

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Part 51

[[EPA-R09-OAR-2011-0130](#), FRL- ]

**Approval and Promulgation of Air Quality Implementation Plans;  
State of Nevada; Regional Haze State Implementation Plan**

**AGENCY:** Environmental Protection Agency (EPA)

**ACTION:** Proposed rule.

**SUMMARY:** EPA is proposing to approve a revision to the Nevada State Implementation Plan (SIP) to implement the regional haze program for the first planning period through July 31, 2018. The Clean Air Act (CAA) requires states to prevent any future and remedy any existing man-made impairment of visibility in 156 national parks and wilderness areas designated as Class I areas. Regional haze is caused by emissions of air pollutants from numerous sources located over a broad geographic area. States must submit SIPs that assure reasonable progress toward the national goal of achieving natural visibility conditions in Class I areas.

**DATES:** Written comments must be received at the address below on or before [insert date 30 days from the date of publication in the Federal Register]

**ADDRESSES:** Submit your comments, identified by Docket ID No.

EPA-R09-OAR-2011-0130 by one of the following methods:

1. Federal Rulemaking portal: <http://www.regulations.gov>. Follow the on-line instructions for submitting comments.
2. E-mail: [Webb.Thomas@epa.gov](mailto:Webb.Thomas@epa.gov)
3. Fax: 415-947-3579 (Attention: Thomas Webb)
4. Mail: Thomas Webb, EPA Region 9, Planning Office, Air Division, 75 Hawthorne Street, San Francisco, California 94105.
5. Hand Delivery or Courier: Such deliveries are only accepted Monday through Friday, 8:30 AM - 4:30 PM, excluding federal holidays. Special arrangements should be made for deliveries of boxed information.

*Instructions:* Direct your comments to Docket ID No. EPA-R09-OAR-2011-0130. Our policy is that EPA will include all comments received in the public docket without change. EPA may make comments available online at <http://www.regulations.gov>, including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through <http://www.regulations.gov> or e-mail. The <http://www.regulations.gov> web site is an "anonymous access" system, which means EPA will not know your identity or contact

information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA, without going through <http://www.regulations.gov>, EPA will include your e-mail address as part of the comment that is placed in the public docket and made available on the internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD-ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit the EPA Docket Center homepage at <http://www.epa.gov/epahome/dockets.htm>.

*Docket:* All documents in the docket are listed in the <http://www.regulations.gov> index. Although listed in the index, some information is not publicly available (e.g., CBI or other information whose disclosure is restricted by statute). Certain other material, such as copyrighted material, will be publicly available only in hard copy form. Publicly available docket materials are available either electronically at <http://www.regulations.gov> or in hard copy at the Planning Office of the Air Division, Air-2, EPA Region 9, 75 Hawthorne

Street, San Francisco, CA 94105. EPA requests you contact the individual listed in the FOR FURTHER INFORMATION CONTACT section to view the hard copy of the docket. You may view the hard copy of the docket Monday through Friday, 9:00 - 5:30 PST, excluding federal holidays.

**FOR FURTHER INFORMATION CONTACT:** Thomas Webb, U.S. EPA, Region 9, Planning Office, Air Division, Air-2, 75 Hawthorne Street, San Francisco, CA 94105. Thomas Webb can be reached at telephone number (415) 947-4139 and via electronic mail at [webb.thomas@epa.gov](mailto:webb.thomas@epa.gov).

**SUPPLEMENTARY INFORMATION:**

Throughout this document wherever "we," "us," or "our," is used, we mean the United States Environmental Protection Agency (EPA).

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**I. State Submittals**

The Nevada Division of Environmental Protection (NDEP) adopted and transmitted its "Nevada Regional Haze State Implementation Plan" (Nevada RH SIP) to EPA Region 9 in a letter dated November 18, 2009. EPA determined the plan complete by operation of law on May 18, 2010. The SIP was properly noticed by the State and available for public comment for 30 days prior to a public hearing held in Carson City, Nevada, on May 20, 2009. There was a separate public notice and hearing on the proposed Best Available Retrofit Technology (BART) controls for four stationary sources, which the State adopted on April 23, 2009. The State submitted to EPA additional documentation of public process and adoption of a more stringent emission limit for one of the BART sources on February 18, 2010. Nevada included in its SIP responses to written comments from EPA Region 9, the National Park Service, and a consortium of

conservation organizations. As a result of the State's participation with 13 other states, tribal nations and federal agencies in the Western Regional Air Partnership (WRAP), Nevada's RH SIP reflects a consistent approach toward addressing regional visibility impairment at 116 Class I areas in the West.

## **II. Background**

### *A. Description of Regional Haze*

Regional haze is the impairment of visibility across a broad geographic area produced by numerous sources and activities that emit fine particles and their precursors, primarily sulfur dioxide (SO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>), and in some cases, ammonia (NH<sub>3</sub>) and volatile organic compounds (VOC). Fine particle precursors react in the atmosphere to form fine particulate matter (PM<sub>2.5</sub>), primarily sulfates, nitrates, organic carbon, elemental carbon, and soil dust, which impair visibility by scattering and absorbing light. Visibility impairment reduces the clarity, color, and visible distance that one can see. PM<sub>2.5</sub> can also cause serious health effects and mortality in humans and contributes to environmental effects such as acid deposition and eutrophication.

Data from existing visibility monitors, the "Interagency Monitoring of Protected Visual Environments" (IMPROVE) network, indicate that visibility impairment caused by air pollution

occurs virtually all the time at most federally protected national parks and wilderness areas, known as Class I areas. The average visual range in many Class I areas in the western United States is 100 to 150 kilometers, or about one-half to two-thirds of the visual range that would exist without man-made air pollution<sup>1</sup>. In most of the eastern Class I areas of the United States, the average visual range is less than 30 kilometers, or about one-fifth of the visual range that would exist under estimated natural conditions. 64 FR 35715 (July 1, 1999).

#### *B. History of Regional Haze Regulations*

In section 169(A)(1) of the 1977 Amendments to the CAA, Congress established 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 man-made air pollution." Visibility was determined to be an important value in 156 mandatory Class I Federal areas<sup>2</sup>

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<sup>1</sup> Visual range is the greatest distance, in kilometers or miles, at which one can view a dark object against the sky.

<sup>2</sup> Areas designated as mandatory Class I Federal areas consist of national parks exceeding 6000 acres, wilderness areas and national memorial parks exceeding 5000 acres, and all international parks that were in existence on August 7, 1977. 42 U.S.C. 7472(a). In accordance with section 169A of the CAA, EPA, in consultation with the Department of Interior, promulgated a list of 156 areas where visibility is identified as an important value. 44 FR 69122 (November 30, 1979). Although states and tribes may designate as Class I additional areas which they consider to have visibility as an important value, the requirements of the visibility program set forth in section 169A of the CAA apply only to "mandatory Class I Federal areas." Each mandatory

as listed in 40 CFR 81.400-437. In the first phase of visibility protection, EPA promulgated regulations on December 2, 1980, to address visibility impairment in Class I areas that is "reasonably attributable" to a single source or small group of sources, i.e., "reasonably attributable visibility impairment" or RAVI. 45 FR 80084. EPA deferred action on regional haze that emanates from a variety of sources until monitoring, modeling and scientific knowledge about the relationship between pollutants and visibility impairment were improved.

Congress added section 169B to the CAA in 1990 to conduct scientific research on regional haze. This legislation established the Grand Canyon Visibility Transport Commission (GCVTC), which issued its report, "Recommendations for Improving Western Vistas," on June 10, 1996. These recommendations informed the regulatory development of a regional haze program, and provided an option for certain western states to address visibility at 16 Class I areas on the Colorado Plateau under 40 CFR 51.309.

EPA promulgated a rule to address regional haze on July 1, 1999 known as the Regional Haze Rule (RHR) (64 FR 35713). The RHR revised the existing visibility regulations to include

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Class I Federal area is the responsibility of a "Federal Land Manager." 42 U.S.C. 7602(i). When we use the term "Class I area" in this action, we mean a "mandatory Class I Federal area."

provisions addressing regional haze impairment and established a comprehensive visibility protection program for Class I areas. The requirements for regional haze, found at 40 CFR 51.308 and 51.309, are included in EPA's visibility protection regulations at 40 CFR 51.300-309. Some of the major elements of the RHR requirements are summarized in section III of this notice. The requirement to submit a regional haze plan revision applies to all 50 states, the District of Columbia, and the Virgin Islands. States were required to submit the first implementation plan addressing regional haze visibility impairment no later than December 17, 2007. 40 CFR 51.308(b). Since most states, including Nevada, did not submit SIPs prior to the deadline, EPA made a Finding of Failure to Submit that extended the deadline to January 15, 2011, for EPA to approve a SIP or publish a Federal Implementation Plan (FIP). 74 FR 2392 (January 15, 2009). EPA is publishing this proposal to meet this obligation.

### *C. Roles of Agencies in addressing Regional Haze*

Successful implementation of the regional haze program will require long-term coordination among states, tribal governments and various federal agencies. As noted above, pollution affecting the air quality in Class I areas can result from the transport of pollutants over long distances, even hundreds of kilometers. Therefore, states and tribal nations need to develop

coordinated strategies to take into account the effect of emissions from one jurisdiction on the air quality in another. To support a regional approach to the planning process, EPA founded five regional planning organizations (RPOs) to assist states and tribes in addressing regional haze and related issues. The RPOs first evaluated technical information to better understand how emissions impact Class I areas across the country, and then pursued the development of regional strategies to reduce pollutants contributing to regional haze.

The Western Regional Air Partnership (WRAP), one of five RPOs nationally, is a voluntary partnership of State, Tribal, Federal, and local air agencies focusing on improving visibility at 116 Class I areas in the West. WRAP member states include: Alaska, Arizona, California, Colorado, Idaho, Montana, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming. WRAP Tribal members include Campo Band of Kumeyaay Indians, Confederated Salish and Kootenai Tribes, Cortina Indian Rancheria, Hopi Tribe, Hualapai Nation of the Grand Canyon, Native Village of Shungnak, Nez Perce Tribe, Northern Cheyenne Tribe, Pueblo of Acoma, Pueblo of San Felipe, and Shoshone-Bannock Tribes of Fort Hall. While Nevada is not a formal member of the WRAP, State representatives participated fully in the WRAP and relied on its technical services and products as the basis for its plan.

While EPA regulates visibility at Class I areas, Federal Land Managers (FLMs) from the National Park Service, Fish and Wildlife Service, and Forest Service have a special role in the program because they have primary jurisdiction over Class I areas. FLMs may submit comments and make recommendations on a state's plan, and states are required to coordinate and consult with FLMs on most major planning and implementation requirements.

### **III. Requirements for Regional Haze SIPs**

#### *A. Regional Haze Rule*

Regional haze SIPs must establish a long-term strategy that ensures reasonable progress toward achieving natural visibility conditions in each Class I area affected by the state's emissions. For each Class I area within its boundaries, the state must establish a reasonable progress goal (RPG) for the first planning period that ends on July 31, 2018. The long-term strategy must include enforceable emission limits and other measures as necessary to achieve the RPG. State implementation plans must also give specific attention to certain stationary sources that were in existence on August 7, 1977, but were not in operation before August 7, 1962. These sources, where appropriate, are required to install Best Available Retrofit Technology (BART) controls to eliminate or reduce visibility

impairment. The specific regional haze SIP requirements are summarized below.

