6560-50-P

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 52

[EPA-R09-OAR-2015-0316; FRL-9933-82-Region 9]

Approval and Promulgation of State Implementation Plans; Nevada; Regional Haze Progress Report

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: The United States Environmental Protection Agency (EPA) proposes to approve a revision to the Nevada Regional Haze State Implementation Plan (SIP) submitted by the Nevada Division of Environmental Protection (NDEP) to document that the existing plan is adequate to achieve established goals for visibility improvement and emissions reductions by 2018. The Nevada Regional Haze SIP revision addresses the Regional Haze Rule (RHR) requirements under the Clean Air Act (CAA) to submit a report describing progress in achieving reasonable progress goals (RPGs) to improve visibility in federally designated Class I areas in Nevada and in nearby states that may be affected by emissions from sources in Nevada. EPA is proposing to approve Nevada's determination that the existing Nevada Regional Haze Implementation Plan is adequate to meet the visibility goals, and requires no substantive revision at this time.

DATES: Comments must be received by the designated contact at the address listed below on or before [**insert date 30 days after date of publication in the Federal Register**].

ADDRESSES: Submit your comments, identified by Docket ID No. EPA-R09-OAR-2015-0316, to the *Federal eRulemaking Portal*: http://www.regulations.gov. Follow the online instructions for submitting comments. Once submitted, comments cannot be edited or withdrawn. EPA may publish any comment received to its public docket. Do not submit electronically any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. If you need to include CBI as part of your comment, please visit http://www.epa.gov/dockets/comments.html for instructions. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make.

For additional submission methods, the full EPA public comment policy, and general guidance on making effective comments, please visit http://www.epa.gov/dockets/comments.html.

The index to the docket (docket number EPA-R09-OAR-2015-0316) for this proposed rule is available electronically at http://www.regulations.gov. Although listed in the index, some information is not publicly available, such as CBI or other information that is restricted by statute. Certain other material, such as copyrighted material, is publicly available only in hard copy form. Publicly available docket materials are available electronically at http://www.regulations.gov or in hard copy during normal business hours at the Planning Office of the Air Division, AIR-2, EPA Region 9, 75 Hawthorne Street, San Francisco, CA 94105. To

view hard copies of documents listed in the docket index, EPA requests that you contact the individual listed in the FOR FURTHER INFORMATION CONTACT section.

FOR FURTHER INFORMATION CONTACT: Vijay Limaye, U.S. EPA, Region 9, Planning Office, Air Division, AIR-2, 75 Hawthorne Street, San Francisco, CA 94105. Vijay Limaye may be reached at telephone number (415) 972-3086 and via electronic mail at Limaye.Vijay@epa.gov.

SUPPLEMENTARY INFORMATION: Throughout this document "we," "us," or "our" refer to EPA.

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I. Overview of Proposed Action

EPA is proposing to approve NDEP's determination that the existing Nevada Regional Haze Implementation Plan[1] is adequate to achieve the established RPGs (i.e., visibility goals) for Class I areas by 2018, and therefore requires no substantive revision at this time. The State's determination and EPA's proposed approval are based on the Nevada Regional Haze 5-Year Progress Report ("Progress Report" or "Report") submitted by NDEP to EPA on November 18, 2014, that addresses 40 CFR 51.308(g), (h), and (i) of the RHR.[2] Specifically, we propose to find that the Progress Report demonstrates that the emission control measures in the existing Nevada Regional Haze SIP are sufficient to enable Nevada, as well as other states with Class I areas affected by emissions from sources in Nevada, to meet all established RPGs for 2018 in accordance with §51.308(g). As a result, we propose to approve NDEP's determination that the

[1] The Nevada Regional Haze Implementation Plan consists of the Nevada Regional Haze SIP, submitted to EPA in November 2009 and partially approved and partially disapproved by EPA in several related actions in 2012, and the partial Regional Haze Federal Implementation Plan (FIP) promulgated in 2012 and revised in 2013, as described further below.

[2] The Progress Report was deemed complete by operation of law on May 18, 2015.

existing Implementation Plan is adequate, and requires no further substantive revision at this time to achieve the established goals for visibility improvement in accordance with §51.308(h). In addition, we are proposing to find that NDEP fulfilled the requirements in §51.308(i)(2), (3), and (4) regarding State coordination with Federal Land Managers (FLMs). This coordination includes providing FLMs with an opportunity for consultation on the Progress Report, describing how NDEP addressed any comments from the FLMs, and providing procedures for continuing consultation with the FLMs. Finally, we propose to find that NDEP has fulfilled the requirements of CAA 110(a) and (l) and 40 CFR 51.102 regarding reasonable notice and public hearings with regard to the Progress Report.

II. Background

A. Description of Regional Haze

Regional haze is visibility impairment produced by many sources and activities located across a broad geographic area that emit fine particles that impair visibility by scattering and absorbing light, thereby reducing the clarity, color, and visible distance that one can see. These fine particles also can cause serious health effects and mortality in humans and contribute to environmental impacts, such as acid deposition and eutrophication of water bodies.

The RHR uses the deciview as the principle metric for measuring visibility and for the RPGs that serve as interim visibility goals toward meeting the national goal of achieving natural visibility conditions by 2064. A deciview expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Deciviews are determined by using air quality measurement to estimate light extinction, and then transforming the value of light extinction using a logarithmic function. A deciview is a more useful measure for tracking progress in improving visibility than light

extinction because each deciview change is an equal incremental change in visibility perceived by the human eye. Most people can detect a change in visibility at one deciview.

B. History of Regional Haze Rule

In section 169A(a)(1) of the CAA Amendments of 1977, Congress created a program to protect visibility in designated national parks and wilderness areas, establishing as a national goal the "prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I Federal areas which impairment results from manmade air pollution." In accordance with section 169A of the CAA and after consulting with the Department of Interior, EPA promulgated a list of 156 mandatory Class I Federal areas where visibility is identified as an important value.[3] In this notice, we refer to mandatory Class I Federal areas on this list as "Class I areas." Nevada has one Class I area, Jarbidge Wilderness Area ("Jarbidge"), in the northeast corner of the State.

With the CAA Amendments of 1990, Congress added section 169B to address regional haze issues. EPA promulgated a rule to address regional haze on July 1, 1999, known as the Regional Haze Rule.[4] The RHR revised the existing visibility regulations in 40 CFR 51.308 to integrate provisions addressing regional haze impairment and to establish a comprehensive visibility protection program for Class I areas. As defined in the RHR, the RPGs must provide for an improvement in visibility for the most impaired days ("worst days") over the period of the implementation plan and ensure no degradation in visibility for the least impaired days ("best days") over the same period.[5]

C. Nevada's Regional Haze Plan

[3] 44 FR 69122, November 30, 1979.
[4] See 64 FR 35713.
[5] 40 CFR 51.308(d)(1).

NDEP submitted its Regional Haze SIP to EPA on November 18, 2009, as required by 40 CFR 51.308 for the first regional haze planning period ending in 2018. EPA approved most of the Nevada Regional Haze SIP on March 26, 2012,[6] with the exception of NDEP's determination of best available retrofit technology (BART) to control emissions of nitrogen oxides (NO_X) at the Reid Gardner Generating Station (Reid Gardner). EPA published a new proposal on April 12, 2012, to approve in part and disapprove in part NDEP's BART determination for NO_X at Reid Gardner.[7] EPA published a final rule on August 23, 2012, approving NDEP's BART determination for NO_X on Units 1 and 2, but disapproving NDEP's determination for Unit 3 and the averaging time for the emission limits at all three units.[8] This final rule included a Federal Implementation Plan (FIP) for the disapproved elements. EPA subsequently agreed to reconsider the compliance date for Units 1, 2, and 3 at Reid Gardner in the FIP, which we extended by 18 months.[9]

III. Requirements for Regional Haze Progress Reports

The RHR requires states to submit a report every five years in the form of a SIP revision to evaluate progress toward achieving the RPGs for each Class I area in the state and for those areas outside the state that may be affected by emissions from within the state.[10] The first progress reports are due five years from the submittal date of each state's initial Regional Haze SIP. Progress reports must be in the form of SIP revisions that comply with the procedural requirements of 40 CFR 51.102 and 51.103. These reports must contain an evaluation of seven elements, at a minimum, and include a determination of the adequacy of the state's existing

[6] See 77 FR 17334.
[7] See 77 FR 21896.
[8] See 77 FR 50936.
[9] See proposed rule to grant extension, 78 FR 18280 (March 26, 2013), and final rule granting extension, 78 FR 53033 (August 28, 2013).
[10] 40 CFR 51.308(g).

Regional Haze SIP. In summary,[11] the seven elements are: 1) a description of the status of implementation of all measures included in the current Regional Haze SIP for achieving the RPGs in Class I areas within and outside the state; 2) a summary of the emission reductions achieved in the state through implementation of these measures; 3) an assessment of visibility conditions and changes on the most impaired and least impaired days for each Class I area in the state in terms of five-year averages of the annual values; 4) an analysis of changes in emissions over the past five years contributing to visibility impairment from all sources and activities within the state based on the most recently updated emissions inventory; 5) an assessment of any significant changes in anthropogenic emissions within or outside the state over the past five years that have limited or impeded progress in reducing pollutant emissions and improving visibility; 6) an assessment of whether the elements and strategies in the current Regional Haze SIP are sufficient to enable the state, or other states affected by its emissions, to achieve the established RPGs; and 7) a review of the state's visibility monitoring strategy and any necessary modifications.

