

## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 49

[EPA-R09-OAR-2013-0009; FRL-9774-1]

### Approval of Air Quality Implementation Plans; Navajo Nation; Regional Haze Requirements for Navajo Generating Station

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

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing a source-specific federal implementation plan (FIP) requiring the Navajo Generating Station (NGS), located on the Navajo Nation, to reduce emissions of oxides of nitrogen (NO<sub>x</sub>) under the Best Available Retrofit Technology (BART) provision of the Clean Air Act (CAA or Act) in order to reduce visibility impairment resulting from NGS at 11 National Parks and Wilderness Areas. NGS, which was built over 35 years ago, is the largest coal-fired power plant in the West in terms of generating capacity. It is central to the economies of the Navajo Nation and Hopi Tribe and supplies power to the states of Arizona, Nevada, and California. Electricity produced by NGS is also used to power the Central Arizona Project, which supplies surface water to three counties and numerous Indian tribes in Arizona. NGS is projected to continue operating at least until 2044. EPA is proposing to require NGS to achieve a nearly 80 percent reduction of its current overall NO<sub>x</sub> emission rate. Our analysis indicates that installation of controls to achieve this reduction would result in significant visibility improvement that is well-balanced with the cost of those controls. For a number of reasons, including the importance of NGS to numerous Indian tribes located in Arizona and the federal government's reliance on NGS to meet the requirements of water settlements with several tribes, EPA is proposing an alternative to BART that would provide flexibility to NGS in the schedule for the installation of new control equipment. We also describe other compliance schedules for consideration and comment. We recognize that there may be other approaches that could result in equivalent or better visibility benefits over time and that there may be changes in energy demand, supply or other developments over the next several decades that may change electricity generation on the Navajo Nation. EPA encourages a robust public discussion of our proposed BART determination and

alternative, the additional alternatives described herein, and other possible approaches. EPA is prepared to issue a supplemental proposal if approaches other than the proposed BART determination or proposed alternative articulated in this notice are identified as satisfying the requirements of the Clean Air Act and meeting the needs of the stakeholders. EPA is committed to continuing to engage with stakeholders to develop a final FIP that maintains benefits to tribes and the regional economy while improving visibility in many of our nation's most treasured National Parks and Wilderness Areas.

**DATES:** Comments must be submitted no later than May 6, 2013.

**ADDRESSES:** Submit comments, identified by docket number EPA-R09-OAR-2013-0009, by one of the following methods:

*Federal eRulemaking Portal:*  
[www.regulations.gov](http://www.regulations.gov). Follow the on-line instructions.

*Email:* [r9ngsbart@epa.gov](mailto:r9ngsbart@epa.gov).

*Mail or deliver:* Anita Lee (Air-2), U.S. Environmental Protection Agency Region 9, 75 Hawthorne Street, San Francisco, CA 94105-3901.

*Instructions:* All comments will be included in the public docket without change and may be made available online at [www.regulations.gov](http://www.regulations.gov), including any personal information provided, unless the comment includes Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Information that you consider CBI or otherwise protected should be clearly identified as such and should not be submitted through [www.regulations.gov](http://www.regulations.gov) or email. [www.regulations.gov](http://www.regulations.gov) is an "anonymous access" system, and EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an email directly to EPA, your email address will be automatically captured and included as part of the public comment. 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.

*Hearings:* EPA intends to hold public hearings to accept oral and written comments on the proposed rulemaking. EPA will provide notice and additional details at least 30 days prior to the hearings in the **Federal Register**, on our Web site, and in the docket.

*Docket:* The index to the docket for this action is available electronically at [www.regulations.gov](http://www.regulations.gov) and in hard copy at EPA Region 9, 75 Hawthorne Street, San Francisco, California. While documents in the docket are listed in

the index, some information may be publicly available only at EPA Region 9 (e.g., maps, voluminous reports, copyrighted material), and some may not be publicly available in either location (e.g., CBI). To inspect the hard copy materials, please schedule an appointment during normal business hours with the contact listed in the **FOR FURTHER INFORMATION CONTACT** section.