*B. Determination of Baseline, Natural and Current Visibility Conditions*

The RHR establishes the deciview (dv) as the principal metric for measuring visibility. This visibility metric expresses uniform changes in haziness in terms of common increments across the entire range of visibility conditions, from pristine to extremely hazy conditions. Visibility expressed in deciviews is determined by using air quality measurements to estimate light extinction and then transforming the value of light extinction to deciviews using a logarithmic function. The 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 as perceived by the human eye. Most people can detect a change in visibility at one deciview.<sup>3</sup>

The deciview is used to express reasonable progress goals; define visibility conditions; and track changes in visibility. To track changes in visibility at each of the 156 Class I areas covered by the visibility program (40 CFR 81.401-437), and as

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<sup>3</sup>The preamble to the RHR provides additional details about the deciview. 64 FR 35714, 35725 (July 1, 1999).

part of the process for determining reasonable progress, states must calculate the degree of existing visibility impairment at each Class I area and periodically review progress midway through each ten-year implementation period. To do this, the RHR requires states to determine the degree of impairment (in deciviews) for the average of the 20 percent least impaired ("best") and 20 percent most impaired ("worst") visibility days over a specified time period at each of their Class I areas. In addition, states must develop an estimate of natural visibility conditions for the purpose of comparing progress toward the national goal. Natural visibility is determined by estimating the natural concentrations of pollutants that cause visibility impairment and then calculating total light extinction based on those estimates. EPA has provided guidance to states regarding how to calculate baseline, natural and current visibility conditions in documents titled, *EPA's Guidance for Estimating Natural Visibility Conditions Under the Regional Haze Rule*, September 2003, (EPA-454/B-03-005 located at [http://www.epa.gov/ttncaaal/t1/memoranda/rh\\_envcurhr\\_gd.pdf](http://www.epa.gov/ttncaaal/t1/memoranda/rh_envcurhr_gd.pdf)), (hereinafter referred to as "EPA's 2003 Natural Visibility Guidance"), and *Guidance for Tracking Progress Under the Regional Haze Rule* (EPA-454/B-03-004 September 2003 located at [http://www.epa.gov/ttncaaal/t1/memoranda/rh\\_tpurhr\\_gd.pdf](http://www.epa.gov/ttncaaal/t1/memoranda/rh_tpurhr_gd.pdf)),

hereinafter referred to as "EPA's 2003 Tracking Progress Guidance").

For the first regional haze SIPs that were due by December 17, 2007, "baseline visibility conditions" were the starting points for assessing "current" visibility impairment. Baseline visibility conditions represent the degree of visibility impairment for the 20 percent least impaired days and 20 percent most impaired days for each calendar year from 2000 to 2004. Using monitoring data for 2000 through 2004, states are required to calculate the average degree of visibility impairment for each Class I area, based on the average of annual values over the five-year period. The comparison of initial baseline visibility conditions to natural visibility conditions indicates the amount of improvement necessary to attain natural visibility, while the future comparison of baseline conditions to the then current conditions will indicate the amount of progress. In general, the 2000-2004 baseline period is considered the time from which improvement in visibility is measured.

### *C. Determination of Reasonable Progress Goals*

The vehicle for ensuring continuing progress towards achieving the natural visibility goal is the submission of a series of regional haze SIPs that establish two RPGs (i.e., two

distinct goals, one for the "best" and one for the "worst" days) for every Class I area for each (approximately) ten-year implementation period. The RHR does not mandate specific milestones or rates of progress, but instead calls for states to establish goals that provide for "reasonable progress" toward achieving natural (i.e., "background") visibility conditions. In setting reasonable progress goals (RPGs), states must provide for an improvement in visibility for the most impaired days over the (approximately) ten-year period of the SIP, and ensure no degradation in visibility for the least impaired days over the same period.

States have significant discretion in establishing RPGs, but are required to consider the following factors established in section 169A of the CAA and in EPA's RHR at 40 CFR 51.308(d)(1)(i)(A): (1) the costs of compliance; (2) the time necessary for compliance; (3) the energy and non-air quality environmental impacts of compliance; and (4) the remaining useful life of any potentially affected sources. States must demonstrate in their SIPs how these factors are considered when selecting the RPGs for the best and worst days for each applicable Class I area. States have considerable flexibility in how they take these factors into consideration, as noted in EPA's *Guidance for Setting Reasonable Progress Goals under the Regional Haze Program*, July 1, 2007, memorandum from William L.

Wehrum, Acting Assistant Administrator for Air and Radiation, to EPA Regional Administrators, EPA Regions 1-10 (pp. 4-2, 5-1) ("EPA's Reasonable Progress Guidance"). In setting the RPGs, states must also consider the rate of progress needed to reach natural visibility conditions by 2064 (referred to as the "uniform rate of progress" (URP) or the "glide path") and the emission reduction measures needed to achieve that rate of progress over the ten-year period of the SIP. Uniform progress towards achievement of natural conditions by the year 2064 represents a rate of progress that states are to use for analytical comparison to the amount of progress they expect to achieve. In setting RPGs, each state with one or more Class I areas ("Class I state") must also consult with potentially "contributing states," i.e., other nearby states with emission sources that may be affecting visibility impairment at the Class I state's areas. 40 CFR 51.308(d)(1)(iv).

#### *D. Best Available Retrofit Technology*

Section 169A of the CAA directs states to evaluate the use of retrofit controls at certain larger, often uncontrolled, older stationary sources in order to address visibility impacts from these sources. Specifically, section 169A(b)(2)(A) of the CAA requires states to revise their SIPs to contain such measures as may be necessary to make reasonable progress towards

the natural visibility goal, including a requirement that certain categories of existing major stationary sources<sup>4</sup> built between 1962 and 1977 procure, install, and operate the "Best Available Retrofit Technology" as determined by the state. Under the RHR, states are directed to conduct BART determinations for such "BART-eligible" sources that may be anticipated to cause or contribute to any visibility impairment in a Class I area. Rather than requiring source-specific BART controls, states also have the flexibility to adopt an emissions trading program or other alternative program as long as the alternative provides greater reasonable progress towards improving visibility than BART.

EPA published on July 6, 2005, the *Guidelines for BART Determinations under the Regional Haze Rule* at Appendix Y to 40 CFR Part 51 (hereinafter referred to as the "BART Guidelines") to assist states in determining which of their sources should be subject to the BART requirements and in determining appropriate emission limits for each applicable source. In making a BART determination for a fossil fuel-fired electric generating plant with a total generating capacity in excess of 750 megawatts, a state must use the approach set forth in the BART Guidelines. A state is encouraged, but not required, to follow the BART

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<sup>4</sup>The set of "major stationary sources" potentially subject to BART is listed in CAA section 169A(g)(7).

Guidelines in making BART determinations for other types of sources.

States must address all visibility-impairing pollutants emitted by a source in the BART determination process. The most significant visibility impairing pollutants are SO<sub>2</sub>, NO<sub>x</sub> and PM. EPA has indicated that states should use their best judgment in determining whether VOC or NH<sub>3</sub> compounds impair visibility in Class I areas.

Under the BART Guidelines, states may select an exemption threshold value for their BART modeling, below which a BART-eligible source would not be expected to cause or contribute to visibility impairment in any Class I area. The state must document this exemption threshold value in the SIP and must state the basis for its selection of that value. Any source with emissions that model above the threshold value would be subject to a BART determination review. The BART Guidelines acknowledge varying circumstances affecting different Class I areas. States should consider the number of emission sources affecting the Class I areas at issue and the magnitude of the individual sources' impacts. An exemption threshold set by the state should not be higher than 0.5 deciview.

In their SIPs, states must identify potential BART sources, described in the RHR as "BART-eligible sources", and document their BART control determination analyses. In making BART

determinations, section 169A(g)(2) of the CAA requires that states consider the following factors: (1) the costs of compliance; (2) the energy and non-air quality environmental impacts of compliance; (3) any existing pollution control technology in use at the source; (4) the remaining useful life of the source; and, (5) the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology. States are free to determine the weight and significance assigned to each factor.

A regional haze SIP must include source-specific BART emission limits and compliance schedules for each source subject to BART. Once a state has made its BART determination, the BART controls must be installed and in operation as expeditiously as practicable, but no later than five years after the date EPA approves the regional haze SIP. CAA section 169(g)(4). 40 CFR 51.308(e)(1)(iv). In addition to what is required by the RHR, general SIP requirements mandate that the SIP must also include all regulatory requirements related to monitoring, recordkeeping and reporting for the BART controls on the source. States have the flexibility to choose the type of control measures they will use to meet the requirements of BART.

### *E. Long-Term Strategy*

Consistent with the requirement in section 169A(b) of the CAA that states include in their regional haze SIP a ten- to fifteen-year strategy for making reasonable progress, section 51.308(d)(3) of the RHR requires that states include a long-term strategy (LTS) in their regional haze SIPs. The LTS is the compilation of all control measures a state will use during the implementation period of the specific SIP submittal to meet applicable RPGs. The LTS must include "enforceable emissions limitations, compliance schedules, and other measures needed to achieve the reasonable progress goals" for all Class I areas within and affected by emissions from the state. 40 CFR 51.308(d)(3).

When a state's emissions are reasonably anticipated to cause or contribute to visibility impairment in a Class I area located in another state, the RHR requires the impacted state to coordinate with contributing states to develop coordinated emissions management strategies. 40 CFR 51.308(d)(3)(i). In such cases, the contributing state must demonstrate that it has included in its SIP, all measures necessary to obtain its share of the emission reductions needed to meet the RPGs for the Class I area. The RPOs have provided forums for significant interstate consultation, but additional consultation between states may be required to sufficiently address interstate

visibility issues (e.g., where two states belong to different RPOs).

States should consider all types of anthropogenic sources of visibility impairment in developing their LTS, including stationary, minor, mobile, and area sources. At a minimum, states must describe how each of the following seven factors listed below are taken into account in developing their LTS: (1) emission reductions due to ongoing air pollution control programs, including measures to address RAVI; (2) measures to mitigate the impacts of construction activities; (3) emissions limitations and schedules for compliance to achieve the RPG; (4) source retirement and replacement schedules; (5) smoke management techniques for agricultural and forestry management purposes including plans as currently exist within the state for these purposes; (6) enforceability of emissions limitations and control measures; and, (7) the anticipated net effect on visibility due to projected changes in point, area, and mobile source emissions over the period addressed by the LTS. 40 CFR 51.308(d)(3)(v).

*F. Coordination of the Regional Haze SIP and Reasonably Attributable Visibility Impairment*

As part of the RHR, EPA revised 40 CFR 51.306(c) regarding the long-term strategy for RAVI to require that the RAVI plan

must provide for a periodic review and SIP revision not less frequently than every three years until the date of submission of the state's first plan addressing regional haze visibility impairment, which was due December 17, 2007, in accordance with 40 CFR 51.308(b) and (c). On or before this date, the state must revise its plan to provide for review and revision of a coordinated LTS for addressing RAVI and regional haze, and the state must submit the first such coordinated LTS with its first regional haze SIP. Future coordinated LTSs, and periodic progress reports evaluating progress towards RPGs, must be submitted consistent with the schedule for SIP submission and periodic progress reports set forth in 40 CFR 51.308(f) and 51.308(g), respectively. The periodic review of a state's LTS must report on both regional haze and RAVI impairment and must be submitted to EPA as a SIP revision.

#### *G. Monitoring Strategy*

Section 51.308(d)(4) of the RHR requires a monitoring strategy for measuring, characterizing, and reporting on regional haze visibility impairment that is representative of all mandatory Class I areas within the state. The strategy must be coordinated with the monitoring strategy required in 40 CFR 51.305 for RAVI. Compliance with this requirement may be met through "participation" in the Interagency Monitoring of

Protected Visual Environments (IMPROVE) network, i.e., review and use of monitoring data from the network. The monitoring strategy is due with the first regional haze SIP, and it must be reviewed every five years. The monitoring strategy must also provide for additional monitoring sites if the IMPROVE network is not sufficient to determine whether RPGs will be met. The SIP must also provide for the following:

- Procedures for using monitoring data and other information in a state with mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas both within and outside the state;
- Procedures for using monitoring data and other information in a state with no mandatory Class I areas to determine the contribution of emissions from within the state to regional haze visibility impairment at Class I areas in other states;
- Reporting of all visibility monitoring data to the Administrator at least annually for each Class I area in the state, and where possible, in electronic format;
- Developing a statewide inventory of emissions of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any Class I area. The inventory must include emissions for a baseline year, emissions for the most recent year for which data are available, and estimates of

future projected emissions. A state must also make a commitment to update the inventory periodically; and,

- Other elements, including reporting, recordkeeping, and other measures necessary to assess and report on visibility.

#### *H. SIP Revisions and Progress Reports*

The RHR requires control strategies to cover an initial implementation period through 2018, with a comprehensive reassessment and revision of those strategies, as appropriate, every ten years thereafter. Periodic SIP revisions must meet the core requirements of section 51.308(d) with the exception of BART. The requirement to evaluate sources for BART applies only to the first regional haze SIP. Facilities subject to BART must continue to comply with the BART provisions of section 51.308(e), as noted above. Periodic SIP revisions will assure that the statutory requirement of reasonable progress will continue to be met.