Based on an evaluation of the factors listed above as well as any other relevant information, a state is required to determine the adequacy of its existing Regional Haze SIP.[12] The state must take one of four possible actions based on the analysis in its progress report. In summary, these actions are to 1) provide a negative declaration to EPA that no further substantive revisions to the state's existing Regional Haze SIP is needed to achieve the RPGs; 2) provide notification to EPA and to other states in its region that its Regional Haze SIP is or may be inadequate to ensure reasonable progress due to emissions from sources in other states, and collaborate with other states to develop additional strategies to address the deficiencies; 3)

[11] Please refer to 40 CFR 51.308(g) for the exact requirements.
[12] 40 CFR 51.308(h).

provide notification and available information to EPA that the state's Regional Haze SIP is or may be inadequate to ensure reasonable progress due to emissions from sources in another country; or 4) revise its Regional Haze SIP within one year to address the deficiencies if the state determines that its existing plan is or may be inadequate to ensure reasonable progress in one or more Class I areas due to emissions from sources within the state.[13]

A state also must document that it provided FLMs with an opportunity for consultation prior to holding a public hearing on a Regional Haze SIP or plan revision.[14] A state must include a description of how it addressed any comments from the FLMs, and provide procedures for continuing consultation with the FLMs.[15]

IV. Context for Understanding Nevada's Progress Report

To facilitate a better understanding of the Progress Report as well as EPA's evaluation of the Report, this section provides background information on how the regional haze program applies to Nevada. This information describes the framework for measuring visibility progress, a profile of the relevant Class I areas, and the sources of data used in the Progress Report.

A. Framework for Measuring Progress

Visibility conditions at Class I areas are described by a "haze index" measured in deciviews and calculated using data collected from the Interagency Monitoring of Protected Visual Environments (IMPROVE) network monitors. Nevada has an IMPROVE monitor at Jarbidge that is designated "JARB1." To measure progress in deciviews, current visibility conditions (2008-2012) are compared to baseline conditions (2000-2004), and to projected conditions at the end of the planning period (2018). A state establishes two RPGs for each of its Class I areas: one

[13] Id.
[14] 40 CFR 51.308(i)(2).
[15] 40 CFR 51.308(i)(3) and (4).

for the 20 percent best days and one for the 20 percent worst days. The RPGs must provide for an improvement in visibility on the 20 percent worst days and ensure no degradation in visibility on the 20 percent best days, compared to average visibility conditions during the baseline period. In establishing the RPG, a state must consider the uniform rate of improvement in visibility (from the baseline to natural conditions in 2064) and the emission reductions measures needed to achieve it. Nevada set the RPGs for Jarbidge using atmospheric air quality modeling based on projected emission reductions from control strategies in the Nevada Regional Haze SIP as well as emission reductions expected to result from other Federal, state and local air quality programs, among other factors. The purpose of a progress report is to assess whether a state's plan is adequate to achieve the established RPGs and emissions reductions goals for 2018, and if not, whether additional emission reduction strategies are needed.

B. Relevant Class I Areas Nevada's one Class I area, the Jarbidge Wilderness Area, is located within the Humboldt National Forest in the northeastern corner of the State within the populated Snake River Basin and less than 10 miles from the Idaho border. The baseline visibility conditions (2000-2004) at Jarbidge are 12.07 deciviews (dv) on the worst days and 2.56 dv on the best days. The RPG for the worst days in 2018 at Jarbidge is 11.05 dv, which is slightly under, and therefore better than, the uniform rate of progress (URP) in 2018, which is 11.09 dv.[16] While a subsequent correction for the worst days in 2018 resulted in projected visibility impairment of 11.8 dv on the worst days,[17] NDEP has retained the RPG of 11.05 dv for Jarbidge. The RPG for the best days in 2018 at Jarbidge is 2.50 dv, which represents a slight improvement

[16] The URP is a straight line from the baseline visibility condition (5-year annual average from 2000-2004) to the estimated natural background condition in 2064, as measured on the 20 percent best and worst days. The URP values for 2018 are the number of deciviews where the lines drawn to 2064 for best and worst days intersect 2018.

[17] See 76 FR 36464, June 22, 2011, footnote 18 ("In April 2011, the WRAP issued a draft report regarding an error in its visibility projections for about 15 Class I areas in the West, including Jarbidge. The draft report indicated that, as a result of the error, the projected visibility at Jarbidge in 2018 is 11.8 dv instead of 11.1 dv (rounded up from 11.05 dv).").

from baseline conditions. The Progress Report addresses whether Nevada's RH SIP is making adequate progress from the baseline toward these RPGs.

The Nevada Regional Haze SIP identified 24 other Class I areas located in five neighboring states that are potentially affected by emissions of sulfates and nitrates from sources in Nevada.[18] Based on projections from air quality modeling for 2018, the highest contribution to sulfate extinction on the worst days from Nevada's emissions is 5.6 percent at Zion National Park in Utah, and on the best days is 7.2 percent at Sawtooth Wilderness Area in Idaho. For nitrate extinction in 2018, Nevada's highest contribution on the worst days is 20 percent at Desolation Wilderness in California, and on the best days is 12.4 percent at Joshua Tree National Park in California.[19] The remaining 20 Class I areas outside Nevada are projected to have smaller fractions of haze attributable to Nevada's emissions.

C. Data Sources: Nevada's Progress Report is based on information available prior to March 2014. For the most part, NDEP relies on technical data and analysis in two reports from the Western Regional Air Partnership (WRAP), the regional planning organization that provides technical support to western states. The WRAP's reports are based on monitoring data from the IMPROVE network and emissions data from EPA's National Emissions Inventory (NEI). The first report is the "Western Regional Air Partnership Regional Haze Rule Reasonable Progress Summary Report," dated June 28, 2013, which includes Section 6.8 Nevada (Appendix A of the Progress Report). This report is based on the time period 2005-2009 and relies on the NEI from 2008. The WRAP updated the inventory before completing a second report titled "West-Wide Jump-Start Air Quality Modeling Study—Final Report" dated September 30, 2013. NDEP also uses NEI data from 2011, State emission inventory data for 2012, acid rain data from EPA's Air

[18] Nevada Regional Haze State Implementation Plan, Chapter 4.3.3, October 2009. Light extinction is based on a model known as Particulate Matter Source Attribution Tracking (PSAT).
[19] 76 FR 36459, June 22, 2011.

Market Program Database, and IMPROVE monitoring data from 2008 to 2012 to provide more current information and additional analysis. NDEP further relies on the WRAP's Technical Support System and the Visibility Information Exchange Web System as analytic tools.

V. EPA's Evaluation of Nevada's Progress Report

This section describes Nevada's Progress Report and EPA's evaluation of the Report in relation to the seven elements listed in 40 CFR 51.308(g), the determination of adequacy in 40 CFR 51.308(h), the requirement for state and FLM coordination in 40 CFR 51.308(i) and the requirements for public participation in CAA section 110(a) and (l) and 40 CFR 51.102. While the Progress Report focuses on the elements of the Nevada Regional Haze SIP, the requirements in 40 CFR 51.308(g) and (h) apply to "implementation plans," which are defined to include approved SIPs and FIPs.[20] Accordingly, EPA has considered our regional haze BART FIP for Reid Gardner as well as the Nevada Regional Haze SIP in assessing the Progress Report. However, as described further below, all three of the BART-eligible units at Reid Gardner have been shut down. Therefore, the partial disapproval and partial FIP for Reid Gardner does not substantively influence our evaluation of the Progress Report.

A. Status of Implementation of All Measures

1. NDEP's Analysis

The Progress Report describes the status of state and federal measures in the Nevada Regional Haze SIP as well as new programs, rules, and legislation that will provide further emission reductions before the first phase of the regional haze program ends in 2018. Nevada's measures to control or otherwise reduce emissions that contribute to haze are organized into

[20] 40 CFR 51.302.

three broad categories: Review of BART Determinations, State Measures Other than BART, and Federal Programs.[21] The status of measures in each of these categories is summarized below.

BART Implementation: NDEP describes BART implementation in Nevada and in neighboring states that contribute to visibility impairment at Jarbidge. The four BART facilities in Nevada are Reid Gardner, Tracy Generating Station (Tracy), Fort Churchill Generating Station (Fort Churchill), and Mohave Generating Station (Mohave). Mohave closed in 2005.[22] The Nevada Regional Haze SIP requires the remaining three facilities to meet the emission limits associated with all BART control measures by January 1, 2015, with the exception of NO_X at Reid Gardner, which has a compliance date of June 30, 2016, as shown in Table 1. As noted in the table, three units at Reid Gardner and two units at Tracy were scheduled to retire by the compliance date. Subsequent to NDEP's submittal of the Progress Report, all five of these units were shut down and are now in the process of being decommissioned and demolished.[23] The retirement of these five units, and the switching of three other units at Tracy and Fort Churchill to natural gas, is largely in response to the passage of Senate Bill (SB) 123 by the Nevada legislature in 2013, which is described in more detail in the next section regarding other State measures.

