



Douglas A. Ducey
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY



Misael Cabrera
Director

NOV 12 2015

Mr. Jared Blumenfeld
Regional Administrator
U.S. Environmental Protection Agency, Region IX
Mail Code: ORA-1
75 Hawthorne Street
San Francisco, CA 94105

RE: Arizona's Regional Haze State Implementation Plan Revision, 5-Year Progress Report

Jared
Dear Mr. Blumenfeld,

Consistent with the provisions of Arizona Revised Statutes §§ 49-104, 49-106, and 49-404, and the Code of Federal Regulations (CFR) Title 40, §§ 51.102 through 51.104, the Arizona Department of Environmental Quality (ADEQ) hereby adopts and submits to the U.S. Environmental Protection Agency (EPA) the *Arizona State Implementation Plan Revision, Regional Haze 5-Year Progress Report* as a revision to the Arizona State Implementation Plan (SIP).

On February 28, 2011, ADEQ adopted and submitted to EPA, *Arizona's State Implementation Plan for Regional Haze under Section 308 of the Federal Regional Haze Rule*. On December 5, 2012, EPA acted by partially approving and partially disapproving elements of Arizona's Regional Haze SIP. This action was followed by a series of SIP revisions and Federal Implementation Plan (FIP) provisions. Those actions collectively encompass Arizona's control measures implemented through the Regional Haze program. Under the Regional Haze Rule (RHR), states must submit a report evaluating Arizona's progress toward the visibility goals established for each mandatory Class I federal area. ADEQ's 2011 submittal triggered the State's obligation to submit a progress report by February of 2016. The information contained in the enclosed revision satisfies the requirements for the five-year progress report under the RHR.

The SIP revision consists of copies of the authorizing statutes cited above (Enclosure 1), the SIP Completeness Checklist demonstrating that this submission satisfies the requirements of 40 CFR Part 51 Appendix V (Enclosure 2), and the SIP revision progress report described above (Enclosure 3). This letter and the attached enclosures are delivered to EPA through the eSIP

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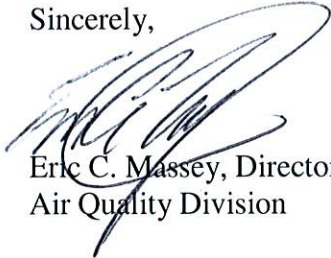
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submittal system pursuant to 40 CFR 51.103(a). If you have any questions, please contact me at (602) 771-2288.

Sincerely,



Eric C. Massey, Director
Air Quality Division

Enclosures (3)

cc. Colleen McKaughan, EPA
Tom Webb, EPA



Douglas A. Ducey
Governor

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY



Misael Cabrera
Director

August 17, 2015

TO: Eric Massey
Division Director
Air Quality Division

Under A.R.S. §49-104(D)(2), I authorize you, Eric Massey, Division Director, Air Quality Division, Arizona Department of Environmental Quality, to perform any act, including execution of any pertinent documents, which I as Director of the Arizona Department of Environmental Quality am authorized or required to do by law with respect to A.R.S. Title 49, chapters 1 and 3 and any other acts relating to air quality including personnel actions.

This authority shall remain in effect until it is revoked or upon your separation from the Arizona Department of Environmental Quality. You may further delegate this authority in the best interest of the agency, however, those delegations must be in writing and you must forward a copy of any further delegations to me.


This delegation is effective August 17, 2015, and revokes all earlier delegations. I ratify all acts performed by you as Air Quality Division Director concerning the duties and functions in this delegation letter.


Misael Cabrera
Director

ENCLOSURE 1

Arizona Revised Statutes §§49-104, 49-106, 49-404

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49-104. Powers and duties of the department and director

A. The department shall:

1. Formulate policies, plans and programs to implement this title to protect the environment.
2. Stimulate and encourage all local, state, regional and federal governmental agencies and all private persons and enterprises that have similar and related objectives and purposes, cooperate with those agencies, persons and enterprises and correlate department plans, programs and operations with those of the agencies, persons and enterprises.
3. Conduct research on its own initiative or at the request of the governor, the legislature or state or local agencies pertaining to any department objectives.
4. Provide information and advice on request of any local, state or federal agencies and private persons and business enterprises on matters within the scope of the department.
5. Consult with and make recommendations to the governor and the legislature on all matters concerning department objectives.
6. Promote and coordinate the management of air resources to assure their protection, enhancement and balanced utilization consistent with the environmental policy of this state.
7. Promote and coordinate the protection and enhancement of the quality of water resources consistent with the environmental policy of this state.
8. Encourage industrial, commercial, residential and community development that maximizes environmental benefits and minimizes the effects of less desirable environmental conditions.
9. Assure the preservation and enhancement of natural beauty and man-made scenic qualities.
10. Provide for the prevention and abatement of all water and air pollution including that related to particulates, gases, dust, vapors, noise, radiation, odor, nutrients and heated liquids in accordance with article 3 of this chapter and chapters 2 and 3 of this title.
11. Promote and recommend methods for the recovery, recycling and reuse or, if recycling is not possible, the disposal of solid wastes consistent with sound health, scenic and environmental quality policies. Beginning in 2014, the department shall report annually on its revenues and expenditures relating to the solid and hazardous waste programs overseen or administered by the department.
12. Prevent pollution through the regulation of the storage, handling and transportation of solids, liquids and gases that may cause or contribute to pollution.
13. Promote the restoration and reclamation of degraded or despoiled areas and natural resources.
14. Assist the department of health services in recruiting and training state, local and district health department personnel.
15. Participate in the state civil defense program and develop the necessary organization and facilities to meet wartime or other disasters.
16. Cooperate with the Arizona-Mexico commission in the governor's office and with researchers at universities in this state to collect data and conduct projects in the United States and Mexico on issues that are within the scope of the department's duties and that relate to quality of life, trade and economic development in this state in a manner that will help the Arizona-Mexico commission to assess and enhance the economic competitiveness of this state and of the Arizona-Mexico region.
17. Unless specifically authorized by the legislature, ensure that state laws, rules, standards, permits, variances and orders are adopted and construed to be consistent with and no more stringent than the corresponding federal law that addresses the same subject matter. This provision shall not be construed to adversely affect standards adopted by an Indian tribe under federal law.

B. The department, through the director, shall:

1. Contract for the services of outside advisers, consultants and aides reasonably necessary or desirable to enable the department to adequately perform its duties.
2. Contract and incur obligations reasonably necessary or desirable within the general scope of department activities and operations to enable the department to adequately perform its duties.
3. Utilize any medium of communication, publication and exhibition when disseminating information, advertising and publicity in any field of its purposes, objectives or duties.
4. Adopt procedural rules that are necessary to implement the authority granted under this title, but that are not inconsistent with other provisions of this title.
5. Contract with other agencies, including laboratories, in furthering any department program.
6. Use monies, facilities or services to provide matching contributions under federal or other programs that further the objectives and programs of the department.
7. Accept gifts, grants, matching monies or direct payments from public or private agencies or private persons and enterprises for department services and publications and to conduct programs that are consistent with the general purposes and objectives of this chapter. Monies received pursuant to this paragraph shall be deposited in the department fund corresponding to the service, publication or program provided.
8. Provide for the examination of any premises if the director has reasonable cause to believe that a violation of any environmental law or rule exists or is being committed on the premises. The director shall give the owner or operator the opportunity for its representative to accompany the director on an examination of those premises. Within forty-five days after the date of the examination, the department shall provide to the owner or operator a copy of any report produced as a result of any examination of the premises.
9. Supervise sanitary engineering facilities and projects in this state, authority for which is vested in the department, and own or lease land on which sanitary engineering facilities are located, and operate the facilities, if the director determines that owning, leasing or operating is necessary for the public health, safety or welfare.
10. Adopt and enforce rules relating to approving design documents for constructing, improving and operating sanitary engineering and other facilities for disposing of solid, liquid or gaseous deleterious matter.
11. Define and prescribe reasonably necessary rules regarding the water supply, sewage disposal and garbage collection and disposal for subdivisions. The rules shall:
 - (a) Provide for minimum sanitary facilities to be installed in the subdivision and may require that water systems plan for future needs and be of adequate size and capacity to deliver specified minimum quantities of drinking water and to treat all sewage.
 - (b) Provide that the design documents showing or describing the water supply, sewage disposal and garbage collection facilities be submitted with a fee to the department for review and that no lots in any subdivision be offered for sale before compliance with the standards and rules has been demonstrated by approval of the design documents by the department.
12. Prescribe reasonably necessary measures to prevent pollution of water used in public or semipublic swimming pools and bathing places and to prevent deleterious conditions at such places. The rules shall prescribe minimum standards for the design of and for sanitary conditions at any public or semipublic swimming pool or bathing place and provide for abatement as public nuisances of premises and facilities that do not comply with the minimum standards. The rules shall be developed in cooperation with the director of the department of health services and shall be consistent with the rules adopted by the director of the department of health services pursuant to section 36-136, subsection H, paragraph 10.
13. Prescribe reasonable rules regarding sewage collection, treatment, disposal and reclamation systems to prevent the transmission of sewage borne or insect borne diseases. The rules shall:
 - (a) Prescribe minimum standards for the design of sewage collection systems and treatment, disposal and reclamation systems and for operating the systems.
 - (b) Provide for inspecting the premises, systems and installations and for abating as a public nuisance any collection system, process, treatment plant, disposal system or reclamation system that does not comply with the minimum standards.
 - (c) Require that design documents for all sewage collection systems, sewage collection system extensions, treatment plants, processes, devices, equipment, disposal systems, on-site wastewater treatment facilities and reclamation systems be submitted with a fee for review to the department and may require that the design documents anticipate and provide for future sewage treatment needs.
 - (d) Require that construction, reconstruction, installation or initiation of any sewage collection system, sewage collection system extension, treatment plant, process, device, equipment, disposal system, on-site wastewater treatment facility or reclamation system conform with applicable requirements.
14. Prescribe reasonably necessary rules regarding excreta storage, handling, treatment, transportation and disposal. The rules shall:
 - (a) Prescribe minimum standards for human excreta storage, handling, treatment, transportation and disposal and shall provide for inspection of premises, processes and vehicles and for abating as public nuisances any premises, processes or vehicles

that do not comply with the minimum standards.

(b) Provide that vehicles transporting human excreta from privies, septic tanks, cesspools and other treatment processes shall be licensed by the department subject to compliance with the rules. The department may require payment of a fee as a condition of licensure. After the effective date of this amendment to this section, the department shall establish by rule a fee as a condition of licensure, including a maximum fee. As part of the rule making process, there must be public notice and comment and a review of the rule by the joint legislative budget committee. After September 30, 2013, the department shall not increase that fee by rule without specific statutory authority for the increase. The fees shall be deposited, pursuant to sections 35-146 and 35-147, in the solid waste fee fund established by section 49-881.

15. Perform the responsibilities of implementing and maintaining a data automation management system to support the reporting requirements of title III of the superfund amendments and reauthorization act of 1986 (P.L. 99-499) and title 26, chapter 2, article 3.

16. Approve remediation levels pursuant to article 4 of this chapter.

17. Establish or revise fees by rule pursuant to the authority granted under title 44, chapter 9, article 8 and chapters 4 and 5 of this title for the department to adequately perform its duties. All fees shall be fairly assessed and impose the least burden and cost to the parties subject to the fees. In establishing or revising fees, the department shall base the fees on:

(a) The direct and indirect costs of the department's relevant duties, including employees salaries and benefits, professional and outside services, equipment, in-state travel and other necessary operational expenses directly related to issuing licenses as defined in title 41, chapter 6 and enforcing the requirements of the applicable regulatory program.

(b) The availability of other funds for the duties performed.

(c) The impact of the fees on the parties subject to the fees.

(d) The fees charged for similar duties performed by the department, other agencies and the private sector.

C. The department may:

1. Charge fees to cover the costs of all permits and inspections it performs to ensure compliance with rules adopted under section 49-203, except that state agencies are exempt from paying the fees. Monies collected pursuant to this subsection shall be deposited, pursuant to sections 35-146 and 35-147, in the water quality fee fund established by section 49-210.

2. Contract with private consultants for the purposes of assisting the department in reviewing applications for licenses, permits or other authorizations to determine whether an applicant meets the criteria for issuance of the license, permit or other authorization. If the department contracts with a consultant under this paragraph, an applicant may request that the department expedite the application review by requesting that the department use the services of the consultant and by agreeing to pay the department the costs of the consultant's services. Notwithstanding any other law, monies paid by applicants for expedited reviews pursuant to this paragraph are appropriated to the department for use in paying consultants for services.


D. The director may:

1. If the director has reasonable cause to believe that a violation of any environmental law or rule exists or is being committed, inspect any person or property in transit through this state and any vehicle in which the person or property is being transported and detain or disinfect the person, property or vehicle as reasonably necessary to protect the environment if a violation exists.

2. Authorize in writing any qualified officer or employee in the department to perform any act that the director is authorized or required to do by law.

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49-106. Statewide application of rules
The rules adopted by the department apply and shall be observed throughout this state, or as provided by their terms, and the appropriate local officer, council or board shall enforce them. This section does not limit the authority of local governing bodies to adopt ordinances and rules within their respective jurisdictions if those ordinances and rules do not conflict with state law and are equal to or more restrictive than the rules of the department, but this section does not grant local governing bodies any authority not otherwise provided by separate state law.

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49-404. State implementation plan

A. The director shall maintain a state implementation plan that provides for implementation, maintenance and enforcement of national ambient air quality standards and protection of visibility as required by the clean air act.

B. The director may adopt rules that describe procedures for adoption of revisions to the state implementation plan.

C. The state implementation plan and all revisions adopted before September 30, 1992 remain in effect according to their terms, except to the extent otherwise provided by the clean air act, inconsistent with any provision of the clean air act, or revised by the administrator. No control requirement in effect, or required to be adopted by an order, settlement agreement or plan in effect, before the enactment of the clean air act in any area which is a nonattainment or maintenance area for any air pollutant may be modified after enactment in any manner unless the modification insures equivalent or greater emission reductions of the air pollutant. The director shall evaluate and adopt revisions to the plan in conformity with federal regulations and guidelines promulgated by the administrator for those purposes until the rules required by subsection B are effective.

ENCLOSURE 2

State Implementation Plan Completeness Checklist

STATE IMPLEMENTATION PLAN COMPLETENESS CHECKLIST

Submittal of

Arizona State Implementation Plan Revision, Regional Haze 5-Year Progress Report November 2015

40 CFR Part 51, Appendix V, *Criteria for Determining the Completeness of Plan Submissions*, contains the "minimum criteria for determining whether a State Implementation Plan submitted for consideration by EPA is an official submission for purposes of review under § 51.103," *Submission of plans, preliminary review of plans*. Appendix V requires the following to be included in plan submissions for review by EPA:

Administrative Materials

1. "A formal letter of submittal from the Governor or his designee, requesting EPA approval of the plan or revision thereof (hereafter "the plan")." [Appendix V, 2.1(a)]

See cover letter.

2. "Evidence that the State has adopted the plan in the State code or body of regulations; or issued the permit, order, consent agreement (hereafter "document") in final form. That evidence shall include the date of adoption or final issuance as well as the effective date of the plan, if different from the adoption/issuance date." [Appendix V, 2.1(b)]

See cover letter.

3. "Evidence that the State has the necessary legal authority under State law to adopt and implement the plan." [Appendix V, 2.1(c)]

See Enclosure 1.

4. "A copy of the actual regulation, or document submitted for approval and incorporation by reference into the plan, including indication of the changes made (such as, redline/strikethrough) to the existing approved plan, where applicable ..." [Appendix V, 2.1(d)]

See Enclosure 3.

5. "Evidence that the State followed all of the procedural requirements of the State's laws and constitution in conducting and completing the adoption/issuance of the plan." [Appendix V, 2.1(e)]

See cover letter and Enclosure 3, Appendix A.

6. "Evidence that public notice was given of the proposed change consistent with procedures approved by EPA, including the date of publication of such notice." [Appendix V, 2.1(f)]

See Enclosure 3, Appendix A.

7. "Certification that public hearing(s) were held in accordance with the information provided in the public notice and the State's laws and constitution, if applicable and consistent with the public hearing requirements in 40 CFR 51.102." [Appendix V, 2.1(g)]

See Enclosure 3, Appendix A.

8. "Compilation of public comments and the State's response thereto." [Appendix V, 2.1(h)]

See Enclosure 3, Appendix A.

Technical Support

9. "Identification of all regulated pollutants affected by the plan." [Appendix V, 2.2(a)]

Primarily the following visibility impairing pollutants from manmade sources: Nitrogen Oxides, Sulfur Dioxides, and Particulate Matter.

10. "Identification of the locations of affected sources including the EPA attainment/nonattainment designation of the locations and the status of the attainment plan for the affected areas(s)." [Appendix V, 2.2(b)]

See Enclosure 3, Sections 1, 2, and 4.

11. "Quantification of the changes in plan allowable emissions from the affected sources; estimates of changes in current actual emissions from affected sources or, where appropriate, quantification of changes in actual emissions from affected sources through calculations of the differences between certain baseline levels and allowable emissions anticipated as a result of the revision." [Appendix V, 2.2(c)]

See Enclosure 3, Section 2.

12. "The State's demonstration that the national ambient air quality standards, prevention of significant deterioration increments, reasonable further progress demonstration, and visibility, as applicable, are protected if the plan is approved and implemented. For all requests to redesignate an area to attainment for a national primary ambient air quality standard, under section 107 of the Act, a revision must be submitted to provide for the maintenance of the national primary ambient air quality standards for at least 10 years as required by section 175A of the Act." [Appendix V, 2.2(d)]

See Enclosure 3, Sections 3, 4, and 9.

13. "Modeling information required to support the proposed revision, including input data, output data, models used, justification of model selections, ambient monitoring data used, meteorological data used, justification for use of offsite data (where used), modes of models used, assumptions, and other information relevant to the determination of adequacy of the modeling analysis." [Appendix V, 2.2(e)]

See Enclosure 3, Sections 3, 4, and 8.

14. "Evidence, where necessary, that emission limitations are based on continuous emission reduction technology." [Appendix V, 2.2(f)]

See Enclosure 3, Section 2.

15. "Evidence that the plan contains emission limitations, work practice standards and recordkeeping/reporting requirements, where necessary, to ensure emission levels." [Appendix V, 2.2(g)]

See Enclosure 3, Section 2.

16. "Compliance/enforcement strategies, including how compliance will be determined in practice."
[Appendix V, 2.2(h)]

See Enclosure 3, Section 4.

17. "Special economic and technological justifications required by any applicable EPA policies, or an explanation of why such justifications are not necessary." [Appendix V, 2.2(i)]

See Enclosure 3, Section 2.

ENCLOSURE 3

Arizona State Implementation Plan Revision

Regional Haze 5-Year Progress Report

November 2015.



FINAL

Arizona State Implementation Plan Revision

Regional Haze 5-Year Progress Report

Air Quality Division

November 2015

November 12, 2015

[ADEQ | AQD | SIP]

[1110 W. Washington St. Phoenix, AZ 85007]



Acknowledgements

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1 Introduction

In the 1977 Clean Air Act (CAA or Act) amendments, Congress declared the protection of visibility in federal areas – national parks, forests, and wilderness areas – a national priority. It called for the “prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class 1 Federal areas which impairment results from manmade air pollution.”¹ The Environmental Protection Agency (EPA), in consultation with the Secretary of the Interior, later published a list of 156 mandatory Federal Class I areas that is comprised of designated wilderness areas over 5,000 acres and national parks over 6,000 acres (referred to herein as Class I areas).² In 1999, EPA finalized the Regional Haze Rule (RHR) calling for state, tribal, and federal agencies to work together in improving visibility in the listed national parks and wilderness areas.³

EPA defines regional haze as visibility impairment produced by a multitude of sources and activities that emit fine particles and their precursors across a broad geographic area, which can interfere with the scenic vistas integral to our national parks, forests, and wilderness areas.⁴ The RHR identifies emission of sulfur dioxide (SO₂), oxides of nitrogen (NO_x) and particulate matter (PM) emitted from inadequately controlled sources as the primary contributor to visibility impairment.⁵ Each state is required to develop an air quality protection plan (State Implementation Plan or SIP) addressing the ways in which it will reduce the emission of those pollutants in Class I areas. Under the RHR, the SIP must include a comprehensive strategy that works toward improving the haziest days and protecting the clearest at each area.⁶

The SIP must specifically identify the state’s goals providing for reasonable progress towards achieving natural visibility, referred to as the Reasonable Progress Goals (RPGs).⁷ A RPG is a visibility value (expressed in deciviews) that serves as an interim benchmark goal in achieving natural visibility, which must be set at levels providing for improvement in the most impaired days and ensures no degradation of the least impaired days.⁸ Starting in 2018, and once every ten years there after, states must reevaluate and build upon its prior RPGs through a SIP revision process.⁹ In order to achieve the first set of RPGs due in 2018 (2018 RPGs), state’s contemplate emission reduction strategies based on data showing trends from various sources, including point and area source emissions, mobile source emissions (both on-road and non-road emissions), biogenic emissions, wildfire emissions, and agriculture emissions.

The EPA designated five Regional Planning Organizations (RPOs) to assist with technical analysis for the SIPs, coordination between states and EPA, and general cooperation needed to address the visibility

¹ 42 U.S.C. §7491, CAA §169A.

² 40 CFR Part 81, Subpart D.

³ 64 Fed. Reg. 35714 (July 1, 1999).

⁴ *Id.*

⁵ *Id.*

⁶ *Id.*

⁷ 40 CFR §51.308.

⁸ *Id.*

⁹ *Id.* at §51.308(f).

issue at hand for the first regional haze SIPs.¹⁰ The RPO supporting the western states' regional haze efforts is the Western Regional Air Partnership (WRAP).¹¹ The materials produced by WRAP establishes monitoring strategies for evaluating visibility conditions, baselines, trends, and long-term (10 to 15 year) strategies for making reasonable progress toward eliminating emissions that contribute to visibility impairment.¹² As such, WRAP's emission information provides a technical basis in ADEQ's SIP submittals, supplements, and revisions, as well FIPs promulgated by the EPA. ADEQ drafted this progress report with the assistance of WRAP's Technical Support System (TSS) and the WRAP RHR progress report support.¹³ ADEQ relied on the information provided by the TSS for its emission inventory rather than that included in WRAP's state specific technical support document since it did not include any data more current than 2008. The general visibility information included in the technical support document was used as reference and is available for review by WRAP.¹⁴

1.1 Regional Haze State Reporting Requirements

The RHR includes two specific requirements for comprehensive periodic plan revisions and progress reviews codified in 40 CFR §51.308. The first of the provisions, which is located in Section 51.308(f) and mentioned briefly above, requires states to submit a comprehensive revision in 2018 and after every subsequent 10-year period.¹⁵ The second, located in Section 51.308(g), requires each state to provide the Administrator with a report every five years evaluating progress towards the RPG for each mandatory Class I area.¹⁶ States must submit the progress report to EPA for review within five years from submittal date of its initial implementation plan, regardless if the state plan received EPA approval.¹⁷ EPA uses the progress reports as a checkpoint to evaluate the effectiveness of a state's current strategy to determine if improvement or change is necessary, thereby ensuring continued progress towards visibility improvement in the Class I areas.

The state of Arizona will submit its 2018 SIP revision satisfying the requirements of Section 51.308(f) in two years and that information is not included in this document. Instead, this report satisfies the submittal requirements of Section 51.308(g) and contains all the information necessary to evaluate the current progress in meeting Arizona's 2018 RPGs in each mandatory Class I area during the first five-year period. Pursuant to guidance released by EPA, this Report will address and include the following elements:¹⁸

- Status of Arizona's regional haze plan and visibility improvement strategy;
- Emissions reductions from the regional haze plan's control strategies;

¹⁰ EPA, *Regional Planning Organizations*, <http://www.epa.gov/visibility/regional.html> (last visited July 17, 2015).

¹¹ WRAP, *Regional Haze Analyses*, <http://www.wrapair2.org/reghaze.aspx> (last visited July 17, 2015).

¹² *Id.*

¹³ WRAP Technical Support System, <http://vista.cira.colostate.edu/TSS/> (last visited July 17, 2015); WRAP *Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report*, June 28, 2013, available at http://www.wrapair2.org/documents/Full%20Report/WRAP_RHRPR_Full_Report_without_Appendices.PDF.

¹⁴ See generally WRAP, *Regional Haze Rule Implementation – Reasonable Progress Analysis Support*, <http://www.wrapair2.org/RHRPR.aspx> (last visited July 17, 2015).

¹⁵ *Supra* note 7.

¹⁶ *Id.*

¹⁷ *Id.*

¹⁸ EPA, *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (Intended to Assist States and EPA Regional Offices in Development and Review of the Progress Reports)*, April 2013, available at http://www.4cleanair.org/Documents/haze_5year_4-10-13.pdf.

- Visibility progress;
- Emission trends;
- Assessment of changes impeding visibility progress;
- Assessment of current strategy;
- Review of visibility monitoring strategy;
- Adequacy determinations; and
- Comments from the Federal Land Manager.

1.2 Class I Areas in Arizona

There are twelve federal Class I areas in Arizona covered by the Regional Haze Rule, which are: the Chiricahua National Monument, Chiricahua Wilderness Area, Galiuro Wilderness Area, Grand Canyon National Park, Mazatzal Wilderness Area, Petrified Forest National Park, Pine Mountain Wilderness, Saguaro National Park, Sierra Ancha Wilderness Area, Superstition Wilderness Area, and Sycamore Canyon Wilderness Area.¹⁹ Below is a table listing each Arizona Class I area and the acreage each covers, as well as a map identifying its location within the State.²⁰ Arizona Department of Environmental Quality (ADEQ) has developed, and continues to expand upon, a strategic visibility improvement plan in compliance with the RHR requirements for each Class I areas.