Each state also is required to submit a report to EPA every five years that evaluates progress toward achieving the RPG for each Class I area within the state and outside the state if affected by emissions from within the state. 40 CFR 51.308(g). The first progress report is due five years from submittal of the initial regional haze SIP revision. At the same time a 5-year progress report is submitted, a state must determine the

adequacy of its existing SIP to achieve the established goals for visibility improvement. 40 CFR 51.308(h). The RHR contains more detailed requirements associated with these parts of the Rule.

#### *I. Coordination with Federal Land Managers*

The RHR requires that states consult with Federal Land Managers (FLMs) before adopting and submitting their SIPs. 40 CFR 51.308(i). States must provide FLMs an opportunity for consultation, in person and at least sixty days prior to holding any public hearing on the SIP. This consultation must include the opportunity for the FLMs to discuss their assessment of impairment of visibility in any Class I area and to offer recommendations on the development of the RPGs and on the development and implementation of strategies to address visibility impairment. Furthermore, a state must include in its SIP a description of how it addressed any comments provided by the FLMs. Finally, a SIP must provide procedures for continuing consultation between the state and FLMs regarding the state's visibility protection program, including development and review of SIP revisions, five-year progress reports, and the implementation of other programs having the potential to contribute to impairment of visibility in Class I areas.

#### **IV. EPA's Analysis of Nevada's RH SIP**

##### *A. Affected Class I Areas*

Nevada has one Class I area, the Jarbidge Wilderness Area (hereinafter referred to as Jarbidge), located within the Humboldt National Forest in the northeastern corner of the State. NDEP identified 24 other Class I areas<sup>5</sup> located outside the State that may be affected by its emissions. These other Class I areas are in Arizona (5), California (11), Idaho (2), Oregon (3) and Utah (3). In Arizona, the Class I areas are Grand Canyon National Park (NP), Sycamore Canyon Wilderness Area (WA), Pine Mountain WA, Mazatal WA, and Sierra Ancha WA. In California, they are Desolation WA, Dome Land WA, Hoover WA, Joshua Tree NP, Kaiser WA, Lassen Volcanic NP, Lava Beds WA, San Gabriel WA, San Geronio WA, Sequoia NP, and Yosemite NP. In Idaho, the areas are Craters of the Moon WA and Sawtooth WA. In Oregon, the areas are Crater Lake NP, Hells Canyon WA and Eagle Cap WA. In Utah, the areas are Bryce Canyon NP, Capitol Reef NP and Zion NP. EPA is proposing to find that NDEP has identified all affected Class I areas within and outside the State that are potentially affected by its emissions.

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<sup>5</sup> These Class I areas were identified using Particle Source Apportionment Tracking (PSAT) modeling results for sulfate and nitrate extinction. Tables 4-3 and 4-4 in the Nevada Regional Haze SIP identify the rank and percentage of the total modeled concentration due to SO<sub>2</sub> emissions and NO<sub>x</sub> emissions from sources in Nevada to the IMPROVE monitors representing Class I areas in the five adjacent states. Where a monitoring site is not located within a specific national park or wilderness area, the closest Class I area is listed.

## *B. Visibility Conditions and Uniform Rate of Progress*

NDEP developed the visibility estimates in its RH SIP using air quality models and analytical tools provided by the WRAP. Based on EPA's review of the WRAP's technical analyses and products, we found that the models were used appropriately, and were consistent with EPA guidance in effect at the time of their use. The models used by the WRAP were state-of-the-science at the time the modeling was conducted, and model performance was adequate for the purposes that they were used.<sup>6</sup>

### 1. Baseline and Natural Visibility Conditions

Baseline visibility conditions represent the degree of visibility impairment for the 20 percent least impaired days and 20 percent most impaired days for each calendar year from 2000 to 2004. Using monitoring data for 2000 through 2004, states are required to calculate the average degree of visibility impairment for each Class I area, based on the average of annual values over the five-year period.

NDEP calculated that on the 20 percent worst days at Jarbidge, the baseline visibility condition is 12.07 dv and the natural visibility condition is 7.87 dv. The natural visibility condition represents the long-term national goal of no man-made impairment. Since a state must ensure visibility improvement on

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<sup>6</sup> For our detailed review and discussion, please see "Technical Support Document for Technical Products Prepared by the Western Regional Air Partnership in support of Western Regional Haze Plans", Final, February 2011 (WRAP TSD).

the worst days, a baseline of 12.07 dv and an endpoint of 7.87 dv are used to measure progress. On the 20 percent best days, the baseline visibility condition is 2.56 dv and the natural visibility condition is 1.14 dv. The baseline visibility condition on best days is a value that must be maintained in future years.

## 2. Uniform Rate of Progress Estimate

NDEP calculated the uniform rate of progress (URP) estimate for Jarbidge using the deciviews for the 2000-2004 baseline and natural background conditions on the 20 percent worst days. The URP is represented as a straight line between a Class I area's baseline value and natural conditions in 2064. 40 CFR Section 51.308(d)(1)(i)(B). This line is linear and assumes the same increment of progress every year for 60 years.

NDEP calculated the URP for Jarbidge in 2018 as 11.09 dv. This is listed below in Table 1 and illustrated below in Figure 1 from Nevada's RH SIP. Given baseline conditions of 12.07 dv and an estimate of natural conditions of 7.87 dv, the overall visibility improvement necessary to reach the national goal is 4.20 dv. As the regional haze rule requires the URP to be calculated over a 60-year period from baseline to natural conditions (2004 to 2064), the URP is an average annual improvement of 0.07 dv (4.20 dv divided by 60 years). A uniform rate of progress in the first planning period (2004 to 2018)

would result in an improvement of 0.98 dv (14 years times .07 dv). Therefore, the URP in 2018 for Jarbidge is 11.09 dv (12.07 dv minus 0.98 dv).

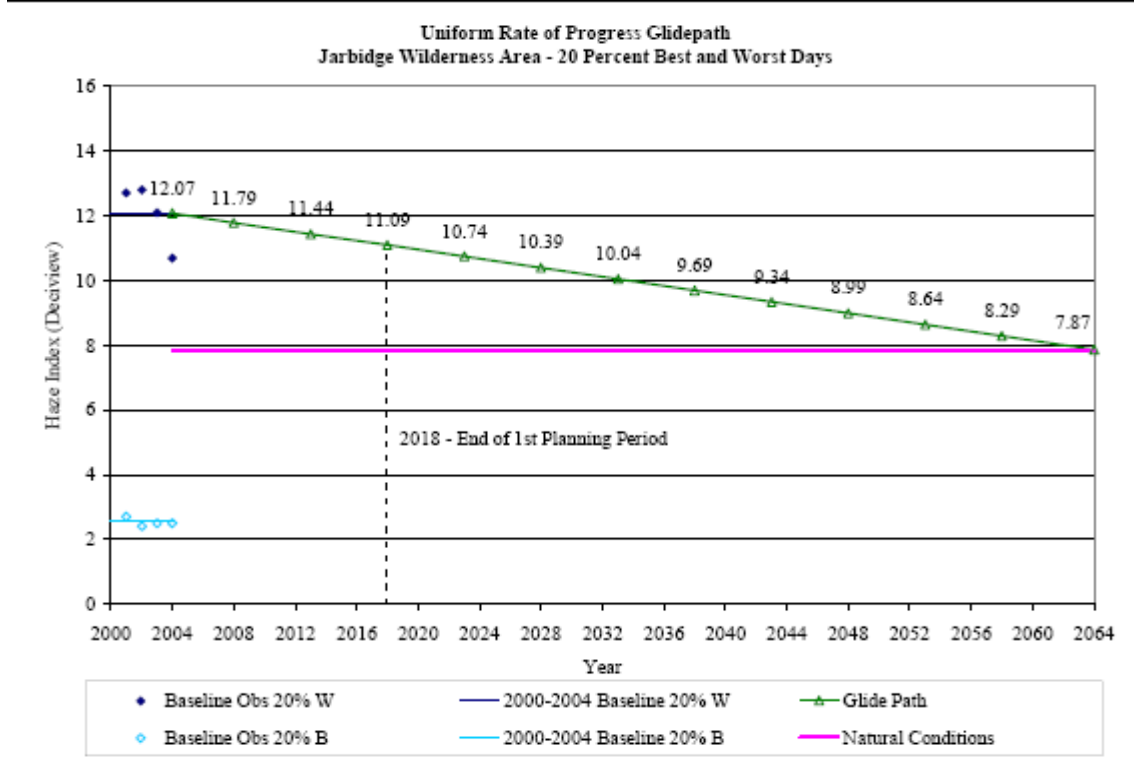
NDEP produced the following visibility estimates in deciviews for its one Class I area: baseline visibility conditions, uniform rate of progress estimate for 2018, and natural conditions estimate for 2064. We propose to find that these estimates are consistent with the requirements of the RHR, particularly the requirements at 40 CFR 51.308(d)(2)(i) and (iii).

TABLE 1-VISIBILITY CALCULATIONS FOR JARBIDGE  
(in deciviews)

Class I Area	2000-20004 Baseline Condition (20% worst days)	2018 Uniform Rate of Progress (20% worst days)	2018 Reduction Needed (20% worst days)	2064 Natural Condition (20% worst days)	2000-2004 Baseline Condition (20% best days)
Jarbidge Wilderness Area	12.07	11.09	0.98	7.87	2.56

Source: Table 2-1, page 2-7, Nevada RH SIP

FIGURE 1—UNIFORM RATE OF PROGRESS FOR JARBIDGE



Source: Figure 2-5, page 2-7, Nevada RH SIP

C. Nevada's Emissions Inventories

1. Emissions Inventories for 2002 and 2018

The RHR requires a statewide emissions inventory of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory Class I area. 40 CFR 51.308(d)(4)(v). NDEP provides a statewide emissions inventory for 2002, representing the mid-point of the 2000-2004 baseline period, and a projected emissions inventory for 2018, the end of the first 10-year planning period. The 2018 inventory is based on visibility modeling conducted by the

WRAP's Regional Modeling Center using the Community Multi-Scale Air Quality (CMAQ) model. The emissions inventories for 2002 and 2018 provide estimates of annual emissions for haze producing pollutants by source category as summarized by EPA in Tables 2 and 3 based on information in Chapter 3 of Nevada's RH SIP. The inventoried pollutants include sulfur oxides (SO<sub>x</sub>), nitrogen oxides (NO<sub>x</sub>), volatile organic compounds (VOCs), fine particulate matter under 2.5 microns (PM<sub>2.5</sub>), coarse particulate matter under 10 microns (PM<sub>10</sub>), ammonia (NH<sub>3</sub>), primary organic aerosol (POA)<sup>7</sup>, and elemental carbon (EC). The emissions are divided into six source categories: point, area, mobile on-road, mobile off-road, natural and other. Natural sources include natural fire, biogenic and windblown dust. Other includes oil and gas, road dust, fugitive dust and anthropogenic fire. EPA is proposing to find that the emission inventories in Nevada's RH SIP were calculated using approved EPA methods.

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<sup>7</sup> Instead of using the category of Organic Carbon, Nevada used the POA primary organic aerosol that includes organic molecules or compounds that are directly emitted from the combustion of organic material. These organic compounds include organic carbon, hydrogen, oxygen as well as other organic atoms.

TABLE 2—SUMMARY OF 2000–2004 AVERAGE BASELINE EMISSIONS FOR NEVADA  
(TONS PER YEAR)

	SO <sub>x</sub>	NO <sub>x</sub>	VOC	PM <sub>2.5</sub>	PM <sub>10</sub>	NH <sub>3</sub>	POA	EC
Point	50,947	59,873	2,215	2,158	4,093	339	256	13
Area	13,037	5,728	28,592	830	897	8,009	687	96
Mobile On-Road	510	41,089	36,257	0	245	2,030	314	235
Mobile Off-Road	1,672	32,565	18,094	0	0	22	572	1,354
Natural	2,784	23,103	811,745	11,844	99,122	1,684	22,501	4,674
Other	28	117	199	6,138	56,786	8	405	37
TOTAL	68,978	162,475	897,102	20,970	161,143	12,092	24,734	6,409
PERCENT	(5)	(12)	(66)	(1.5)	(12)	(1)	(2)	(0.5)

TABLE 3—SUMMARY OF 2018 EMISSIONS FOR NEVADA  
(TONS PER YEAR)

	SO <sub>x</sub>	NO <sub>x</sub>	VOC	PM <sub>2.5</sub>	PM <sub>10</sub>	NH <sub>3</sub>	POA	EC
Point	28,320	67,632	3,866	2,211	4,717	864	168	13
Area	14,280	7,418	53,014	1,150	1,012	8,535	776	115
Mobile On-Road	336	15,049	17,085	0	360	3,385	422	121
Mobile Off-Road	473	22,182	11,784	0	0	30	393	668
Natural	2,784	23,103	811,745	11,844	99,122	1,684	22,501	4,674
Other	30	114	213	8,928	83,076	5	561	47
TOTAL	46,223	135,498	897,707	24,133	188,287	14,503	24,822	5,638
PERCENT	(3.5)	(10)	(67)	(2)	(14)	(1)	(2)	(0.5)

## 2. Analysis of Statewide Emissions by Pollutant

NDEP's analysis of each pollutant in its emissions inventory, as summarized below, informs the relationship between the State's emissions and visibility impairment at Jarbidge as well as Class I areas outside the State.