TABLE 1—STATUS OF BART CONTROL MEASURES

Facility	Units	BART Control Measures
Reid Gardner Generating Station	1, 2, 3	NV Energy retired these three units as of December 31, 2014, as approved by the Public Utilities Commission of Nevada (PUCN)

[21] Progress Report, Chapter Two, Status of Implementation of Control Measures, pages 2-1 thru 2-13.
[22] Even though Mohave's closure in 2005 predates the first phase of the RH program (2008-2018), NDEP addresses Mohave's emissions in its Progress Report because these emissions are included in the inventories and modeling that form the basis for the Nevada Regional Haze SIP. For example, the projected emission inventory for 2018 includes about 19,595 tpy of NO_X and 8,701 tpy of SO_2 from Mohave.
[23] See Reid Gardner Generating Station Fact Sheet from Nevada Energy (May 2015), Frank A. Tracy Generating Station Fact Sheet from Nevada Energy (June 2015).

Tracy Generating Station	1, 2	NV Energy retired these two units as of December 31, 2014, as approved by the PUCN and in response to SB 123.
	3	NV Energy is relying on alternative control technology and burning only natural gas to comply with the BART emissions limits as of the December 31, 2014, compliance date.
Fort Churchill Generating Station	1, 2	NV Energy is relying on alternative control technology and burning only natural gas to comply with the BART emissions limits as of the December 31, 2014, compliance date.
Mohave Generating Station	All	This facility ceased operations in December 2005 and was subsequently fully decommissioned and demolished.

NDEP explains in the Progress Report that BART implementation in neighboring states is expected to contribute to visibility improvement at Jarbidge, which is located very near the Idaho border and downwind from sources in Oregon. Since source apportionment modeling identified substantial contributions of sulfur dioxide (SO_2) from point sources in Idaho and Oregon,[24] NDEP provides updates on two facilities in Idaho (Amalgamated Sugar Company in Nampa and Monsanto/P4 Production in Soda Springs) and one facility in Oregon (Boardman Power Plant) that are subject to BART control measures. Each of these three facilities is reportedly in compliance with the required BART emission limits for SO_2 and NO_X. However, since some of the compliance dates are not yet effective, more emission reductions are expected by 2018.

Other State Measures: Other State measures contributing to reasonable progress at Jarbidge and other Class I areas include cancellations of applications to build power plants, State legislation to reduce emissions from coal-fired power plants (i.e., SB 123), an expanded renewable energy portfolio, and implementation of control measures to attain the National Ambient Air Quality Standards (NAAQS) as listed in Table 2. Regarding cancellations, NDEP explains that these measures represent additional emission reductions because the emissions from these unbuilt sources were included in the baseline and projected emission inventories in

[24] Nevada Regional Haze SIP, Section 4.3, November 2009.

the Nevada Regional Haze SIP. Of the five proposed power plants that NDEP assumed would be producing emissions, three withdrew applications (White Pine, Toquop, and Copper Mountain), and two were built (Newmont TS Power Plant near Dunphy in northern Nevada and Chuck Lenzie Generating Station near Las Vegas).[25]

The Nevada Legislature in 2013 enacted SB 123 requiring the reduction of emissions from coal-fired power plants in Clark County, Nevada. SB 123 requires the retirement or elimination of not less than 800 megawatts of coal-fired electric generating capacity: 300 MW by December 2014, an additional 250 MW by December 2017, and an additional 250 MW by December 2019. This legislation also mandates the construction or acquisition of 350 MW from new renewable energy facilities. NV Energy must construct or acquire and own facilities with a total capacity of 550 MW to replace the coal-fired capacity eliminated between 2014 and 2019.[26] NV Energy's decision to retire BART units at Reid Gardner and Tracy, and to convert other BART units to natural gas at Tracy and Fort Churchill, was in response to this legislation.

NDEP also reports that Nevada is one of the first states to adopt a renewable portfolio standard that establishes a schedule requiring electric utilities to generate, acquire, or save a percentage of electricity from renewable energy systems or efficiency measures. Not less than 20 percent must come from renewable energy or efficiency measures from 2015 to 2019. The Nevada legislature also has enacted the "Solar Energy Systems Incentive Program," which requires the Public Utilities Commission of Nevada to set incentives and schedules to produce at least 250 MW of capacity from solar energy by 2021. At the time of the Progress Report, Nevada had installed 38 MW of capacity at a cost of $160 million. Another example of renewable energy is the "Solar Thermal Demonstrations Program" that promotes the installation of at least 3,000

[25] Newmont TS is a 220-megawatt power plant using coal-fired boilers with modern control technologies operating since 2008. Chuck Lenzie is 1,102-megawatt generating station using gas-fired steam engines operating since 2006.
[26] Public Utilities Commission of Nevada, Docket No. 14-05003, May 1, 2014, (Appendix C).

solar thermal systems in homes, businesses, schools, and government buildings throughout the State. The Progress Report mentions several other programs to establish solar, wind, and waterpower energy systems along with a list of proposed generation plants that will rely on renewable energy.[27]

TABLE 2—STATUS OF OTHER STATE MEASURES

State Measure	Effective Date
Three Power Plants included in Inventory for 2018	Never Built
Legislation to Retire Coal-Fired Plants (800 mw)	2014 – 2019
Legislation for New Renewable Energy (350 mw)	2014 – 2021
Renewable Energy Portfolio	2015 – 2025
NAAQS Attainment/Maintenance Regulations	Ongoing

Federal Measures: The Progress Report provides a summary of existing federal measures, those that were included in the Nevada Regional Haze SIP, as well as new federal measures as listed in Table 3. NDEP describes in the Report how each of these federal programs, rules, and standards contribute further reductions in visibility impairing pollutants.[28] All eight areas in Nevada that were designated non-attainment for one more NAAQS either have been redesignated to attainment and are operating under a maintenance plan or have a determination of attainment indicating that the area is attaining the NAAQS. The control measures for attainment that remain in place include fugitive dust regulations, oxygenated fuel programs, gasoline vapor recovery, transportation control measures, residential wood burning regulations, woodstove replacement programs, and alternative fuel vehicle program.

[27] Progress Report, Chapter 2, pages 2-8 thru 2-9.
[28] Progress Report, Chapter 2, pages 2-3 thru 2-6.

TABLE 3—STATUS OF FEDERAL MEASURES

Existing Federal Measures	
Heavy Duty Highway Rule (PM, NO_X, SO_X)	Phased in 2006 - 2010
Tier 2 Vehicle and Gasoline Program (NO_X, VOC)	Effective in 2005
Non-Road Mobile Diesel Emissions Program (NO_X, CO)	Phased in 2004 - 2012
Maximum Achievable Control Technology Program	Ongoing Applicability
New Federal Measures	
Mercury and Air Toxics Rule (Toxic Gases, SO_2)	Final Rule in 2011
Revised NAAQS for Sulfur Dioxide	Final Rule in 2010
Revised NAAQS for Nitrogen Dioxide	Final Rule in 2010
Revised NAAQS for Fine Particulate Matter	Final Rule in 2012
North American Emission Control Areas (NO_X, $PM_{2.5}$, SO_2)	Effective in 2012; 2015
Tier 3 Vehicle Emission and Fuel Standards Program (SO_X)	Effective in 2017

PM = Particulate Matter
VOC = Volatile Organic Compounds

2. EPA's Evaluation

EPA proposes to find that NDEP adequately addresses the requirement in 40 CFR 51.308(g)(1) to describe the status of all measures included in the Nevada Regional Haze SIP. NDEP provides a detailed and comprehensive update of state and federal measures, including new measures that are expected to contribute further to visibility improvement. The Progress Report's description of BART implementation, legislation, programs, and rules provides a thorough summary of the regulatory requirements that underpin Nevada's regional haze program.

B. Summary of Emission Reductions Achieved

1. NDEP's Analysis

The Progress Report focuses on SO_2 and NO_X emissions, which are the primary pollutants of concern from anthropogenic sources. NDEP reports that SO_2 and NO_X emissions have decreased substantially in Nevada due to the implementation of control measures as well as other changes in State energy policy and source activity as described above in the status of

measures. According to EPA's acid rain data,[29] annual SO_2 emissions from Electricity Generating Units (EGUs) in Nevada decreased by 44,107 tpy (82 percent) from 53,346 tpy in 2005 to 9,239 tpy in 2006. Similarly, NO_X emissions from power plants decreased by 23,257 tpy (54 percent) from 43,242 tpy in 2005 to 19,985 tpy in 2006. NDEP points out that while these large decreases from 2005 to 2006 are mostly due to the closure of Mohave Generating Station, emissions continued to decrease steadily thereafter. From 2006 to 2013, power plant emissions of SO_2 decreased by about 20 percent (9,239 to 7,427 tpy) and NO_X emissions decreased by about 61 percent (19,985 to 7,796 tpy).[30] The closure of units at Reid Gardner and Tracy, and the implementation of control measures on other units at Tracy and Fort Churchill, should contribute further emission reductions not reflected in the acid rain data for 2013.