Class I Area	Acreage
Chiricahua National Monument	9,440
Chiricahua Wilderness	18,000
Galiuro Wilderness	52,717
Grand Canyon National Park	1,176,913
Mazatzal Wilderness	205,137
Mount Baldy Wilderness	6,975
Petrified Forest National Park	93,493
Pine Mountain Wilderness	20,061
Saguaro National Park	71,400
Sierra Ancha Wilderness	20,850
Superstition Wilderness	124,117
Sycamore Canyon Wilderness	47,757

Table 1 - Arizona Class I Areas

¹⁹ 40 CFR §81.403.

²⁰ *Id.*

ARIZONA CLASS I AREAS



Figure 1 - Map of AZ Class I Areas

1.3 Arizona's Reasonable Progress Goals

EPA disapproved ADEQ's initial reasonable progress goals included in Arizona's first Regional Haze SIP submittal and later promulgated a Federal Implementation Plan (FIP) detailing the RPGs and other requirements now included in Arizona's Regional Haze Plan (AZ RH Plan). Table 2 below lists the progress goals prescribed by the FIP and those figures are the only RPGs discussed and referenced for the remainder of the document. The state of Arizona is currently meeting its 2018 RPGs for each Class I area, which is discussed in more detail in Section 4.

Class I Area	20% Best Days		20% Worst Visibility Days	
	2018 RPG (dv)	2064 Natural Conditions (dv)	2018 RPG (dv)	2064 Natural Conditions (dv)
Chiricahua National Monument	4.77	1.83	13.19	7.20
Chiricahua Wilderness	4.77	1.83	13.19	7.20
Galiuro Wilderness	4.77	1.83	13.19	7.20
Grand Canyon National Park	2.02	0.31	11.02	7.04
Mazatzal Wilderness	5.07	1.91	12.63	6.68
Mount Baldy Wilderness	2.76	0.51	11.40	6.24
Petrified Forest National Park	4.62	1.07	12.64	6.49
Pine Mountain Wilderness	5.07	1.91	12.63	6.68
Saguaro National Park – East Unit ²¹	6.93	2.23	14.68	6.46
Saguaro National Park – West Unit	8.23	2.50	15.87	6.24
Sierra Ancha Wilderness	5.78	2.03	13.05	6.59
Superstition Wilderness	6.09	2.03	13.72	6.54
Sycamore Canyon Wilderness	5.39	0.98	14.92	6.65

Table 2 – 2018 RPGs and Natural Conditions

²¹ The Saguaro National Park has two IMPROVE monitoring stations; designated as West Unit and East Unit.

1.4 Procedural Background of Arizona's Regional Haze Program

Arizona's Regional Haze Plan (AZ RH Plan) includes a combination of requirements found in the state implementation plan (SIP), the federal implementation plan (FIP), and subsequent SIP revisions that collectively create the State's strategy for achieving its 2018 RPGs. ADEQ submitted Arizona's first Regional Haze SIP to EPA for review in 2011, which EPA partially disapproved. Following that submission, there were a number of approvals and disapprovals of additional SIP submittals, FIP provisions, and further SIP revisions. Below is a summary of the regulatory activity that has shaped the current AZ RH Plan:

Subpart 308 Regional Haze Actions	
February 2011	ADEQ submitted Regional Haze SIP required under 40 CFR 51.308 (308 RH SIP) to EPA.
December 2012	EPA publishes a partial approval, partial disapproval and Federal Implementation Plan (308 RH FIP) for Phase I and designated the rulemaking "Phase 1." ²²
May 2013	ADEQ submitted revisions to the 308 RH SIP addressing deficiencies identified by EPA in its notice of proposed rulemaking for Phase 2. ²³
August 2013	EPA published Phase 2 Notice of Final Rulemaking partially approving and partially disapproving certain provisions of the 308 RH SIP. ²⁴
September 2014	EPA published Phase 3, Notice of Final Rulemaking promulgating Federal Implementation Plan for remaining portions of Arizona Regional Haze program. ²⁵
February 2015	EPA approves Arizona's revision to NO _x requirements in SIP and FIP for AEPCO, Apache Generating Station. ²⁶
March 2015	EPA published a Notice of Proposed Rulemaking for revisions to the NO _x requirements in the FIP for the SRP, Coronado Generating Station. ²⁷

Table 3 - EPA Actions

2 Status of Control Strategies in the Regional Haze SIP

Under the RHR, each state must report on the status of the control strategies utilized in its regional haze plan to achieve the reasonable progress goals.²⁸ This Section will discuss Arizona's control strategies in the AZ RH Plan used to achieve its 2018 Reasonable Progress Goals (RPGs) and improve the visibility of Class I areas. Arizona's strategy for achieving its RPGs during the initial period included the following six categories: 1) control measures at stationary sources required to implement Best Available Retrofit Technology, 2) emission limitations at certain non-BART sources, 3) the closure of certain stationary sources, 4) existing federal regulations, 5) existing state regulations, and 6) new state regulations and policy addressing prescribed/controlled burns. The following sections discuss each category and how it contributed to reductions in both the actual and projected emissions of visibility-impairing pollutants.

²² 77 Fed. Reg. 72512 (December 5, 2012).

²³ 78 Fed. Reg. 29292 (May 20, 2013).

²⁴ 78 Fed. Reg. 46142 (July 30, 2013).

²⁵ 79 Fed. Reg. 52420 (September 3, 2014).

²⁶ 80 Fed. Reg. 19220 (April 10, 2015).

²⁷ 80 Fed. Reg. 17010 (March 31, 2015).

²⁸ *Supra* note 7, at §51.308(g)(1).

2.1 Stationary Sources Requiring Best Available Retrofit Technology

The first category covered in this report is the limitations on emission and control technology requirements directly imposed on stationary sources in or near Class I areas. These direct control measures apply only to facilities identified as eligible for and subject to the Best Available Control Technology (BART) standard.²⁹ The RHR requires states to identify a stationary source as BART-eligible if: 1) it falls within one of twenty-six source categories, and 2) it began operation between 1962 and 1977, and 3) has the potential to emit 250 tons per year of any air pollutant.³⁰ Any BART-eligible source that may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area is subject-to-BART.³¹ Once facilities are identified as subject-to-BART, states make control determinations on a case-by-case basis and identify which measures, if any, constitute BART for the facility.³²

The AZ RH Plan includes ADEQ's approved BART determinations, as well as additional determinations imposed through the FIP promulgated by EPA. Arizona has seven facilities total that are currently in operation with one or more units requiring BART emission control measures. The following subsections list each facility, the applicable control requirements, whether those requirements are a product of the SIP or the FIP, and the relevant compliance dates.

2.1.1 Arizona Electric Power Cooperative (AEP) Apache Generating Station

There are three subject-to-BART emission units at the AEP Apache Station, referred to herein as Apache Units 1, 2, and 3. These units are subject to "BART alternative" (also known as "better-than-BART") control requirements included in the facility's permit revision issued on May 13, 2014³³ and approved into the Arizona SIP on April 10, 2015.³⁴ The facility's permit lists the control measures and stipulates that they will go into effect according to the SIP compliance dates listed below in Table 4.³⁵

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
Apache Unit 1	12/5/2017	12/5/2016	12/5/2016
Apache Unit 2	12/5/2017	12/5/2016	12/5/2016
Apache Unit 3	12/5/2017	12/5/2016	12/5/2016

Table 4 - AEP Apache BART Alternative Compliance Dates

Unit 1:

Apache Unit 1 includes Steam Unit 1 (75 MW) and Gas Turbine 1 (10.51 MW). As outlined in its air quality permit, the BART Alternative limits for Apache Unit 1 are:³⁶

1. Steam Unit 1 shall combust only pipeline natural gas.
2. Steam Unit 1 shall not emit more than 0.00064 lb SO₂/MMBTU heat input in stand-alone operation or in combined cycle operation with Gas Turbine 1, averaged over 30 boiler-operating days.

²⁹ *Id.* at §51.308(e)

³⁰ *Id.*

³¹ *Id.*

³² *Id.*

³³ *Arizona Electric Power Cooperative, Inc. – Apache Generating Station*, Permit Revision No. 59195 (May 13, 2014).

³⁴ 80 FR 19220 (April 20, 2015).

³⁵ *Id.*

³⁶ *Supra* note 34.

3. Steam Unit 1 shall not emit more than 0.0075 lb PM₁₀/MMBTU heat input in stand-alone operation or in combined cycle operation with Gas Turbine 1, averaged over 30 boiler-operating days.
4. Effective December 5, 2017, Steam Unit 1 shall not emit NO_x in stand-alone operation in excess of 0.056 lb/MMBTU heat input, averaged over 30 boiler operating days.
5. Effective December 5, 2017, Steam Unit 1 and Gas Turbine 1 in combined cycle operation shall not emit NO_x in excess of 0.10 lb/MMBTU heat input averaged over 30 boiler operating days.
6. Effective December 5, 2017, Steam Unit 1 in stand-alone operation Steam Unit 1, and Gas Turbine 1 in combined cycle operation shall not emit NO_x in excess of 1205 lb/day, averaged over 30 calendar days.

Unit 2 & 3:

Apache Unit 2 (also known as Steam Unit 2) is a 194.7 MW unit which combusts coal as a primary fuel with the ability to supplement with natural gas as needed. Apache Unit 3 (also known as Steam Unit 3) is a 194.7 MW unit which combusts coal as a primary fuel with the ability to supplement with natural gas as needed. As outlined in its permit, Apache Units 2 and 3 have individual emission limits and control measure requirements, with an optional set of limits, which apply to both units collectively.³⁷

The individual BART Alternative requirements for Unit 2 are:

1. Effective December 5, 2016, Steam Unit 2 shall not emit SO₂ in excess of 0.15 lb/MMBTU heat input, averaged over 30 boiler operating days and shall not emit PM₁₀ in excess of 0.03 lb/MMBTU heat input (filterable only), averaged over 30 boiler operating days.
2. Effective December 5, 2017, Steam Unit 2 shall burn only pipeline quality natural gas except in the event of an emergency (defined in the permit under Section III.E).
3. Effective December 5, 2017, Steam Unit 2 shall not emit NO_x in excess of 0.085 lb/MMBTU heat input, averaged over 30 boiler operating days, SO₂ in excess of 0.00064 lb/MMBTU heat input, averaged over 30 boiler operating days, and PM₁₀ in excess of 0.01 lb/MMBTU heat input (filterable + condensable), averaged over 30 boiler operating days.
4. Effective December 5, 2018, Steam Unit 2 shall not emit PM₁₀ in excess of 0.008 lb/MMBTU heat input (filterable + condensable), averaged over 30 boiler operating days.

The individual BART Alternative requirements for Unit 3 are:

1. Effective December 5, 2016, Steam Unit 3 shall not emit SO₂ in excess of 0.15 lb/MMBTU heat input, averaged over 30 boiler operating days and shall not emit PM₁₀ in excess of 0.03 lb/MMBTU heat input (filterable only), averaged over 30 boiler operating days.
2. Effective no later than December 5, 2017, Steam Unit 3 shall install, operate and maintain low NO_x burners, overfire air, and selective non-catalytic reduction (SNCR) technology. The SNCR shall operate at all times that Steam Unit 3 is in operation and exhaust gas temperatures equal or exceed the manufacturer's recommended minimum temperature for operation of the SNCR technology.
3. Effective December 5, 2017, Steam Unit 3 shall not emit NO_x in excess of 0.23 lb/MMBTU heat input, averaged over 30 boiler operating days.

³⁷ *Id.*

BART Alternative limits for combined operation of Apache Units 2 and 3:

1. Effective December 5, 2017, in lieu of the individual limits set forth for NO_x above (Conditions III.B3 and III.C.3 in the permit), the combined NO_x emissions of Steam Unit 2 and 3, averaged over 30 boiler-operating days, shall not exceed the limit established in the following equation:

$$\text{Limit} = \frac{\left[\left(\text{Unit 2 MMBTU}_{\text{gas}} \times 0.085 \frac{\text{lbs}}{\text{MMBTU}_{\text{gas}}} \right) + \left(\text{Unit 2 MMBTU}_{\text{coal}} \times 0.37 \frac{\text{lbs}}{\text{MMBTU}_{\text{coal}}} \right) + \left(\text{Unit 3 MMBTU} \times 0.23 \frac{\text{lbs}}{\text{MMBTU}} \right) \right]}{\text{Unit 2 MMBTU} + \text{Unit 3 MMBTU}}$$

2.1.2 Arizona Public Service (APS) Cholla Generating Station

There are three emission units located at the Cholla Generating Station with BART requirements, referred to herein as Cholla Units 2, 3, and 4. Cholla Units 2 and 3 are 305 MW coal-fired steam boilers. Cholla Unit 4 is a 425 MW coal-fired steam boiler. All of the units have the same BART determinations for all three visibility-impairing pollutants. The PM₁₀ and SO₂ control measures are part of the Arizona SIP, while the NO_x control measures are included in the FIP.³⁸

Under the FIP Cholla Units 2, 3, and 4 are subject to a NO_x limit of 0.055 lb/BBMtu, determined as an average of the three units and based on a rolling 30-boiler-operating-day average. Under the SIP, the PM₁₀ controls require each unit to use a fabric filter with an associated emission limit of 0.015 lb/MMBtu. In addition, the SO₂ controls require each unit to use wet Flue Gas Desulfurization (FGD) with an emission limit of 0.15 lb/MMBtu on a 30-day rolling average. The FIP later imposed an addition requirement of 95 percent SO₂ removal efficiency for the control equipment. Cholla Generating Station's current air quality permit contains the BART requirements and the compliance dates for each are listed below in Table 5.³⁹ The Cholla Generating station is in compliance with its permit and has no violations observed by ADEQ.

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
Cholla Unit 2	12/5/2017	4/1/2016	4/1/2016
Cholla Unit 3	12/5/2017	6/3/2013	6/3/2013
Cholla Unit 4	12/5/2017	6/3/2013	12/5/2013

Table 5 - APS Cholla BART Compliance Dates

At the time of this report was ADEQ was working with Cholla Generating Station on a BART Reassessment and permit revision, but the EPA had not yet published an approval. The Cholla SIP Reassessment requires NO_x controls that include the complete shutdown of operations at Unit 2. In addition, Units 3 and 4 must meet a 0.22lb/MMBtu emission limit and halt coal-burning activities with the option to switch to natural gas by 2025.

2.1.3 Salt River Project (SRP) Coronado Generating Station

There are two BART emission units at the Coronado Generating Station, referred to herein as Coronado Units 1 and 2. Both Coronado Units are 456 MW coal-fired steam boilers and both are subject to the same requirements for all three of the visibility-impairing pollutants. The FIP provides the requirements for NO_x

³⁸ *Supra* note 23.

³⁹ APS – Cholla Generating Station, Permit No. 53399; as amended by No. 60129 (August 22, 2014).

controls, while the SIP provides the requirements for PM₁₀ and SO₂ controls.⁴⁰ The NO_x control is an emission limit of 0.065 lb/MMBtu, which is determined as an average of the two units and based on a rolling 30-boiler-operating-day average.⁴¹ No further emissions control technology is required for PM₁₀, but both units must comply with a 0.03lb/MMBtu emission limit.⁴² In addition, the SO₂ BART controls require both units to implement Wet Flue Gas Desulfurization with an associated emission rate of 0.080 lb/MMBtu on a 30-day rolling average.⁴³

Coronado Generating Station's 2011 operating permit, which was in effect at the time of this report, includes the BART requirements described above for PM₁₀ and SO₂.⁴⁴ As of June 1, 2014, Coronado Unit 1 was required to comply with a NO_x emission rate of 0.080 lb/MMBtu.⁴⁵ The facility is currently required to comply with the above stated NO_x BART requirements by December 5, 2017. The Coronado Generating Station is in compliance with its permit and has no violations observed by ADEQ.

On March 31, 2015, EPA published a notice of proposed rulemaking proposing to revise the NO_x BART requirements imposed on the Coronado Generating Station in the FIP.⁴⁶ If finalized, the revision will require Unit 1 will to meet a 0.065lb/MMBtu emission limit.⁴⁷ In addition, Unit 2 will comply with an emission limit prescribed in a consent decree of 0.080 lb/MMBtu based on a 30-boiler-operating-day basis.⁴⁸ The compliance dates for these controls are listed below in Table 6.

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
Coronado Unit 1	12/5/2017	6/3/2013	6/3/2013
Coronado Unit 2	12/5/2017	6/3/2013	6/3/2013

Table 6 - SRP Coronado BART Compliance Dates

2.1.4 Freeport-McMoRan Miami Smelter

The Miami Smelter Converters 2 through 5 and the Electric Furnace are the emission units requiring BART controls, which either apply to all units collectively or are split into converter and electric furnace requirements depending on the pollutant. The FIP imposes NO_x and SO₂ control requirements for all of the emission units, while the SIP contains the control requirements for PM₁₀.⁴⁹ The NO_x FIP determination requires that the facility as a whole comply with annual emission limit of 40 tons per year.⁵⁰ The PM₁₀ SIP determination provides that compliance with the previously approved Maximum Achievable Control Technology (MACT) standard in the National Emission Standards for Hazardous Air Pollutants (NESHAPs) for Primary Copper Smelting is sufficient to satisfy BART and the FIP incorporates these requirements by reference to ensure their enforceability.⁵¹ The SO₂

⁴⁰ *Supra* note 23.

⁴¹ *Id.*

⁴² *Id.*

⁴³ *Id.*

⁴⁴ SRP – Coronado Generating Station, Permit Renewal No. 52639 (December 6, 2011).

⁴⁵ *Id.*

⁴⁶ 80 Fed. Reg. 17010 (March 31, 2015).

⁴⁷ *Id.*

⁴⁸ *Id.*

⁴⁹ 78 Fed. Reg. 46142 (July 30, 2013) (EPA disapproved the NO_x and SO₂ requirements in ADEQ's SIP submittal and approved the PM10 requirements.), 79 Fed. Reg. 52420 (September 3, 2014) (EPA published the FIP detailing NO_x and SO₂ requirements).

⁵⁰ 79 Fed. Reg. 52420 (September 3, 2014).

⁵¹ 78 Fed. Reg. 46142 (July 30, 2013), 79 FR 52420, 52454 (September 3, 2014).

FIP determination provides separate requirements for the converters and the electric furnace. The converters must achieve a SO₂ control efficiency of 99.7 percent on a 365-day rolling average applied to combined primary and secondary capture system on a cumulative mass basis.⁵² Improvements are required for the primary control system (existing acid plant with tail stack scrubber) and the construction of a new capture and control system.⁵³ The FIP also imposes a work practice standard for the converters requiring the primary and secondary capture systems designed and operated in a way that maximizes SO₂ captured from the units.⁵⁴ The FIP determination for SO₂ requirements on electric Furnace are the continued use of the existing work practice standard and prohibition of active aeration.⁵⁵ The compliance dates for these controls are listed below in Table 7.

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
Freeport – Miami	9/2/2016	n/a	1/1/2018

Table 7 - Freeport-McMoRan Miami BART Compliance Dates

2.1.5 ASARCO Inc., Hayden Smelter

The Hayden Smelter is subject to FIP requirements for NO_x and SO₂, as well as SIP requirements for PM₁₀.⁵⁶ Under the FIP, the Hayden Smelter must comply with an annual emission limit of 40 tons per year of NO_x from the converters and anode furnaces.⁵⁷ To control PM₁₀ the Asarco Smelter must continue to use the existing controls and meet specified provisions of the NESHAPs for Primary Copper Smelting.⁵⁸ The smelter must reduce SO₂ at both the converters and anode furnaces.⁵⁹ The converters must comply with an emission limit of 99.8 percent control efficiency on a 365-day rolling average for the primary system and 98.7 percent efficiency on a 365-day rolling average for the secondary capture system. The smelter must impose a work practice standard requiring the anode furnaces to be charge only with blister copper or higher purity copper. The compliance dates for these controls are listed below in Table 8.

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
ASARCO – Hayden	9/4/2017	n/a	Primary: 9/4/2017 Secondary: 9/3/2018

Table 8 - ASARCO Hayden BART Compliance Dates

2.1.6 Tucson Electric Power (TEP) Sundt Generating Station

The Sundt Generating Station has one emission unit that must comply with certain BART determinations, referred to herein as Sundt Unit 4. EPA disapproved ADEQ's initial determination that Unit 4 was not BART-

⁵² *Supra* note 50.

⁵³ *Id.*

⁵⁴ *Id.*

⁵⁵ *Id.*

⁵⁶ 78 Fed. Reg. 46142 (July 30, 2013) (EPA disapproved the NO_x and SO₂ requirements in ADEQ's SIP submittal and approved the PM₁₀ requirements.), 79 Fed. Reg. 52420 (September 3, 2014) (EPA published the FIP detailing the NO_x and SO₂ requirements for the Hayden Smelter.).

⁵⁷ 79 Fed. Reg. 52420 (September 3, 2014).

⁵⁸ 78 Fed. Reg. 46142 (July 30, 2013), 79 FR 52420, 52448 (September 3, 2014).

⁵⁹ *Supra* Note 57.

eligible and later promulgated requirements for NO_x, PM₁₀ and SO₂ in the FIP.⁶⁰ To control NO_x emissions, Unit 4 must comply with a of 0.36 lb/MMBtu emission limit, which is consistent with the use of SNCR paired with the existing Low-NO_x Burners.⁶¹ Sundt Unit 4 must also comply with a PM₁₀ filterable emission limit of 0.030 lb/MMBtu and an SO₂ emission limit of 0.23 lb/MMBtu on a 30-boiler-operating-day average.⁶² The compliance dates for these controls are listed below in Table 9.

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
Sundt Unit 4	9/4/2017	4/16/2015	9/4/2017

Table 9 - Sundt BART Compliance Dates

Alternatively, TEP may elect to switch Sundt Unit 4 to natural gas, in which case it would have meet a NO_x emission limit of 0.25 lb/MMBtu and an SO₂ emission limit of 0.00064 lb/MMBtu (both on a 30-boiler-operating-day average).⁶³ The PM₁₀ limit would be based on the results of initial performance test following the switch to gas. TEP must inform EPA of its choice of compliance option by March 31, 2017. If TEP chooses to switch to gas, it must meet the alternative emission limits by December 31, 2017.

2.1.7 Nelson Lime Plant

The Nelson Lime Plant has two lime kilns that must comply with BART requirements, referred to herein as Nelson Kiln 1 and 2. EPA disapproved ADEQ's initial determination that the Kilns were not subject to BART control measures and promulgated requirements for NO_x, PM₁₀ and SO₂ pollutants in the FIP.⁶⁴ To control NO_x emissions, Nelson Kiln 1 is subject to a limit of 3.80 lbs/ton of lime on a 12-month rolling average and Nelson Kiln 2 is subject to a limit of 2.61 lbs/ton of lime on a 30-day rolling average.⁶⁵ Each of these NO_x emission limits is consistent with the use of LNB and SNCR.⁶⁶ To control PM₁₀, Nelson Kilns 1 and 2 are subject to an emission limit of 0.12 lbs/ton of stone feed, based on the use of the existing fabric filter baghouses.⁶⁷ To control SO₂, Nelson Kiln 1 is subject to an emission limit of 9.32 lbs/ton of lime on a 12-month rolling average.⁶⁸ Nelson Kiln 2 is subject to an emission limit of 9.73 lbs/ton of lime on a 12-month rolling average.⁶⁹ The compliance dates for these controls are listed below in Table 10.

Source	BART Compliance Dates		
	NO _x	PM ₁₀	SO ₂
Nelson Kiln 1	9/4/2017	n/a	3/3/2016
Nelson Kiln 2	9/4/2017	n/a	3/3/2016

Table 10 - Nelson Lime BART Compliance Dates

⁶⁰ 78 Fed. Reg. 46142 (July 30, 2013) (EPA Disapproval), 79 Fed. Reg. 52420 (September 3, 2014) (EPA's publication of the FIP).

⁶¹ 79 Fed. Reg. 52520 (September 3, 2014).

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.*

⁶⁵ *Id.*

⁶⁶ *Id.*

⁶⁷ *Id.*

⁶⁸ *Id.*

⁶⁹ *Id.*

2.2 Other Stationary Sources Subject to Control Requirements

As part of the reasonable progress analysis in its Phase 3 FIP, EPA also conducted an independent source-specific analysis of potential NO_x controls for facilities ADEQ previous determined did not require BART controls. Based on that analysis, EPA identified two non-BART sources that required control technology to meet reasonable progress requirements.⁷⁰ The first is Phoenix Cement Company (PCC) Clarkdale Kiln 4, which must meet a NO_x emission limit of 2.12 lb/ton based on a 30-day rolling average.⁷¹ EPA determined that the emission limit is consistent with the implementation of Selective Non-Catalytic Reduction (SNCR) as a control technology.⁷² The second non-BART source subject to limitation is CalPortland Cement (CPC) Rillito, Kiln 4, which must meet a NO_x emission limit of 2.67 lb/ton based on a 30-day rolling average.⁷³ EPA determined that this limitation would also be consistent with the use of SNCR.⁷⁴ The above-mentioned reasonable progress control measures will go into effect on the dates listed below in Table 11.

Source	Compliance date
	NO _x
Clarkdale Kiln 4	12/31/2018
Rillito Kiln 4	12/31/2018

Table 11 - Other Sources BART Compliance Dates

2.3 Emissions Reductions as a Result of Facility Closures

In 2012, Catalyst Paper shut down production and closed permanently resulting in a decrease in emissions equal to that of its total emissions.⁷⁵ The Catalyst Paper facility housed a boiler unit, referred to as Power Boiler #2, which was previously determined to be subject to BART requirements. Power Boiler #2 emitted more than 250 tons per year of NO_x and SO₂.⁷⁶ According to CALPUFF modeling, it had a visibility extinction of 0.739 deciviews on the Sierra Ancha Wilderness area and 0.523 deciviews on the Superstition Wilderness area.⁷⁷ Emissions reductions due to the closure of the Catalyst Paper facility are significant and the resulting visibility improvement assisted Arizona in achieving its 2018 RPGs. If the Catalyst Paper facility ever sought to resume business operations, it would constitute a new source subject to New Source Review regulation.

2.4 Federal Regulations

The following sections discuss federal programs that contribute significantly to emissions reductions and Arizona's success in reaching its 2018 RPGs. These include the regulations identified in WRAP's 2018 projected emissions inventory, as well as new federal programs that provide for further reductions in visibility-impairing pollutants, either through direct control requirements or as a secondary benefit.