- *Sulfur Dioxide:* SO<sub>2</sub> emissions are mostly from coal combustion at electrical generation facilities, but smaller amounts are from natural gas combustion, mobile sources and wood combustion. In Nevada, SO<sub>x</sub> emissions are predominantly from

point sources (61 percent) and area sources (31 percent).

Statewide emissions of SO<sub>2</sub> are projected to decrease 33 percent by 2018 as compared to the baseline due to planned BART controls on power plants and to reductions in mobile source emissions due to federal diesel fuel standards. Comparing 2018 projections to the baseline, SO<sub>x</sub> emissions from point sources decrease 44 percent; area sources increase 10 percent; off-road mobile decrease 72 percent; and on-road mobile decrease 34 percent.

- *Nitrogen Oxide:* NO<sub>x</sub> is generated during any combustion process where nitrogen and oxygen from the atmosphere combine to form nitric oxide and to a lesser extent nitrogen dioxide. NO<sub>x</sub> emissions are predominantly from point sources (50 percent) and mobile sources (27 percent). Statewide emissions of NO<sub>x</sub> are expected to decrease by 17 percent by 2018, primarily due to an estimated 36,423 ton reduction in emissions from mobile sources due to new federal vehicle emission standards. While NO<sub>x</sub> from point sources is projected to increase by 13 percent, the 2018 emissions inventory data does not include NO<sub>x</sub> reductions from the installation of BART controls in Nevada. The projected increase of 29 percent in area sources by 2018 is largely due to forecasted increases in activity from population growth.

- *Volatile Organic Compounds:* VOCs are gases emitted by a wide array of man-made products and sources, but in Nevada are mostly from living organisms (90 percent), a natural source

categorized as a biogenic. VOCs impact visibility as emissions condense in the atmosphere to form an organic aerosol.

Projected emissions of VOCs are not expected to change by 2018.

- *PM<sub>2.5</sub>*: PM fine emissions are composed of fine particulates that can remain suspended in the atmosphere for long periods of time and travel long distances. In Nevada, these emissions are generated mostly by natural fires (49 percent) and area sources (37 percent) such as woodstoves. Statewide emissions of *PM<sub>2.5</sub>* are expected to increase by 15 percent by 2018. Most of the increase is associated with fugitive dust related to increases in population. Overall, *PM<sub>2.5</sub>* is a relatively small part of the visibility problem compared to other pollutants.

- *PM<sub>10</sub>*: PM coarse emissions are larger particles that travel shorter distances, but still contribute to regional visibility impairment. In Nevada, PM coarse emissions are predominately due to windblown dust (50 percent) and fugitive dust (36 percent). *PM<sub>10</sub>* emissions are expected to increase about 17 percent by 2018 due mostly to projected increases in road dust and fugitive dust linked to increases in population. Windblown dust is not projected to change by 2018, and remains the primary source category for these emissions.

- *Ammonia*:  $\text{NH}_3$  emissions are from a variety of sources including wastewater treatment facilities, livestock operations, fertilizer applications and mobile sources.  $\text{NH}_3$  emissions are

predominantly from area sources (59 percent) and on-road mobile sources (23 percent). The 2018 projections indicate a net increase of 20 percent, mostly from on-road mobile sources due to projected increases in population, and by extension, vehicular traffic. While emission estimates for NH<sub>3</sub> are hard to quantify, these pollutants are important because they react with SO<sub>2</sub> and NO<sub>x</sub> to form ammonium sulfate (SO<sub>4</sub>) and ammonium nitrate (NO<sub>3</sub>) particles that are very effective in impairing visibility.

- *Primary Organic Aerosol:* POA includes organic molecules or compounds directly emitted from the combustion of organic material. Natural fire emissions (91 percent) dominate this category of statewide emissions.

- *Elemental Carbon:* EC particulates are emitted as a primary aerosol from fossil fuel combustion (vehicles, boilers, and other industrial processes), wild fires and other types of burning. In Nevada, the primary source of EC emissions is natural fire (83 percent) followed by off-road mobile (12 percent). Total EC emissions are projected to decrease 12 percent by 2018, mostly from mobile source emissions reductions resulting from federal regulations.

### 3. Analysis of Natural versus Anthropogenic Emissions

NDEP distinguishes between natural and anthropogenic sources of statewide emissions to indicate the type and level of emissions within the State that are amenable to controls. Table

4 provides a summary of anthropogenic and natural emissions based on the 2018 emissions inventory. The last column provides the percentage change in total emissions from the average emissions baseline.

TABLE 4--NATURAL V. ANTHROPOGENIC SOURCES

Emissions Summary in 2018 (tons per year)						
	Anthropogenic		Natural		Total in 2018	Change from Baseline
	Tons/Year	% of Total	Tons/Year	% of Total		
SO <sub>x</sub>	43,440	94%	2,784	6%	46,224	-33.0%
NO <sub>x</sub>	112,394	83%	23,102	17%	135,496	-16.6%
EC	964	17%	4,674	83%	5,638	-12.0%
PM <sub>2.5</sub>	12,289	51%	11,845	49%	24,134	15.1%
PM <sub>10</sub>	89,165	47%	99,122	53%	188,287	16.8%
NH <sub>3</sub>	12,819	88%	1,684	12%	14,503	19.9%
POA	2,321	9%	22,501	91%	24,822	0.4%
VOC	85,962	10%	811,745	90%	897,707	0.1%
Total	359,354	27%	977,458	73%	1,336,811	-1.3%

Source: Table 3-6, page 3-14, Nevada RH SIP

NDEP estimates that about 73 percent of its statewide emissions in 2018 are projected to come from natural sources (i.e., natural fires, windblown dust and biogenics). Natural sources contribute most of the emissions of EC, POA and VOC, and about half the emissions of PM<sub>2.5</sub> and PM<sub>10</sub>. While anthropogenic sources comprise only 27 percent of the projected inventory in 2018, these sources are important contributors of SO<sub>x</sub>, NO<sub>x</sub> and NH<sub>3</sub> as well as half of PM<sub>2.5</sub> and PM<sub>10</sub>.

#### *D. Sources of Visibility Impairment*

NDEP used baseline monitoring data presented in Table 5 to analyze the contribution of pollutants to light extinction (i.e., visibility impairment) on the worst days at Jarbidge. The pollutants causing the highest levels of light extinction are associated with the sources causing the most visibility impairment. The primary contributors to light extinction at Jarbidge are organic matter carbon (40 percent), coarse matter (22.3 percent), and sulfates (16.7 percent). Elevated levels of organic carbon and its seasonal pattern suggest these particles are from wildfires and biogenic sources. Two components of organic carbon, POA and VOCs, are each 90 percent from natural sources as listed above in the 2018 emissions inventory. While anthropogenic emissions contributing to organic carbon may include fossil fuels combustion and wood burning, these are not likely sources at Jarbidge, which is an isolated national park. Similarly, coarse matter, also known as PM<sub>10</sub>, is due mostly to naturally occurring events of windblown dust and fugitive dust based on the 2018 emissions inventory. Ammonia sulfate (SO<sub>4</sub>) is the third highest contributor to light extinction on the worst days (16.7 percent), and the one most closely associated with anthropogenic sources. Soil (PM<sub>2.5</sub>) and elemental carbon (EC) are mostly from natural fire, and ammonia nitrates (NO<sub>3</sub>) have only a minimal contribution to light extinction at Jarbidge.

This analysis indicates that most of the light extinction at Jarbidge is due to natural sources.

TABLE 5—PERCENTAGE OF LIGHT EXTINCTION AT JARBIDGE  
(BASELINE PERIOD<sup>8</sup>)

Year	SO <sub>4</sub>	NO <sub>3</sub>	OMC	EC	Soil	CM	Sea Salt
20 Percent Worst Days							
2001	14.6	3.5	38.6	8.4	10.4	24.2	0.3
2002	11.5	5.6	48.4	6.5	10.9	17.1	0.0
2003	17.3	3.1	40.8	6.3	7.7	24.8	0.0
2004	23.6	5.7	32.4	5.0	9.7	23.0	0.7
<b>Average</b>	<b>16.7</b>	<b>4.5</b>	<b>40.0</b>	<b>6.5</b>	<b>9.7</b>	<b>22.3</b>	<b>0.3</b>

Source: Table 2-2, page 2-19, Nevada RH SIP

### 1. Sources of Visibility Impairment at Jarbidge

NDEP relied on source apportionment modeling<sup>9</sup> conducted by the WRAP to determine the sources of sulfate and nitrate particles at Jarbidge since these pollutants are commonly associated with anthropogenic sources. The source apportionment modeling results for the WRAP region on the worst days at Jarbidge in 2018 indicate that the relative contribution of particulate sulfate concentrations is primarily from point sources and natural fires in Idaho, Oregon, Washington, Nevada and California (in descending order). If one expands the

<sup>8</sup> While the baseline period is from 2000 to 2004, the monitoring data for 2000 at Jarbidge was invalid because it failed to meet EPA's data completeness criteria.

<sup>9</sup> The WRAP's Regional Modeling Center used the Particulate Matter Source Apportionment Technology (PSAT) algorithm in the Comprehensive Air Quality Model with Extensions (CAMx) to attribute particle species, particularly sulfate and nitrate, from specific source areas and source categories within the WRAP region. The PSAT algorithm applies nitrate-sulfate-ammonia chemistry to a system of tracers to track chemical transformation, transport and dissipation of emissions based on a 36 kilometer grid cell within a specified source area.

modeling domain to include all areas outside the WRAP region, the areas of greatest sulfate contribution are Outside Domain<sup>10</sup> (43.8 percent), Idaho (10.3 percent), Oregon (7.2 percent), and Pacific Offshore (6.9 percent). Based on this analysis, Nevada contributes a relatively small amount (less than 5 percent) of sulfate at Jarbidge, which primarily comes from outside the United States.

Source apportionment modeling indicates that the areas of greatest nitrate contribution in the WRAP region on the worst days at Jarbidge in 2018 is primarily from area and mobile sources in Idaho, and mobile sources in Utah and Nevada. Point sources in all three states are also significant contributors. Including all areas outside the WRAP region, Idaho is the largest source of nitrates on the worst days (30.3 percent), followed by Outside Domain (27.5 percent), Nevada (13.1 percent), and Utah (10.6 percent). This analysis indicates that Nevada contributes a small amount of nitrates at Jarbidge.

In summary, the analysis of light extinction indicates that organic carbon and coarse matter from natural sources account for most of the visibility impairment at Jarbidge. While sulfates are an important contributor to light extinction, the vast majority of sulfate particles are from outside of Nevada.

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<sup>10</sup> Outside Domain represents the background concentrations of pollutants that enter the modeling domain from sources outside the United States as well as portions of Canada and Mexico that are included in the modeling domain.