The Progress Report also quantifies emission reductions resulting from the cancellation of plans to construct three power plants and lower actual emissions from the two plants that were built. NDEP includes this analysis because projected emissions from these five sources are included in the emission inventory for 2018 that provides the basis for the RPG at Jarbidge. The reductions due to permit cancellations are 5,814 tpy of SO_2, 6,136 tpy of NO_X, and 5,814 tpy of particulate matter (PM_{10}). Moreover, the two new plants that were built (Newmont and Chuck Lenzie) have combined actual emissions in 2012 that are less than projected for the emission inventory in 2018.[31] NDEP states that these unrealized emissions, in effect, would result in lower modeled visibility impairment in 2018, particularly at Class I areas near southern and eastern Nevada where the two built sources are located and the three cancelled sources had planned to locate.

[29] USEPA Clean Air Markets Division, Air Markets Program Data, Acid Rain Program.
[30] Progress Report, Chapter 3, Table 3-2, page 3-5.
[31] Progress Report, Chapter 3, Table 3-1, page 3-4.

2. EPA's Evaluation

EPA proposes to find that NDEP adequately addresses the requirement in 40 CFR 51.308(g)(2) to provide a summary of the emission reductions from implementing the measures in the Nevada Regional Haze SIP. NDEP documents that SO_2 and NO_X emissions from Nevada's power plants have decreased substantially, especially due to the closure of Mohave. NDEP makes the case that emissions from the power sector should continue to decline as BART controls and SB 123 are implemented, further reducing emissions from Reid Gardner, Tracy, and Fort Churchill. While it is difficult to quantify emission reductions from other state and federal programs, we agree that other state and federal measures should contribute to declining emissions, particularly from mobile and stationary sources. While the cancellation of proposed facilities does not constitute emission reductions per se, we recognize that the inclusion of these projected emissions in the 2018 inventory likely inflated the projected emissions used as the basis of the RPGs for Jarbidge and Class I areas affected by Nevada's emissions. We also note that NDEP's summary of emission reductions is complemented by its analysis of recent changes in emissions from all sources in Section D of this proposal.

C. Assessment of Visibility Conditions and Changes at Jarbidge

1. NDEP's Analysis

Current Visibility Conditions: NDEP reports on current visibility conditions for the 20 percent worst days and 20 percent best days at Jarbidge for the five-years from 2008 to 2012 as displayed in Table 4.[32] The five-year annual average haze index at Jarbidge for this current time period is 12.0 dv on worst days and 1.9 dv on best days. On worst days, the annual averages for visibility impairment are strongly influenced by light extinction due to particulate organic matter

[32] Progress Report, Chapter 4, Table 4-1, page 4-3.

(POM), followed by coarse mass and sulfate. On the best days, visibility impairment is dominated by light extinction due to sulfate, followed by POM and coarse mass. The Progress Report notes that sources of POM are predominantly natural, while sources of fine soil and coarse mass are about equally split between natural and anthropogenic. The dominant source of sulfate is SO_2 from anthropogenic sources.

TABLE 4—CURRENT ANNUAL AND FIVE-YEAR ANNUAL AVERAGE VISIBILITY CONDITIONS FOR WORST AND BEST DAYS AT JARBIDGE[33]

Year	Haze Index (dv)	Sulfate (Mm^{-1})	Nitrate (Mm^{-1})	POM (Mm^{-1})	EC (Mm^{-1})	Soil (Mm^{-1})	Coarse Mass (Mm^{-1})	Sea Salt (Mm^{-1})
Worst Days								
2008	12.5	3.72	1.12	12.06	1.48	2.61	4.84	0.04
2009	11.1	4.43	0.53	7.32	1.12	2.31	5.66	0.30
2010	10.0	3.30	1.04	4.33	0.77	2.49	5.66	0.06
2011	11.7	4.16	0.67	7.71	1.21	2.49	6.85	0.40
2012	14.9	3.87	1.18	23.97	3.11	2.63	5.17	0.21
Average	12.0	3.9	0.9	11.1	1.5	2.5	5.6	0.2
Best Days								
2008	1.9	1.14	0.22	0.23	0.09	0.12	0.27	0.05
2009	1.8	0.95	0.16	0.31	0.11	0.12	0.28	0.03
2010	1.8	1.09	0.15	0.30	0.12	0.06	0.24	0.03
2011	2.1	1.21	0.19	0.39	0.13	0.10	0.26	0.07
2012	2.0	0.95	0.18	0.37	0.18	0.10	0.37	0.04
Average	1.9	1.1	0.2	0.3	0.1	0.1	0.3	0.0

EC = Elemental Carbon

Difference between Current and Baseline Visibility Conditions: NDEP presents the difference between the current five-year annual average (2008-2012) and the baseline five-year annual average (2000-2004) for Jarbidge, as displayed in Table 5, which also includes successive five-year annual averages for the intervening time periods (2005-2009, 2006-2010, and 2007-

[33] The data on visibility conditions is from the IMPROVE monitor at Jarbidge (JARB1) that measures light extinction in terms of inverse megameters (Mm^{-1}) that are directly related to gaseous and aerosol concentrations. The haze index is measured in deciviews, which is a metric of haze proportional to the logarithm of the light extinction.

2011).[34] The differences calculated in the table are between the baseline and the current visibility condition represented by the time period 2008-2012. A negative difference indicates a reduction in haze (i.e., improved visibility). Comparing baseline to current visibility conditions on worst days, the haze index declined slightly (12.1 to 12.0 dv) with corresponding decreases in light extinction for sulfate, nitrate, and elemental carbon, but a noticeable increase in POM. On the best days, the haze index decreases from the baseline to current visibility conditions (2.6 to 1.9 dv) with corresponding decreases in light extinction for sulfate, nitrate, POM, and elemental carbon, with the three other pollutants remaining the same.

NDEP also analyzes the relative percentage contribution and rank of each pollutant to visibility impairment on the worst and best days for the five-year annual average baseline and successive five-year time periods, as displayed in Table 5.[35] This analysis reveals that POM (ranging from 35.5 to 43.0 percent), coarse mass (21.9 to 26.1 percent), and sulfate (15.1 to 17.0 percent) rank first, second, and third, respectively, as the largest contributors to light extinction on worst days in each of the five-year periods from the baseline to current time period. On the worst days, POM dominates the contributions to visibility impairment for the baseline as well as all subsequent time periods. The data for sulfate and nitrate show small but continued improvement on worst days based on these five-year annual averages.

On the best days for each five-year period of annual averages, sulfate (ranging from 4.10 to 50.5 percent), POM (15.1 to 26.1 percent), and coarse mass (12.4 to13.2 percent) rank first, second, and third except for the baseline period in which nitrate is third, contributing 9.8 percent. On average across all five-year periods, nitrate and elemental carbon each contribute about 10 percent to visibility impairment on best days. NDEP explains that the sulfate contribution is most

[34] See Progress Report, Chapter 4, Table 4-2, page 4-4.

[35] Progress Report, Table 4-4, Percent Contribution to Aerosol Extinction by Species, page 4-10. These results excluded Rayleigh and are expressed as a percentage of Mm^{-1}.

likely high because best days represent times when there are fewer emissions from natural sources, resulting in relatively higher contribution to impairment from anthropogenic emissions. Although the ranking changes from worst days to best days, POM, coarse mass, and sulfate are the three largest contributors to visibility impairment at Jarbidge.

TABLE 5—BASELINE AND FIVE-YEAR ANNUAL AVERAGE VISIBILITY CONDITIONS FOR THE WORST AND BEST DAYS AT JARBIDGE

Time Period	Haze Index (dv)	Sulfate (Mm^{-1})	Nitrate (Mm^{-1})	POM (Mm^{-1})	EC (Mm^{-1})	Soil (Mm^{-1})	Coarse Mass (Mm^{-1})	Sea Salt (Mm^{-1})
Worst Days								
Baseline	12.1	4.0	1.1	10.0	1.6	2.4	5.5	0.1
2005-2009	12.4	4.4	1.4	10.0	1.7	2.6	5.9	0.2
2006-2010	12.2	4.0	1.1	9.6	1.6	2.7	6.1	0.1
2007-2011	11.7	3.9	1.0	8.4	1.2	2.7	6.2	0.2
2008-2012	12.0	3.9	0.9	11.1	1.5	2.5	5.6	0.2
Difference	-0.1	-0.1	-0.2	1.1	-0.1	0.1	0.1	0.1
Best Days								
Baseline	2.6	1.2	0.3	0.8	0.3	0.1	0.3	0.0
2005-2009	2.2	1.1	0.2	0.5	0.2	0.	0.3	0.0
2006-2010	2.0	1.1	0.2	0.4	0.1	0.1	0.3	0.0
2007-2011	2.0	1.1	0.2	0.3	0.1	0.1	0.3	0.0
2008-2012	1.9	1.1	0.2	0.3	0.1	0.1	0.3	0.0
Difference	-0.7	-0.1	-0.1	-0.5	-0.2	0.0	0.0	0.0

To support its analysis of current conditions, NDEP presents a set of rolling five-year averages of the annual averages, and includes the current estimate of natural conditions, as shown in Table 6.[36] The rolling five-year average of the annual averages reveals more clearly the trend in visibility conditions over time.