⁷⁰ *Id.*

⁷¹ *Id.*

⁷² *Id.*

⁷³ *Id.*

⁷⁴ *Id.*

⁷⁵ See generally <http://www.catalystpaper.com/media/news/community/catalyst-permanently-close-snowflake-recycle-paper-mill>.

⁷⁶ ADEQ, *Arizona State Implementation Plan: Regional haze Under Section 308 of the Federal Regional Haze Rule*, January 2011, Appendix D, section IX.

⁷⁷ *Id.*

2.4.1 Heavy-Duty Highway Rule

EPA set a particulate matter (PM) emission standard for new heavy-duty engines of 0.01 gram per brake horsepower-hour (g/bhp-hr), which took full effect for diesel engines of the 2007 model year.⁷⁸ The rule also included a standard of 0.20 g/bhp-hr for NO_x and of 0.14 g/bhp-hr for non-methane hydrocarbons. The diesel and non-methane hydrocarbons engine NO_x standards were successfully phased in together between 2007 and 2010.⁷⁹

The rule also requires lower levels of sulfur in diesel fuel to facilitate the use of modern pollution-control technology on trucks and buses subject to regulation.⁸⁰ EPA mandated a 97 percent reduction in the sulfur content of highway diesel fuel, which became effective in Arizona in 2001.⁸¹ In June of 2006, refiners began producing the cleaner-burning diesel fuel for highway vehicles, which allowed car, truck, and bus manufacturers to meet the 2007 emissions standards included in the rule.⁸²

2.4.2 Tier 2 Vehicle and Gasoline Sulfur Program

EPA's Tier 2 Motor Vehicle Emissions Standards and Gasoline Sulfur Control Requirements significantly reduced emissions from new passenger cars and light trucks, including pickup trucks, vans, minivans, and sport-utility vehicles.⁸³ The rule provided for more protective tailpipe emissions standards for all passenger vehicles by imposing a NO_x standard of 0.07 grams per mile on all classes of passenger vehicles beginning in 2004.⁸⁴ The rule phased in vehicles weighing less than 6,000 pounds between 2004 and 2007 through a tiered approach, whereby the standard decreased incrementally over time.⁸⁵

The rule also lowered the standard for sulfur in gasoline, requiring passenger vehicles to be 77 to 95 percent cleaner than those on the road at the time and reduce the sulfur content of gasoline by 90 percent.⁸⁶ As of 2004, the nation's refiners and importers of gasoline had the flexibility to manufacture product with a range of sulfur levels, as long as production capped at 300 parts per million (ppm) and the annual corporate average sulfur levels were 120 ppm.⁸⁷ The caps decreased annually until eventually each refiner and importer was required to meet a production cap of 80 ppm and a 30 ppm annual corporate average.⁸⁸

The Tier 2 program marked the first time EPA treated vehicles and fuel systems as an integrated system, which resulted in low-sulfur gasoline and the ability to use advanced emissions control systems in cars, pickups, and SUVs.⁸⁹ In addition, it was the first time SUVs and other light-dusty trucks, even the largest passenger vehicles,

⁷⁸ 40 CFR Part 86; 66 Fed. Reg. 5002 (January 18, 2001); see also EPA Regulatory Announcement, *Heavy-Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements*, December 2000, available at <http://www.epa.gov/otaq/highway-diesel/regs/f00057.pdf>.

⁷⁹ *Id.*

⁸⁰ *Id.*

⁸¹ ARS 49-558.01.

⁸² EPA Office of Transportation and Air Quality, *Introduction of Cleaner-Burning Diesel Fuel Enables Advanced Pollution Control for Cars, Trucks, and Buses*, October 2006, available at <http://www.epa.gov/oms/highway-diesel/regs/420f06064.pdf>.

⁸³ 65 Fed. Reg. 6698 (February 10, 2000).

⁸⁴ EPA Regulatory Announcement, *EPA's Program for Cleaner Vehicles and Cleaner Gasoline*, December 1999, available at <http://www.epa.gov/tier2/documents/f99051.pdf>.

⁸⁵ *Id.*

⁸⁶ *Id.*

⁸⁷ *Id.*

⁸⁸ *Id.*

⁸⁹ *Id.*

were subject to the same national pollution standards as cars.⁹⁰ The success of this program helped ensure the continued planning and rulemaking effort that will be the Tier 3 standards.

2.4.3 Tier 3 Vehicle Emission and Fuel Standards

The Tier 3 Vehicle Emission and Fuel Standards program will become effective in 2017, which set new vehicle emissions standards and lower the sulfur content of gasoline.⁹¹ Building on the Tier 2 program, it bolsters the EPA's comprehensive approach to reducing the impacts of motor vehicles on air quality and the public health.⁹² The new standards will further reduce both tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles.⁹³ It will impose a more stringent gasoline sulfur standard, allowing emission control systems to be more effective for both existing and new vehicles.⁹⁴

2.4.4 Non-Road Engine Program

There is an extremely wide range of uses and application of non-road engines, each involving great differences in operating characteristics, engine technology, and market dynamics.⁹⁵ EPA has adopted emission standards for all types of non-road engines, equipment, and vehicles.⁹⁶ These standards apply separately for each category, with addition requirement for in-use gasoline and diesel fuel.⁹⁷ The non-road engines regulated under this program include aircrafts and baggage transportation vehicles, boats, ships and personal watercrafts, diesel engines used in construction activities such as excavators, heavy forklifts and generators, small lawn and garden equipment, locomotives, and non-road recreation engines such as snowmobiles, dirt bikes, and ATVs.⁹⁸

The non-road engine rules have reduced emissions in some areas, such as non-road diesel equipment, by more than 90 percent.⁹⁹ A comprehensive report on the extensive emission reductions that has resulted from these regulations is located on EPA's website.¹⁰⁰ The expansive emission reductions that have resulted from the imposition of the federal non-road engine regulations has improved visibility in Arizona's Class I areas and help the State achieve its RPGs.

2.4.5 Mercury and Air Toxics Rule

On December 16, 2011, EPA finalized national standards to reduce mercury and other toxic air pollutants from coal and oil-fired power plants under CAA section 111 (New Source Performance Standards) and 112 (Toxics Program) of the 1990 amendments.¹⁰¹ There were no federal standards in existence that required power plants

⁹⁰ *Id.*

⁹¹ EPA, *Tier 3 Vehicle Emission and Fuel Standards Program*, <http://www.epa.gov/oms/tier3.htm> (Last visited July 17, 2015).

⁹² *Id.*

⁹³ EPA Regulatory Announcement, *EPA Sets Tier 3 Tailpipe and Evaporative Emission and Vehicle Fuel Standards*, March 2014, available at <http://www.epa.gov/oms/documents/tier3/420f14008.pdf>.

⁹⁴ EPA Regulatory Announcement, *Tier 3 Gasoline Sulfur Standard's Impact on Gasoline Refining*, March 2014, available at <http://www.epa.gov/oms/documents/tier3/420f14007.pdf>.

⁹⁵ EPA, *Nonroad Engines, Equipment, and Vehicles*, <http://www.epa.gov/nonroad/> (last visited July 17, 2015).

⁹⁶ *Id.*

⁹⁷ *Id.*

⁹⁸ *Id.*

⁹⁹ See <http://www.epa.gov/oms/nonroad-diesel.htm>.

¹⁰⁰ *Id.*

¹⁰¹ 77 Fed. Reg. 9304 (Dec. 16, 2011).

to limit their emissions of toxic air pollutants like mercury, arsenic, and metal prior to this action.¹⁰² EPA later published updates to the rule that apply only to new, rather than existing, power plants.¹⁰³

The rule sets technology-based emissions limitation standards for coal- and fire- electric generating units (EGUs) with a capacity of 25 megawatts or greater.¹⁰⁴ EPA did not identify any size, design, or engineering distinction between major and area sources, rather all regulated EGUs are “major” under the final rule.¹⁰⁵ The rule is expected to prevent about 90 percent of the mercury in coal burning in power plants from being emitted into the air, reduce 88 percent of acid gas emissions from power plants, and reduce 41 percent of sulfur dioxide emissions from power plants beyond the reductions expected from the Cross State Air Pollution Rule.¹⁰⁶

2.4.6 2010 NO₂ National Ambient Air Quality Standard

In January of 2010, EPA established an additional primary standard for NO₂ at 100 ppb, averaged over one hour, while retaining the annual standard.¹⁰⁷ EPA also set new monitor requirements for NO₂ levels near major roadways.¹⁰⁸ The data collected from the new monitoring locations will assist EPA in establishing, where appropriate, accurate area redesignations in 2016 or 2017. Areas designated as nonattainment will need to reduce its emissions in order to attain the new primary NAAQS. In addition, the standard must be taken into account when permitting new or modified major sources of NO_x emissions, such as fossil-fuel fired power plants, boilers, and a variety of other manufacturing operations.¹⁰⁹ Reductions in NO_x emissions resulting from the 2010 primary NO₂ NAAQS will enhance protection of visibility in Class I areas.

2.4.7 2010 SO₂ National Ambient Air Quality Standard

In June of 2010, EPA published a more stringent SO₂ NAAQS by revising the primary standard to 75 ppb average over one hour.¹¹⁰ This new, short-term standard is much more stringent than the previously revoked standards of 140 ppb averaged over 24 hours and 30 ppb averaged over a year.¹¹¹ In 2012, EPA took action to retain the secondary standard then in effect for SO₂.¹¹² The largest sources of SO₂ are fossil fuel combustion at power plants, roughly 73 percent, with the remaining SO₂ emissions result form industrial processes at various facilities.¹¹³ In 2013, EPA designated two areas (Hayden and Miami) as nonattainment for the 2010 standard.¹¹⁴ At this time, ADEQ is working on a nonattainment plan to reduce SO₂ emissions that will be submitted to EPA in the future. The reductions in SO₂ emissions resulting from the new, more stringent standard will provide for greater visibility improvement in Class I areas.

¹⁰² EPA, *Mercury and Air Toxics Standards: Basic Information*, <http://www.epa.gov/airquality/powerplanttoxics/basic.html> (last visited July 17, 2015).

¹⁰³ 78 Fed. Reg. 24073 (April 24, 2013).

¹⁰⁴ *Id.*

¹⁰⁵ *Id.*

¹⁰⁶ EPA, *Mercury and Air Toxics Standards: Cleaner Power Plants*, <http://www.epa.gov/mats/powerplants.html> (last visited July 17, 2015).

¹⁰⁷ 75 Fed. Reg. 6474 (January 22, 2010); *see also* <http://www.epa.gov/air/criteria.html>.

¹⁰⁸ *Id.*

¹⁰⁹ *Id.*

¹¹⁰ 75 Fed. Reg. 35520 (June 22, 2010).

¹¹¹ *Id.*

¹¹² 77 Fed. Reg. 20218 (April 3, 2012).

¹¹³ EPA, *Sulfur Dioxide*, <http://www.epa.gov/airquality/sulfurdioxide/> (last visited July 17, 2015).

¹¹⁴ 78 Fed. Reg. 47191 (August 5, 2013).

2.4.8 2012 PM_{2.5} National Ambient Air Quality Standard

In December of 2012, EPA strengthened the annual NAAQS for fine particulates to 12.0 micrograms per cubic meter annually, averaged over three years.¹¹⁵ Since that time EPA has designated some, not all, areas as either in attainment, nonattainment, or unclassified for that standard.¹¹⁶ EPA has yet to make any attainment designations for any air quality control region within Arizona.¹¹⁷ Emissions of fine particulate, a contributor to visibility impairment, will decrease because of this more stringent following area designations and the implementation of the associated state plans.

2.5 State Regulations

In addition to the federal regulatory programs listed above, there are state requirements that contribute to Arizona's success in reaching the 2018 RPGs. Discussed below are the relevant state regulations, which include mobile source programs, updates to the preconstruction permitting program, and requirements to manage pollution resulting from prescribed/controlled burns.

2.5.1 Arizona State Vehicle Emissions Inspection Program

Arizona Department of Environmental Quality (ADEQ) administers a mandatory vehicle emissions testing and repair program known as the Vehicle Emissions Inspection Program (VEIP) in Phoenix and Tucson.¹¹⁸ VEIP's emphasizes the importance of proper vehicle maintenance to ensure better performance, lower emissions, and a longer life of vehicles.¹¹⁹ VEIP improves the air quality by reducing vehicle emissions through effective testing technology and customer service measures that make it easy for participants to comply emissions requirements¹²⁰. VEIP has resulted in significant reductions in air pollutant such as NO_x and VOCs by identifying the vehicles emitting high levels of pollutants, requiring repairs and maintenance for registration purposes when appropriate, and providing free gas caps for vehicles that fail the gas cap test.

2.5.2 Arizona's New Source Review Program

Section 110(a)(2)(C) of the CAA requires states to develop a New Source Review (NSR) SIP that provides for regulation of the modification and construction of stationary sources. Part C of Title I contains the requirements for new sources within an attainment area and Part D contains requirements for Nonattainment areas. Arizona's NSR SIP covers regulated criteria pollutants, including SO₂, NO_x and PM₁₀ emissions that contribute to visibility impairment.

In October of 2012, ADEQ submitted a SIP revision and rule update for both major and minor source NSR rules to EPA and later signed a Limited Approval/Limited Disapproval on June 29, 2015. ADEQ is currently working with EPA to remedy the deficiencies identified and approval is anticipated in December of 2016. This action is the first NSR SIP update since the 1980s and significantly strengthened the program, resulting in increased emissions control standards. The imposition of more stringent requirements through the revised NSR program that occurred during the first planning period will contribute to the continued improvement of visibility in Class I areas.

¹¹⁵ 78 Fed. Reg. 3086 (December 14, 2012).

¹¹⁶ EPA, *Fine Particle (PM_{2.5}) Designations*, <http://www.epa.gov/airprog/oar/particlepollution/designations/> (last visited July 17, 2015).

¹¹⁷ *Id.*

¹¹⁸ ADEQ, *Air Quality Division: Vehicle Emissions*, <https://www.azdeq.gov/enviro/air/vei/> (last visited July 17, 2015).

¹¹⁹ *Id.*

¹²⁰ *Id.*

2.6 Arizona Regulations and Policy Addressing Fires

ADEQ's Air Quality Division implements a certified Enhanced Smoke Management Program that works toward a reduction in smoke impacts due to prescribed/controlled burning of nonagricultural fuels with particular regard to heavy forest fuels. All state lands, parks and forests, as well as any federally managed lands in Arizona, are under the jurisdiction of ADEQ in matters relating to air pollution from prescribed burning. Below Section 3.2 details the estimated tons of PM_{2.5}, which have been averted due to ADEQ's Smoke Management Plan.

3 Emissions Reductions from Regional Haze SIP Strategies

The RHR rule requires states to provide a summary of the emission reductions achieved through the implementation of its regional haze control measures.¹²¹ Figure 18, located in Section 5, provides a list of the pollutants contributing to visibility impairment, as well as information on their sources of emission. In the 1977 amendments providing authority for the RHR, Congress called for the “prevention of any future, and remedying of any existing, impairment of visibility in mandatory class I Federal areas *which impairment results from manmade air pollution.*”¹²² Since reductions of visibility impairing pollutants in the RHR are limited to manmade sources, a cornerstone of the AZ RH Plan and this report is reductions in NO_x, SO₂, and PM from stationary sources.

The control strategies, discussed in Section 2, implemented by Arizona have resulted in significant and continuing reductions in manmade haze creating pollutants. Although it is not possible to quantify every reduction, ADEQ has gathered and provided information on emission data for Electrical Generating Units (EGUs) and other major point sources for the period of 2002 to 2014. This section also discusses reductions in PM_{2.5} from anthropogenic fires through the implementation of Arizona's Enhanced Smoke Management Program. The baseline emissions year used in the following analysis is 2002, which is consistent with work performed by WRAP.

3.1 NO_x, SO₂, & PM₁₀ from BART Sources and Non-BART EGUs

Figure 2 below displays the emission totals and heat input for all Arizona EGUs that report to EPA's Clean Air Markets Division (CAMD) database. When compared to the 2002 baseline, 2014 emission totals from these EGUs for both NO_x and SO₂ have decreased by 43 percent and 68 percent, respectively. During this same period, total heat input has increased at these facilities by 22 percent. This simultaneous decrease in emissions and increase in heat input is consistent with the effective implementation of control measures for NO_x and SO₂.

¹²¹ *Supra* note 7, at 51.308(g)(2).

¹²² 42 USC §7491, CAA §169A (emphasis added).

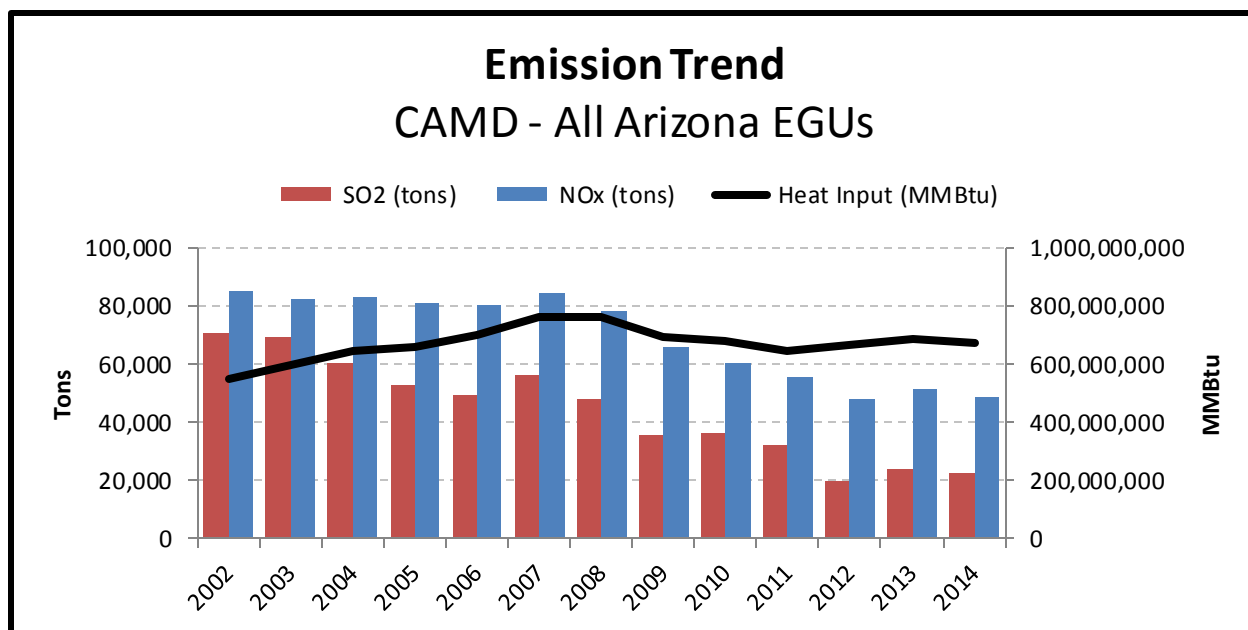


Figure 2 – CAMD - EGU Emission Trend

CAMD - All Arizona EGUs			
Year	SO2 (tons)	NOx (tons)	Heat Input (MMBtu)
2002	70,693.12	84,937.69	550,435,918
2003	69,396.07	82,607.06	596,941,073
2004	60,371.73	83,082.69	643,404,347
2005	52,761.52	80,790.03	657,183,740
2006	49,160.91	80,196.75	703,627,113
2007	56,486.3	84,430.9	764,895,852
2008	48,115.53	78,525.18	762,442,943
2009	35,977.97	65,608.17	693,798,486
2010	36,445.12	60,523.7	681,330,967
2011	32,427.63	55,453.05	643,162,935
2012	20,022.9	48,137.41	663,704,899
2013	23,688.74	51,753.42	686,904,693
2014	22,560.19	48,411.64	670,859,719

Table 12- CAMD - EGU Emission Data

Since Figure 2 also includes emissions data from non-BART EGU sources, ADEQ provides Figure 3 to examine the emission reductions from BART control measures. Figure 2 and Table 13 show the trend in emissions for the four BART sources that report to CAMD, which are Apache Generating Station, Cholla Generating Station, Coronado Generating Station, and Sundt Generating Station. Since 2002, these four facilities have decreased their NO_x and SO₂ emissions by 77 percent and 24 percent, respectively. At the same time, the total heat input for these facilities has increased by 0.5 percent. This concurrent decrease in emissions and increase in heat input is evidence that the emission reductions are the result of the proper implementation of BART controls and not due to external factors such as reduced demand. Further reductions in SO₂ and NO_x emissions from these

facilities are expected to occur in 2016-2017, due to the implementation of the remaining BART and BART Alternative requirements for these facilities, as described above.

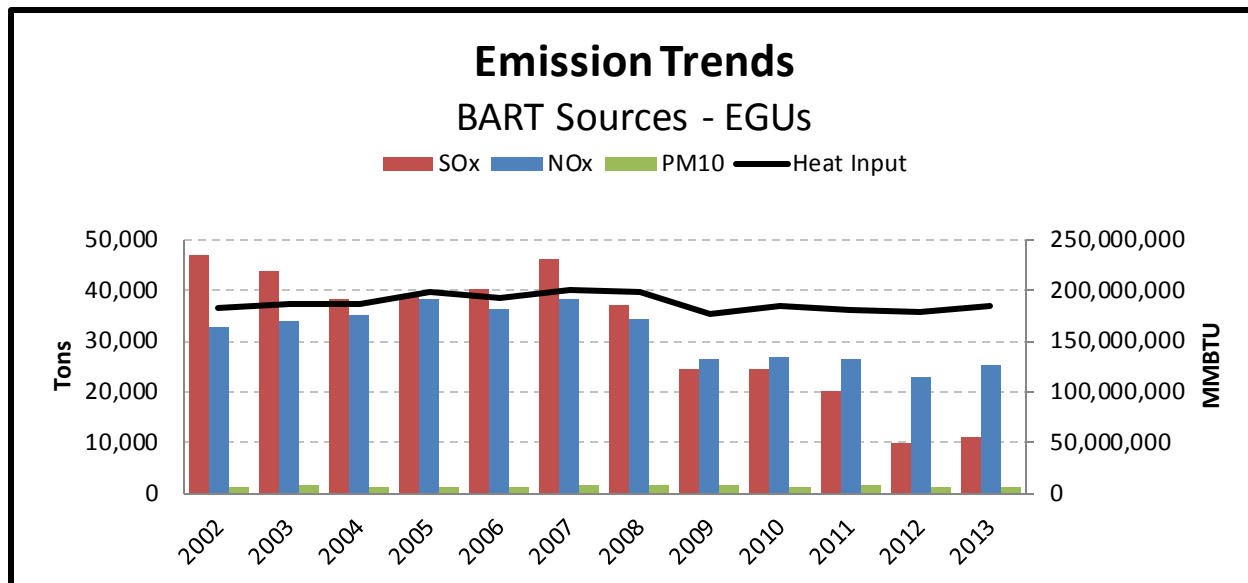


Figure 3 - BART-Only Emission Trend

BART Sources - EGUs				
Year	SOx (tons)	NOx (tons)	PM ₁₀ (tons)	Heat Input
2002	46,798.38	32,713.54	1,215.19*	1.83E+08
2003	43,901.28	34,125.76	1,653.73*	1.87E+08
2004	38,407.93	35,318.75	1,433.88*	1.87E+08
2005	38,877.89	38,456.78	1,270.10*	1.98E+08
2006	40,360.44	36,143.63	1,482.61	1.92E+08
2007	45,974.07	38,454.06	1,782.20	2.01E+08
2008	37,108.81	34,283.70	1,823.26	1.97E+08
2009	24,510.66	26,482.54	1,652.86	1.77E+08
2010	24,543.44	26,930.75	1,476.81	1.85E+08
2011	20,204.00	26,321.35	1,636.55	1.81E+08
2012	9,861.17	23,090.36	1,154.20	1.78E+08
2013	11,025.46	25,337.46	1,321.54	1.84E+08
*PM ₁₀ data was not available for Sundt (Irvington) Generating Station.				

Table 13 - EGU BART Emission Trend Data

Four of the eight subject-to-BART sources in Arizona are non-EGUs and as a result are not represented in the CAMD data provided in Figures 2 and 3. Therefore, Figure 4 and Table 14 below provide the emission totals for the four non-EGU BART sources to provide a more complete characterization of emissions reductions from BART implementation. ADEQ obtained the emission data for the non-EGU facilities from the 2008 and 2011 National Emissions Inventory (NEI) as well as ADEQ's internal point source emission database. The four non-EGU sources are: 1) Asarco Hayden Smelter, 2) Chemical Lime Nelson, 3) Freeport Miami Smelter, and 4) Catalyst Paper. The SO₂ and NO_x emissions from these facilities have decreased by 11 percent and 41 percent, respectively, from

2002 to 2013. Further reductions in the emissions from these facilities are expected to occur as a result of implementation of BART or BART Alternative controls in 2017-2018.