## 2. Nevada's Contributions to Visibility Impairment in Class I Areas Outside of the State

NDEP identified the rank and percentage of sulfate extinction and nitrate extinction due to Nevada's emissions at IMPROVE monitors in each of 24 Class I areas in the five adjacent states.<sup>11</sup> The results for the best and worst days in 2002 and 2018 indicate that Nevada is responsible for a very small part of visibility impairment in Class I areas in Arizona, California, Idaho, Oregon and Utah. The highest concentration of sulfate extinction from Nevada's emissions in 2018 on the best days is 7.2 percent at Sawtooth Wilderness Area in Idaho, and on the worst days is 5.6 percent at Zion National Park in Utah. For nitrate extinction in 2018, Nevada's highest contribution on the best days is 12.4 percent at Joshua Tree National Park in California, and on the worst days is 20 percent at Desolation Wilderness in California. The next highest contribution of nitrate extinction is significantly lower, 8.8 percent at Bryce Canyon National Park in Utah. The level of Nevada's contributions to other Class I areas, mostly well below 10 percent, indicate that the vast majority of sulfates and nitrates in other Class I areas are from sources outside of Nevada. In conclusion, NDEP relied on source apportionment

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<sup>11</sup> See Table 4.3 Nevada's Sulfate Extinction Contribution to Class I Areas Outside of Nevada (page 4-15) and Table 4.4 Nevada's Nitrate Extinction Contribution to Class I Areas Outside of Nevada (page 4-17).

modeling to determine the relative contributions of haze causing pollutants in Class I areas inside and outside Nevada. We found these analyses to be valid and technically correct. We propose to find that the State has met the requirements of CFR 51.308(d)(3)(iii) and (iv).

*E. Determination of Best Available Retrofit Technology (BART)*

Nevada is required to evaluate the use of BART controls at 26 types of major stationary sources<sup>12</sup> built between 1962 and 1977 that have the potential to emit 250 tons or more of any pollutant and may reasonably be anticipated to cause or contribute to any impairment of visibility in any Class I area. CAA Section 169A(b)(2)(A) and 40 CFR 51.308(e). The state must submit a list of all BART-eligible sources within the state, and a determination of BART controls, including emissions limitations and schedules of compliance, for those sources subject to BART. Each source subject to BART is required to install and operate BART as expeditiously as practicable, but not later than five years after EPA approval of the state's regional haze SIP revision. CAA Section 169(g)(4) and 40 CFR 51.308(e)(1)(iv).

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<sup>12</sup> The set of "major stationary sources" potentially subject to BART is listed in CAA section 169A(g)(7).

## 1. Sources eligible for BART

The first phase of the BART evaluation is to identify all the BART-eligible sources within a state's boundaries. NDEP identified fourteen units at seven facilities as eligible for BART controls as listed below in Table 6. The seven facilities are Nevada Energy's Tracy (Mustang, NV), Fort Churchill (Yerington, NV), Reid Gardner (Moapa, NV) and Sunrise (Las Vegas, NV) electrical generating stations; Southern California Edison's Mohave generating station (Laughlin, NV); Nevada Cement Company's Portland cement plant (Fernley, NV); and Chemical Lime Company's Portland cement plant (Apex, NV). Mustang, Yerington, Moapa and Fernley are in eastern Nevada. Las Vegas, Laughlin and Apex are in southern Nevada. A map locating BART sources in relation to Class I areas is provided as Figure 1, page 5-5, in Nevada's RH SIP.

TABLE 6—SOURCES ELIGIBLE FOR BART IN NEVADA

Source (Location)	Unit	Source Category	Date in Operation	Facility Potential to Emit (tons per year)		
				NO <sub>x</sub>	SO <sub>2</sub>	PM <sub>10</sub>
Tracy (Mustang)	Boiler 1	Electric Generating Station	1963	1,167	21	125
	Boiler 2		1965			
	Boiler 3		1974			
Fort Churchill (Yerington)	Boiler 1	Electric Generating Station	1968	2,221	9	41
	Boiler 2		1971			
Reid Gardner (Moapa)	Boiler 1	Electric Generating Station	1965	7,045	1,020	1,343
	Boiler 2		1968			
	Boiler 3		1976			
Sunrise (Las Vegas)	Boiler 1	Electric Generating Station	1964	851	1	13
Mohave (Laughlin)	Boiler 1	Electric Generating Station	1969	20,267	40,347	1,958
	Boiler 2		1969			
Nevada Cement Company (Fernley)	Kiln 1	Portland Cement Plant	1963	2,065	96	80
	Kiln 2		1967-68			
Chemical Lime Company (Apex)	Kiln 3	Portland Cement Plant	1968	1,121	178	241

Source: Table 5-1, page 5-3, Nevada RH SIP

## 2. Sources subject to BART

The second phase of the BART determination process is to identify those BART-eligible sources that one may reasonably anticipate to cause or contribute to visibility impairment at any Class I area. These subject-to-BART sources are required to analyze what control measures, if any, constitute BART for the applicable SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>10</sub> emissions. A state may exempt a BART-eligible source from further BART review if the source is

not reasonably anticipated to cause or contribute to any visibility impairment at any Class I area. As described in EPA's BART Guidelines<sup>13</sup>, a state may chose to use dispersion modeling to estimate a source's contribution to visibility impairment, an approach which requires the State to establish a threshold for contribution. Nevada established a 0.5 deciview threshold for exempting BART-eligible sources based on the results of dispersion modeling<sup>14</sup>.

NDEP determined that four of the seven eligible facilities are subject to BART since these facilities contribute to visibility impairment higher than 0.5 deciviews in one or more Class I areas. Information on the four subject-to-BART facilities is listed below in Table 7.

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<sup>13</sup> EPA's Guidelines for BART Determinations under the Regional Haze Rule are at 40 CFR Part 51 Appendix Y or 70 FR 39104 (July 6, 2005). For information on setting the contribution threshold refer to 70 FR 39161 (July 6, 2005).

<sup>14</sup>WRAP's RMC used the CALPUFF modeling system to assess whether Nevada's eligible sources were subject to or exempt from BART by estimating impacts from a single source on each Class I area within 300 km of any BART-eligible facility. The highest modeled impact in the fourth column is the maximum annual 98<sup>th</sup> percentile delta deciview (8<sup>th</sup> highest value) of the three years analyzed.

TABLE 7—SOURCES SUBJECT TO BART IN NEVADA  
(Based on data from 2001-2003)

Facility	Class I Areas within 300 km	Distance to Class I Area (km)	Highest Impact on Class I Area (dv)	Days Impact exceeds 0.5 dv
Tracy	Desolation	81	1.20	47
	Mokelumne	101	0.88	32
	Hoover	142	0.52	11
	Yosemite	153	0.50	11
	Caribou	170	1.03	48
	Lassen Volcanic	175	0.94	44
	South Warner	189	0.99	62
	Lava Beds	286	0.74	25
Fort Churchill	Mokelumne	78	1.24	69
	Desolation	85	1.25	72
	Hoover	99	1.00	32
	Emigrant	100	0.68	25
	Yosemite	112	1.00	29
	Ansel Adams	132	0.70	28
	John Muir	169	0.56	24
	Caribou	226	0.77	34
	Lassen Volcanic	231	0.77	33
	South Warner	245	0.72	62
	Thousand Lakes	265	0.60	21
Reid Gardner	Grand Canyon	85	1.72	60
	Zion	148	0.83	38
	Joshua Tree	292	0.88	48
Mohave	Grand Canyon	110	4.61	498
	Joshua Tree	137	4.58	248
	Sycamore Canyon	223	1.51	111
	San Gorgonio	225	1.44	75
	San Jacinto	234	1.62	74
	Zion	262	2.58	270
	Pine Mountain	265	1.21	49
	Dome Land	268	1.97	72
	Mazatal	279	1.19	45
	Aqua Tibia	286	1.15	54
	Cucamonga	287	1.38	51

Source: Table 5-2, page 5-6, Nevada RH SIP

Nevada determined that three BART-eligible facilities are not required to evaluate control options because these facilities modeled below the visibility impairment threshold of 0.5 deciviews based on the 98<sup>th</sup> percentile deciview. These facilities are the Sunrise Generating Station, the Nevada Cement Company, and the Chemical Lime Company listed below in Table 8. The fourth BART-eligible facility, Mohave Generating Station, has ceased operating<sup>15</sup>. A summary of the WRAP's BART exemption modeling for these facilities is available at <http://ndep.nv.gov/baqp/planmodeling/rhaze.html>.

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<sup>15</sup> The Mohave Generating Station has ceased all operations related to the generation of electricity from burning coal. NDEP approved Southern California Edison's request to terminate their Air Quality Operating Permit (No. AP4911-0774, FIN A0013) on April 9, 2010.

TABLE 8—SOURCES EXEMPT FROM BART IN NEVADA

Facility	Class I Areas within 300 km	Distance to Class I Area (km)	Highest Impact on Class I Area (dv)	Days Impact exceeds 0.5 dv
Sunrise Generating Station	Grand Canyon	95	0.20	1
	Zion	207	0.11	0
	Joshua Tree	228	0.16	0
	Dome Land	237	0.08	0
	San Gorgonio	271	0.08	0
	John Muir	282	0.06	0
	Bryce Canyon	284	0.04	0
	Sequoia	288	0.04	0
	San Jacinto	290	0.06	0
Sycamore Canyon	290	0.03	0	
Nevada Cement Company	Desolation	101	0.27	3
	Mokelumne	115	0.31	3
	Emigrant	148	0.16	0
	Hoover	150	0.22	0
	Yosemite	161	0.22	0
	Caribou	185	0.48	6
	Ansel Adams	186	0.18	0
	Lassen Volcanic	191	0.46	6
	South Warner	224	0.49	7
	John Muir	224	0.14	0
	Thousand Lakes	254	0.26	4
	Kaiser	267	0.08	0
	Kings Canyon	294	0.11	0
Lava Beds	294	0.22	0	
Chemical Lime Company	Grand Canyon	89	0.05	0
	Zion	185	0.03	0
	Joshua Tree	254	0.04	0
	Dome Land	256	0.02	0
	Bryce Canyon	263	0.01	0
	John Muir	290	0.01	0
	Sycamore	292	0.01	0
	Sequoia	296	0.01	0
San Gorgonio	297	0.02	0	

Source: Table 5-3, page 5-7, Nevada RH SIP

NDEP based its contribution threshold on four factors. First, 0.5 deciviews equates to the five percent extinction

threshold for new sources under the Prevention of Significant Deterioration and New Source Review rules. Second, this value is consistent with the threshold selected by all other states in the West. Third, it represents the limit of perceptible change. Fourth, there was no clear rationale or justification for selecting a lower level. This explanation, however, is inadequate for adopting a 0.5 dv threshold to determine whether a BART source may be reasonably anticipated to cause or contribute to any visibility impairment in a Class I area. Based on EPA's review of the BART-eligible sources, however, EPA is proposing to find that a 0.5 dv threshold is appropriate, given the specific facts in Nevada.

In the BART Guidelines, EPA recommended that States "consider the number of BART sources affecting the Class I areas at issue and the magnitude of the individual sources' impacts. In general, a larger number of BART sources causing impacts in a Class I area may warrant a lower contribution threshold." 70 FR 39104, 39161 July 6, 2005. Since four of the sources are subject to BART, EPA focused its review on the modeled impacts of the three BART-exempt sources as listed in the fourth column of Table 8. Of those sources, Nevada Cement Company has estimated impacts of close to 0.5 dv at three of the fourteen potentially impacted Class I areas. Nevada Cement's highest modeled impacts are at Caribou WA (0.48 dv), Lassen Volcanic NP

(0.46 dv) and South Warner WA (0.49 dv). Of the BART-eligible sources, only Tracy and Fort Churchill also impact visibility in these three Class I areas. NDEP found both Tracy and Fort Churchill to be subject to BART based on its threshold of 0.5 dv. Thus, only a small number of BART-eligible sources, two of which were found to be subject to BART, are impacting Caribou WA, Lassen Volcanic NP, and South Warner WA above or close to the threshold level of 0.5 dv. In comparison to Nevada Cement, Sunrise's highest impact is 0.20 dv and Chemical Lime's highest impact is 0.05, both on Grand Canyon NP. Of the other BART-subject sources impacting visibility at the Grand Canyon, Mohave has closed and Reid Gardner is subject to BART controls. Given the relatively limited impact on visibility from the three exempted sources, NDEP could have reasonably concluded that a 0.5 dv threshold was appropriate for identifying those BART-eligible sources with significant impacts on visibility in Class I areas. Based on our analysis, EPA is proposing to approve the 0.5 dv threshold adopted by Nevada in its Regional Haze SIP.