TABLE 6—FIVE-YEAR ANNUAL AVERAGE HAZE INDEX FOR BASELINE AND SUCCESSIVE TIME PERIODS MEASURED AT JARB1 (IN DECIVIEWS)

Days Measured	Baseline Conditions	Interim Five-Year Time Periods	Current Conditions	Natural Conditions

[36] Progress Report Table 4-3, page 4-6.

(20 Percent)	2000-2004	2005-2009	2006-2010	2007-2011	2008-2012	2064
Worst	12.1	12.4	12.2	11.7	12.0	7.9
Best	2.6	2.2	2.0	2.0	1.9	1.1

NDEP also presents the change in visibility conditions between the baseline and current period for best and worst days in comparison to the RPG in 2018 using the 2008 to 2012 average as displayed in Table 7.[37] While visibility on the best days shows improvement, only modest progress is shown for the worst days due to significant contribution of POM to light extinction at Jarbidge, particularly in 2012 as shown in Table 4.

TABLE 7—REASONABLE PROGRESS GOAL SUMMARY FOR JARBIDGE
(IN DECIVIEWS)

Best Days			Worst Days				
Baseline (2000-2004)	Current (2008-2012)	Visibility Improve-ment	Baseline (2000-2004)	Current (2008-2012)	Visibility Improve-ment	2018 RPG	Progress in 2012 to 2018 RPG
2.6	1.9	0.7	12.1	12.0	0.1	11.05	9.5%

Changes in Visibility Impairment over Past Five Years: The distinguishing feature of annual visibility impairment on the worst days from 2008 to 2012 is the variability of light extinction due to POM and its corresponding effect on the haze index as shown in Table 4. While light extinction for other pollutants is relatively flat during this current five-year period, POM varies by almost 20 Mm^{-1}, from a low of 4.33 Mm^{-1} in 2010 to a high of 23.97 Mm^{-1} in 2012. Levels of POM spiked in 2012, which NDEP attributes to emissions from wildfires. As the table shows, on the worst days POM has a strong influence on the year-to-year variability in visibility conditions, and can cause a corresponding increase in the 2008-2012 five-year annual average. Visibility impairment on worst days generally has not changed much over the five years except for the variations due to light extinction from POM. Visibility on best days, by contrast,

[37] Progress Report Table 4-6, page 4-14. This table omits the RPG for the best days, which is 2.56 dv.

generally is improving over the current time period with little variability from year to year. For the best days, there is a noticeable reduction in visibility impairment due to sulfate, nitrate, POM, and elemental carbon.

NDEP presents a trend analysis for the period from 2000 to 2012, focusing on sulfates and nitrates, as an annual average and as a rolling five-year average during this 13-year time period based on IMPROVE data.[38] Analyzing this longer time period demonstrates that on the worst and best days visibility impairment resulting from light extinction due to sulfate and nitrate is improving over time, both on an annual basis as well as five-year annual averages. NDEP also includes an analysis showing the effect of a large spike in nitrates in December 2005 (41 Mm^{-1}) that increases the annual average as well as all the five-year averages that include data from 2005.

2. EPA's Evaluation

EPA proposes to find that NDEP adequately addresses the requirement in 40 CFR 51.308(g)(3) to assess the visibility conditions and changes in each of the State's Class I areas for the least and most impaired days in terms of the current conditions, difference between current and baseline conditions, and over the past five years. The analysis indicates that visibility on the best days at Jarbidge is getting better, but that visibility on the worst days is flat or only minimally improving. However, NDEP offers compelling evidence that light extinction due to POM has dominated visibility conditions on the worst days, particularly in 2012 as shown in Table 4.

D. Analysis of Changes in Emissions

1. NDEP's Analysis

[38] Nevada RH Progress Report, Chapter 4, Figures 4-12 through 4-15, pages 4-15 thru 4-19.

NDEP relies on the WRAP's analysis[39] to describe the changes in emissions from the baseline[40] in 2002 to the emissions inventory in 2008, the beginning of Nevada's current five-year time period. NDEP also uses NEI data from 2008 to 2011 to augment its analysis.[41] As shown in Table 8, emissions of all visibility-impairing pollutants decreased from the baseline inventory to 2008, except for fine soil and coarse mass. Notably, actual emissions in 2008 are lower than the projected 2018 emissions for all pollutants, with the exception of fine soil and coarse mass. For example, point source emissions of SO_2 decreased by 78 percent, while point source emissions of NO_X decreased by over 50 percent from the baseline to 2008. These large reductions in the anthropogenic emissions of SO_2 and NO_X represent a successful strategy of reducing anthropogenic emissions within the State. NDEP notes that the increase in fine soil and coarse mass are likely due to updates in inventory development methods rather than actual increases, which is plausible given the small changes in soil and coarse mass observed at the Jarbridge monitor.

TABLE 8—COMPARISON OF EMISSION INVENTORIES IN 2002, 2008, AND 2018 FOR NEVADA OF ALL VISIBILITY IMPAIRING POLLUTANTS[42]

Pollutants	2002 Baseline (tpy)	2008 Inventory (tpy)	2018 Projection (tpy)	2008 Actuals as a Percent of 2018 Projections
Sulfur Dioxide	67,743	17,058	46,224	37%
Nitrogen Oxides	162,397	119,513	135,496	88%
Ammonia	12,092	9,382	14,503	65%
Volatile Organic Compounds	897,102	351,142	897,707	39%
Primary Organic Aerosol	24,734	11,816	24,822	48%

[39] *WRAP Regional Haze Rule Reasonable Progress Summary Report*, June 28, 2013. *West-Wide Jump-Start Air Quality Modeling Study—Final Report*, September 30, 2013.
[40] WRAP refers to the baseline as 2002, the midyear of the baseline inventory period from 2000 to 2004.
[41] Data from the NEI are slightly different from the WestJump2008 inventory, which leverages more recent inventory development performed by the WRAP.
[42] The WRAP compared data between the baseline (2002) and emission inventory (2008) for nine source categories: point sources, area sources, oil and gas, on-road mobile, off-road mobile, fugitive dust and road dust, windblown dust, biogenic, and fires.

Elemental Carbon	6,409	4,425	5,638	78%
Fine Soil	21,208	40,301	24,134	167%
Coarse Mass	161,142	321,257	188,287	171%

NDEP analyzes the differences between the baseline and current emissions based on WRAP's WestJump2008 inventory for eight categories of emissions as summarized below. This analysis focuses on the percentage change in the emissions of each pollutant by source category in 2002 and 2008, and adds an analysis of changes in emissions from 2008 to 2011 where NEI data is available.

Sulfur Dioxide: Total anthropogenic emissions of SO_2 decreased by 75 percent from 65,543 tons in 2002 to 16,552 tons in 2008, representing a significant reduction in particular from point and area sources as shown in Table 9. Point source emissions alone decreased by 78 percent (50,720 to 11,067 tpy) during this period, and area source emissions decreased by 63 percent (12,953 to 4,863 tpy). As a percentage of total statewide emissions, anthropogenic and natural, point source emissions decreased from 75 percent of the total in the 2002 (50,720 of 67,743 tons) to 65 percent of the total in the 2008 (11,067 tons of a total 16,552 tons). Moreover, the NEI inventories show a further decrease in SO_2 emissions from point sources of 44 percent from 10,409 tpy in 2008 to 5,863 tpy in 2011, primarily due to reductions in coal-fired emissions from power plants. On-road and off-road mobile emissions decreased by 34 percent (454 to 298 tpy) and 77 percent (1,403 to 322 tpy), respectively, from 2002 to 2008. Data from the NEI indicate further reductions in emissions from mobile sources from 2008 to 2011, a 47 percent decrease in on-road emissions (511 to 270 tpy) and a 87 percent decrease in off-road emissions (316 to 41 tpy).

TABLE 9—CHANGES IN SULFUR DIOXIDE EMISSIONS BY CATEGORY (TPY)

Source Category	2002 (Baseline)	2008 (WestJump2008)	Difference (Percent Change)

Anthropogenic Sources			
Point	50,720	11,067	-39,653 (-78%)
Area	12,953	4,863	-8,090 (-62%)
On-Road Mobile	454	298	-156 (-34%)
Off-Road Mobile	1,403	322	-1,081 (-77%)
Area Oil and Gas	0	0	0
Fugitive and Road Dust	0	0	0
Anthropogenic Fire	12	2	-10 (-83%)
Total Anthropogenic	65,543	16,552	-48,991 (-75%)
Natural Sources			
Natural Fire	2,200	506	-1,694 (-77%)
Biogenic	0	0	0
Windblown Dust	0	0	0
Total Natural	2,200	506	-1,694 (-77%)
All Sources			
Total Emissions	67,743	17,058	-50,685 (-75%)