**FOR FURTHER INFORMATION CONTACT:**

Anita Lee, EPA Region 9, (415) 972-3958, [r9ngsbart@epa.gov](mailto:r9ngsbart@epa.gov).

**SUPPLEMENTARY INFORMATION:**

Throughout this document, "we", "us", and "our" refer to EPA.

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## I. Background

### A. Navajo Generating Station

The Navajo Generating Station (NGS) is a coal-fired power plant located on the Navajo Nation Indian Reservation, just east of Page, Arizona, approximately 135 miles north of Flagstaff, Arizona. The three 750 MW units at NGS were constructed over 1974–1976. At a capacity of 2250 MW, NGS is the largest coal-fired power plant in the western United States.

NGS is located near many of our most treasured National Parks and Wilderness Areas. Congress mandated heightened protection for these areas in designating them as mandatory Class I Federal areas. Eleven Class I areas are located within 300 km of NGS: Arches National Park (NP), Bryce Canyon NP, Canyonlands NP, Capitol Reef NP, Grand Canyon NP, Mazatzal Wilderness Area (WA), Mesa Verde NP, Petrified Forest NP, Pine Mountain WA, Sycamore Canyon WA, and Zion NP. These areas support an active tourism industry drawing over 4 million visitors to the Grand Canyon National Park alone in 2011.<sup>1</sup> In addition to EPA's role implementing the Regional Haze program, the Federal Land Managers of these areas, the National Park Service and the U.S. Fish and Wildlife Service, under the Department of the Interior, and the U.S. Forest Service, under the Department of Agriculture, also play important roles in the protection of visibility in the mandatory Class I Federal areas.

NGS is co-owned by six entities: The U.S. Bureau of Reclamation (Reclamation)—24.3 percent, Salt River Project (SRP), which also acts as the

facility operator—21.7 percent, Los Angeles Department of Water and Power (LADWP)—21.2 percent, Arizona Public Service (APS)—14 percent, Nevada Power Company (NPC)—11.3 percent, and Tucson Electric Power (TEP)—7.5 percent. NGS uses hot-side electrostatic precipitators (hot-side ESPs) to control emissions of particulate matter (PM) and flue gas desulfurization units (FGDs) to control emissions of sulfur dioxide (SO<sub>2</sub>). Over the 2009–2011 period, the owners of NGS voluntarily installed modern low-NO<sub>x</sub> burners with separated over-fire air (LNB/SOFA) to reduce emissions of NO<sub>x</sub>.

### B. Significance of NGS and Federal Collaboration

Federal participation in NGS was authorized in the Colorado River Basin Project Act of 1968 as a preferred alternative to building hydroelectric dams in the Grand Canyon for providing power to the Central Arizona Project.<sup>2</sup> The Central Arizona Project (CAP) is a 336-mile water distribution system that delivers about 1.5 million acre-feet (AF) per year of Colorado River water from Lake Havasu in western Arizona to non-tribal agricultural water users in central Arizona, Indian tribes located in Arizona, and municipal water users in Maricopa, Pinal, and Pima counties.<sup>3</sup> This CAP water is used to meet the terms of a number of Indian water rights settlements in central Arizona and to reduce groundwater usage in the region.<sup>4</sup> Electricity from NGS powers the pumps that move CAP water to its destinations along the distribution system.

Several tribes located in Arizona have allocations of CAP water through water settlement agreements that have been approved through acts of Congress.<sup>5</sup> In exchange for allocations of CAP water at reduced cost and access to funds for the development of water infrastructure, these tribes have released their claims to other water in Arizona. Excess NGS power owned by Reclamation that is not used by CAP is sold and profits are deposited into a fund to support the

tribal water settlement agreements.<sup>6</sup> The Department of the Interior (through the Bureau of Reclamation) plays an important role in the implementation of these settlement agreements and the management of the funds set aside for water infrastructure development for tribes.