### 3. BART Determinations

NDEP completed BART determinations and set emission limits for the eligible units at the Tracy, Churchill, and Reid Gardner electrical generating stations in conformance with EPA's BART Guidelines. Control technologies or measures identified by NDEP as BART are required to be installed and operating on units at

these three facilities by January 1, 2015, or no later than five years after approval of Nevada's RH SIP, whichever occurs sooner. The designated BART controls, emission limits, and compliance deadlines are enforceable through Nevada State regulation R190-08, adopted on April 23, 2009. Nevada Energy's BART reports and NDEP's BART determinations are available at <http://ndep.nv.gov/bagp/planmodeling/rhaze.html>. Nevada Energy is the owner and operator of Tracy, Fort Churchill and Reid Gardner. NDEP made its BART determinations based on the BART reports from Nevada Energy, additional economic analysis, and baseline emission scenarios for NO<sub>x</sub> and SO<sub>2</sub> using emissions data from EPA's Acid Rain Program. Please refer to Chapter 5 of the Nevada RH SIP for further information.

a. Tracy Generating Station

*Background:* Tracy is a natural gas-fueled power plant complex with 12 generating units located about 17 miles east of Reno, Nevada. The plant consists of three BART-eligible steam boiler units completed in 1963, 1965 and 1974. These units have a generating capacity of about 251 megawatts (MW), of which unit 1 is 55 MW, unit 2 is 83 MW and unit 3 is 113 MW. The Title V permit allows burning pipeline quality natural gas (PNG) or blended residual fuel oil (No. 2 and No. 6 and non-PCB mineral oil). Nevada Energy, the owner, completed a BART analysis for Tracy that investigated technology alternatives and potential

reductions in NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub> emissions rates in a report dated October 2008. NDEP partially concurred with Nevada Energy's analysis of BART controls, but disagreed that installation of only low NO<sub>x</sub> burners (LNB) for control of NO<sub>x</sub> emissions at units 2 and 3 was BART. NDEP set lower NO<sub>x</sub> emission limits at all three units than those requested by Nevada Energy. NDEP reviewed Nevada Energy's five-factor analysis for each unit at Tracy and determined that installation of LNB with flue gas recirculation (FGR) for units 1 and 2, as well as LNB with selective non-catalytic reduction (SNCR) for unit 3, meet the BART criteria. Associated first year costs range from \$2,383 to \$3,050/ton of NO<sub>x</sub> removed. NDEP considered these values to be cost effective. Based on a review of Nevada Energy's economic analysis, NDEP concluded that the dollars per ton of NO<sub>x</sub> removed for units 1 and 2 increased significantly for LNB with SNCR, rotating opposed fire air (ROFA) with Rotamix<sup>16</sup>, and selective catalytic reduction (SCR), with only slight improvements in visibility. For unit 2, although LNB with SNCR appears cost effective, that technology does not reduce the modeled average number of days above 0.5 deciviews at the Desolation Wilderness Area or Yosemite National Park. For unit 3, although the first year cost effectiveness for ROFA with Rotamix appears

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<sup>16</sup> Rotamix is a technology for adding SNCR using ammonia or a urea-based reagent.

reasonable, the incremental cost effectiveness of ROFA with Rotamix is much higher than LNB with SNCR. It also does not reduce the modeled average number of days above 0.5 deciviews at Desolation Wilderness or Yosemite. Support documents for Nevada's BART determinations are at <http://ndep.nv.gov/baqp/planmodeling/rhaze.html>.

Regarding BART for SO<sub>2</sub>, NDEP agreed with Nevada Energy's analysis to require Pipeline Quality Natural Gas (PNG) or low sulfur No. 2 fuel oil with an emission limit of 0.05 lb/MMBtu over a 24-hour averaging time for all three units. NDEP also agreed with Nevada Energy that BART for PM<sub>10</sub> for all three units is PNG or low sulfur No. 2 fuel oil with an emission limit of 0.03 lb/MMBtu over a 3-hour average.

*BART Controls:* For units 1 and 2 at Tracy, EPA proposes to agree with NDEP's analysis that BART for NO<sub>x</sub> is LNB with FGR and emission limits of 0.15 lb/MMBtu and 0.12 lb/MMBtu, respectively, based on a 12-month rolling average. For unit 3, EPA proposes to agree with NDEP's analysis that BART for NO<sub>x</sub> is LNB with SNCR and an emission limit of 0.19 lb/MMBtu, based on a 12-month rolling average. EPA also proposes to approve NDEP's conclusion to eliminate the additional control options that Nevada Energy analyzed based on its finding those options had significantly higher incremental cost effectiveness and/or would not reduce the frequency of impaired visibility at Class I

areas. EPA proposes to agree that for all units at Tracy, BART for SO<sub>2</sub> is PNG and/or No. 2 fuel oil with an emission limit of 0.05 lb/MMBtu, based on a 24-hour averaging period. For PM<sub>10</sub>, EPA proposes to agree with NDEP's analysis that BART is also PNG and/or No. 2 fuel oil, but with an emission limit of 0.03 lb/MMBtu, based on a 3-hour averaging period for all units.

*Visibility Improvement:* Based on visibility modeling, emissions reductions due to the installation of BART controls at Tracy result in 82 less days every year with visibility impacts greater than 0.5 dv at fifteen Class 1 areas within 300 km of the facility. NDEP anticipates even greater visibility improvement from BART than modeled because the actual NO<sub>x</sub> emission limits for BART (0.12-0.19 lb/MMBtu) are much lower than the emission rates (0.40 lb/MMBtu) used to model visibility improvement due to BART implementation.

b. Fort Churchill Generating Station

*Background:* Fort Churchill is a natural gas-fired power plant located in Yerington, Nevada, that uses steam boilers to drive turbine generators. The plant consists of two units, completed in 1968 and 1971, that are BART-eligible with a generating capacity of 113 megawatts each. The fuel currently used in units 1 and 2 is PNG or blended fuel oil (No. 6 residual oil and No. 2 distillate fuel oil). In its BART analysis, Nevada Energy investigated technology alternatives and

identified potential reductions in NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub> emissions rates. NDEP partially concurred with Nevada Energy's analysis of BART controls, but disagreed that installation of only LNB for control of NO<sub>x</sub> emissions was BART, and disagreed with the associated NO<sub>x</sub> emission limits. For unit 1, LNB with SNCR and ROFA with Rotamix appear cost effective in the first year costs, but have significantly higher incremental cost effectiveness than LNB with FGR. In addition, LNB with SNCR and ROFA with Rotamix do not show fewer modeled average number of days above 0.5 deciviews at Mokelumne Wilderness Area and Yosemite. For unit 2, LNB with SNCR and ROFA with Rotamix appear to be cost effective in the first year, but have significantly higher incremental cost effectiveness than LNB with FGR. Nevada Energy's modeling analysis shows that LNB with SNCR does not result in any fewer averaged number of days above 0.5 deciviews at Mokelumne and only one fewer averaged days above 0.5 delta deciviews at Yosemite.

Regarding BART for SO<sub>2</sub>, NDEP agreed with Nevada Energy's analysis to require PNG or low sulfur No. 2 fuel oil with an emission limit of 0.05 lb/MMBtu over a 24-hour averaging time for all three units. NDEP also agreed with Nevada Energy that BART for PM<sub>10</sub> for all three units is PNG or low sulfur No. 2 fuel oil with an emission limit of 0.03 lb/MMBtu over a 3-hour average.

*BART Controls:* For units 1 and 2 at Fort Churchill, EPA is proposing to approve NDEP's determination that BART for NO<sub>x</sub> is LNB with FGR and emission limits of 0.20 lb/MMBtu and 0.16 lb/MMBtu, respectively, based on a 12-month rolling average. EPA proposes to approve NDEP's decision to eliminate the additional control options that Nevada Energy analyzed based on its finding those options had significantly higher incremental cost effectiveness or would not reduce the frequency of impaired visibility at Class I areas.

For SO<sub>2</sub>, EPA proposes to agree with NDEP's analysis that BART is PNG and/or No. 2 fuel oil for all units with an emission limit of 0.05 lb/MMBtu, based on a 24-hour averaging period. For PM<sub>10</sub>, EPA proposes to find that BART is also PNG and/or No. 2 fuel oil for all units, with an emission limit of 0.03 lb/MMBtu, based on a 3-hour averaging period.

*Visibility Improvement:* Based on visibility modeling, emission reductions due to the installation of BART controls at Fort Churchill result in 227 less days every year with visibility impacts greater than 0.5 dv at fourteen Class 1 areas within 300 km of the facility. NDEP anticipates even greater visibility improvement from BART than modeled because the actual NO<sub>x</sub> emission limits for BART (0.12 and 0.16 lb/MMBtu) are much less than the emission rates (0.40 lb/MMBtu) used to model visibility improvement due to BART implementation. For Fort

Churchill, the total annual NO<sub>x</sub> emissions post-BART controls (963 tpy) are 53 percent of those modeled (2,181 tpy).

c. Reid Gardner Generating Station

*Background:* Reid Gardner is a coal-fueled, steam-electric generating plant with four operating units producing a total of 557 MW. Three of the units, built in 1965, 1968 and 1976 are BART-eligible. Each of these units produces about 100 MW with steam boilers that drive turbine-generators. The units are equipped with LNB and over-fire air (OFA) system, mechanical collectors for particulate control, wet scrubbers that use soda ash for SO<sub>2</sub> removal, as well as recently installed baghouses. NDEP's review of Nevada Energy's BART report for Reid Gardner resulted in NDEP agreeing only with the control technologies proposed as BART for SO<sub>2</sub> and PM<sub>10</sub>. For the three BART units, NDEP concurs that BART for SO<sub>2</sub> is the existing wet soda ash FGD and BART for PM<sub>10</sub> is the recently installed fabric filter baghouse. NDEP disagreed with Nevada Energy's conclusion on BART for NO<sub>x</sub>, and on the proposed emission limits for NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub>. NDEP later responded to comments from EPA, FLMS and other non-governmental organizations regarding its proposed BART SO<sub>2</sub> emission limit for Reid Gardner. After further evaluation of emission data that reflected compliance with existing controls at the facility, NDEP lowered the SO<sub>2</sub> emissions limit at Reid Gardner from 0.25 lb/MMBtu to 0.15 lb/MMBtu on all three units.

The revised BART regulation was adopted by the Nevada Environmental Commission on February 11, 2009 and submitted to EPA as a revision to NDEP's RH SIP on February 18, 2010.

*BART Controls:* NDEP determined that for all units at Reid Gardner, BART controls for NO<sub>x</sub> are rotating opposed fire air (ROFA) with Rotamix and emission limits of 0.20 lb/MMBtu for units 1 and 2, and 0.28 lb/MMBtu for unit 3, based on a 12-month rolling average. To evaluate the cost of compliance, NDEP analyzed the cost per year of the various control technologies compared to the tons of NO<sub>x</sub> removed by each. NDEP determined that the additional cost per year for SCR technologies did not appear cost effective compared to the additional NO<sub>x</sub> reduction for each unit. NDEP also evaluated the second BART factor, energy and non-air quality environmental impacts, for requiring SCR or SNCR rather than ROFA with Rotamix. NDEP determined that there were negative non-air quality environmental impacts with SCR and SNCR, including the salability and ultimate disposal of fly ash due to higher ammonia levels. Moreover, NDEP found that SCR and SNCR increased the potential for creating a visible stack plume. NDEP also was concerned about the transportation of ammonia to Reid Gardner increasing the likelihood of an accidental release. EPA is proposing to approve these BART determinations for NO<sub>x</sub> based on NDEP's approach.

EPA proposes to agree that BART controls for SO<sub>2</sub> are wet soda ash flue gas desulfurization on all units with an emission limit of 0.15 lb/MMBtu, based on a 24-hour averaging period. We also propose to agree that for PM<sub>10</sub>, BART controls are fabric filter baghouses on all units with an emission limit of 0.015 lb/MMBtu, based on 3-hour averaging period.

*Visibility Improvement:* Based on visibility modeling, emission reductions due to the installation of BART controls at Reid Gardner result in five less days with visibility impacts greater than 0.5 dv at five Class I areas within 300 kilometers of the facility. NDEP anticipates even greater visibility improvement from BART than modeled since the total annual emissions for NO<sub>x</sub>, SO<sub>2</sub> and PM<sub>10</sub> are about half of the emissions modeled due to more stringent emission limits.

d. Mohave Generating Station

*Background:* Mohave was a 1,580 MW coal-fired power plant with two units that ceased operations at the end of December 2005. Located about 70 miles southwest of Grand Canyon National Park, Mohave was one of the single, largest sources of SO<sub>2</sub> in the West. The facility closed after failing to meet emission limitations for SO<sub>2</sub> and emission controls for NO<sub>x</sub> as required by a consent decree between the facility's owners and environmental

organizations<sup>17</sup>. However, the owners did not officially decide to decommission the facility until June 10, 2009. Since Mohave was subject to BART and its final status was unknown at the time Nevada developed its SIP, the WRAP included Mohave in its emission inventory and NDEP prepared a BART determination for SO<sub>2</sub>, NO<sub>x</sub> and PM<sub>10</sub> that was required prior to the facility restarting operations. NDEP estimates that BART controls, based on fuel switching from coal to natural gas, would have resulted in an additional reduction of 8,701 tons per year of SO<sub>2</sub> (75 percent reduction) and 19,595 tons per year of NO<sub>x</sub> (98 percent reduction) compared to the emission limits and control requirements in the consent decree.