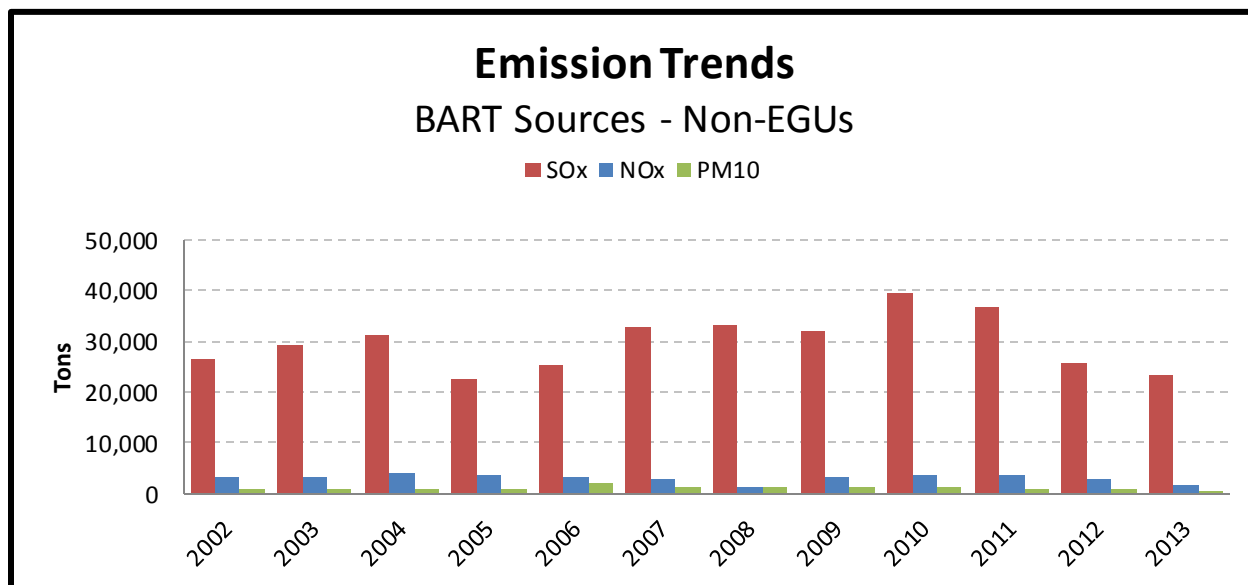


Figure 4 - Non-EGU BART Emission Trend Graph

BART Sources - Non-EGUs			
Year	SOx	NOx	PM ₁₀
2002	26,329.79	3,079.91	996.13
2003	29,148.71	3,253.50	970.13
2004	31,019.13	3,957.29	991.43
2005	22,629.87	3,498.00	980.40
2006	25,414.23	3,192.79	1,904.98
2007	32,932.73	2,867.47	1,189.45
2008	33,343.86	1,300.21	1,329.33
2009	32,089.09	3,203.38	1,127.69
2010	39,520.99	3,754.05	1,112.11
2011	36,757.34	3,622.01	1,066.46
2012	25,627.16	2,869.08	749.47
2013	23,363.64	1,825.78	607.03

Table 14 - Non-EGU BART Emission Trend Data

Two sources were determined to need reasonable progress controls, although EPA approved the state's determination that they were not subject-to-BART. These two sources are 1) CalPortland Cement – Rillito and 2) Phoenix Cement Company – Clarkdale. Figure 5 and Table 15 presents the SO₂, NO_x, and PM₁₀ emissions from these facilities. The data shows that from 2002 to 2013 SO₂ emissions have decreased by 97 percent, NO_x has decreased by 70 percent and PM₁₀ has decreased by 81 percent. Further reductions in the emissions from these facilities are expected to occur because of implementation of reasonable progress controls in 2017-2018.

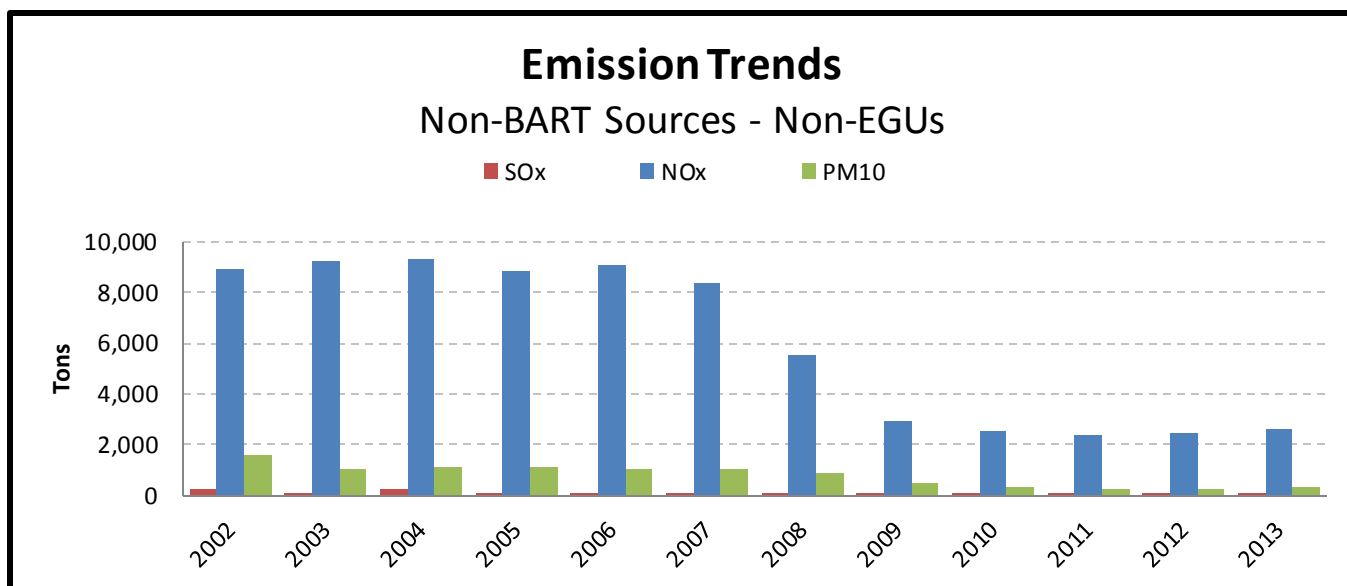


Figure 5 - Non-EGU Non-BART Emission Trend Graph

Non-BART, Non-EGU			
Year	SOx	NOx	PM ₁₀
2002	291.58	8,894.53	1,600.16
2003	30.97	9,215.68	1,004.81
2004	220.97	9,285.76	1,094.75
2005	19.33	8,851.11	1,157.94
2006	21.60	9,077.13	1,081.03
2007	103.79	8,367.40	1,046.82
2008	21.39	5,543.42	859.78
2009	10.71	2,937.34	464.27
2010	14.83	2,559.71	313.15
2011	10.41	2,350.06	281.76
2012	10.89	2,465.56	277.30
2013	9.94	2,648.60	301.33

Table 15 - Non-EGU Non-BART Emission Trend Data

3.2 PM_{2.5} from Anthropogenic Fires

ADEQ's Air Quality Division implements a certified Enhanced Smoke Management Program (ESMP), mentioned previously in Section 2.6 of this document, which reduce smoke impacts due to prescribed/controlled burning of nonagricultural fuels with particular regard to heavy forest fuels. All state lands, state parks, state forests, and federally managed lands in Arizona are under the jurisdiction of ADEQ in matters relating to air pollution from prescribed burning. Table 16 details the estimated tons of PM_{2.5} that have been averted due to the ESMP.

Year	Tons of PM _{2.5} Averted ¹²³
2009	11,916
2010	7,100
2011	3,986
2012	3,986
2013	4,344
2014	7,127

Table 16 - Averted PM_{2.5} Emissions

¹²³ ADEQ calculates annual PM_{2.5} emissions and emissions averted using Western Regional Air Partnership (WRAP) recommended Emission Reduction Techniques (ERTs) ratios applied to non-agricultural forest and range management burns. *See generally* <http://www.wrapair.org/forums/fejfd/documents/ert/index.html>.

4 Visibility Progress

The RHR requires states to assess current visibility, the change compared to baseline, and change over the past five years for both the most impaired (Worst Days) and least impaired (Best Days) days.¹²⁴ The following analysis uses the years of 2009-2013 to represent the current conditions and 2000-2004 as the baseline period. Below, Table 17 compares current and baseline Worst Days and Best Days including the visibility changes as required by the RHR. Table 17 also compares Worst Days current conditions with Arizona's 2018 RPG at each monitoring site. Visibility is improving on the Best Days at all monitoring locations and meeting the RHR requirement that Best Days should not degrade.

Visibility is also improving on the Worst Days and all monitoring locations have already achieved the 2018 RPGs. Sulfate and nitrate contributions at the Class I areas are declining and should continue to decline in response to emission reductions. However, organic carbon is the largest contributor to haze on the 20% worst days and wildfires are a primary source of organic carbon. Therefore, emissions beyond ADEQ's control and outside the reach of the RHR influence the visibility trends. While eight or nine IMPROVE monitors are currently on track to meet the uniform rate of visibility progress by 2018, wildfire impacts could alter expected visibility improvement.

The following section demonstrate the changes in visibility conditions for both the Worst Days and Best Days at each of the IMPROVE monitoring stations in Arizona. Each section contains graphs that display the annual deciview, five-year average deciview, baseline conditions, uniform rate of progress glidepath, and reasonable progress glidepath. ADEQ used data obtained from the WRAP TSS website, which constitutes the most recent quality assured public data available.

¹²⁴ Supra note 7, at §51.308(g)(3).

IMPROVE Monitor	Class I Areas	Best Days (dv)			Worst Days (dv)			
		Baseline 2000-2004	2018 RPG	Current 2009-2013	Baseline 2000-2004	2018 RPG	2018 URP	Current 2009-2013
BALD1	Mount Baldy Wilderness	3.0	2.76	2.7	11.8	11.40	10.54	10.5
CHIR1	Chiricahua National Monument, Chiricahua Wilderness & Galiuro Wilderness	4.9	4.77	4.1	13.4	13.19	11.98	12.1
GRCA2	Grand Canyon National Park	2.2	2.02	1.8	11.7	11.02	10.58	10.9
IKBA1	Mazatzal Wilderness & Pine Mountain Wilderness	5.4	5.07	4.4	13.3	12.63	11.76	12.0
PEFO1	Petrified Forest National Park	5.0	4.62	4.1	13.2	12.64	11.63	11.9
SAGU1	Saguaro National Monument – East Unit	6.9	6.93	6.1	14.8	14.68	12.88	12.6
SAWE1	Saguaro National Monument – West Unit	8.6	8.23	7.5	16.2	15.87	13.88	14.2
SIAN1	Sierra Ancha Wilderness	6.2	5.78	4.9	13.7	13.05	12.02	12.2
SYCA2	Sycamore Canyon Wilderness	5.6	5.39	5.1	15.3	14.92	13.24	14.6
TONT1	Superstition Wilderness	6.5	6.09	5.2	14.2	13.72	12.38	12.7

Table 17 - Reasonable Progress Goal Summary

4.1 Mount Baldy Wilderness

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	3.0	11.8
2005-09	2.9	11.8
2006-10	2.9	11.1
2007-11	2.8	11.5
2008-12	2.8	11.6
2009-13	2.7	10.5

Pollutant	20% Worst Days Progress Period (Mm^{-1})						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	6.2	6.5	5.8	5.7	5.3	5.6	-0.6
Nitrate	1.1	1.0	1.0	1.0	1.0	1.0	-0.1
Organic Carbon	13.0	10.9	9.3	10.5	11.0	8.4	-4.6
Elemental Carbon	2.8	2.1	1.8	1.9	2.0	1.7	-1.1
Fine Soil	1.1	1.5	1.5	1.6	1.6	1.3	0.2
Coarse Material	2.8	4.1	4.1	4.4	4.4	3.5	0.7
Sea Salt	0.0	0.1	0.1	0.1	0.1	0.1	0.1
Total Light Extinction	36.1	35.1	32.8	34.4	34.6	30.6	-5.5

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

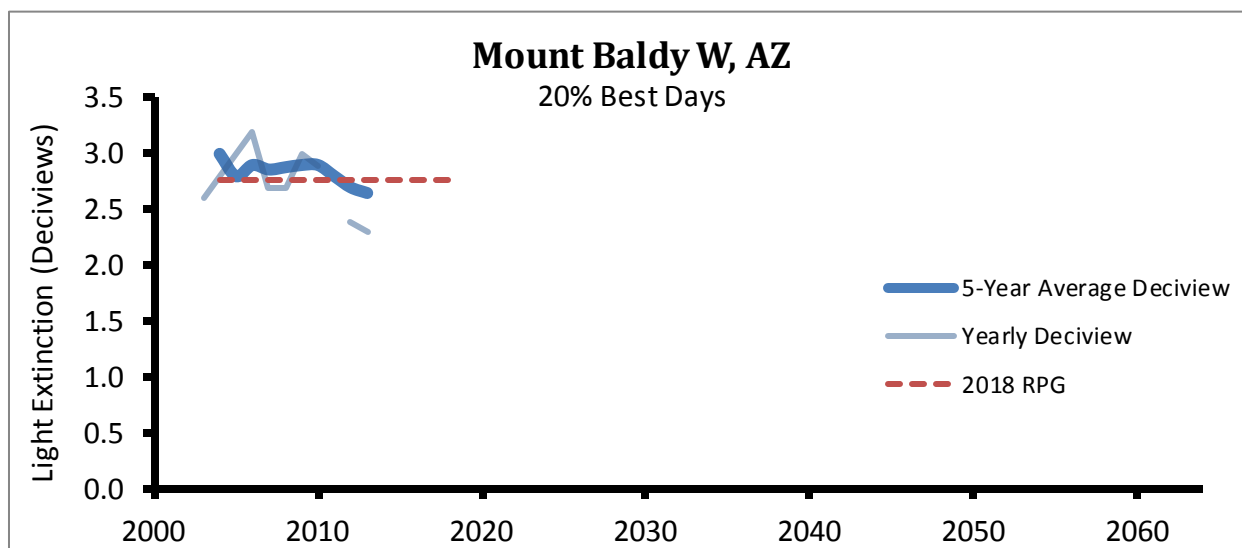


Figure 6 - Mount Baldy, 20% Best Days

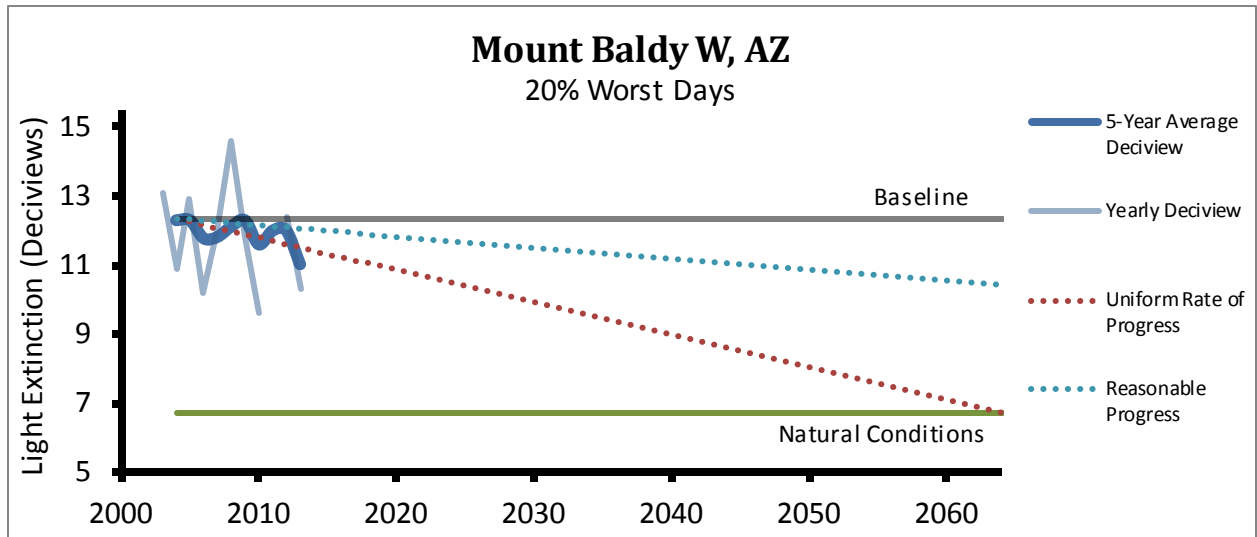


Figure 7 - Mount Baldy, 20% Worst Days

4.2 Chiricahua National Monument, Chiricahua Wilderness & Galiuro Wilderness

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	4.9	13.4
2005-09	4.4	12.2
2006-10	4.2	11.8
2007-11	4.0	11.9
2008-12	4.0	11.9
2009-13	4.1	12.1

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	8.1	9.1	8.6	8.4	7.7	7.3	-0.8
Nitrate	1.3	1.3	1.3	1.2	1.3	1.3	0.0
Organic Carbon	7.3	4.0	3.5	4.5	4.7	4.9	-2.4
Elemental Carbon	1.7	1.2	1.0	1.2	1.2	1.2	-0.5
Fine Soil	2.7	2.4	2.4	2.1	2.0	1.9	-0.8
Coarse Material	8.6	6.8	6.8	6.2	6.4	7.4	-1.2
Sea Salt	0.1	0.3	0.3	0.2	0.3	0.2	0.1
Total Light Extinction	39.9	35.1	33.8	33.7	33.5	34.3	-5.6

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

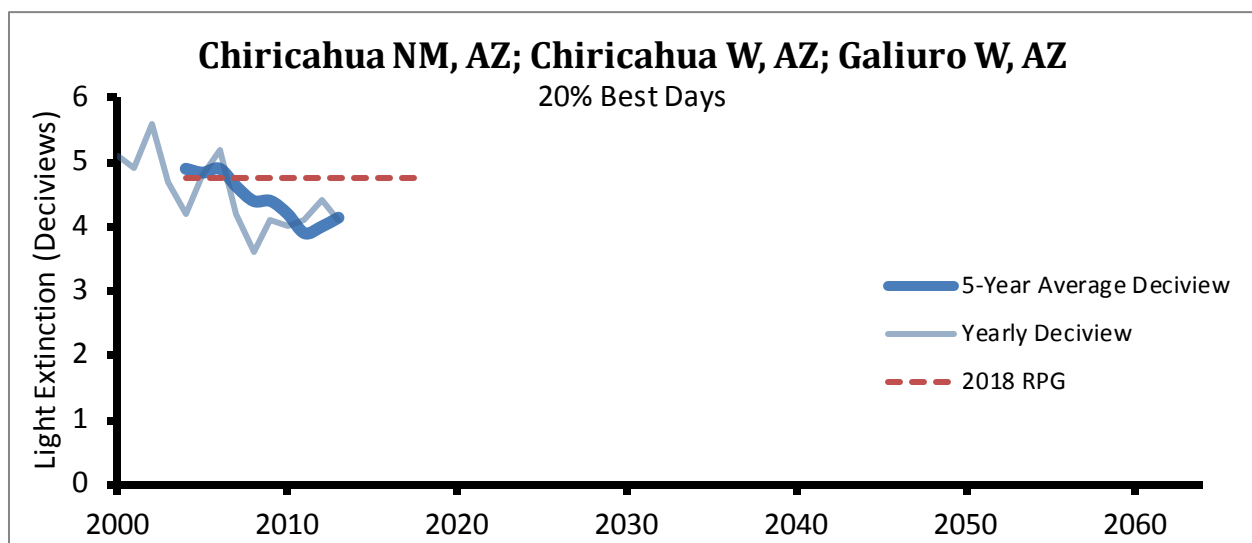


Figure 8 - Chiricahua & Galiuro 20% Best Days

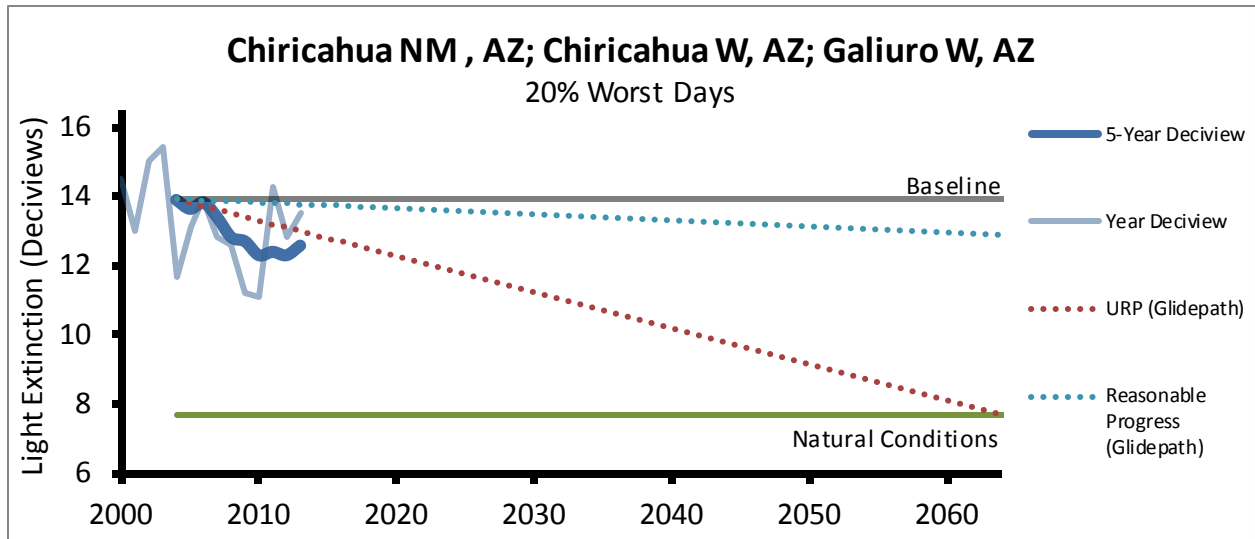


Figure 9 - Chiricahua & Galiuro 20% Worst Days

4.3 Grand Canyon National Park

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	2.2	11.7
2005-09	2.2	12.0
2006-10	2.1	11.4
2007-11	2.0	11.5
2008-12	1.9	11.1
2009-13	1.8	10.9

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	5.4	5.8	5.3	5.3	5.1	4.9	-0.5
Nitrate	2.2	1.8	1.9	1.8	1.7	1.5	-0.7
Organic Carbon	10.7	10.7	10.2	11.7	10.9	11.4	0.7
Elemental Carbon	2.4	2.9	2.7	2.9	2.7	2.8	0.4
Fine Soil	1.3	1.5	1.5	1.5	1.4	1.2	-0.1
Coarse Material	3.5	3.2	3.2	3.4	3.4	3.2	-0.3
Sea Salt	0.1	0.1	0.1	0.1	0.1	0.2	0.1
Total Light Extinction	34.6	35.1	33.9	35.7	34.3	34.3	-0.3

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

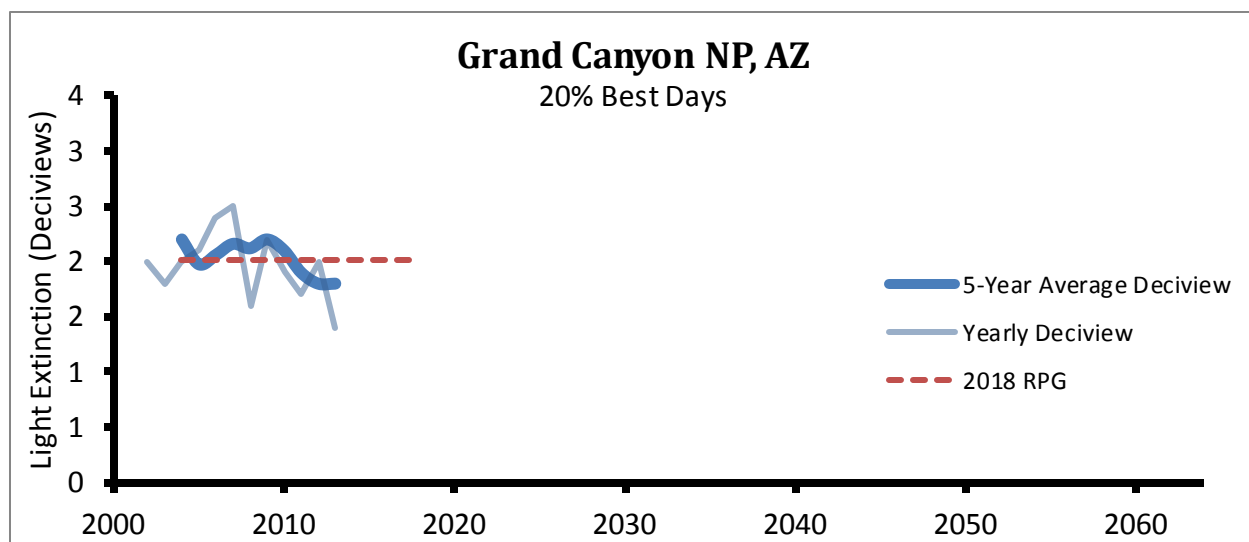


Figure 10 - Grand Canyon 20% Best Days

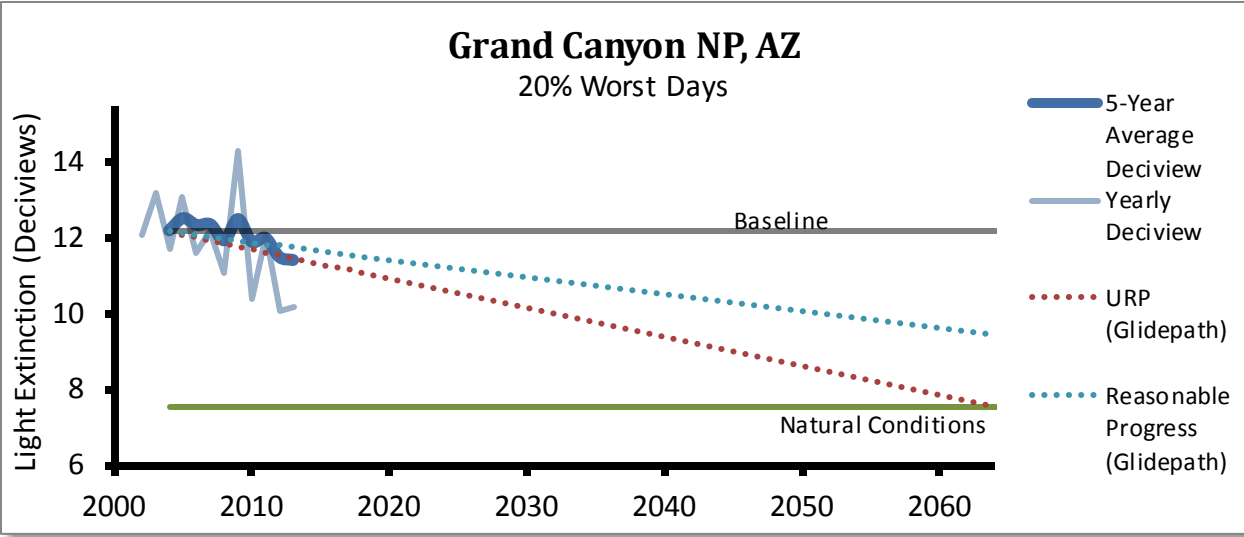


Figure 11 - Grand Canyon 20% Worst Days

4.4 Mazatzal Wilderness & Pine Mountain Wilderness

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	5.4	13.3
2005-09	5.1	13.4
2006-10	5.0	12.6
2007-11	4.5	12.7
2008-12	4.5	12.4
2009-13	4.4	12.0