The coal used by NGS is supplied by the Kayenta Mine, operated by Peabody Energy and located on reservation lands of both the Navajo Nation and the Hopi Tribe. Taxes and royalties from NGS and the Kayenta Mine paid to the Navajo Nation and Hopi Tribe contribute significantly to the annual revenues for both governments.<sup>7</sup>

### C. Statutory and Regulatory Framework for Addressing Visibility

Part C, subpart II, of title I of the CAA as amended in 1977 establishes a visibility protection program that sets forth “as a national goal the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from manmade air pollution.” 42 U.S.C. 7491A(a)(1). The terms “impairment of visibility” and “visibility impairment” are defined in the Act to include a reduction in visual range and atmospheric discoloration. *Id.* 7491A(g)(6). A fundamental requirement of the visibility protection program was for EPA, in consultation with the Secretary of the Interior, to promulgate a list of “mandatory class I Federal areas” where visibility is an important value. *Id.* 7491A(a)(2). These areas include national wilderness areas and national parks greater than six thousand acres in size. *Id.* 7472(a).

On November 30, 1979, EPA identified 156 mandatory Class I Federal areas where visibility is an important value, including: Grand Canyon NP in Arizona (40 CFR 81.403); Mesa Verde NP in Colorado (*Id.* 81.406); and Arches, Bryce Canyon, Canyonlands, Capitol Reef, and Zion NP in Utah (*Id.* 81.430). These mandatory Class I Federal areas are among the 11 Class I areas within an approximately 300 km radius of NGS.

On December 2, 1980, EPA promulgated the first phase of the required visibility regulations addressing visibility impairment that is reasonably attributable to a single source or a small group of sources, codified at 40 CFR 51.300–307. 45 FR 80084. The 1980 regulations deferred regulating regional haze (i.e., widespread haze from a multitude of sources which impairs visibility in every direction over a large area), based

<sup>2</sup> See information on the Central Arizona Project at [http://www.usbr.gov/projects/Project.jsp?proj\\_Name=Central+Arizona+Project](http://www.usbr.gov/projects/Project.jsp?proj_Name=Central+Arizona+Project). See also report by the National Renewable Energy Lab (NREL), discussed in more detail in Section G.iii of this notice, titled “Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts”, revision dated March 2012 (NREL report) in the docket for this proposed rulemaking.

<sup>3</sup> See Section titled “Welcome” on CAP homepage: <http://www.cap-az.com/>

<sup>4</sup> See, for example, Section 4 of the NREL report and Comments from the Central Arizona Water Conservation District on the NREL report to DOI and EPA dated February 23, 2012[2], in the docket for this proposed rulemaking.

<sup>5</sup> See, for example, Section 6 of the NREL report.

<sup>6</sup> *Id.*

<sup>7</sup> *Id.*

<sup>1</sup> See document titled “Grand Canyon Annual Visitation.pdf” in the docket for this proposed rulemaking, available through <https://irma.nps.gov/Stats/>.

on a finding that the scientific data were inadequate at that time. Id. at 80086.

Congress added Section 169B to the Act in the 1990 CAA Amendments, requiring EPA to take further action to reduce visibility impairment in broad geographic regions. 42 U.S.C. 7492. In 1993, the National Academy of Sciences released a comprehensive study required by the 1990 Amendments concluding that “current scientific knowledge is adequate and control technologies are available for taking regulatory action to improve and protect visibility.”<sup>8</sup>

EPA promulgated regulations to address regional haze on April 22, 1999. 64 FR 35765. Consistent with the statutory requirement in 42 U.S.C. 7491(b)(2)(A), EPA’s 1999 regional haze regulations (RHR) include a provision that states must require certain major stationary sources “in existence on August 7, 1977, but which ha[ve] not been in operation for more than fifteen years as of such date” which emit pollutants that are reasonably anticipated to cause or contribute to any visibility impairment to procure, install and operate BART. In determining BART, states are required to take into account five factors identified in the CAA and EPA’s regulations. 42 U.S.C. 7491(g)(2) and 40 CFR 51.308. These five factors are the cost of controls, the energy and non-air quality impacts of controls, the existing controls at the source, the remaining useful life of the source, and the anticipated visibility benefits of controls. The CAA and RHR require BART to be installed and operated as expeditiously as practicable, but in no event later than five years from the date of the approved plan. 42 U.S.C. 7491(b)(2)(A), 42 U.S.C. 7491(g)(4), and 40 CFR 51.308(e)(1)(iv). EPA made revisions to the RHR after 1999 and those revisions together with the RHR are codified at 40 CFR Part 51, Subpart P and Appendix Y. The regulations allow EPA to promulgate an alternative to BART provided the alternative results in greater reasonable progress than will result from installation and operation of BART. 40 CFR 51.308(e)(2).