*BART Controls:* Since Mohave is permanently closed, with emissions of zero, EPA is satisfied with the State's approach to determining BART.

*Visibility Improvement:* NDEP relies on emission reductions required by the consent decree as well as their BART determination to characterize visibility improvement at eleven Class I areas located within 300 km of Mohave. While this method understates the visibility benefit resulting from the

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<sup>17</sup> In a Consent Decree dated December 21, 1999, the owners of Mohave power plant agreed with the Grand Canyon Trust, Sierra Club, and National Parks and Conservation Association to limit opacity to 20 percent by implementing SO<sub>2</sub> emission limitations and NO<sub>x</sub> control requirements on units 1 and 2 by December 31, 2005. The consent decree had no emission limitations for either NO<sub>x</sub> or PM. EPA promulgated a final rule on February 8, 2002, to include the consent decree requirements in Nevada's Federal Implementation Plan for Visibility at 40 CFR 52.1488. Nevada included the requirements of the Visibility FIP in Mohave's Title V operating permit.

plant's closure, modeling indicates these emission reductions would result in 538 less days every year at the eleven Class I areas with visibility impairment of greater than 0.5 dv. With Mohave's permanent shutdown, the annual emission reductions are equal to the WRAP's baseline emissions for the plant: 55,047 tons of SO<sub>2</sub>; 31,344 tons of NO<sub>x</sub>; and 3,417 tons of PM<sub>10</sub>. The closure of the Mohave generating station provided the largest reduction in haze-causing pollutants from a subject-to-BART source in Nevada, and should result in greater visibility improvement than modeling has projected.

#### 4. EPA's Assessment

EPA is proposing to approve NDEP's analyses and conclusions for the BART emissions units at Tracy, Fort Churchill and Reid Gardner generating stations. Based on our review, EPA is proposing to find that the BART determinations were conducted in a manner consistent with the RHR BART requirements in 40 CFR 51.308(e), the EPA's BART Guidelines, and EPA's Air Pollution Control Cost Manual (<http://www.epa.gov/ttnecas1/costmodels.html>). We believe the outcome of Nevada's BART determinations reflects a reasonable consideration of the relevant factors.

*F. Determination of Reasonable Progress Goal*

The RHR requires states to establish a goal, expressed in deciviews, for each Class I area within the state that provides for reasonable progress toward achieving natural visibility conditions by 2064. The RPG must provide for an improvement in visibility for the most impaired days, and ensure no degradation in visibility for the least impaired days over the period of the SIP.

1. Visibility Projections for 2018

NDEP relied on the Community Multi-Scale Air Quality (CMAQ) model used by the WRAP's RMC to project visibility conditions at all western Class I areas in 2018. For Jarbidge, the model predicted 11.05 dv on the worst days and 2.50 dv on the best days in 2018. The visibility projection compares favorably to the URP estimate in 2018 of 11.09 dv as displayed in Table 9. The visibility projection was based on estimates of emissions reductions from all existing and known controls resulting from federal and state CAA programs as of March 2007. This data formed the basis for the State's RH SIP submitted to EPA in November 2009.<sup>18</sup> EPA addressed the uncertainties associated with

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<sup>18</sup> 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). It is EPA's view that at this point in the SIP process, the discovery of a potential error in the visibility projections for 2018 does not call for a revision of the Nevada SIP. Because of the significant resources needed to model projected visibility impacts and the time needed for Nevada to repeat the SIP review and approval process, such action is not appropriate. Moreover, any correction to the modeling results at this time should be based on an update to all the data used in 2007 to model

modeled projections by making the RPG an analytic tool for the purpose of evaluating progress, not an enforceable standard.

51.308(d)(1)(v) and 64 FR 35733.

TABLE 9—SUMMARY OF MODEL PREDICTED PROGRESS  
TOWARD 2018 UNIFORM RATE OF PROGRESS AT JARBIDGE (in deciviews)

Class I Area	20% Worst Days			20% Best Days	
	2000-04 Baseline Worst Days	2018 URP Estimate	2018 Modeling Result (RPG)	2000-04 Baseline Best Days	2018 Modeling Result
Jarbridge	12.07	11.09	11.05	2.56	2.50

Source: Table 6-3, page 6-15, Nevada RH SIP

2. Establishing the Reasonable Progress Goal

In setting its RPG of 11.05 dv for Jarbridge, NDEP considered a number of different factors as described on pages 6-16 and 6-17 of the Nevada RH SIP. These factors included: 1) The URP of 11.09 in 2018; 2) Reductions in Nevada’s anthropogenic emissions by 2018 estimated at 44 percent for SO<sub>x</sub> and 33 percent for NO<sub>x</sub>; 3) Reductions in anthropogenic emissions consistent with Nevada’s share of emissions reductions at Class I areas in other states; 4) Major reductions in mobile source emissions; 5) Major contributions to visibility impairment from offshore marine shipping and international emissions; 6) Significant

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visibility projections. For example, the visibility modeling did not include emission reductions from more recent BART control decisions in Nevada and neighboring states, and did include emissions from proposed facilities in Nevada that now are not expected to be built. EPA is satisfied that the progress report and adequacy determination due in November 2014, see 40 CFR 51.308(g) and (h), will provide an opportunity to determine whether Nevada’s SIP is sufficient to ensure that the State is making reasonable progress.

contributions from natural sources of visibility impairment; and  
7) Consideration of the five BART factors. Based on its  
analysis of reasonable progress, Nevada concluded that  
additional control measures, beyond those documented for BART,  
are unreasonable at this time.

EPA is proposing to agree with the State's analysis and  
conclusion that it is reasonable not to seek additional controls  
on other sources within the State at this time. Importantly,  
the RPG for Jarbidge meets the URP in 2018, committing the State  
to make reasonable progress in the first planning period toward  
attaining natural background conditions. Nevada has  
demonstrated that the RPG provides for visibility improvement on  
the worst days and no degradation of visibility on the best days  
compared to the baseline average (see Table 9). The RPG also  
represents more visibility improvement than would result from  
implementation of other CAA requirements since emissions  
reductions from existing and known controls were included in the  
visibility modeling. EPA finds that the State's decision not to  
seek additional control measures is supported by the attributes  
of regional haze at Jarbidge as well as the expected reductions  
in statewide emissions of SO<sub>x</sub> and NO<sub>x</sub> and BART controls on three  
facilities. The WRAP's regional analysis indicates that haze at  
Jarbidge is mostly from natural sources like wildfires, and most  
of the anthropogenic sources contributing to that haze are

outside the State. Based upon everything NDEP considered in its SIP, EPA is proposing to approve Nevada's demonstration that its RPG provides for reasonable progress in the first planning period as required in CFR 51.308(d)(1)(i), (ii) and (vi).

### 3. Interstate Consultation

Nevada consulted with thirteen other western states through numerous WRAP meetings, workshops and conference calls that began in 1996. Through the WRAP's consultative process, Nevada resolved technical tasks and policy decisions related to monitoring, emissions, modeling, BART application, control measures, and other issues. There were no comments from other states on Nevada's RH SIP, implying that the consultative process was successful in resolving any potential conflicts that would undermine regional planning. EPA confirms that Nevada consulted with other states on its RPG through the WRAP process, and that there is no evidence of any disagreement on the RPG for Jarbidge.

#### *G. Long-Term Strategy*

EPA is proposing to find that NDEP adequately addressed the RHR requirements in developing its LTS. We believe that the LTS provides sufficient documentation to ensure that Nevada will meet its emission reduction obligations for all Class I areas it affects in the first planning period. Nevada relied on

monitoring, emission inventories and modeling information from the WRAP as the technical basis for its LTS. Coordination and consultation occurred with other states through the WRAP, in which all western states participated in developing the technical analysis upon which their SIPs are based. This included identifying all anthropogenic sources of visibility impairment including major and minor stationary sources, mobile sources, and area sources. The anticipated net effect on visibility over the first planning period due to changes in point, area and mobile source emissions is a reduction in regional haze at Jarbidge. Nevada also analyzed its contribution to visibility impairment at Class I areas in other states to ensure it is meeting its share of emission reductions obligations<sup>19</sup>. In particular, NDEP considered the following factors in developing its long-term strategy.

1. BART Controls

The installation and operation of BART controls is an integral part of the State's long-term strategy to achieve the RPG at Jarbidge, and to reduce Nevada's share of emissions affecting Class I areas in neighboring states. As described in this notice and in more detail in Nevada's RH SIP, NDEP is requiring three of Nevada Energy's facilities (Tracy, Fort

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<sup>19</sup> See Summary of Visibility Impairment at Nearby Class I Areas and Nevada's Emissions Reductions, Table 7-6, page 7-21.

Churchill and Reid Gardner) to install and operate BART controls as expeditiously as practicable, but no later than January 1, 2015 or five years after EPA approval of the SIP, whichever occurs first. Each source is required to establish procedures to ensure that the control equipment is properly operated and maintained. Nevada's BART emissions limitations and schedules for compliance are codified in a revision to the Nevada Administrative Code (NAC) adopted on February 11, 2009<sup>20</sup>. The regulations identify the emission limits and control technologies required as BART on the Tracy, Fort Churchill and Reid Gardner facilities. NDEP also will incorporate BART control limits into Nevada Energy's Title V operating permits for these facilities at the time of renewal. Regarding the Mohave generating station, Nevada terminated its Air Quality Operating Permit No. AP4911-0774 as documented in a letter to Southern California Edison on April 9, 2010.

## 2. Ongoing Air Pollution Control Programs

Nevada continues to achieve significant reductions in SO<sub>x</sub> and NO<sub>x</sub> from mobile sources through the implementation of Federal, State and local programs. Federal and State mobile source regulations are the primary air quality programs expected to reduce visibility impairment in the first planning period. These programs include limitations and schedules of compliance

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<sup>20</sup> See Nevada RH SIP Appendix A for Nevada BART regulations.

identified in rules and regulations that are unique to each program. For example, EPA has mandated new standards for on-road (highway) diesel fuel, known as ultra-low sulfur diesel (ULSD) beginning in 2006. This regulation dropped the sulfur content of diesel fuel from 500 parts per million (ppm) to 15 ppm. ULSD fuel enables the use of cleaner technology diesel engines and vehicles with advanced emissions control devices, resulting in significantly lower emissions. Diesel fuel intended for locomotive, marine and non-road (farming and construction) engines and equipment is required to meet the low sulfur diesel fuel maximum specification of 500 ppm sulfur in 2007, previously 5000 ppm. The ULSD fuel standard of 15 ppm sulfur will apply to all non-road diesel fuel by 2011. Locomotive and marine diesel fuel will be required to meet the ULSD standard beginning in 2012, resulting in further reductions of diesel emissions. Based on WRAP RMC models, implementation of the Federal programs alone will result in a 49 percent reduction in mobile source NO<sub>x</sub> emissions and a 63 percent reduction in mobile source SO<sub>x</sub> emissions from the baseline to 2018. This trend is expected to provide significant visibility benefits for Jarbidge and at other Class I areas in neighboring states.

The State's continued implementation of the Prevention of Significant Deterioration (PSD) and New Source Review (NSR)

program requirements, including FLM involvement in reviewing impacts on Class I areas, also supports achieving visibility goals. These programs will protect the least impaired days from further degradation and will assure that no Class 1 areas experience degradation from expansion or growth of a single new source or the regional development of stationary sources.

Nevada also has emission control requirements for motor vehicles in Clark and Washoe Counties; for residential burning in Washoe County; for PM<sub>10</sub> nonattainment/maintenance areas; and for dust suppression at construction sites and unpaved roads. Together with the State's renewable energy requirements, these ongoing programs will contribute to improvements in visibility at protected Class I areas.