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	6.5	7.5	6.8	6.9	6.7	6.6	0.1
Nitrate	3.5	2.3	2.4	2.4	2.4	2.2	-1.3
Organic Carbon	7.6	8.3	6.4	5.9	5.8	5.4	-2.2
Elemental Carbon	2.3	2.3	1.9	1.7	1.6	1.5	-0.8
Fine Soil	2.6	2.3	2.4	2.6	2.5	2.3	-0.3
Coarse Material	6.2	6.2	5.8	6.9	6.4	6.2	0.0
Sea Salt	0.1	0.2	0.2	0.3	0.3	0.3	0.2
Total Light Extinction	38.9	39.2	35.9	36.8	35.7	34.6	-4.3

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

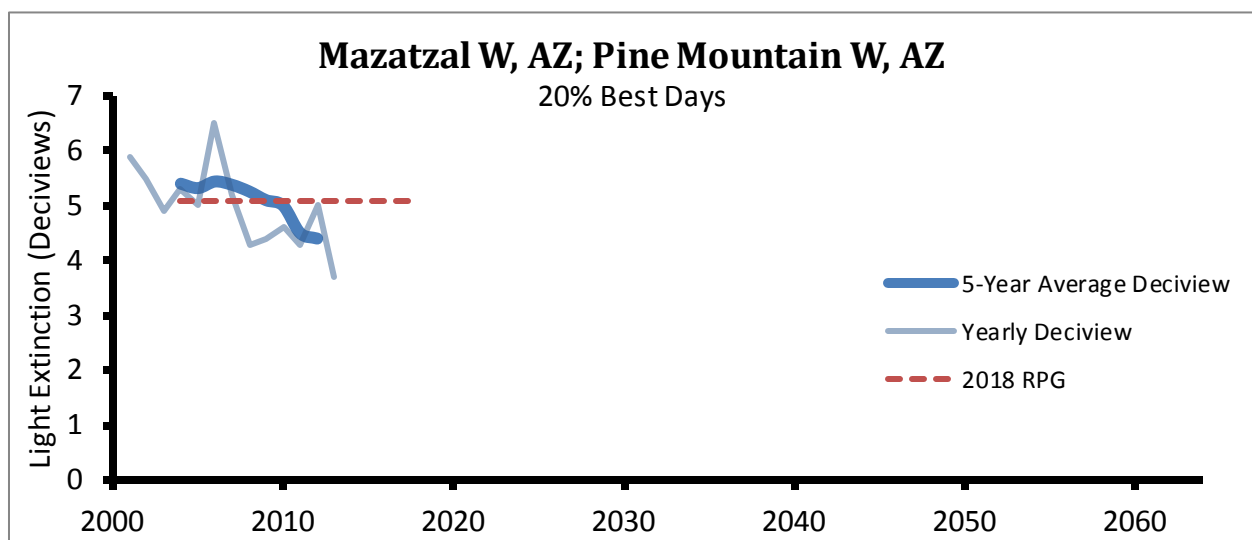


Figure 12 - Mazatzal & Pine Mountain 20% Best Days

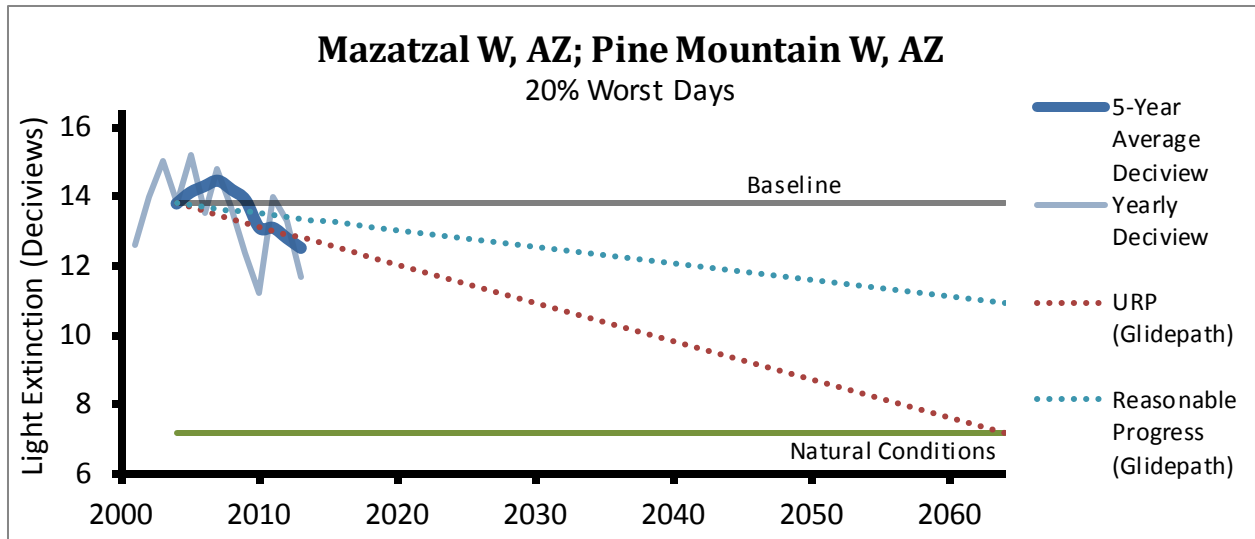


Figure 13 - Mazatzal & Pine Mountain 20% Worst Days

4.5 Petrified Forest National Park

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	5.0	13.2
2005-09	4.6	13.0
2006-10	4.6	12.5
2007-11	4.3	12.5
2008-12	4.2	12.4
2009-13	4.1	11.9

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	6.6	7.2	6.4	6.4	5.9	5.6	-1.0
Nitrate	1.8	1.5	1.6	1.9	1.7	1.6	-0.2
Organic Carbon	10.9	9.5	7.5	7.4	7.4	7.4	-3.5
Elemental Carbon	2.9	3.4	2.9	2.8	2.7	2.5	-0.4
Fine Soil	2.0	2.6	2.4	2.3	2.3	2.1	0.1
Coarse Material	7.3	6.3	6.7	6.5	6.8	6.4	-0.9
Sea Salt	0.0	0.2	0.2	0.2	0.2	0.2	0.2
Total Light Extinction	40.6	39.7	36.6	36.5	36.0	34.9	-5.7

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

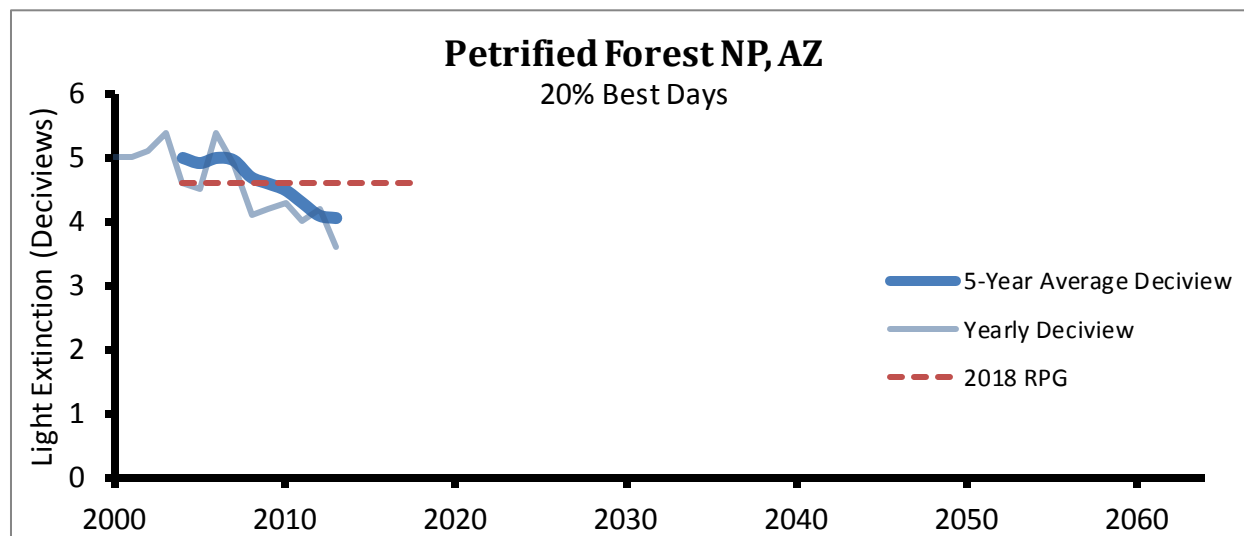


Figure 14 - Petrified Forest 20% Best Days

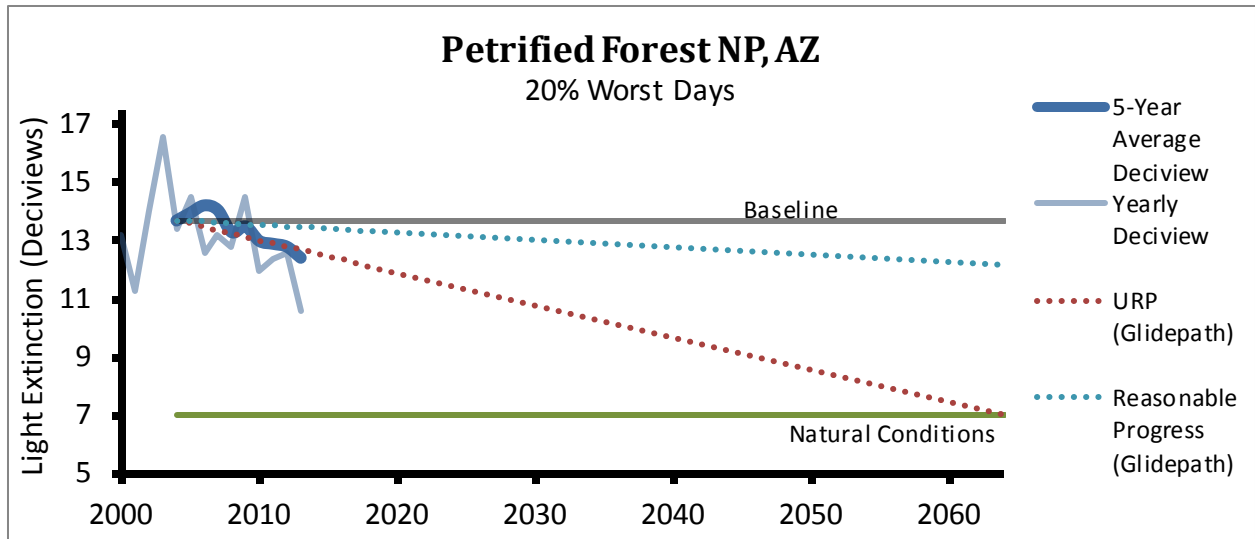


Figure 15 - Petrified Forest 20% Worst Days

4.6 Saguaro National Park – East Unit

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	6.9	14.8
2005-09	6.7	13.6
2006-10	6.4	13.3
2007-11	6.1	13.1
2008-12	6.0	12.7
2009-13	6.1	12.6

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	7.4	7.4	6.7	6.7	6.4	6.8	-0.6
Nitrate	5.8	2.6	2.9	2.9	2.5	2.5	-3.3
Organic Carbon	9.4	5.3	4.6	4.3	4.2	4.0	-5.4
Elemental Carbon	3.1	2.2	1.9	1.7	1.5	1.5	-1.6
Fine Soil	3.4	3.3	3.2	3.4	2.9	2.5	-0.9
Coarse Material	7.1	8.3	8.3	8.1	7.9	8.0	0.9
Sea Salt	0.2	0.4	0.4	0.5	0.4	0.4	0.2
Total Light Extinction	46.3	39.5	38.0	37.5	35.9	35.7	-10.6

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

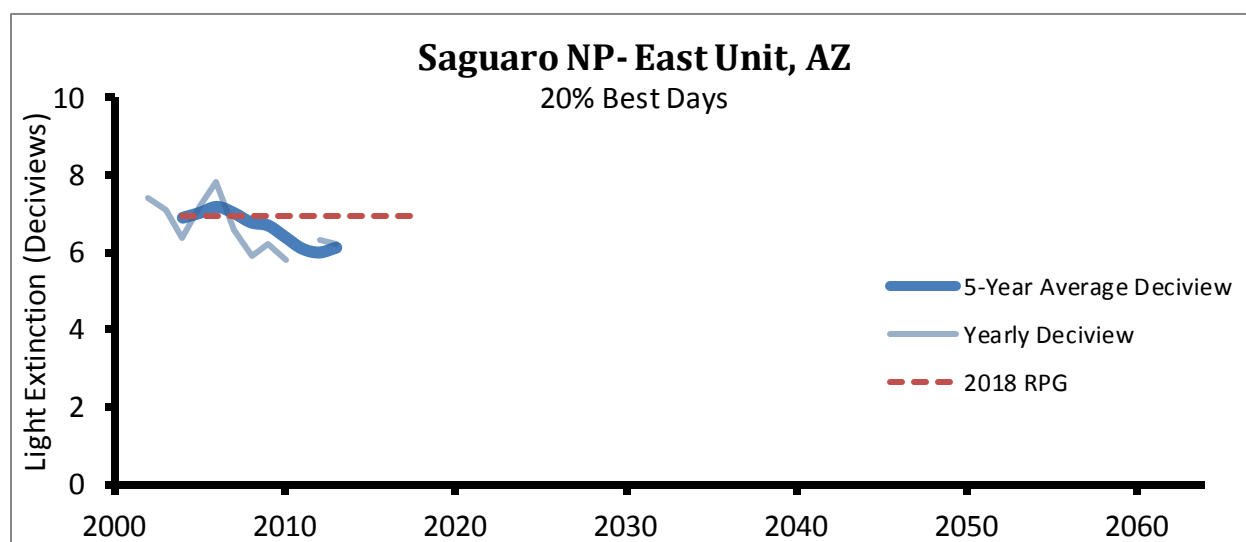


Figure 16 - Saguaro-East 20% Best Days

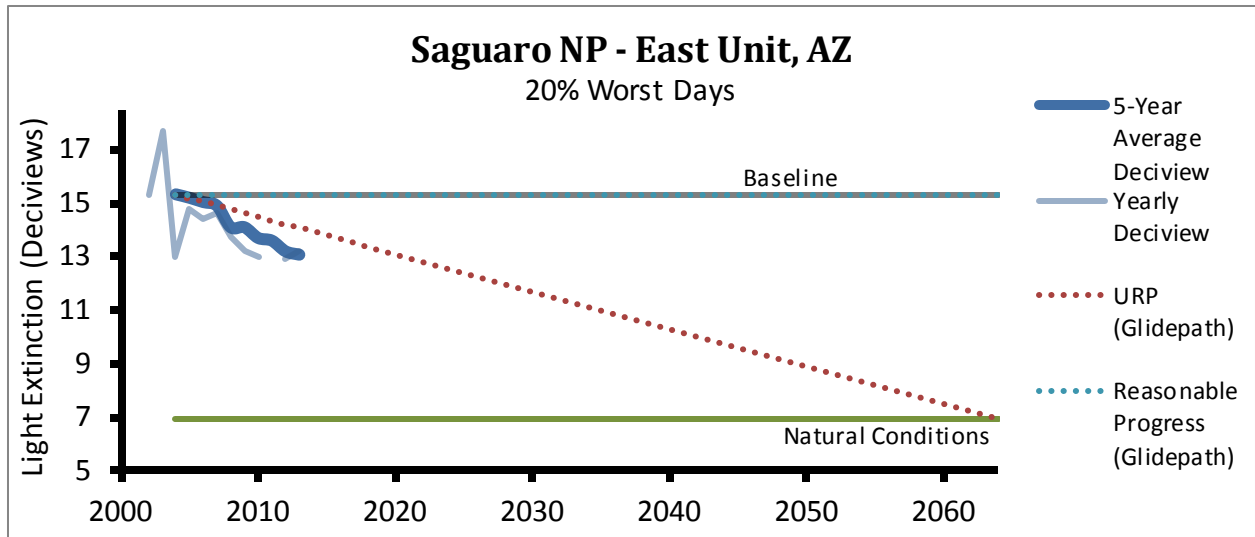


Figure 17 - Saguaro-East 20% Worst Days

4.7 Saguaro National Park – West Unit

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	8.6	16.2
2005-09	8.0	14.9
2006-10	7.8	14.4
2007-11	7.5	14.4
2008-12	7.5	14.3
2009-13	7.5	14.2

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	7.7	7.1	6.7	7.2	6.9	6.9	-0.8
Nitrate	6.0	3.7	3.5	3.5	3.6	2.8	-3.2
Organic Carbon	7.5	5.6	4.8	4.6	4.8	4.9	-2.6
Elemental Carbon	3.2	2.7	2.3	2.1	2.0	1.9	-1.3
Fine Soil	5.8	4.4	4.2	4.0	3.8	3.6	-2.2
Coarse Material	12.8	10.6	10.8	10.7	10.6	11.2	-1.6
Sea Salt	0.3	0.4	0.4	0.4	0.4	0.4	0.1
Total Light Extinction	53.3	44.6	42.8	42.5	42.2	41.9	-11.4

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

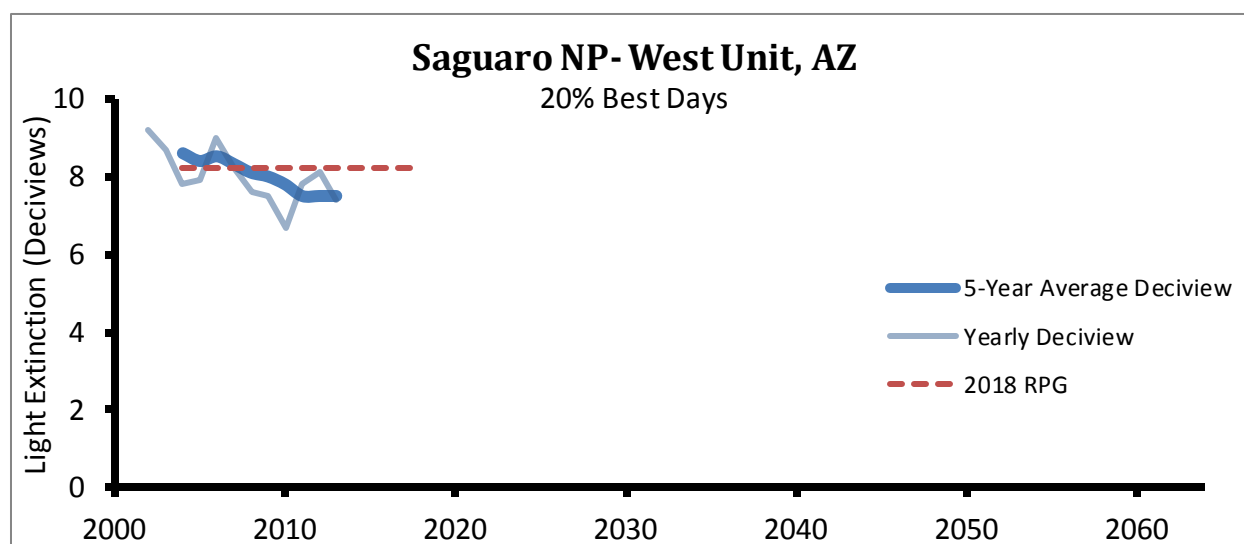


Figure 18 - Saguaro-West 20% Best Days

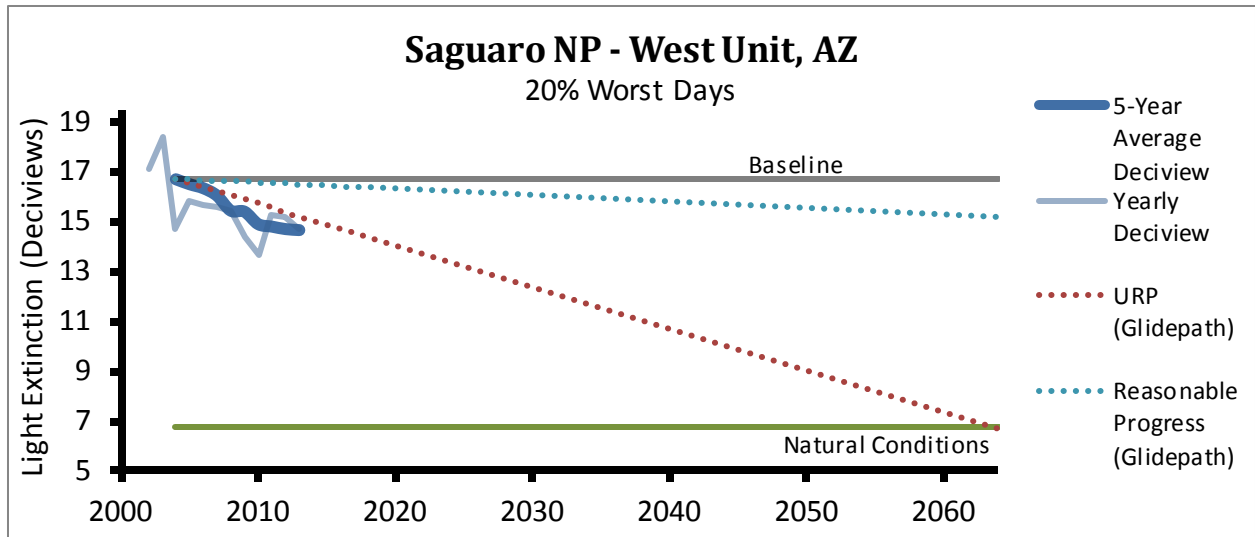


Figure 19 - Saguaro-West 20% Worst Days

4.8 Sierra Ancha Wilderness

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	6.2	13.7
2005-09	5.3	13.0
2006-10	5.4	12.4
2007-11	5.2	12.4
2008-12	5.2	12.7
2009-13	4.9	12.2

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	6.4	7.2	6.4	6.7	6.3	6.1	-0.3
Nitrate	2.1	1.8	1.8	1.8	1.6	1.6	-0.5
Organic Carbon	12.0	9.4	7.6	7.9	8.3	12.7	0.7
Elemental Carbon	2.4	2.6	2.1	2.1	2.1	2.4	0.0
Fine Soil	2.2	2.3	2.2	2.3	2.0	1.8	-0.4
Coarse Material	5.9	5.3	5.1	5.0	4.7	4.4	-1.5
Sea Salt	0.1	0.3	0.3	0.3	0.3	0.3	0.2
Total Light Extinction	41.1	38.8	35.6	36.0	35.5	39.2	-1.9

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

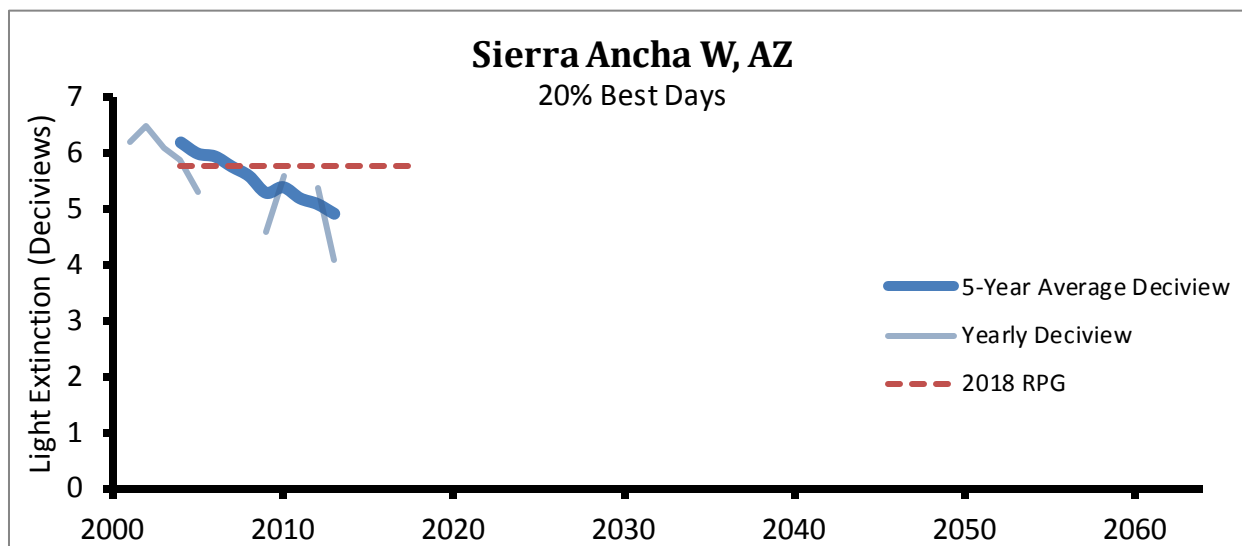


Figure 20 - Sierra Ancha 20% Best Days

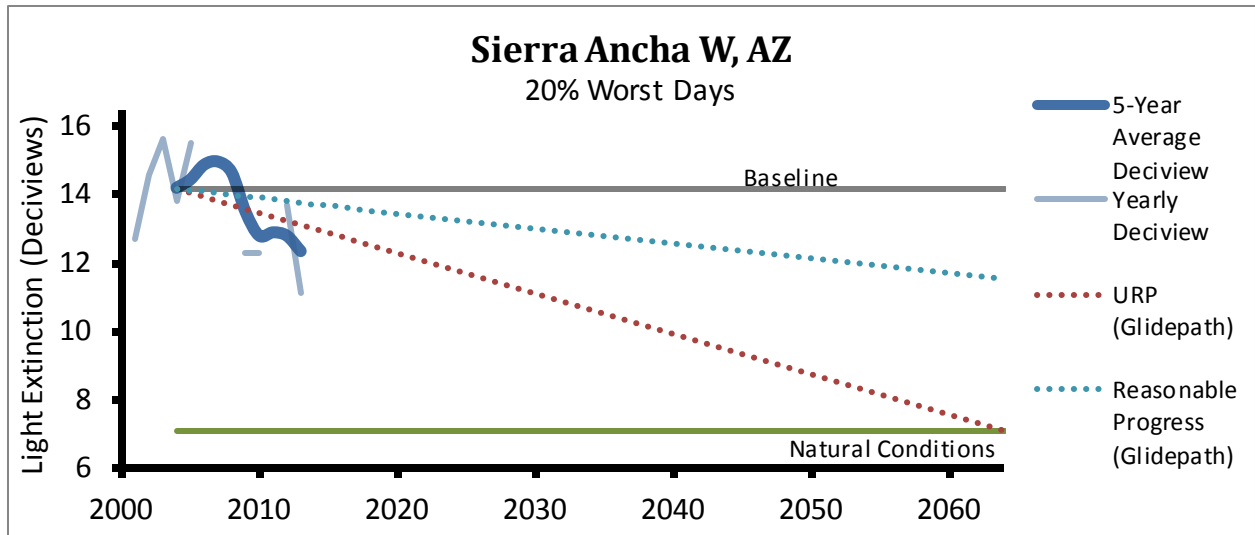


Figure 21 - Sierra Ancha 20% Worst Days

4.9 Sycamore Canyon Wilderness

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	5.6	15.3
2005-09	5.1	15.2
2006-10	5.1	14.7
2007-11	4.8	15.0
2008-12	5.1	14.9
2009-13	5.1	14.6