#### *D. Statutory and Regulatory Framework for Addressing Sources Located in Indian Country*

When the CAA was amended in 1990, Congress included a new provision, Section 301(d), granting EPA authority

to treat Indian tribes in the same manner as states where appropriate. See 40 U.S.C. 7601(d). Congress also recognized, however, that such treatment may not be appropriate for all purposes of the Act and that in some circumstances, it may be inappropriate to treat tribes identically to states. Therefore, Section 301(d)(2) of the Act directed EPA to promulgate regulations “specifying those provisions of [the CAA] for which it is appropriate to treat Indian tribes as states.” Id. 7601(d)(2). In addition, Congress provided that “[i]n any case in which [EPA] determines that the treatment of Indian tribes as identical to states is inappropriate or administratively infeasible, the Administrator may provide, by regulation, other means by which the Administrator will directly administer such provisions so as to achieve the appropriate purpose.” Id. 7601(d)(4).

In 1998, EPA promulgated regulations at 40 CFR Part 49 (which have been referred to as the Tribal Authority Rule or TAR) relating to implementation of CAA programs in Indian country. See 40 CFR Part 49; see also 59 FR 43956 (Aug. 25, 1994)(proposed rule); 63 FR 7254 (Feb. 12, 1998)(final rule); *Arizona Public Service Company v. EPA*, 211 F.3d 1280 (DC Cir. 2000), cert. den., 532 U.S. 970 (2001)(upholding the TAR). The TAR allows EPA to treat eligible Indian tribes in the same manner as states “with respect to all provisions of the [CAA] and implementing regulations, except for those provisions [listed] in § 49.4 and the [EPA] regulations that implement those provisions.” 40 CFR 49.3. EPA recognized that tribes may, but are not required to administer air programs under the CAA, were in the early stages of developing air planning programs known as Tribal Implementation Plans (TIPs) and would need additional time to develop air quality programs. 63 FR 7264–65. Thus, EPA determined that it was not appropriate to treat tribes in the same manner as states for purposes of those provisions of the CAA imposing air program submittal deadlines. See 59 FR 43964–65; 63 FR 7264–65. Similarly, EPA determined that it would be inappropriate to treat tribes in the same manner as states for purposes of the related CAA provisions establishing sanctions and federal oversight mechanisms where states fail to meet applicable air program submittal deadlines. Id. In particular, EPA found that it was inappropriate to treat tribes in the same manner as states for the purposes of Section 110(c)(1), which requires EPA to promulgate a FIP within

2 years after a state fails to make a required plan submission.

Although EPA determined that it was inappropriate to treat tribes in the same manner as states for the purposes of Section 110(c)(1), EPA also determined that under other provisions of the CAA, it has the discretionary authority to promulgate “such federal implementation plan provisions as are necessary or appropriate to protect air quality” when a Tribe has not submitted a TIP. 40 CFR 49.11. EPA determined in promulgating the TAR that it could exercise discretionary authority to promulgate FIPs based on Section 301(a) of the CAA, which authorizes EPA to prescribe such regulations as are necessary to carry out the Act, and Section 301(d)(4), which authorizes EPA to directly administer CAA provisions for which EPA has determined it is inappropriate or infeasible to treat tribes as identical to states so as to achieve the appropriate purpose. 40 CFR 49.11. See also 63 FR 7265. Specifically, 40 CFR 49.11(a) provides that EPA:

[s]hall promulgate without unreasonable delay such Federal implementation plan provisions as are necessary or appropriate to protect air quality, consistent with the provisions of sections 301(a) and 301(d)(4), if a tribe does not submit a tribal implementation plan or does not receive EPA approval of a submitted tribal implementation plan.