### 3. Construction Activities

Nevada manages the release of fugitive dust related to construction activities through the implementation of regulations set forth in the Nevada Administrative Code 445B.22037. The State requires fugitive dust to be controlled regardless of the size or amount of acreage disturbed, and requires the use of best practical methods to prevent airborne particulate matter. All activities that have the potential to adversely affect local air quality must include all appropriate measures to limit controllable emissions. Appropriate measures for dust control may consist of a phased approach to acreage

disturbance rather than disturbing the entire area all at once; using wet suppression through such application methods as water trucks or water sprays systems to control windblown dust; the application of soil binding agents or chemical surfactant to roadways and areas of disturbed soil; as well as the use of wind-break or wind-limiting fencing designed to limit wind erosion of soils.

#### 4. Source Retirement and Replacement Schedules

While NDEP did not include any repair or replacement schedules for large point sources, EPA is satisfied with the explanation that it is very difficult for the regulatory community to predict potential permit revisions for large sources. In general, repair and replacement of current facilities over time will reduce emissions as new technology is incorporated in industrial processes. Similarly, the construction of new sources may contribute to the early or scheduled retirement of older, less well-controlled sources. Five proposed power plants for Nevada were included in the projected emissions inventory for 2018. Whether these new sources are built will influence the future activity of existing sources.

#### 5. Smoke Management Programs

Preventing and managing emissions from prescribed fires in Nevada is achieved through implementation of the Nevada Smoke

Management Program (SMP) and through Open Burning regulations. The State's SMP was developed to coordinate and facilitate the statewide management of prescribed outdoor burning, specifically for land management purposes. This program is designed to meet the requirements of Nevada's air quality statutes listed in Nevada Revised Statutes (NRS) 445B.100 through 445B.845, inclusive, and the requirements of the USEPA Interim Air Quality Policy on Wild Land and Prescribed Fires (EPA OAQPS, April 23, 1998). The SMP supports the visibility protection goals for Class I areas. This program does not, however, supersede the authority of local governments to regulate and control smoke and air pollution under NRS 244.361 and NRS 268.410 or the authority of the State forester to regulate controlled fires under NRS 527.122 through 527.128.

Open burning is controlled through a comprehensive set of regulations that are found in NAC 445B.22067. These regulations apply to federal, state and private lands and prohibit open burning of combustible refuse, waste, garbage, oil or open burning for any salvage operation. Exemptions are granted for open burning conducted for the purposes of weed abatement, conservation, disease control, game or forest management, and fire training. Burning for agricultural purposes is exempt, as is the burning of yard waste and untreated wood at single-family

residences. Small fires used for cooking, recreation, education or ceremonial purposes are also exempt.

#### 6. Other Measures Supporting the LTS

NDEP intends to evaluate additional controls for sources that impact visibility in Class I areas in the required progress report due in 2014. This evaluation will take into account new monitoring and modeling information, new regulations, and new guidance that may result in additional control measures consistent with the reasonable progress requirement of the RHR. If additional controls are identified, the progress report will update the plan to include an implementation schedule for controls, necessary rulemaking, projected visibility improvements, and revised RPGs for 2018.

#### 7. Interstate Transport Requirements for Visibility

Section 110(a)(2)(D)(i)(II) of the Act requires SIP revisions to contain adequate provisions to prohibit any source or other types of emission activity within the state from emitting any air pollutant in amounts that will interfere with another state's plan to protect visibility. Nevada submitted its SIP for Interstate Transport to EPA on February 7, 2007, which EPA approved and promulgated in the Federal Register on July 31, 2007 (70 FR 41629). In our Federal Register Notice, we deferred action on whether Nevada interferes with other states' plans to address regional visibility impairment caused by

regional haze until we received Nevada's Regional Haze SIP. As explained in Section IV.D.2. of this notice, NDEP relied on the WRAP's source apportionment modeling to demonstrate that Nevada's emissions are projected to have a minimal contribution to sulfate and nitrate extinction in each of 24 Class I areas in five adjacent states. Moreover, none of the neighboring western states have requested emission reductions from Nevada in order to meet their RPGs. Therefore, in proposing to approve Nevada's RH SIP, we are proposing to find that this plan revision contains adequate provisions to protect visibility in other states.

#### *H. Monitoring Strategy*

Nevada's SIP includes the required monitoring strategy for measuring, characterizing and reporting on regional haze visibility impairment as required in 51.308(d)(4). The primary source of monitoring data for the regional haze program in Nevada is the IMPROVE network. There is currently one IMPROVE monitoring site at Jarbidge. IMPROVE monitoring data serves as the baseline for the regional haze program, and is the source of data for states to comply with the regional haze monitoring requirements now and in the future. States have access to the IMPROVE data and data analysis tools through the Visibility Information Exchange Web System (VIEWS), which is maintained by

the WRAP and other regional planning organizations. The operation of the IMPROVE network is dependent on EPA funding.

#### 1. Coordination of RAVI with RHR

Nevada's monitoring strategy is coordinated with the monitoring required for Reasonably Attributable Visibility Impairment (RAVI) that is codified under a Federal Implementation Plan (FIP) for the State. RAVI, which predates the RHR, is visibility impairment that is caused by the emission of air pollutants from one or a small number of sources. The provisions of visibility monitoring for RAVI in 40 CFR 52.26 are incorporated into the visibility FIP for Nevada in 40 CFR 52.1488. Under the FIP, EPA has responsibility in cooperation with the appropriate FLMS to monitor visibility in Nevada's Class I area. NDEP coordinates its regional haze monitoring with the FIP for RAVI by participating in the IMPROVE network, and utilizing data from the same IMPROVE monitor at Jarbidge.

#### 2. Additional Monitoring Sites

EPA agrees with Nevada's assessment that the existing IMPROVE monitor at Jarbidge, its only class I area, is sufficient to address regional haze and determine reasonable progress toward the national visibility goal. The monitor is located in the Humboldt National Forest in northeastern Nevada, about one kilometer north of the city of Jarbidge in the Jarbidge River drainage.

### 3. Using and Reporting Monitoring Data

Nevada will continue to rely on the IMPROVE network, technical support from the WRAP, and regional technical tools (e.g., VIEWS and WRAP's Technical Support System) to assess the contribution of emissions to visibility impairment at Class I areas within and outside the State. The IMPROVE network was established in the 1980s to measure visibility impairment in mandatory class I areas throughout the United States. The IMPROVE monitors were used by WRAP and NDEP as the source of data for the 2000-2004 baseline and for future projections, and is the source of record for air quality professionals to track visibility improvement or degradation. Visibility monitoring data is available to the public, states and EPA in an electronic format at the IMPROVE and VIEWS websites

### 4. Statewide Emissions Inventory

NDEP commits to updating periodically its statewide emissions inventory, tracking emissions changes, determining trends, and utilizing the WRAP's services to evaluate reasonable progress. Nevada has a statewide emissions inventory of pollutants reasonably anticipated to cause or contribute to visibility impairment as described in section III.B. of this notice. NDEP annually updates its inventory of major point sources and its entire inventory every three years as required by EPA's Consolidated Emissions Reporting Rule. The State's

capacity to fulfill future requirements to project emissions and evaluate progress depend on the continued existence of the IMPROVE program as well as the technical support of the WRAP or a similar regional planning organization

#### *I. State and Federal Land Manager Coordination*

Nevada participated fully in the WRAP process, the primary forum for consultation among western states, tribal nations, federal agencies, stakeholder groups and the public. FLMs from the National Park Service, U.S. Fish and Wildlife Service, Bureau of Land Management and the U.S. Forest Service were actively engaged in the WRAP's development of technical analyses and reports for the western region and individual states. To facilitate consultation, NDEP provided a list of its agency contacts to the FLMs in a letter dated September 15, 2006. The FLMs had numerous opportunities throughout the WRAP process to participate fully in the development and review of regional technical documents that form the basis of the western states' plans. Nevada provided additional opportunities for coordination and consultation with FLMs through local meetings and stakeholder workshops. NDEP provided its draft RH SIP to the FLMs on January 5, 2009 for a 60-day review and comment period. Comments were received from the FLMs on March 4 and 6, 2009. NDEP's responses to the FLMs' comments are in Appendix C

of the Nevada RH SIP. EPA believes that NDEP adequately addressed the FLMS' concerns either through revisions to the SIP, or in responses to their comments. NDEP also has committed to provide the FLMS an opportunity to review and comment on future SIP revisions, the 5-year progress reports, and the implementation of other programs that may contribute to class I visibility impairment. All SIP revisions will include a description of how the state consulted with and addressed any comments provided by the FLMS. At a minimum, NDEP will meet with the FLMS on an annual basis through the WRAP, as long as the WRAP continues to provide this forum. EPA is satisfied that Nevada has coordinated with the FLMS as required in 40 CFR 51.308(i)(1-4).

*J. Periodic SIP Revisions and 5-Year Progress Reports*

Nevada affirmed its commitment to submit a report to EPA every five years evaluating progress toward the RPG for its Class I area as well as Class I areas outside the State that may be affected by emissions from within the State as required in 40 CFR 51.308(g). The first report is due five years after the State's submittal, which is November 18, 2014. The required elements for these reports are listed in section III of this notice.

Nevada commits to making an adequacy determination of the current SIP at the same time it submits the five-year progress report as required in 40 CFR 51.308(h). If Nevada determines that the current implementation plan is or may be inadequate due to emissions from within the State, Nevada will develop additional strategies to address the plan deficiencies and revise the SIP within one year from the date that the progress report is due. If Nevada determines that the plan is or may be inadequate due to emissions from other states, Nevada will notify EPA and the other states. The affected states are required to address the deficiency through the regional planning process by developing additional strategies.

Nevada also commits to complete and submit a comprehensive RH SIP revision to EPA by July 31, 2018 and every 10 years thereafter as required in 40 CFR 51.308 (f). In these comprehensive revisions, the State must evaluate and reassess all of the elements required in 40 CFR 51.308(d), taking into account improvements in monitoring data collection and analysis techniques and control technologies. The State must also address current visibility conditions, actual progress toward natural conditions, effectiveness of the long-term strategy, and the reasonable progress goal.

## **V. EPA's Proposed Action**

EPA believes the Nevada RH SIP fulfills all the relevant requirements of CAA Section 169A and the Regional Haze Rule. Therefore, we are proposing a full approval of the plan as described in Section 110(k)(3) of the Act. Regarding the major requirements, we find that Nevada has: established baseline visibility conditions and a reasonable progress goal for its one Class I area; developed a long-term strategy with enforceable measures to ensure reasonable progress toward achieving the RPG in the first planning period ending in 2018; adequately applied Best Available Retrofit Technology to specific stationary sources; developed a regional haze monitoring strategy; provided for periodic progress reports and revisions; provided for consultation and coordination with federal land managers; and provided for the regional haze plan's future review and revisions. We also are proposing to find that emissions from Nevada do not interfere with other states' measures to protect visibility as required by CAA Section 110(a)(2)(D)(i)(II).

## **VI. Statutory and Executive Order Reviews**

Under the Clean Air Act, the Administrator is required to approve a SIP submission that complies with the provisions of the Act and applicable Federal regulations. 42 U.S.C. 7410(k); 40 CFR 52.02(a). Thus, in reviewing SIP submissions, EPA's role

is to approve State choices, provided that they meet the criteria of the Clean Air Act. Accordingly, this action merely approves State law as meeting Federal requirements and does not impose additional requirements beyond those imposed by State law. For that reason, this 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 (Public Law 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 application of those requirements would be inconsistent with the Clean Air Act; and
- does not interfere with Executive Order 12898 (59 FR 7629 (Feb. 16, 1994)) because EPA lacks the discretionary authority to address environmental justice in this rulemaking.

In addition, this rule does not have tribal implications as specified by Executive Order 13175 (65 FR 67249, November 9, 2000), because the SIP is not approved to apply in Indian country located in the State, and EPA notes that it will not impose substantial direct costs on tribal governments or preempt tribal law.

List of Subjects in 40 CFR Part 52

Environmental protection, Air pollution control,  
Intergovernmental relations, Nitrogen oxides, Sulfur dioxide,  
Particulate matter, Reporting and recordkeeping requirements,  
Volatile organic compounds.

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

June 9, 2011  
Dated:

Jared Blumenfeld  
Jared Blumenfeld  
Regional Administrator,  
Region 9