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	5.0	5.7	4.8	4.9	4.8	4.5	-0.5
Nitrate	2.0	1.4	1.4	1.6	1.6	1.6	-0.4
Organic Carbon	11.7	11.2	11.3	12.1	12.3	12.2	0.5
Elemental Carbon	3.2	3.5	3.6	3.6	3.6	3.3	0.1
Fine Soil	6.8	5.8	5.7	5.7	5.8	5.6	-1.2
Coarse Material	9.4	10.8	9.6	10.0	9.9	9.8	0.4
Sea Salt	0.1	0.1	0.1	0.2	0.2	0.2	0.1
Total Light Extinction	47.2	47.4	45.6	47.2	47.0	46.0	-1.2

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

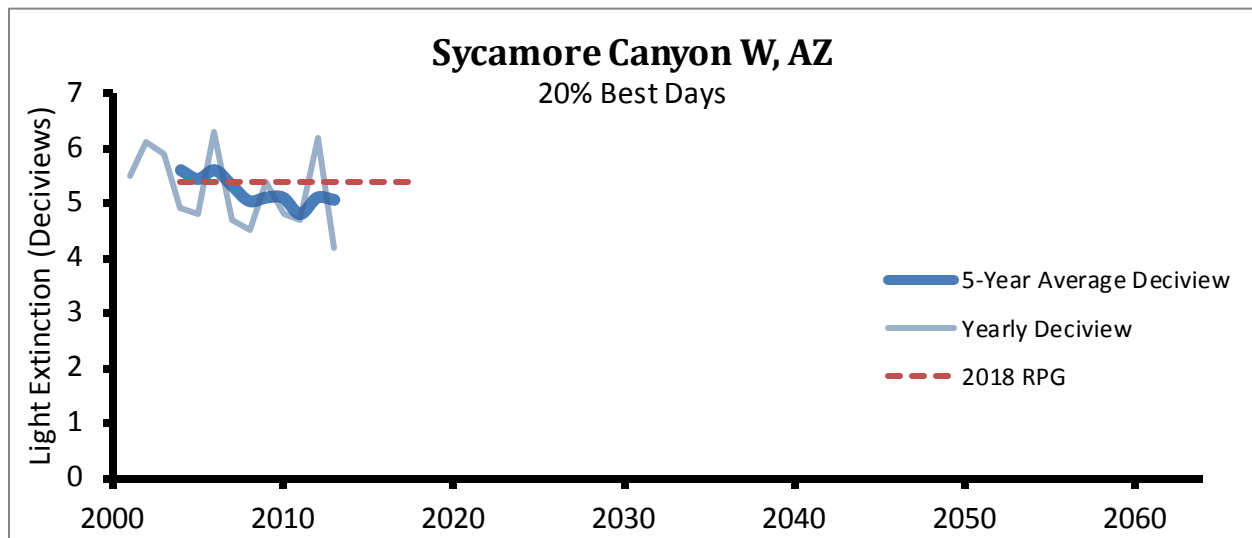


Figure 22 - Sycamore Canyon 20% Best Days

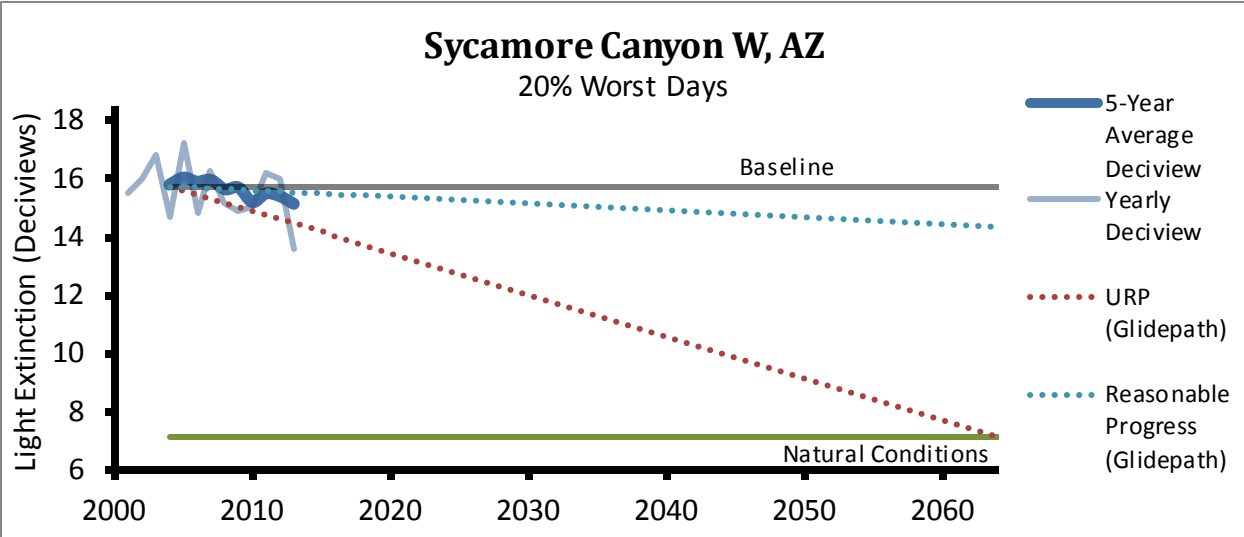


Figure 23 - Sycamore Canyon 20% Worst Days

4.10 Superstition Wilderness

Progress Period	Deciviews	
	20% Best Days	20% Worst Days
2000-04 (Baseline)	6.5	14.2
2005-09	5.7	13.8
2006-10	5.7	13.3
2007-11	5.4	13.2
2008-12	5.4	13.0
2009-13	5.2	12.7

Pollutant	20% Worst Days Progress Period (Mm ⁻¹)						Difference*
	2000-04 (Baseline)	2005-09	2006-10	2007-11	2008-12	2009-13	
Sulfate	7.2	8.5	7.8	7.6	7.3	7.1	-0.1
Nitrate	3.0	2.5	2.5	2.4	2.1	2.0	-1.0
Organic Carbon	10.0	6.4	5.3	5.1	5.2	4.9	-5.1
Elemental Carbon	2.7	2.1	1.6	1.5	1.5	1.4	-1.3
Fine Soil	2.4	2.8	2.8	2.8	2.7	2.5	0.1
Coarse Material	7.4	7.9	8.0	8.3	7.8	7.8	0.4
Sea Salt	0.1	0.3	0.4	0.4	0.4	0.4	0.3
Total Light Extinction	42.8	40.5	38.4	38.1	36.9	36.2	-6.6

*Calculated as the difference between the baseline period (2000-04) and current conditions (2009-13). A negative difference indicated a reduction in haze, i.e. improved visibility.

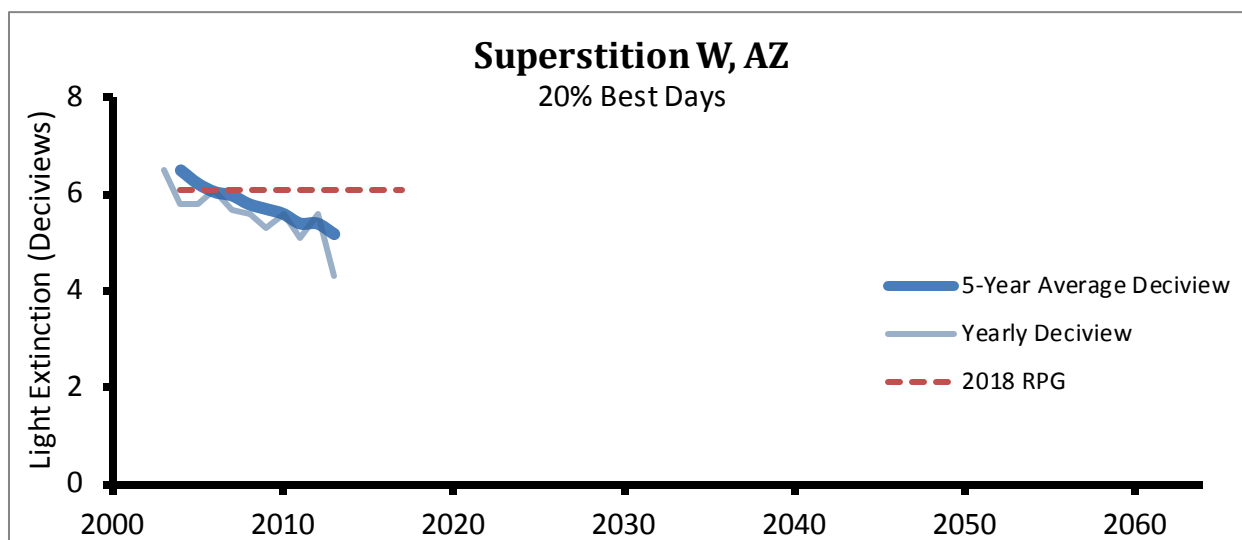


Figure 24 - Superstition 20% Best Days

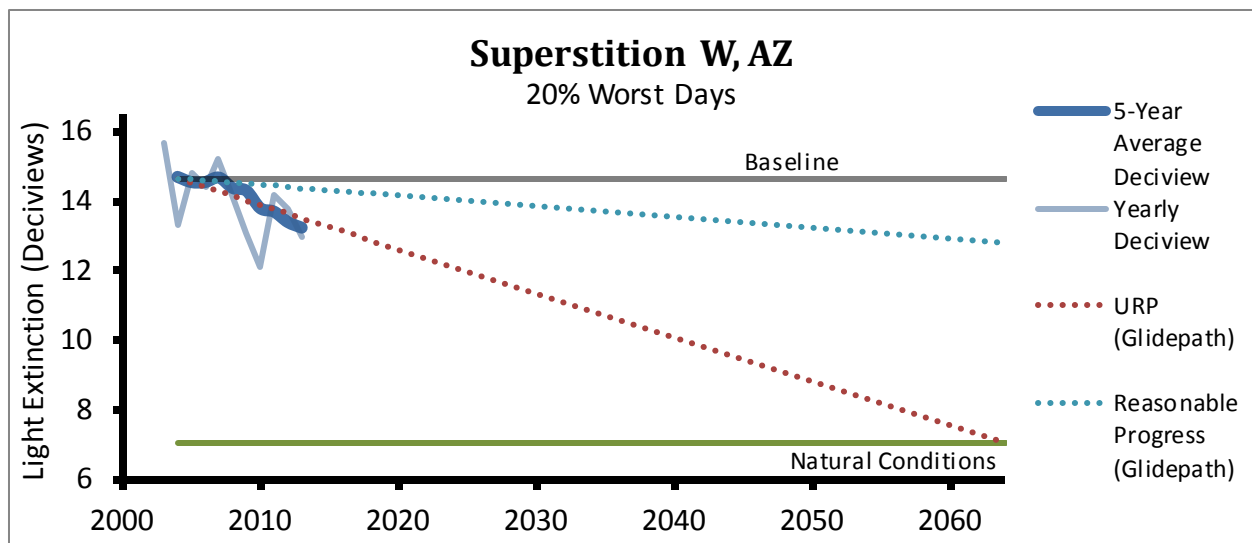


Figure 25 - Superstition 20% Worst Days

5 Statewide Emission Progress

The RHR requires each state to track changes over the past five years in emissions of pollutants contributing to visibility impairment from all sources and activities within the state.¹²⁵ ADEQ examined the emissions of SO₂, NO_x, Primary Organic Aerosols, Elemental Carbon, Fine Particulate Matter, Coarse Particulate Matter, Ammonia, and Volatile Organic Compounds and determined its emissions reductions are adequate to achieve Arizona's RPGs. ADEQ has included a quick summary of these pollutants in Table 24.¹²⁶

The following sections provide a detailed analysis of the emission trends over the nine-year period from 2002 (the baseline year) to 2011 (the most current inventory year available). ADEQ relied heavily on data provided by the WRAP TSS and Regional Progress Support Documents and analyzed the emissions data for years 2002, 2008, and 2011.¹²⁷ These datasets represent the most comprehensive, accurate, and current statewide emission inventories available. ADEQ is able to account for emissions during the requisite five-year period by using the 2002, 2008, and 2011 datasets.

¹²⁵ *Supra* note 7, at §51.308(g)(4).

¹²⁶ WRAP, *Regional Haze Rule Implementation—Reasonable Progress: Arizona State Summary*, (June 28, 2013), available at http://www.wrapair2.org/documents/6.0%20STATE%20AND%20CLASS%20%20AREA%20SUMMARIES/6.02%20Arizona/WRAP_RHRPR_Sec_6_State_Summaries-Arizona.pdf.

¹²⁷ *Supra* note 13; note 14.

Emitted Pollutant	Related Aerosol	Major Sources	Notes
Sulfur Dioxide (SO ₂)	Ammonium Sulfate	Point Sources; On- and OffRoad Mobile Sources	SO ₂ emissions are generally associated with anthropogenic sources such as coal-burning power plants, other industrial sources such and refineries and cement plants, and both on- and off-road diesel engines.
Oxides of Nitrogen (NO _x)	Ammonium Nitrate	On- and OffRoad Mobile Sources; Point Sources; Area Sources	NO _x emissions are generally associated with anthropogenic sources. Common sources include virtually all combustion activities, especially those involving cars, trucks, power plants, and other industrial processes.
Ammonia (NH ₃)	Ammonium Sulfate and Ammonium Nitrate	Area Sources; On-Road Mobile Sources	Gaseous NH ₃ has implications in particle formation because it can form particulate ammonium. Ammonium is not directly measured by the IMPROVE program, but affects formation potential of ammonium sulfate and ammonium nitrate. All measured nitrate and sulfate is assumed to be associated with ammonium for IMPROVE reporting purposes.
Volatile Organic Compounds (VOCs)	Particulate Organic Mass (POM)	Biogenic Emissions; Vehicle Emissions; Area Sources	VOCs are gaseous emissions of carbon compounds, which are often converted to POM through chemical reactions in the atmosphere. Estimates for biogenic emissions of VOCs have undergone significant updates since 2002, so changes reported here are more reflective of methodology changes than actual changes in emissions (see Section 3.2.1).
Primary Organic Aerosol (POA)	POM	Wildfires; Area Sources	POA represents organic aerosols that are emitted directly as particles, as opposed to gases. Wildfires in the west generally dominate POA emissions, and large wildfire events are generally sporadic and highly variable from year-to-year.
Elemental Carbon (EC)	EC	Wildfires; On- and OffRoad Mobile Sources	Large EC events are often associated with large POM events during wildfires. Other sources include both on- and off-road diesel engines.
Fine Soil	Soil	Windblown Dust; Fugitive Dust; Road Dust; Area Sources	Fine soil is reported here as the crustal or soil components of PM _{2.5} .
Coarse Mass (PMC)	Coarse Mass	Windblown Dust (WB Dust); Fugitive Dust	Coarse mass is reported by the IMPROVE Network as the difference between PM ₁₀ and PM _{2.5} mass measurements. Coarse mass is not separated by species in the same way that PM _{2.5} is speciated, but these measurements are generally associated with crustal components. Similar to crustal PM _{2.5} , natural windblown dust is often the largest contributor to PMC.

Table 18 - Pollutants, Aerosol Species, and Major Sources

5.1 Statewide Emission Trends

Overall, emissions of visibility impairing pollutants in Arizona have decreased by 23% between 2002 and 2011. Analysis of Figures 27 and 28 reveal several trends in these statewide emission totals, namely: 1) VOC emissions represent the largest percentage of total emissions, 2) VOC emissions have decreased by 36%, 3) NO_x emissions have decreased by 29%, 4) SO₂ emissions have decreased by 30%, and 5) Coarse Mass (PMC) emissions have increased by 141%.

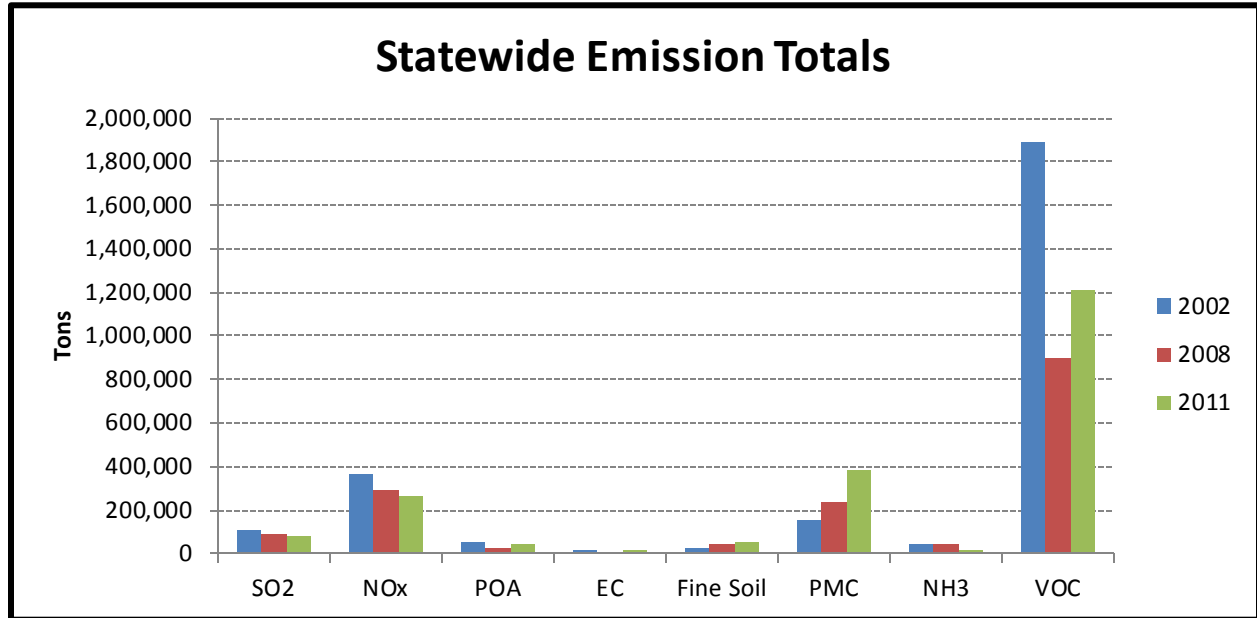


Figure 26 - Statewide Emission Trends by Pollutant

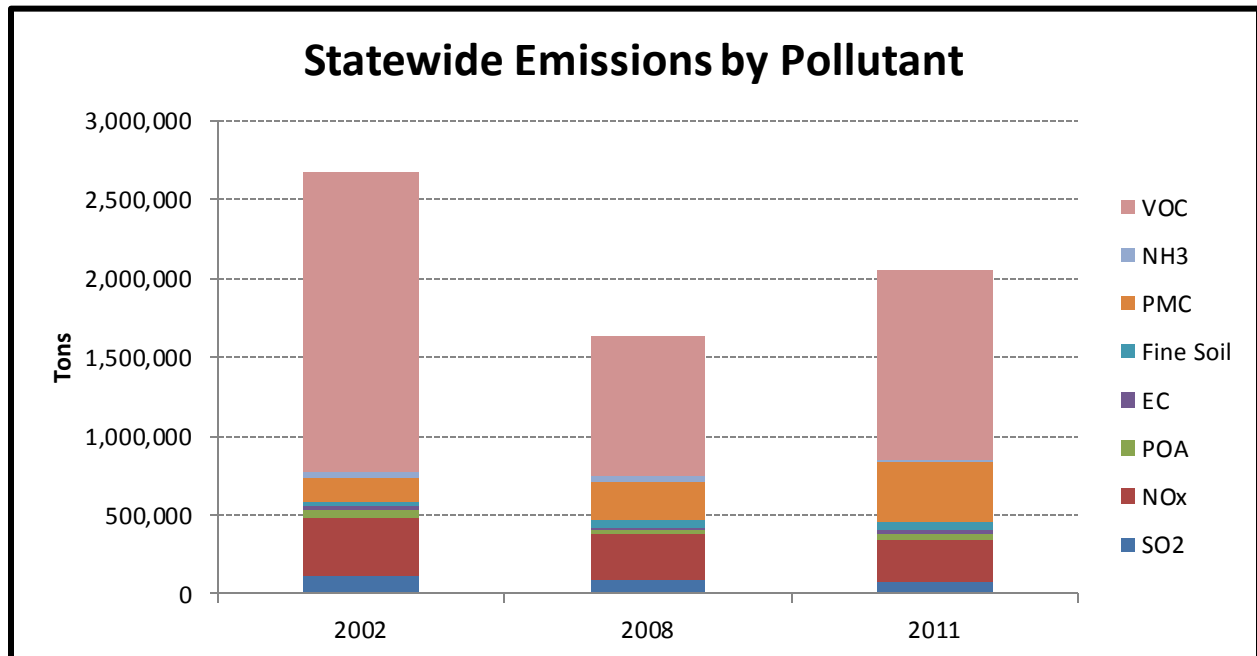


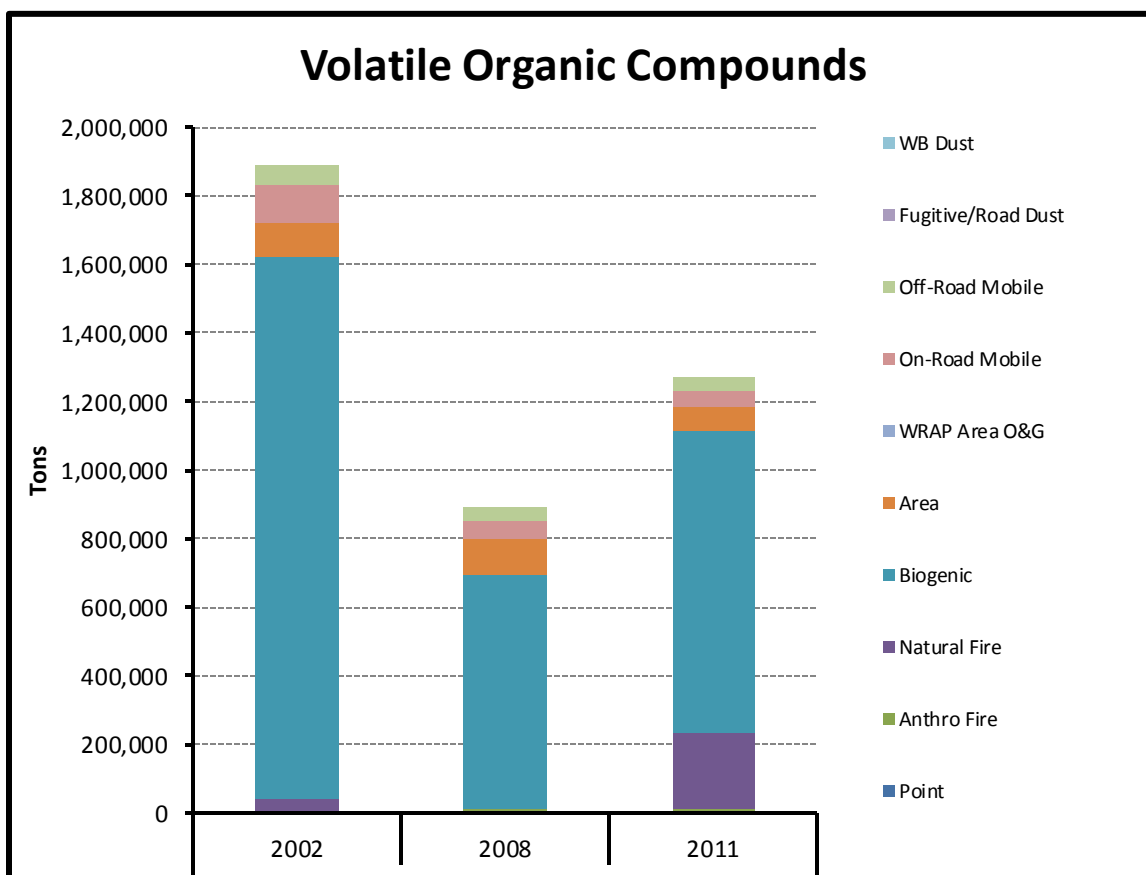
Figure 27 - Statewide Emission Trends by Year

	SO2	NOx	POA	EC	Fine Soil	PMC	NH3	VOC
2002	111,708.57	368,497.75	57,753.85	14,745.46	25,293.65	158,098.73	42,203.44	1,889,682.47
2008	86,314.28	293,114.31	23,972.30	10,789.30	48,288.07	240,569.50	42,457.43	894,010.48
2011	77,656.67	264,707.62	50,057.10	18,054.48	50,351.97	381,306.40	49,130.97	1,272,342.20
% Change 2002 to 2011	-30%	-28%	-13%	22%	99%	141%	16%	-33%

Table 19 - Statewide Emission Trend Data

5.2 Volatile Organic Compounds

Volatile Organic Compounds (VOCs) constitute the largest single component of Arizona's regional haze emission inventory, accounting for 58.8% of the entire inventory in 2011. The largest sources of VOC emissions in Arizona are biogenics and wildfires (Natural Fire), which made up 69.2% and 17.5 percent of the 2011 inventory, respectively. While the data suggests that VOC emission have decreased by 33% from 2002 to 2011, a direct comparison of these inventories may not be appropriate. WRAP made significant model changes to enhance the accuracy of the biogenic emissions, which has affected the comparability of the 2002, 2008 and 2011 inventories. Detailed information on these modeling changes is described in Section 3.2.1 of the WRAP Regional Haze Rule Reasonable Progress Summary Report¹²⁸.