As described in detail below, EPA has previously promulgated FIPs to regulate air pollutants emitted from the two coal-fired electric generating facilities on the Navajo Nation, Four Corners Power Plant (FCPP) and NGS. In 1991, prior to the promulgation of the TAR, EPA revised an existing FIP that applied to Arizona to include a requirement for NGS to substantially reduce its SO<sub>2</sub> emissions by installing scrubbers, based on a finding that the SO<sub>2</sub> emissions were contributing to visibility impairment at the Grand Canyon National Park. 56 FR 50172 (October 3, 1991); see also *Central Arizona Water Conservation District v. United States Environmental Protection Agency*, 990 F.2d 1531 (9th Cir. 1993)(upholding EPA’s promulgation of the FIP). Then, in 1999, EPA proposed a FIP for NGS to fill the regulatory gap that existed because SIP rules issued by Arizona to regulate NGS were not applicable or enforceable on the Navajo Nation, and the Tribe had not sought approval of a TIP covering the plant. 64 FR 48731 (September 8, 1999). EPA did not finalize the 1999 proposal and proposed a new FIP for NGS on September 12, 2006. 71 FR 53631. EPA finalized the NGS FIP in 2010 generally making the emission limits from the Arizona SIP

<sup>8</sup> *Protecting Visibility in National Parks and Wilderness Areas*, Committee on Haze in National Parks and Wilderness Areas, National Research Council, National Academy Press (1993). Available through: [http://www.nap.edu/openbook.php?record\\_id=2097&page=R2](http://www.nap.edu/openbook.php?record_id=2097&page=R2)

rules for NGS federally enforceable, with one modification.<sup>9</sup> 75 FR 10174 (March 5, 2010). The 2010 NGS FIP was promulgated under the authority in the CAA and 40 CFR 49.11(a) that underlies our proposal today.

Because the Arizona SIP did not contain any NO<sub>x</sub> emission limits for NGS, the final 2010 FIP did not impose any limits on NO<sub>x</sub>. However, NGS is subject to the federal Acid Rain Program requirements under title IV of the Clean Air Act. NGS elected to comply early as a Phase I NO<sub>x</sub> facility subject to a NO<sub>x</sub> limit of 0.40 lb/MMBtu, per unit, on an annual basis. Over the 2009–2011 timeframe, the owners of NGS voluntarily installed new LNB/SOFA at NGS, with a NO<sub>x</sub> emission limit of 0.24 lb/MMBtu.

#### *E. Statutory and Regulatory Framework for BART Determinations*

When Congress enacted Section 169A of the CAA in 1977 to protect visibility, it directed EPA to promulgate regulations that would require applicable implementation plans to include a determination of BART for certain major stationary sources that are “reasonably anticipated to cause or contribute to any impairment of visibility in any [Class I area]”. 42 U.S.C. 7491(b)(2)(A) & (g). A source is BART-eligible if it is a fossil fuel-fired steam electric plant of more than 250 MMBtu/hr heat input or other listed industrial source that has the potential to emit 250 tons or more of any visibility-impairing pollutant and that came into operation between 1962 and 1977. *Id.* NGS meets these criteria and is a BART-eligible source.

A BART-eligible source with a predicted visibility impact of 0.5 deciviews (dv) or more in a Class I area “contributes” to visibility impairment and is subject to BART. See 70 FR at 39161 (July 6, 2005). NGS contributes to visibility impairment at 11 surrounding Class I areas in excess of this threshold, and is thus subject to BART.