Nitrogen Oxides: The total statewide inventory of NO_X emissions from all sources decreased by 26 percent from 162,397 tpy in 2002 to 118,766 tpy in 2008 as shown in Table 10. Over this time period, NO_X emissions from anthropogenic sources decreased by 23 percent (139,353 tpy to 107,827 tpy), and natural emissions decreased by 53 percent (23,044 tpy to 10,939 tpy). Anthropogenic emissions of NO_X in Nevada are primarily from point and on-road mobile sources, followed by off-road and area sources. From the 2002 to 2008 inventories, NO_X emissions from point sources decreased by about 50 percent (59,864 to 29,344 tpy), on-road mobile increased by about 22 percent (41,089 to 50,068 tpy), off-road mobile decreased by about 48 percent (32,565 to 17,081 tpy), and area sources increased by 98 percent (5,725 to 11,321 tpy). Increases in on-road mobile and area source emission inventories were offset by larger decreases in emissions from point and off-road mobile sources. The NEI point source inventory shows a decrease of 57 percent in NO_X emissions from 2008 to 2011. NDEP attributes the 22 percent increase in on-road mobile emissions to the use of different air quality models to estimate emissions in 2002 (MOBILE6) and in 2008 (MOVES2010), a growth in the number of

vehicles, and the fact that federal vehicle emissions standards were not fully implemented. NEI data from 2008 and 2011 show a 36 percent increase in on-road mobile NO_X emissions, possibly related to population growth. The NEI shows a continuing decrease in off-road mobile emissions of 12 percent from 2008 to 2012. NDEP states that the increase in emissions from area sources may be a result of a reclassification of some off-road mobile sources into area source category, which may have contributed to the decrease in emissions from off-road mobile sources. This is consistent with the reclassification of in-flight aircraft emissions and locomotive emissions outside of rail yards from the off-road mobile category to the area source category in the 2008 NEI.[43]

TABLE 10—CHANGES IN NITROGEN OXIDE EMISSIONS BY CATEGORY (TPY)

Source Category	2002 (Baseline)	2008 (WestJump2008)	Difference (Percent Change)
Anthropogenic Sources			
Point	59,864	29,344	-30,520
Area	5,725	11,321	5,597
On-Road Mobile	41,089	50,068	8,979
Off-Road Mobile	32,565	17,081	-15,484
Area Oil and Gas	63	0	-63
Fugitive and Road Dust	0	0	0
Anthropogenic Fire	48	13	-35
Total Anthropogenic	139,353	107,827	-31,526 (-23%)
Natural Sources			
Natural Fire	8,026	3,575	-4,451
Biogenic	15,018	7,364	-7,654
Windblown Dust	0	0	0
Total Natural	23,044	10,939	-12,105 (-53%)
All Sources			
Total Emissions	162,397	118,766	-43,631 (-26%)

Ammonia: Total statewide emissions of ammonia decreased by 22 percent (12,092 to 9,382 tpy) from 2002 to 2008. Of this total, anthropogenic emissions decreased by 34 percent

[43] See http://www.epa.gov/ttnchie1/net/2008inventory.html ("Description of NEI Data Categories")

(10,408 to 6,893 tpy) while natural emissions increased by 48 percent (1,684 to 2,490 tpy). The primary source of anthropogenic emissions of ammonia is area sources, and to a lesser extent on-road mobile sources, while fire is the dominant natural source.[44] Area sources of ammonia emissions decreased by about 29 percent (8,009 to 5,717 tpy) from 2002 to 2008. On-road mobile sources, the next largest category of anthropogenic emissions, decreased by about 58 percent (2,030 to 849 tpy). Despite an increase of 48 percent in natural fire (1,684 to 2,490 tpy), there was a net decrease in statewide emissions. Ammonia is not a criteria pollutant and is not included in the NEI, so no data for 2011 were provided.

Volatile Organic Compounds: Data from the 2002 and 2008 inventories as well as from the NEI for the 2008 to 2011 time period show large reductions in volatile organic compounds (VOC) emissions from natural sources with lesser reductions from anthropogenic sources. Biogenic emissions from natural sources dominate the Nevada VOC emissions inventory. Total statewide VOC emissions decreased by 61 percent from 897,102 tpy in 2002 to 351,142 tpy in 2008. This large reduction is mostly due to a decrease in biogenic emissions over this time period by 67 percent from 794,139 tpy to 262,912 tpy. NDEP notes that these changes may reflect enhancements to the inventory method, use of different meteorological years, and improved emission factors and data sources. There were also decreases in on-road mobile (36,257 to 21,302 tpy) and natural fire (17,606 to 4,204 tpy), and an increase in area sources (28,592 to 40,973 tpy), all of which are a very small part of the total inventory. VOC emissions in the NEI show a decrease in point source (17 percent), on-road mobile (20 percent), and off road mobile (18 percent) from 2008 to 2011.

[44] The WRAP has created an operational policy level definition of fire activity as discretely natural or anthropogenic. See the *WRAP Regional Haze Rule Reasonable Progress Summary Report*, section 3.2.1 and the WRAP's *Policy for Categorizing Fire Emissions* (November 15, 2001), available at http://www.wrapair.org/forums/fejf/documents/nbtt/FirePolicy.pdf.

Primary Organic Aerosol: Wildfires are the dominant source of primary organic aerosol (POA) emissions, 90 percent of the total in 2002 (22,501 of a total 24,734 tpy) and 58 percent in 2008 (6,831 of a total 11,816 tpy). Anthropogenic sources, namely area and mobile, also are important contributors. Overall, total emissions of POA decreased by 52 percent from 2002 to 2008. Natural fire emissions of POA decreased 70 percent (22,501 to 6,831 tpy), reflecting the high variability of wildfires from year to year. Except for anthropogenic fire, all other categories of anthropogenic sources of POA (primarily area, mobile, and fugitive) increased during this time period with the total anthropogenic emissions increasing by 123 percent from 2,233 to 4,985 tpy.

Elemental Carbon: Natural fire (i.e., wildfires) also dominate EC emissions at 73 percent of the 2002 inventory (4,674 of 6,409 tpy), but only 23 percent of the 2008 inventory (1,130 to 4,425 tpy), a reduction of 76 percent (4,674 to 1,130 tpy). Consequently, total emissions decreased by 31 percent (6,409 to 4,425 tpy) mostly due to the decrease in natural fire. Total anthropogenic emissions increased by 90 percent (1,735 to 3,295 tpy) due mostly to an increase in on-road mobile sources from 235 to 1,891 tpy over this time period. On-road mobile is the largest source of elemental carbon in the 2008 inventory at 43 percent, while the next largest category is natural fire emissions contributing 26 percent. Area and point sources, by contrast, contribute less than one percent each to the 2008 inventory.

Fine Soil: Total emissions of fine soils increased by 90 percent (21,208 to 40,301 tpy) from the 2002 to the 2008 inventory. The largest increases were in fugitive dust (6,128 to 19,216 tpy) and windblown dust (10,438 to 17,051 tpy). NDEP reports that increases in these source categories were likely due to updates to inventory development methods rather than actual increases.

Coarse Mass: Total emissions of coarse mass increased by about 99 percent (161,142 to 321,257 tpy), mostly due to large increases in anthropogenic fugitive and road dust (56,799 to 161,532 tpy) and in natural windblown dust (93,946 to 153,459 tpy). Fugitive dust includes sources such as agricultural operations, construction, and mining operations. Windblown dust is largely from vacant lands. NDEP attributes these increases in part to updates in the inventory development methods rather than actual increases. Nonetheless, increases in fugitive dust may be due to increases in population, while increases in road dust may be due to increases in vehicle miles traveled. Point source and natural fire emissions decreased.

2. EPA's Evaluation

We propose to find that NDEP adequately addresses the requirement in 40 CFR 51.308(g)(4) to analyze the change in emissions over the past five years of pollutants contributing to visibility impairment from all sources and activities within the state, using the most recently updated emission inventories. NDEP's analysis of emission data makes a strong case that the State is reducing emissions of SO_2 and NO_X from anthropogenic sources, especially point sources.

E. Assessment of Anthropogenic Emissions Impeding Progress

1. NDEP's Analysis

NDEP reports that progress toward achieving its visibility goal of 11.05 dv at Jarbidge by 2018 has not been impeded by any significant anthropogenic emission changes within or outside the State. NDEP reaches this conclusion by evaluating significant emission changes within Nevada, the effect of emissions from sources outside of Nevada on Jarbidge, and the effect of Nevada's emissions on nearby Class I areas.

Emission Changes within Nevada and Visibility Conditions at Jarbidge: NDEP analyzes the baseline and rolling five-year annual averages of light extinction data from the JARB1 monitor for the best and worst days from 2005 through 2012. For the worst days, the data show a reduction in sulfate and nitrate extinction for the three most recent five-year periods (2006-2010, 2007-2011, and 2008-2012), but an increase in POM extinction, due to a spike in 2012 that NDEP attributes to wildfires.[45] On the best days, visibility impairment is reduced from the baseline to the current period due to decreases in extinction from sulfate, nitrate, POM, and elemental carbon. Light extinction for soil, coarse mass, and sea salt remain fairly constant on best days.

Actual emissions of SO_2, NO_X, PM_{10}, and VOC from point sources in Nevada[46] have decreased significantly over a 10-year period (2002-2012) and over the last five years (2008-2012) as presented in Table 11.[47] The years 2002, 2005, 2008, and 2011 are the most complete inventory years submitted to EPA for the NEI. The data for 2012 are actual emission values for major and minor point sources from Nevada's permitting database. As shown in the table, SO_2 emissions from point sources dropped dramatically after the closure of Mohave in 2005, and decreased by another 50 percent from 2008 to 2012. Likewise, NO_X emissions decreased by 30,000 tpy after 2005, and decreased another 62 percent from 2008 to 2012.