¹²⁸ See http://www.wrapair2.org/documents/SECTIONS%201.0%20-%20203.0/WRAP_RHRPR_Sec_1-3_Background_Info.pdf.

Volatile Organic Compounds			
	2002	2008	2011
Point	5,464.29	3,490.42	3,413.59
Anthro Fire	854.97	5,780.75	10,053.46
Natural Fire	36,377.00	1,330.16	222,313.71
Biogenic	1,576,697.73	686,254.50	880,219.11
Area	102,917.62	100,256.47	67,622.14
WRAP Area O&G	46.29	12.15	65.42
On-Road Mobile	110,423.63	54,589.29	49,387.06
Off-Road Mobile	56,900.94	42,296.74	39,267.71
Fugitive/Road Dust	0.00	0.00	0.00
WB Dust	0.00	0.00	0.00
Total	1,889,682.47	894,010.48	1,272,342.20

5.3 Sulfur Oxides (SO₂) and Nitrogen Oxides (NO_x)

SO₂ emissions are generally associated with anthropogenic sources such as coal-burning power plants, refineries, cement plants, and both on- and off-road diesel engines. From 2002 to 2011, SO₂ emissions in Arizona decreased by 30 percent. This overall decrease is due primarily to reductions in point source emissions of SO₂, which are described in more detail above in Section 3.1. NO_x emissions are associated with virtually all combustion activities, especially those involving cars, trucks, power plants, and other industrial processes. From 2002 to 2011, NO_x emissions in Arizona decreased by approximately 29 percent. This overall decrease is due primarily to reductions in point source and on-road mobile emission of NO_x.

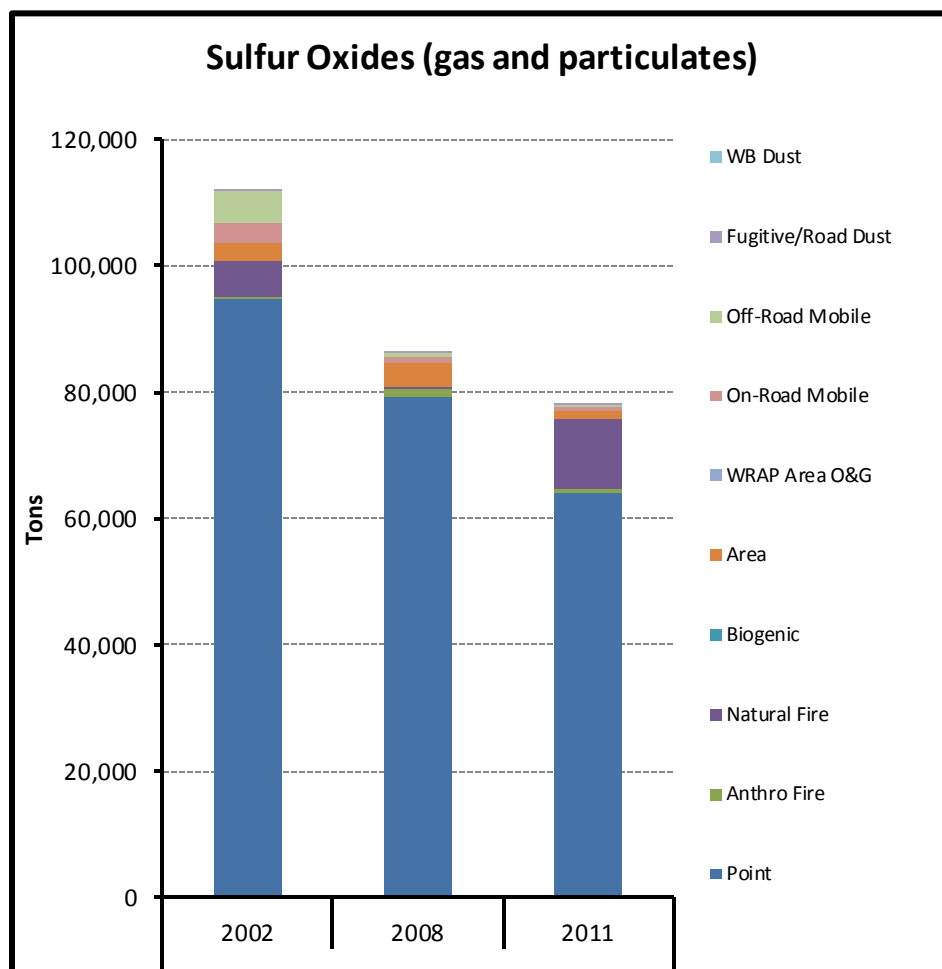


Figure 28 - Sources of SO₂ Emissions

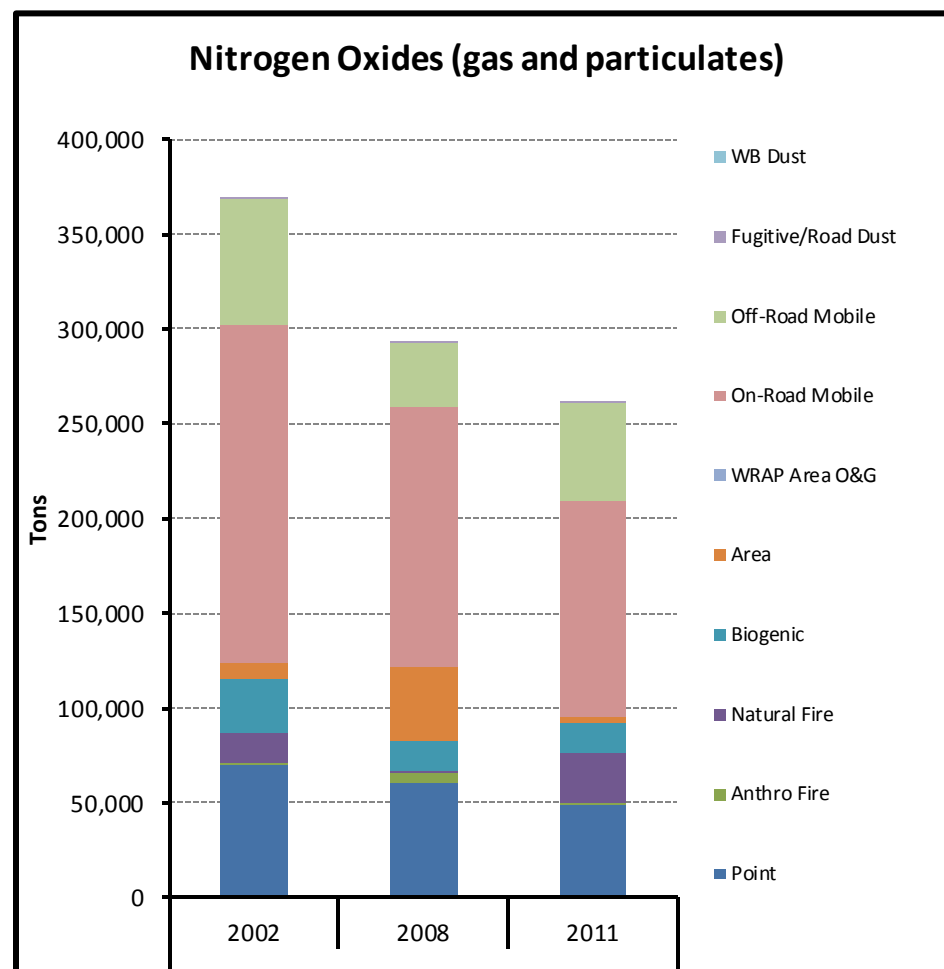


Figure 29 - Sources of NO_x Emissions

	Sulfur Oxides (gas and particulate)			Nitrogen Oxides (gas and particulate)		
	2002	2008	2011	2002	2008	2011
Point	94,834.64	79,339.89	64,172.44	69,971.39	60,881.89	49,011.43
Anthro Fire	209.91	1,066.00	500.35	727.03	4,755.47	1,240.28
Natural Fire	5,583.65	268.90	10,980.95	16,621.65	1,328.25	25,860.87
Biogenic	0.00	0.00	0.00	27,663.79	15,255.75	16,032.18
Area	3,043.95	4,054.60	942.65	9,064.65	39,450.24	7,223.43
WRAP Area O&G	0.00	0.00	0.12	17.31	0.00	14.70
On-Road Mobile	2,976.98	827.70	518.34	178,008.76	137,559.99	113,273.08
Off-Road Mobile	5,045.28	684.42	451.58	66,414.33	33,864.33	52,030.51
Fugitive/Road Dust	14.17	72.77	90.24	8.86	18.39	21.14
WB Dust	0.00	0.00	0.00	0.00	0.00	0.00
Total	111,708.57	86,314.28	77,656.67	368,497.75	293,114.31	264,707.62

5.4 Particulates

From 2002 to 2011 emissions of particulate matter, categorized as Coarse Mass (PMC), Fine Soil, Elemental Carbon (EC), and Primary Organic Aerosol (POA), have increased by 92%. Figure 32 shows this trend along with the individual source contributions for each inventory year. The largest contributor to particulate matter emissions is coarse particulate matter. As shown in Figure 33, the largest sources contributing to PMC emissions are windblown dust and fugitive/road dust. In the 2002 inventory, windblown dust and fugitive/road dust accounted for 87% of the total category; by 2011, these two sources accounted for 98%.

As noted in Section 6.2.2.1 of the WRAP Regional Haze Rule Reasonable Progress Report Support Document, [f]ine soil and coarse mass increased for the windblown dust inventory comparisons and the combined fugitive/road dust inventories. Large variability in changes in windblown dust was observed for the continuous WRAP states, which was likely due in large part to enhancements in dust inventory methodology, as referenced in Section 3.2.1, rather than changes in actual emissions.”

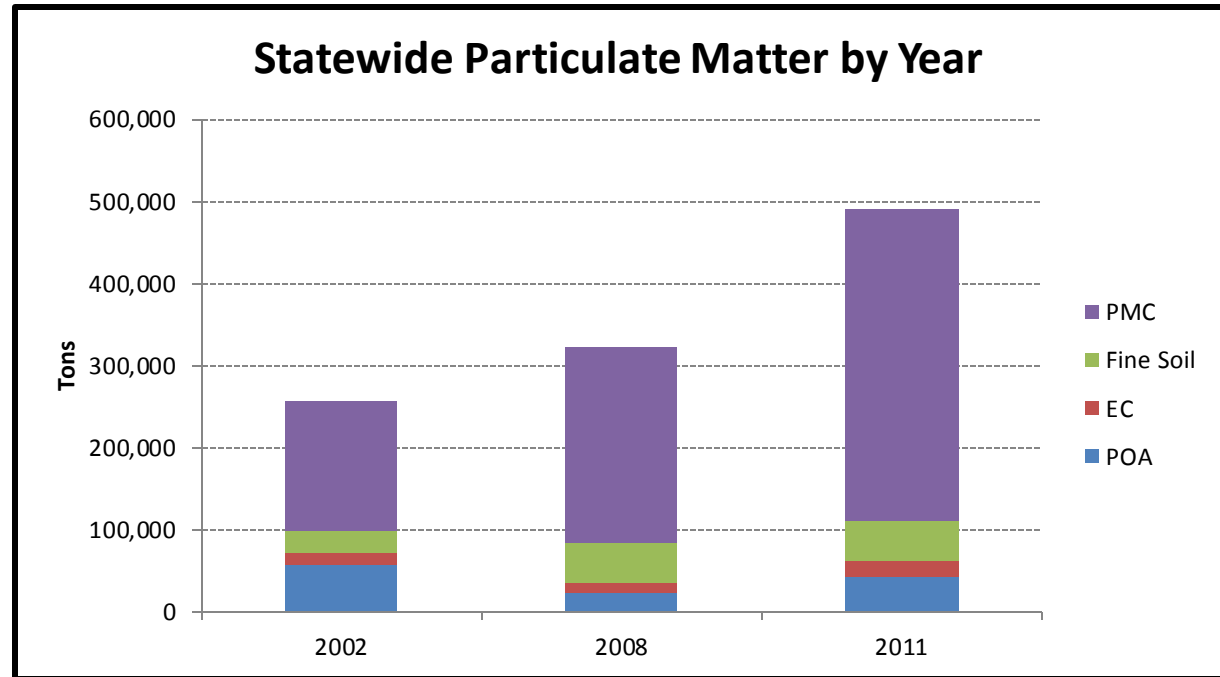


Figure 31 - Statewide PM by Year

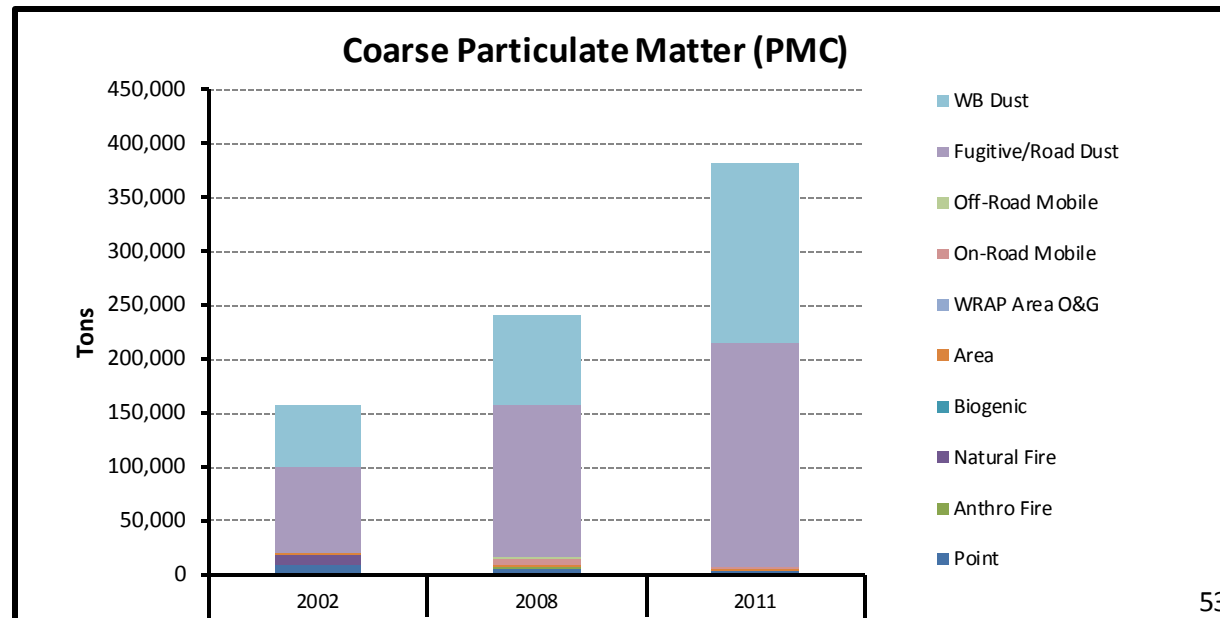


Figure 30 - Coarse Particulate Matter (PMC)

Coarse Particulate Matter			
	2002	2008	2011
Point	8,473.42	5,261.83	4,161.89
Anthro Fire	17.39	1,873.02	361.69
Natural Fire	10,107.37	403.43	0.00
Biogenic	0.00	0.00	0.00
Area	1,384.44	2,389.18	881.61
WRAP Area O&G	0.00	0.00	0.00
On-Road Mobile	1,004.04	5,597.49	1,537.64
Off-Road Mobile	0.00	162.21	212.66
Fugitive/Road Dust	79,315.81	141,117.01	207,346.71
WB Dust	57,796.26	83,765.33	166,804.20
Total	158,098.73	240,569.50	381,306.40

5.5 Fires

Even with ADEQ's efforts to control emissions from prescribed burning (anthro fire), fires still contribute significantly to Arizona's regional haze emission inventory. As noted above in Section 3.2, ADEQ has implemented control strategies that apply to prescribed fires that have led to the aversion of an estimated 38,459 tons of PM_{2.5} from 2009 to 2014. However, prescribed fire emission reductions are notably dwarfed by wildfire events depending on the annual conditions. This was the case in 2011, when Arizona experienced an exceptionally active wildfire season.

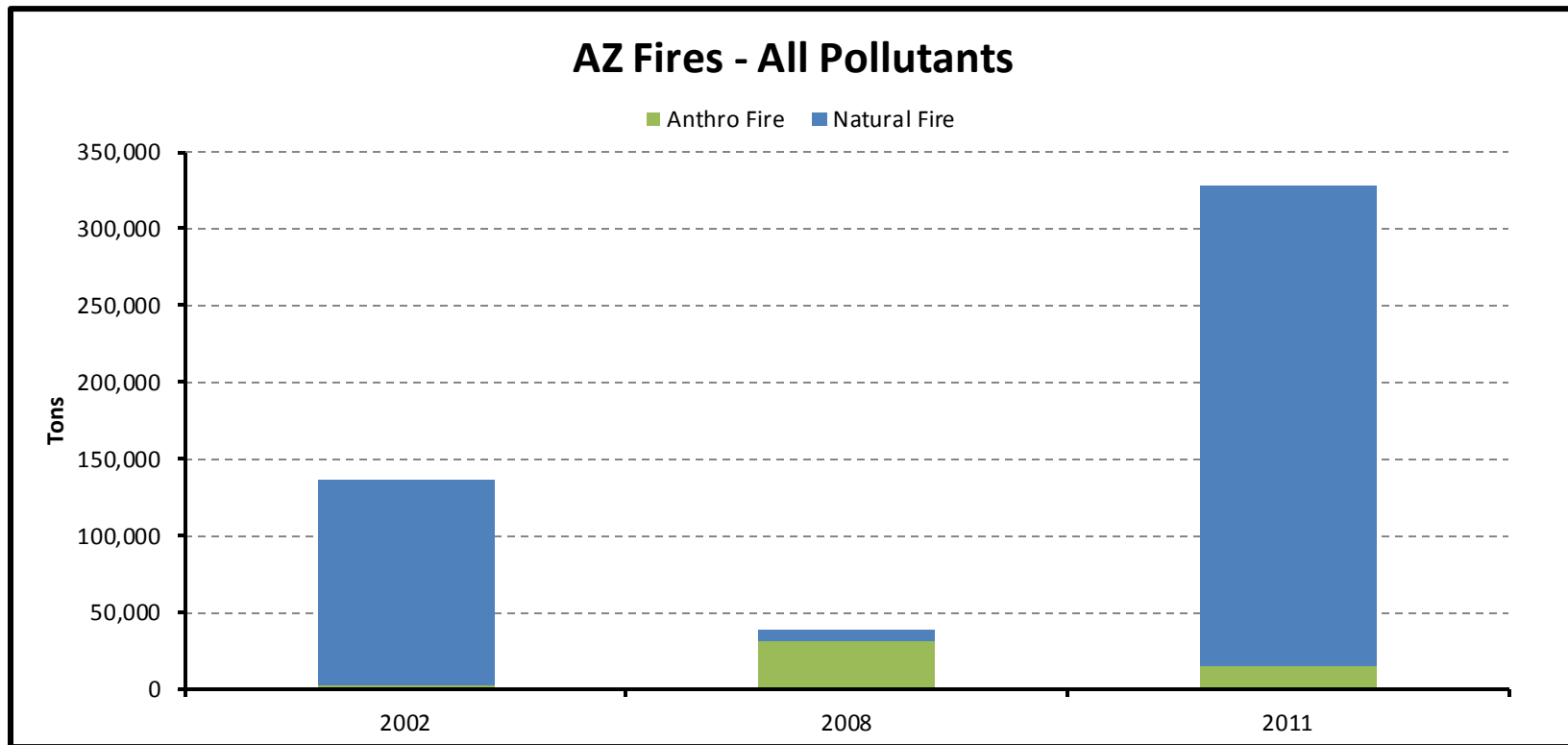


Figure 32 -Pollutant Emissions from Fires

	2002	2008	2011
Anthro Fire	2,971.05	31,737.40	14,444.08
Natural Fire	133,694.81	7,557.66	313,150.60

6 Assessment of Changes Impeding Visibility Progress

The RHR requires states to provide an assessment of any significant changes in anthropogenic emissions within or outside the state that have occurred over the past five years that have limited or impeded progress in reducing visibility impairing pollutants.¹²⁹ All Class I areas within Arizona are currently below their respective 2018 reasonable progress goals, which is demonstrated by all the information provided in this report. As such, no significant changes have occurred within the last five years that have adversely affected the ability of any Class I area to meet or achieve these reasonable progress goals.

7 Assessment of Current Strategy

The RHR requires an assessment of the current strategies and whether they are sufficient to enable the state, or other states with Class I areas affected by Arizona's emissions, to meet all established RPGs.¹³⁰ The following sections satisfy these requirements by first discussing the visibility characteristics of each Class I area in relation to the progress goals in section 7.1. Then, section 7.2 will cover the Class I areas in other states potentially impacted by the emissions of visibility impairing pollutants from Arizona.

7.1 Assessment of Arizona Class I areas

The following reviews the visibility data for each Class I area within Arizona, including the area's visibility value for 2009-2013 (most recent data available), the 2018 reasonable progress goals for both the 20% best and 20% worst days, and each area's 2013 and 2018 uniform rate of progress (URP) goals.¹³¹ Each Class I area in Arizona is meeting both the 20% best and 20% worst 2018 reasonable progress goals. There are only two areas with a 2009-2013 visibility value meeting the 2018 URP: Mount Baldy Wilderness area and Saguaro National Park – East. ADEQ anticipates the visibility values for all areas will improve and meet the 2018 goals, as well as future progress goals, because most of the BART compliance measures will be implemented from 2015 to 2018.

Chiricahua National Monument

The most recent visibility data for the Chiricahua National Monument indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.1 dv, which is below the 2018 RPG (13.19 dv). The 2009-2013 visibility value for the 20% best day is 4.1 dv, which is below the 2018 RPG (4.77 dv). In addition, the visibility value for the 20% worst days is below the 2013 URP goal, which is 12.5 dv. Although the visibility value is not below the 2018 URP goal (11.98 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.2 illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

¹²⁹ *Supra* note 7, at 51.308(g)(5).

¹³⁰ *Supra* note 7, at 51.308(g)(6).

¹³¹ The reasonable progress goals for the 20% best, 20% worst days and the 2018 uniform rate are found in the FIP. 79 Fed. Reg. 52420, 52469-70 (September 3, 2014). ADEQ derived the 2013 uniform rate of progress (URP) goal for 20% worst days for each area by interpolating between the area's 20% worst day baseline (2000-2004) and natural condition (2064) values.

