general definitions and rules of practice.
- Provisions for compliance schedules are found in Chapter 21.
- Standards and procedures for the permitting of emission sources, periodic monitoring, and requirements for nonattainment areas are found in Chapter 22.
- Air emission standards for contaminants are found in Chapter 23.
- Chapter 24 provides for the reporting of excess emissions and the equipment maintenance and repair requirements.
- Testing and sampling requirements for new and existing sources are found in Chapter 25.
- Chapter 26 identifies air pollution emergency episodes and preplanned abatement strategies.
- Conditions that political subdivisions must meet in order to secure acceptance of a local air pollution control program are set forth in Chapter 27.
- Chapter 28 identifies the state's adopted ambient air quality standards.
- Qualifications for observers of visible emission are found in Chapter 29.
- Chapter 31 contains the conformity of general federal actions to the Iowa state implementation plan or federal implementation plan.
- Chapter 33 contains special regulations and construction permit requirements for major stationary sources and includes the requirements for PSD.
- Provisions for air quality emissions trading programs are found in Chapter 34.