TABLE 11—ACTUAL EMISSIONS OF NEVADA POINT SOURCES (TPY)

Year	SO_2	NO_X	PM_{10}	VOC
2002	50,619	55,876	6,868	2,132
2005	54,243	52,087	4,643	1,646
2008	10,497	21,680	3,465	1,600
2011	5,959	10,548	3,331	971
2012	5,278	8,324	2,629	986

[45] Progress Report, Chapter 6, pages 6-2 thru 6-3.
[46] SO_2 emissions from point sources were 68 percent of the total anthropogenic emissions in Nevada in 2008 (WestJump2008). Area source emissions of SO_2 were 29 percent of total anthropogenic emissions in 2008.
[47] Progress Report, Table 6-1, page 6-4.

PM_{10} = particulate matter less than 10 microns

Emissions from Outside Sources Effecting Jarbidge: NDEP's analysis focuses on three BART sources in Idaho and Oregon to determine whether these previously identified point sources are impeding progress on the worst days at Jarbidge. Comparing baseline emissions to the NEI in 2011, total SO_2 emissions from these three sources decrease by about 40 percent (26,243 to 15,782 tpy) from 2002 to 2011. Total NO_X emissions decrease by about 31 percent (11,010 to 7,611 tpy) over the same time period. Moreover, emissions from these sources will continue to decline over time given staggered compliance dates through 2018. With visibility impairment resulting from sulfate and nitrate trending downward at Jarbidge and the implementation of BART controls in Idaho and Oregon, NDEP concludes that there are no significant changes in anthropogenic emissions from outside the State that are impeding progress at Jarbidge.

In assessing point source emissions from Idaho and Oregon, NDEP references source apportionment modeling of particulate sulfate and nitrate extinction for 2018 that was performed by the WRAP for the Nevada Regional Haze SIP.[48] The purpose of the modeling is to determine source areas that contribute to visibility impairment on the worst days at Jarbidge. The area of greatest sulfate contribution is Outside Domain[49] (43.8 percent), followed by Idaho (10.3 percent), Oregon (7.2 percent), and Pacific Offshore (6.9 percent). The area of greatest nitrate contribution is Idaho (30.3 percent), followed by Outside Domain (27.5 percent), Nevada (13.1 percent), and Utah (10.6 percent). Based on these results, Idaho is the second largest contributor

[48] Nevada Regional Haze SIP, Chapter 4, Table 4-5: Summary of 2018 Model Results for Jarbidge Wilderness Area, based on Particulate Matter Source Attribution Tracking, page 31.

[49] Outside Domain as a source category represents the background concentrations of pollutants from international sources that enter the modeling domain, in this case the western United States and portions of Canada and Mexico.

of modeled sulfate and the largest contributor of modeled nitrate concentrations. Oregon is the third largest contributor of modeled sulfate concentrations. While this analysis supports the focus on emissions from Idaho and Oregon, the fact that Outside Domain contributes 43.8 percent of the modeled sulfate and 27.5 percent of the modeled nitrate is another indication that Nevada has limited control over a large subset of the emissions impairing visibility at Jarbidge.

Nevada's Emissions Effect on Nearby Class I Areas: NDEP also addresses the potential effect of Nevada's emissions on nearby Class I areas in other states using particulate source apportionment modeling conducted by the WRAP for the first round of regional haze SIPs. This modeling estimated Nevada's projected contributions to light extinction from sulfates and nitrates at Class I areas in adjacent states in 2018.[50] In light of the 75 percent reduction in Nevada's SO_2 emissions (see Table 9) and 26 percent reduction in NO_X emissions (see Table 10) between 2002 and 2008, NDEP concludes that Nevada's emission reductions are not impeding progress in reducing visibility impairment at Class I areas in adjacent states.

2. EPA's Evaluation

EPA proposes to find that NDEP adequately addresses the requirement in 40 CFR 51.308(g)(5) to assess any significant changes in anthropogenic emissions within or outside the state over the past five years that have limited or impeded progress in reducing emissions and improving visibility. NDEP provides a comprehensive analysis of emission changes within and outside the State, and examines the potential effect of these changes at Jarbidge and at other Class I areas. All indications are that the total statewide emissions of SO_2 and NO_X are decreasing (see Tables 9, 10, and 11), and most of the pollutants are already at levels below those in the projected emission inventory for 2018 (see Table 8). Based on NDEP's analysis, EPA

[50] Nevada Regional Haze SIP, Chapter 4, Tables 4-3: Nevada's Sulfate Extinction Contribution to Class I Areas Outside of Nevada and Table 4-4: Nevada's Nitrate Extinction Contribution to Class I Areas Outside of Nevada, pages 14-17.

proposes to concur with NDEP that there is no evidence that any recent changes in emissions from any specific sources or source categories are impeding progress.

F. Assessment of Plan Elements and Strategy

1. NDEP's Analysis

The Progress Report concludes that the existing elements and strategies in the Nevada Regional Haze Implementation Plan are sufficient to enable Nevada and other neighboring states to meet the RPGs by 2018 in terms of reducing emissions from anthropogenic sources. Nevada has already achieved significant emission reductions in the first phase of the regional haze program, with additional reductions expected by 2018. Actual emissions of visibility impairing pollutants in 2008, with the exception of fine soil and coarse mass, are already less than the projected emissions in 2018 (see Table 8). Notably actual SO_2 emissions in 2008 are about 40 percent and actual NO_X emissions are about 90 percent of the respective totals in the projected emission inventory for 2018. The NEI data for 2008 and 2011 also demonstrate further reductions in SO_2 and NO_X emissions from point sources in Nevada (see Table 11). Moreover, further reductions in anthropogenic emissions are expected from the power sector as a result of BART implementation, shutdowns, and conversions to natural gas or lower sulfur fuels. In the case of Jarbidge, NDEP notes that emissions from natural sources can dominate visibility impairment on the worst days, and much of the anthropogenic emissions are from out-of-state. NDEP states that given the current and expected SO_2 and NO_X emission reductions from power plants, further reductions from any other non-utility or industrial point sources are unnecessary at this time.

Regarding visibility conditions, trend analysis of monitoring data at Jarbidge from 2000 to 2012 demonstrates improvement in visibility impairment from sulfate and nitrate on the worst

and best days, both on an annual average basis as well as five-year annual averages.[51] NDEP notes that, although the visibility benefit from anthropogenic emission reductions is overshadowed by contributions from natural sources, visibility is slowly improving at Jarbidge on the worst days and shows considerable improvement on the best days (see Tables 5, 6, and 7). Where it appears that visibility improvement on worst days is not keeping pace with emission reductions (e.g., the 14.9 dv annual average for 2012 in Table 4), NDEP asserts that this is due to large contributions from natural sources (e.g., light extinction from POM of 23.97 Mm^{-1} in 2012). In terms of anthropogenic sources, NDEP notes that sulfate contributes the most to visibility impairment on worst days at Jarbidge, but most of the sulfate is from out-of-state sources. Nitrate has only a small contribution to visibility impairment on the worst days.

2. EPA's Evaluation

EPA proposes to find that the Progress Report adequately addresses the requirement in 40 CFR 51.308(g)(6) to assess whether the current elements and strategies in the Regional Haze Implementation Plan are sufficient to enable Nevada, and other states affected by Nevada's emissions, to meet all established RPGs.

In particular, the Report analyzes trends in statewide emissions and visibility conditions at Jarbidge, as well as the additional emission reductions expected through 2018. The Report indicates that anthropogenic emissions of SO_2, NO_X, ammonia and VOC are decreasing. In particular, the emission reductions reflect substantial decreases in total anthropogenic emissions of SO_2 and NO_X. However, anthropogenic emissions of POA, fine soil, elemental carbon and coarse mass are increasing. While these increases may be partially attributable to changes in

[51] Progress Report, Chapter 4, Section 4.6: Visibility Trends, pages 4-15 thru 4-19.

inventory development methodologies, they highlight the need for greater attention to these pollutants in future planning periods.

With regard to visibility trends, the Progress Report explains that Jarbidge is not on track to meet the 2018 RPG for the worst days due to the large contribution from POM, which NDEP attributes mostly to wildfires and windblown dust. EPA concurs that POM has a large impact on the worst days and that much of the POM is attributable to natural sources, particularly wildfires. Furthermore, we note that the trend of high POM extinction (with significant interannual variability) dominating the worst days at Jarbidge has continued during 2013 and 2014, for which the IMPROVE data are now available, as shown in Tables 12 and 13.