20 % Worst Days		20 % Best Days		Uniform Rate of Progress	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days Goal
12.1 dv	13.19 dv	4.1 dv	4.77 dv	12.5 dv	11.98 dv

Chiricahua Wilderness

The most recent visibility data for Chiricahua Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.1 dv, which is below the 2018 RPG (13.19 dv). The 2009-2013 visibility value for the 20% best days is 4.1 dv, which is below the 2018 RPG (4.77 dv). In addition, the visibility value for the 20% worst days is below the 2013 URP goal, which is 12.5 dv. Although the visibility value is not below the 2018 URP goal (11.98 dv), ADEQ anticipates BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.2 illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20 % Worst Days		20 % Best Days		Uniform Rate of Progress	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days Goal
12.1 dv	13.19 dv	4.1 dv	4.77 dv	12.5 dv	11.98 dv

Galiuro Wilderness

The most recent visibility data for Galiuro Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.1 dv, which is below the 2018 RPG (13.19 dv). The 2009-2013 visibility value for the 20% best days is 4.1 dv, which is below the 2018 RPG (4.77 dv). In addition, the visibility value for the 20% worst days is below the 2013 URP goal, which is 12.5 dv. Although the visibility value is not below the 2018 URP goal (11.98 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.2 illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20 % Worst Days		20 % Best Days		Uniform Rate of Progress	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days Goal
12.1 dv	13.19 dv	4.1 dv	4.77 dv	12.5 dv	11.98 dv

Grand Canyon National Park

The most recent visibility data for the Grand Canyon National Park indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility values for the 20% worst day is 10.9 dv, which is below the 2018 RPG (11.02 dv). The 2009-2013 visibility value for the 20% best day is 1.8 dv, which is below the 2018 RPG (2.02 dv). In addition, the visibility value for the 20% worst days is below the 2013 URP goal, which is 11.0 dv. Although the visibility value is not below the 2018 URP goal (10.58 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.3

illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20 % Worst Days		20 % Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
10.9 dv	11.02 dv	1.8 dv	2.02 dv	11.0 dv	10.58 dv

Mazatal Wilderness

The most recent visibility data Mazatal Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.0 dv, which is below the 2018 RPG (12.63 dv). The 2009-2013 visibility value for the 20% best day is 4.4 dv, which is below the 2018 RPG (5.07 dv). In addition, the visibility value for the 20% worst days is below the 2013 URP goal, which is 12.3 dv. Although the visibility value for the 20% worst days is not below the 2018 uniform rate of progress goal (11.76 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.4 illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information above, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days Goal
12.0 dv	12.63 dv	4.4 dv	5.07 dv	12.3 dv	11.76 dv

Mount Baldy Wilderness

The most recent visibility data for Mount Baldy Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 10.5 dv, which is below the 2018 RPG (11.52 dv). The 2009-2013 visibility value for the 20% best day is 2.7 dv, which is below the 2018 RPG (2.76 dv). In addition, the visibility value for the 20% worst days is below the 2013 URP goal of 11.0 dv. Although the visibility value for the 20% worst days is not below the 2018 URP goal (10.54 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.4 illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information above, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days Goal
10.5 dv	11.52 dv	2.7 dv	2.76	11.0 dv	10.54 dv

Petrified Forest National Park

The most recent visibility data for the Petrified Forest National Park indicates this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 11.9 dv, which is below the 2018 RPG (12.85 dv). The 2009-2013 visibility value for the 20% best day is 4.1 dv, which is below the 2018 RPG (4.62 dv). The visibility value for the 20% worst days is below the 2013 URP goal (12.2 dv) for this area. Although the visibility value is not below the 2018 URP goal (11.63 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.5 illustrates the visibility trend in this Class I area, which has generally improved since 2004. Based on the information above, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days Goal
11.9 dv	12.85 dv	4.1 dv	4.62 dv	12.2 dv	11.63 dv

Pine Mountain Wilderness

The most recent visibility data for Pine Mountain Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.0 dv, which is below the 2018 RPG (12.63 dv). The 2009-2013 visibility value for the 20% best day is 4.4 dv, which is below the 2018 RPG (5.07 dv). The visibility values for the 20% worst days are below the 2013 URP goal (12.3 dv), but slightly above the 2018 URP goal (11.76 dv). ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 will reduce visibility-impairing pollutants to levels that will meet both URP goals. Section 4.4 illustrates the visibility improvement in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to meet the reasonable progress and uniform rate of progress goals in 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
12.0 dv	12.63 dv	4.4 dv	5.07	12.3 dv	11.76 dv

Saguaro National Park – East Unit

The most recent visibility data for the Saguaro National Park – East Unit indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.6 dv, which is below the 2018 RPG (14.68 dv). The 2009-2013 visibility value for the 20% best day is 6.1 dv, which is below the 2018 RPG (6.93). In addition, the visibility value for the 20% worst days is below the 2013 URP goal (13.6 dv) for this area. Although the visibility value is not below the 2018 URP goal (12.88 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.6 illustrates the visibility improvement in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20 % Worst Days		20 % Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
12.6 dv	14.68 dv	6.1 dv	6.93 dv	13.6 dv	12.88 dv

Saguaro National Park – West Unit

The most recent visibility data for the Saguaro National Park – West Unit indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 14.2 dv, which is below the 2018 RPG (15.87 dv). The 2009-2013 visibility value for the 20% best day is 7.5 dv, which is below the 2018 RPG (8.23 dv). The visibility value for both the 20% worst days is below the 2013 URP goal (14.7 dv) for this area. Although the visibility value is not below the 2018 URP goal (13.88 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.7 illustrates the visibility improvement in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
14.2 dv	15.87 dv	7.5 dv	8.23 dv	14.7 dv	13.88 dv

Sierra Ancha Wilderness

The most current visibility data for Sierra Ancha Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.2 dv, which is below the 2018 RPG (13.05 dv). The 2009-2013 visibility value for the 20% best day is 4.9 dv, which is below the 2018 RPG (5.78 dv). The visibility value for both the 20% worst days is below the 2013 URP goal (12.6 dv) for this area. Although the visibility value is not below the 2018 URP goal (12.02 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.8 illustrates the visibility improvement in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to achieve the reasonable progress and uniform rate of progress goals in 2018.

20 % Worst Days		20 % Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
12.2 dv	13.05 dv	4.9 dv	5.78 dv	12.6 dv	12.02 dv

Superstition Wilderness

The most recent visibility data for the Superstition Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 12.7 dv, which is below the 2018 RPG (13.72 dv). The 2009-2013 visibility value for the 20% best day is 5.2 dv, which is below the 2018 RPG (6.09 dv). The visibility value for the 20% worst days is below the 2013 URP goal (13.0 dv) for this area. Although the visibility value is not below the 2018 URP goal (12.38 dv), ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.10 illustrates the

visibility improvement in this Class I area, which has generally improved since 2004. Based on the information provided in this report, the current strategy is sufficient to meet the reasonable progress and URP goals in 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
12.7 dv	13.72 dv	5.2 dv	6.09 dv	13.0 dv	12.38 dv

Sycamore Canyon Wilderness

The most recent visibility data for Sycamore Canyon Wilderness indicates that this Class I area is already meeting its 2018 reasonable progress goals. The 2009-2013 visibility value for the 20% worst days is 14.6 dv, which is below the 2018 RPG (14.92 dv). The 2009-2013 visibility value for the 20% best day is 5.1 dv, which is below the 2018 RPG (5.39 dv). The visibility values for the 20% worst days is not below the 2013 URP goal (14.0 dv), nor does it fall not below the 2018 URP goal (13.24 dv). ADEQ expects the BART emission controls scheduled for implementation in 2016-2018 to provide for its achievement. Section 4.9 illustrates the visibility improvement in this Class I area, which has generally improved since 2004. Based on the information above, the current strategy is sufficient to achieve the reasonable progress goal by 2018.

20% Worst Days		20% Best Days		Uniform Rate of Progress Goal	
2009-2013 Visibility Value	2018 RPG	2009-2013 Visibility Value	2018 RPG	2013 20% Worst Days Goal	2018 20% Worst Days URP
14.6 dv	14.92 dv	5.1 dv	5.39 dv	14.0 dv	13.24 dv

7.2 Assessment of Non-Arizona Class I Area Contributions

This section reviews Arizona's impacts on nearby Class I areas based on particulate source apportionment modeling conducted by WRAP. Arizona potentially contributes to visibility impairment at twelve areas located in three states: Colorado, Utah, and New Mexico. The ADEQ 2011 SIP submittal details Arizona's potential impact on sulfate and nitrate levels in out-of-state Class I areas (Section 12.4) by identifying Arizona's contribution to the 20% worst days visibility value. The modeled maximum projected contributions of sulfate concentrations were in the Mesa Verde National Park in Colorado (Table 12.1) and the San Pedro Parks Wilderness area in New Mexico (Table 12.3). The modeling showed a projected contribution of 10 percent on the 20% worst days at both areas. The modeled maximum projected contribution of nitrate concentrations was in the Gila Wilderness area in New Mexico (Table 12.3). The modeling showed a projected contribution of 20 percent on the 20% worst days. However, Arizona's modeled contribution of nitrate only exceeded 10 percent in one of the remaining eleven areas.

Section five of this report discusses the changes in emissions from sources within the state resulting from proper implementation of the AZ RH Plan. Figure 27 presents the statewide emission totals for 2002 through 2011, which illustrates the decrease in sulfur dioxide and nitrogen oxides. Sulfur dioxide emissions in Arizona decreased by roughly 30 percent (Figure 30), which is primarily due to decreases in point source emissions. Nitrogen oxide emissions decreased by approximately 29 percent (Figure 31), which is due to decreases by point sources and on-road mobile sources. Those significant decreases in the emission of visibility impairing

pollutants within the state's boundaries also decreases the amount of pollution potentially carried over state lines.

8 Review of Visibility Monitoring Strategy

The RHR requires a review of the state's visibility monitoring strategy and any modifications necessary in the five-year progress report.¹³² ADEQ's monitoring strategy has been, and continues to be, reliance on the IMPROVE network to collect and analyze visibility data within Arizona's Class I areas. There have been no changes to the IMPROVE network that affect ADEQ's ability to assess visibility conditions in the twelve Class I areas in Arizona. One IMPROVE monitoring station, the Grand Canyon – Indian Garden site, was shut down in 2013 due to budgetary constraints. However, ADEQ relies on data from the Hance Camp (GRCA2) monitoring site to determine visibility conditions within the Grand Canyon National Park. The closure of the Indian Gardens site is of little consequence as it in no way affects the reliability or usability of Arizona's IMPROVE network for the purposes of measuring visibility trends. The AZ RH Plan includes an ongoing commitment to characterize long-term trends in all Class I areas as completely as possible using ambient visibility measurements, within the constraints of an area's size, terrain, or logistics.

9 Determination of Adequacy

The RHR requires states to provide a determination of the adequacy of its existing regional haze SIP.¹³³ The rule requires that states simply present one of four options based on the information provided in the progress report.¹³⁴ As such, ADEQ has selected the option to provide a negative declaration that further revisions of the existing plan are not necessary based on the information provided in this report and the determination that Arizona is currently on track to achieve all 2018 visibility goals.

10 Public Process and Consultation with Federal Land Managers

The RHR contains certain procedural requirements for the 5-year progress report. The first, under Section 51.308(g), requires submission of the progress reports in the form of an implementation plan revision that complies with the procedural requirements of 40 CFR §§ 51.102 and 51.103. The second, under Section 51.308(i), requires states to consult with federal land managers (FLMs) and include a description of how the states addressed any comments provided by the FLMs.

ADEQ fully complied with the procedural requirements under 40 CFR §§51.102 and 51.103, with the appropriate documentation included in Appendix A. ADEQ also provided the FLMs with sixty days to review and provide input on the information contained in the report. During that time, ADEQ received only one formal comment from the National Park Service, which is located in Appendix A.

¹³² *Supra* note 7, at 51.308(g)(7).

¹³³ *Supra* note 7, at 51.308(h).

¹³⁴ *Id.*

Appendix A

State Implementation Plan Revision Public Comment and Hearing Documentation

- A.1 Notice of Public Hearing
- A.2 Public Hearing Agenda
- A.3 Public Hearing Sign-In Sheet
- A.4 Public Hearing Officer Certification and Transcript
- A.5 Comments and Responsiveness Summary

Appendix A.1

Notice of Public Hearing



PUBLIC NOTICE

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY PUBLIC COMMENT PERIOD AND HEARING ON THE PROPOSED ARIZONA STATE IMPLEMENTATION PLAN REVISION, REGIONAL HAZE 5-YEAR PROGRESS REPORT

The Arizona Department of Environmental Quality (ADEQ) proposes a revision in the form of a progress report for the Arizona Regional Haze State Implementation Plan (SIP). The SIP revision, titled the Regional Haze 5-Year Progress Report (Report), is a periodic report required under the Environmental Protection Agency's (EPA) Regional Haze Rule. The Report focuses on detailed information about the state's progress in achieving its visibility goals. It includes the status of the state's control strategies, such as emission limitations at certain stationary sources, facility closures, federal and state programs that impact visibility, and certain aspects of policies addressing fires. The Report also provides the visibility information of each federal Class I area in Arizona and illustrates the visibility improvements resulting from the Regional Haze Program.

You have an opportunity to submit written comments and/or make oral comments on the SIP revision at the public hearing ADEQ will be holding regarding this matter. The hearing will be on October 27, 2015 at 1:30 p.m. at ADEQ, Conference Room 3100B, 1110 West Washington Street, Phoenix, AZ 85007. The hearing is designed to solicit comments on the proposed SIP revision.

The proposed SIP revision is available for review Monday through Friday between 8:30 a.m. and 4:30 p.m. at the [ADEQ Records Center](#), 1110 West Washington Street, Phoenix, Arizona. Please call (602) 771-4380 or email recordscenter@azdeq.gov 48 hours in advance to schedule an appointment to review the file. The proposed SIP revision document may be viewed online at <http://azdeq.gov/cgi-bin/vertical.pl> by accessing the notice on the Events and Notices Calendar for the date of this public notice.

The public notice period is in effect from September 28, 2015 to November 2, 2015. Comments may be submitted in writing to [Justine Miller](#), Air Quality State Implementation Plan Section, ADEQ, 1110 West Washington Street, Phoenix, AZ 85007 or via e-mail at Miller.Justine@azdeq.gov. Persons wishing to submit written comments can also do so at the public hearing. Comments must be received by November 2, 2015. The written comment shall state the name and mailing address of the person, shall be signed by the person, their agent or attorney, and shall clearly set forth reasons why the SIP revision should or should not be finalized. Grounds for comment are limited to whether the SIP revision meets the criteria spelled out in the federal air pollution control laws or rules. The final SIP revision will be submitted to EPA following consideration of all comments received during the public notice period.

For questions or more information, please provide your name, address, and ZIP code, or e-mail address to [Justine Miller](#), (602) 771-6723, toll free (800) 234-5677, via e-mail Miller.Justine@azdeq.gov or in writing to the ADEQ address above.

To request an auxiliary aid or service for accessible communication, please contact Alicia Pollard at (602) 771-4791 or at aap@azdeq.gov or dial 7-1-1 for TTY/TTD Services.

ADEQ
AIR QUALITY DIVISION

15 OCT -8 AM 11: 10

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THE ARIZONA REPUBLIC

STATE OF ARIZONA
COUNTY OF MARICOPA } SS.

Manuel Vargas, being first duly sworn, upon oath deposes and says: That he is a legal advertising representative of the Arizona Business Gazette, a newspaper of general circulation in the county of Maricopa, State of Arizona, published at Phoenix, Arizona, by Phoenix Newspapers Inc., which also publishes The Arizona Republic, and that the copy hereto attached is a true copy of the advertisement published in the said paper on the dates as indicated.

The Arizona Republic

September 28, 29, 2015

[Handwritten Signature]

Sworn to before me this
1ST day of
October A.D. 2015



[Handwritten Signature]
Notary Public

ness in achieving its visibility goals. It includes the status of the state's control strategies, such as emission limitations at certain stationary sources, facility closures, federal and state programs that impact visibility, and certain aspects of policies addressing fires. The Report also provides the visibility information of each federal Class I area in Arizona and illustrates the visibility improvements resulting from the Regional Haze Program. You have an opportunity to submit written comments and/or make oral comments on the SIP revision at the public hearing ADEQ will be holding regarding this matter. The hearing will be on October 27, 2015 at 1:30 p.m. at ADEQ, Conference Room 3100B, 1110 West Washington Street, Phoenix, AZ 85007. The hearing is designed to solicit comments on the proposed SIP revision.

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6840
State Agency
Public Notices

ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY PUBLIC COMMENT PERIOD AND HEARING ON THE PROPOSED ARIZONA STATE IMPLEMENTATION PLAN REVISION, REGIONAL HAZE 5-YEAR PROGRESS REPORT
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Appendix A.2

Public Hearing Agenda



Public Hearing Agenda

AIR QUALITY DIVISION

PUBLIC HEARING ON THE PROPOSED ARIZONA STATE IMPLEMENTATION PLAN (SIP) REVISION

Regional Haze 5-Year Progress Report

PLEASE NOTE THE MEETING LOCATION AND TIME:

**Arizona Department of Environmental Quality
1110 W. Washington St., Phoenix, Arizona
3rd Floor, Conference Room # 3100B
Tuesday, October 27, 2015, 1:30PM**

Pursuant to 40 CFR § 51.102 notice is hereby given that the above referenced meeting is open to the public.

1. Welcome and Introductions
2. Purpose of the Oral Proceedings
3. Procedure for Making Public Comment
4. Brief Overview of the Proposed SIP Revision
5. Oral Comment Period
6. Adjournment of Oral Proceeding

Copies of the proposal are available for review at the ADEQ Records Center, First Floor, 1110 W. Washington Street, Phoenix, Arizona 85007, (602) 771-4712. The proposal can also be viewed online at http://www.azdeq.gov/calendar/sip_regional_haze.pdf. For additional information regarding the hearing, please contact Justine E. Miller, ADEQ Air Quality Division, at (602) 771-6723 or miller.justine@azdeq.gov.

Persons with a disability may request reasonable accommodations by contacting Alicia Pollard at (602)771-4791 or aap@azdeq.gov. This document is also available in alternative formats by contacting ADEQ, TTD phone number (602)771-4829.

Appendix A.3

Public Hearing Sign-In Sheet



Air Quality Division Sign-In Sheet

Please Sign In

SUBJECT: Arizona's Regional Haze 5-Year Progress Report; Public Hearing DATE: 10/27/2015

<u>NAME</u>	<u>ORGANIZATION</u>	<u>PHONE</u>	<u>E-MAIL</u> (primary method of contact)
1. <u>Todd Weaver</u>	<u>Freight-McMoran</u>	<u>(602) 366-7818</u>	<u>todd-weaver@fmc.com</u>
2. <u>Marina Mesa</u>	<u>DEQ</u>	<u>(602) 771-4858</u>	<u>mm23@azdeg.gov</u>
3. <u>Natalie Muihlenberg</u>	<u>ADEQ</u>	<u>602-771-1089</u>	<u>nm3@azdeg.gov</u>
4. <u>Justine Miller</u>	<u>ADEQ</u>	<u>(602) 771-6723</u>	<u>jm15@azdeg.gov</u>
5. <u>Brue Friedl</u>	<u>ADEQ</u>	<u>602-771-2259</u>	<u>bjf@azdeg.gov</u>
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Air Quality Division Sign-In Sheet – p 2 of 5

NAME

ORGANIZATION

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E-MAIL

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Appendix A.4

Public Hearing Officer Certification and Transcript



Air Quality Division

Public Hearing Presiding Officer Certification

I, Bruce Friedl, the designated Presiding Officer, do hereby certify that the public hearing held by the Arizona Department of Environmental Quality was conducted on October 27, 2015 at the Arizona Department of Environmental Quality, Conference Room 3100B, 1110 West Washington Street, Phoenix, Arizona, in accordance with public notice requirements by publication in *The Arizona Republic* beginning September 28, 2015. Furthermore, I do hereby certify that the public hearing was recorded from the opening of the public record through concluding remarks and adjournment, and the transcript provided contains a full, true, and correct record of the above-referenced public hearing.

Dated this 27 day of October 2015.

State of Arizona)
) ss.
County of Maricopa)

Subscribed and sworn to before me on this 27th day of October 2015.


Notary Public

My commission expires: 2/11/18

1 **PROPOSED ARIZONA AIR QUALITY**
2 **STATE IMPLEMENTATION PLAN (SIP)**
3 **FOR NEW SOURCE REVIEW**

4
5
6 Oral Proceeding
7 Hearing Officer Script

8
9 October 27, 2015

10
11 Bruce Friedl: Good afternoon, thank you for coming. I now open this hearing on the proposed
12 State Implementation Plan revision for the Regional Haze 5-Year Progress Report. This
13 proceeding is being recorded and will be preserved for the record.

14
15 Today is October 27, 2015, and the time is 1:38 p.m. The location is conference room 3100B at
16 the Arizona Department of Environmental Quality, 1110 West Washington Street, Phoenix,
17 Arizona 85007. My name is Bruce Friedl and I have been appointed by the Director of the
18 Arizona Department of Environmental Quality (ADEQ) to preside at this proceeding.

19
20 The purposes of this proceeding are to provide the public an opportunity to:
21 (1) hear about the substance of the proposed Regional Haze SIP revision, and
22 (2) present oral argument, data and views regarding the revision in the form of comments on the
23 record.

24
25 Representing the Department are: Justine Miller and Natalie Muilenberg of the Air Quality
26 Division's State Implementation Plan Section.

27
28 Public notice of the State Implementation Plan, or SIP, revision was published in the Arizona
29 Republic and was also provided on ADEQ's website. Paper copies of the proposed SIP revision
30 were made available at the ADEQ Phoenix office's Record Center and the ADEQ website as of
31 September 28, 2015 and will remain available until the close of the comment period.

1
2 The procedure for making a public comment on the record is straightforward during today's
3 proceeding. If you wish to comment, please fill out a speaker slip, which is available at the sign-
4 in table, and give it to Natalie. Using speaker slips allows everyone an opportunity to be heard
5 and allows us to match the name on the official record with the comments. You may also submit
6 written comments to Natalie during today's hearing. Please note, the comment period for the
7 proposed SIP revision ends at midnight on November 2, 2015 and all written comments must be
8 received by that time. Written comments can also be mailed to Justine Miller, Air Quality
9 Division, Arizona Department of Environmental Quality, 1110 W. Washington Street, Phoenix,
10 85007 or emailed to miller.justine@azdeq.gov. Comments may also be faxed to (602) 771-2366.

11
12 Comments made during the formal comment period are required by law to be considered by the
13 Department when preparing the final state implementation plan submission for the
14 Environmental Protection Agency. This is done through the inclusion of a responsiveness
15 summary in which the Department responds in writing to written and oral comments made
16 during the formal comment period.

17
18 The agenda for this hearing will go as follows:

19
20 First, Justine will present a brief overview of the proposed revision to the state implementation
21 plan.

22
23 Then I will conduct the oral comment period. At that time, I will begin to call speakers in the
24 order that speaker slips were received.

25
26 Please be aware that any comments from today's hearing you would like the Department to
27 formally consider, must be given either in writing or on the record at today's hearing during the
28 oral comment period of this proceeding.

29
30 At this time, Justine Miller will give a brief overview of the proposal.

* * * * *

If you have not already submitted written comments, you may submit them at this time. Again, the comment period for this proposed revision to the state implementation plan ends at midnight Monday, November 2, 2015.

Thank you for attending.

The time is now 1:43 p.m.. I now close this oral proceeding.

Appendix A.5

Comments and Responsiveness Summary

ARIZONA REGIONAL HAZE STATE IMPLEMENTATION PLAN
5-YEAR PROGRESS REPORT
RESPONSIVENESS SUMMARY

INTRODUCTION

The Arizona Department of Environmental Quality (ADEQ) has proposed a revision to its Regional Haze State Implementation Plan (SIP) in the form of a 5-Year Progress Report (Report). The Report must be submitted as a SIP revision under 40 CFR 51.308(g) and evaluates Arizona's progress towards the reasonable progress goals for each mandatory Class I federal area.

PUBLIC PARTICIPATION PROCESS

Notice of the public comment period for the proposed Report SIP revision was published in the *Arizona Republic* on September 28, 2015, and September 29, 2015. One public hearing was conducted on October 27, 2015, at the ADEQ office in Phoenix, AZ to solicit comments. No written or oral comments were received during the public hearing and no written comments were received during the public process period.

FEDERAL LAND MANAGER CONSULTATION

Pursuant to 40 CFR 51.308(g)(i)(2) ADEQ provided Federal Land Managers with the draft Regional Haze 5-Year Progress Report for 60-day review on August 24, 2015. ADEQ received one comment letter from the National Parks Service (NPS), a copy of which follows the set of comments and responses below.

NPS Comments:

COMMENT 1: We recommend that you move Table 18 into Section 3 and introduce the relationship between the visibility impairing pollutants and emissions sources categories that have been targeted for emissions reductions.

RESPONSE: A discussion of the relationship between visibility impairing pollutants, emissions, and sources has been added to Section 3, as well as a reference to Table 18.

COMMENT 2: Please add the 2018 Uniform Rate of Progress for the 20% worst visibility days to Table 7. The tables that define pollutant contributions to light extinction on the 20% worst days at each Class I area are very helpful. Please add interpretation of these tables here or in Section 6. Sulfate and nitrate contributions at the Class I areas are declining and should continue to decline in response to emission reductions. However, organic carbon is the largest contributor to haze on the 20% worst days and wildfires are a primary source of organic carbon. Therefore visibility trends are influenced by emission beyond ADEQ's control. While 8 or 9 IMPROVE monitors are currently on track to meet the uniform rate of visibility progress by 2018, wildfire impacts could alter expected visibility improvement.

RESPONSE: Language has been added to Section 4 regarding the decline in sulfate and nitrate contributions, as well as the impact of organic carbon from wildfires on the 20% worst days. The 2018 uniform rate of progress values have been added to the 20% worst days portion of Table 17.

COMMENT 3: *Please add table summarizing impacts from Arizona emission at Class I areas in other states (currently cited from 2011 Regional Haze SIP.)*

RESPONSE: Section 7.2 of the Progress Report discusses the information on impacts from Arizona's emission at Class I areas in other states. At this time there is no information available outside that provided in the 2011 Regional Haze SIP.

COMMENT 4: *Please add paragraph before Section 9 that ADEQ has consulted with FLM.*

RESPONSE: Section 10 of the final SIP revision document covers the FLM consultation and public process requirements for the progress report.



United States Department of the Interior

NATIONAL PARK SERVICE

Air Resources Division

P.O. Box 25287

Denver, CO 80225-0287

TRANSMITTED VIA ELECTRONIC MAIL - NO HARDCOPY TO FOLLOW

N3615 (2350)

October 28, 2015

Justine E. Miller
Air Quality Division
Arizona Department of Environmental Quality
1110 W. Washington Street
Phoenix, AZ 85007

Dear Ms. Miller:

Thank you for the opportunity to review and comment on Arizona's draft Regional Haze 5-Year Progress Report. We believe that Arizona's Department of Environmental Quality (ADEQ) has met the requirements for the periodic progress report as outlined in 40 CFR 51.308 (g) and (h). ADEQ has described the emission controls that are being implemented under State and Federal Regional Haze Implementation Plans and reported on emissions and visibility trends. Visibility at all 9 IMPROVE monitors in Arizona is currently better than the 2018 visibility improvement goals set by ADEQ.

Our suggestions to improve ADEQ's demonstration are below:

Section 3 Emissions:

We recommend that you move Table 18 into Section 3 to introduce the relationship between the visibility impairing pollutants and emissions and sources categories that have been targeted for emissions reductions.

Section 4 Visibility Progress:

Please add the 2018 Uniform Rate of Progress for the 20% worst visibility days to Table 17. The tables that define pollutant contributions to light extinction on the 20% worst days at each Class I area are very helpful. Please add interpretation of these tables here or in Section 6. Sulfate and nitrate contributions at the Class I areas are declining and should continue to decline in response to emission reductions. However, organic carbon is the largest contributor to haze on the 20% worst days and wildfires are a primary source of organic carbon. Therefore visibility

trends are influenced by emissions beyond ADEQ's control. While 8 of the 9 IMPROVE monitors are currently on track to meet the uniform rate of visibility progress by 2018, wildfire impacts could alter expected visibility improvement.

Section 7.2 Please add table summarizing impacts from Arizona emissions at Class I areas in other states (currently cited from the 2011 Regional Haze SIP.)

Please add paragraph before Section 9 that ADEQ has consulted with FLM.

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

Sincerely,

A handwritten signature in cursive script that reads "Pat Brewer".

Pat Brewer

cc:

Colleen McKaughan, EPA Region 9

Mike George, NPS Intermountain Region