TABLE 12 - 2013 AND 2014 AVERAGE VISIBILITY CONDITIONS FOR WORST AND BEST DAYS AT JARBIDGE

Year	Haze Index (dv)	Sulfate (Mm^{-1})	Nitrate (Mm^{-1})	POM (Mm^{-1})	EC (Mm^{-1})	Soil (Mm^{-1})	Coarse Mass (Mm^{-1})	Sea Salt (Mm^{-1})
Worst Days								
2013	11.7	3.5	1.0	8.4	1.3	2.7	5.9	0.1
2014	12.2	3.1	0.6	14.5	2.3	2.2	4.5	0.2
Best Days								
2013	1.5	0.9	0.1	0.2	0.0	0.1	0.2	0.0
2014	1.8	1.0	0.2	0.3	0.1	0.1	0.2	0.1

TABLE 13 - FIVE-YEAR ANNUAL AVERAGE VISIBILITY CONDITIONS FOR WORST AND BEST DAYS AT JARBIDGE

Year	Haze Index (dv)	Sulfate (Mm^{-1})	Nitrate (Mm^{-1})	POM (Mm^{-1})	EC (Mm^{-1})	Soil (Mm^{-1})	Coarse Mass (Mm^{-1})	Sea Salt (Mm^{-1})
Worst Days								
2009-2013	12.0	3.8	0.9	10.7	1.5	2.5	5.9	0.2
2010-2014	12.2	3.6	0.9	12.1	1.8	2.5	5.6	0.2
Best Days								
2009-2013	1.9	1.0	0.2	0.4	0.1	0.1	0.3	0.0
2010-2014	1.9	1.0	0.2	0.4	0.1	0.1	0.3	0.0

However, we also note that not all POM is from natural sources. POA and VOC, the precursors to POM, are also emitted by anthropogenic sources, particularly area and mobile

sources. Moreover, other pollutants, particularly coarse mass and sulfates, both of which have a significant anthropogenic component, also contribute to impairment on the worst days at Jarbidge. Accordingly, in developing its Regional Haze SIP for the next planning period, NDEP should consider implementing additional control measures to address anthropogenic emissions of POA, VOC, SO_2, and coarse mass.

Nonetheless, given the substantial reductions in anthropogenic emissions of SO_2 and NO_X, improvement in visibility conditions on the best days, and evidence that the worst days are slowly improving, we propose to find that the current plan is sufficient for meeting the RPGs.

G. Review of Visibility Monitoring Strategy

1. NDEP's Analysis

The primary monitoring network, nationally and in Nevada, for the measurement and characterization of pollutants contributing to regional haze is the IMPROVE network. NDEP intends to rely on the continued availability of quality assured data collected through the IMPROVE network to comply with the regional haze monitoring requirements in the RHR. NDEP finds that the IMPROVE site at Jarbidge, Nevada's only Class I area, is sufficiently representative to support a determination of reasonable progress. NDEP concludes that no modification to the State's visibility monitoring strategy is necessary at this time.

2. EPA's Evaluation

EPA proposes to find that NDEP adequately addresses the requirement in 40 CFR 51.308(g)(7) to review its visibility monitoring strategy and make any modifications as necessary. We are not aware of any evidence of a need to modify Nevada's monitoring strategy for measuring visibility at this time.

H. Determination of Adequacy

1. NDEP's Determination

NDEP has determined that no substantive revision of the Nevada Regional Haze Implementation Plan is warranted at this time in order to achieve the RPGs in 2018 for visibility improvement at Jarbidge and at other Class I areas affected by emissions from Nevada. NDEP concludes that no additional controls are necessary based on the evidence presented in the Progress Report regarding the first half of the first phase of the program. The Report documents a substantial reduction in anthropogenic emissions in Nevada as well as an improvement in visibility at Jarbidge even though BART controls and other state and federal measures are not yet fully implemented. Further changes in source activity that were not included in the State's plan further support the conclusion that progress is adequate.

2. EPA's Evaluation

EPA proposes to find that NDEP adequately addresses the requirements in 40 CFR 51.308(h) by determining that the existing Nevada Regional Haze Implementation Plan requires no substantive revisions at this time to achieve the established RPGs at Jarbidge and at other Class I areas affected by emissions from Nevada. We propose to concur with the State's negative declaration based on the analysis and documentation presented in the Progress Report.

NDEP demonstrates that emissions from anthropogenic sources within the State are decreasing as are emissions from point sources in Idaho and Oregon that contribute to visibility impairment at Jarbidge. While the monitoring data indicates that best days at Jarbidge are getting better, we are concerned that visibility conditions on the worst days are relatively flat or only slightly improving. However, this lack of progress on the worst days is largely attributable to the impact of POM, which results primarily from natural sources. Therefore, we propose to approve

NDEP's determination that the Nevada Regional Haze Implementation Plan requires no substantive revisions at this time.

I. Consultation with Federal Land Managers

1. NDEP's Consultation

NDEP provided FLMs with a draft Progress Report on June 14, 2014, for a 60-day review prior to the public comment period, received comments from the U.S. Department of Interior National Parks Service (NPS) and the U.S. Department of Agriculture Forest Service (USFS), and responded to those comments as documented in Appendix C of the Progress Report. The letter from NPS dated August 15, 2014, supported the Report's findings, and provided four short comments on how to improve specific aspects of the analyses. The letter from USFS dated August 29, 2014, acknowledged the opportunity to work with NDEP, but provided no specific comments. In the Progress Report, NDEP reaffirmed its commitment to continue participating in the WRAP and consulting with other states, FLMs, and tribes regarding SIP revisions and implementation of other programs that may contribute to visibility impairment.

2. EPA's Evaluation

EPA proposes to find that NDEP has addressed the requirements in 40 CFR 51.308(i)(2), (3), and (4) to provide FLMs with an opportunity for consultation in person and at least 60 days prior to a public hearing on the revised plan; include a description in the revised plan of how it addressed any comments from the FLMs; and provide procedures for continuing consultation between the State and FLMs. These procedural requirements for the Progress Report, a revision to the Regional Haze SIP in this case, are documented in Appendices C and D attached to the Report.

J. Public Participation

1. NDEP's Public Process

NDEP provided a 30-day public comment period on the draft Progress Report as well as an opportunity for a public hearing. The public hearing, scheduled for October 15, 2014, was cancelled because no request for a hearing was received. During the public comment period, NDEP received one set of comments from the Sierra Club and National Parks Conservation Association in a letter dated October 16, 2014.[52] These organizations questioned whether NDEP's analysis supports its determination that progress in implementing the Nevada Regional Haze Implementation Plan is adequate to achieve the 2018 RPGs for Jarbidge and other Class I areas affected by Nevada's emissions. NDEP provided detailed responses to these comments in Appendix D of the Progress Report.

2. EPA's Evaluation

EPA proposes to find that NDEP has fulfilled the requirements of CAA 110(a) and (l) and 40 CFR 51.102 regarding reasonable notice and public hearings.

VI. EPA's Proposed Action

EPA is proposing to approve the Nevada Regional Haze Progress Report submitted to EPA on November 18, 2014, as meeting the applicable requirements of the CAA and RHR.

VII. Statutory and Executive Order Reviews

Under the CAA, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations.[53] Thus, in reviewing SIP

[52] The letter to Adele Malone, NDEP, is signed by David VonSeggern, Chair, Sierra Club Toiyabe Chapter; Gloria Smith, Managing Attorney, Sierra Club; and Lynn Davis, Senior Program Manager, Nevada Field Office, National Parks Conservation Association.
[53] 42 U.S.C. 7410(k); 40 CFR 52.02(a).

submissions, EPA's role is to approve state decisions, provided that they meet the criteria of the CAA. Accordingly, this proposed action is to approve state law as meeting Federal requirements, and does not impose additional requirements beyond those imposed by state law. For that reason, this proposed action:

- is not a ''significant regulatory action'' subject to review by the Office of Management and Budget under Executive Order 12866 (58 FR 51735, October 4, 1993);
- does not impose an information collection burden under the provisions of the Paperwork Reduction Act (44 U.S.C. 3501 *et seq.*);
- is certified as not having a significant economic impact on a substantial number of small entities under the Regulatory Flexibility Act (5 U.S.C. 601 *et seq.*);
- does not contain any unfunded mandate or significantly or uniquely affect small governments, as described in the Unfunded Mandates Reform Act of 1995 (Pub. L. 104–4);
- does not have Federalism implications as specified in Executive Order 13132 (64 FR 43255, August 10, 1999);
- is not an economically significant regulatory action based on health or safety risks subject to Executive Order 13045 (62 FR 19885, April 23, 1997);
- is not a significant regulatory action subject to Executive Order 13211 (66 FR 28355, May 22, 2001);
- is not subject to requirements of Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (15 U.S.C. 272 note) because it does not involve technical standards; and
- does not provide EPA with the discretionary authority to address, as appropriate, disproportionate human health or environmental effects, using practicable and legally permissible methods, under Executive Order 12898 (59 FR 7629, February 16, 1994).

In addition, this proposed action does not apply on any Indian reservation land or in any other area where EPA or an Indian tribe has demonstrated that a tribe has jurisdiction. In those areas of Indian country, the rule does not have tribal implications and will not impose substantial direct costs on tribal governments or preempt tribal law as specified by Executive Order 13175 (65 FR 67249, November 9, 2000).

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control, Incorporation by reference, Intergovernmental relations, Nitrogen oxides, Organic carbon, Particulate matter, Reporting and recordkeeping requirements, Sulfur oxides, Visibility, Volatile organic compounds.

Authority: 42 U.S.C. 7401 *et seq.*

Dated: September 1, 2015.

Jared Blumenfeld,
Regional Administrator,
Region IX.

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