In determining BART, states are required to take into account five factors identified in the CAA and EPA’s regulations. 42 U.S.C. 7491(g)(2) and 40 CFR 51.308. Those factors are: (1) The costs of compliance, (2) the energy and non-air quality environmental impacts of compliance, (3) any pollution control equipment in use or in existence 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. 40 CFR 51.308(e)(1)(ii)(A). EPA’s guidelines for evaluating BART are set forth in Appendix Y to 40 CFR Part 51, referred to as the BART Guidelines, and must be followed in making BART determinations for fossil fuel-fired electric generating plants larger than 750 MW.

#### *F. Relationship of Air Pollutants to Visibility Impairment*

Emissions of NO<sub>x</sub> contribute to the formation of particulate matter (PM), which, in turn, interacts with light to impair visibility. The fundamental science of haze formation and visibility impairment is described in greater detail in a comprehensive study by National Research Council.<sup>10</sup>

Briefly, the smallest particles in the 0.1 to 1 micron range interact with light most strongly as they are about the same size as the wavelengths of visible light. The effect of the interaction is to scatter light from its original path. Conversely, for a given line of sight, such as between a mountain scene and an observer, light from many different original paths is scattered into that line. The scattered light appears as whitish haze in the line of sight, obscuring the view.

Boiler stacks and material handling are sources of primary PM, or PM emitted directly into the atmosphere. Of primary PM emissions, those in the smaller particle size range, less than 2.5 microns, tend to have the largest impact on visibility. PM emissions from boiler stacks can have varying particle size makeup depending on the PM control technology. PM from material handling, however, tends to be coarse, i.e., around 10 microns, because it is created from the breakup of larger particles of coal, soil, and rock.

PM that is formed in the atmosphere from the photochemical transformation and condensation of gaseous chemical pollutants, also called secondary PM, tends to be fine, i.e., smaller than 1 micron, because it is formed from the buildup of individual molecules. This secondary PM tends to contribute more to visibility impairment than primary PM because it is in the size range that most effectively interacts with visible light. NO<sub>x</sub> and SO<sub>2</sub> emissions from coal-fired power plants are examples of gaseous chemical pollutants that react with other compounds in the atmosphere to form secondary PM.

NO<sub>x</sub> is a gaseous pollutant that can be oxidized to form nitric acid. In the atmosphere, nitric acid in the presence of ammonia forms particulate ammonium nitrate. The formation of particulate ammonium nitrate depends on temperature and relative humidity, and therefore varies by season. Particulate ammonium nitrate can grow into the size range that effectively interacts with light by coagulating together and by taking on additional pollutants and water.

#### *G. EPA’s Advanced Notice of Proposed Rulemaking*

On August 28, 2009, EPA published an Advanced Notice of Proposed Rulemaking (ANPRM) regarding EPA’s intention to implement the BART requirement of the RHR for the two subject-to-BART coal-fired power plants located on the Navajo Nation, the Four Corners Power Plant<sup>11</sup> and the Navajo Generating Station. 74 FR 44313. In that ANPRM, EPA put forth our analysis of the cost and anticipated visibility benefits comparing selective catalytic reduction (SCR) and modern combustion controls for both power plants and requested comment. The ANPRM marked the beginning of an ongoing process of consultation with tribes and discussions with other key stakeholders on the issue of NO<sub>x</sub> control at FCPP and NGS. EPA received over 6,000 comments on the ANPRM, most of which were identical electronic mail messages in support of requiring stringent air pollution controls at NGS. Comments from tribes located in Arizona, the owners of NGS, other stakeholders, and other federal agencies are discussed briefly below, and described in more detail in the TSD for this proposed rulemaking.

##### *i. Information from Tribes*

EPA received numerous comments on the ANPRM from tribes and tribal organizations, including the Navajo Nation, Hopi Tribe, Gila River Indian Community, Ak-Chin Indian Community, Tohono O’odham Nation, Pascua Yaqui Tribe, Fort McDowell Yavapai Nation, Yavapai-Apache Nation, and the Inter Tribal Council of Arizona. Comments from the Navajo Nation and Hopi Tribe focused on the significant contribution of coal-related royalties, taxes, and employment at NGS and the Kayenta Mine to the economies of the Navajo Nation and the Hopi Tribe. Comments from the Gila River Indian Community, the Tohono

<sup>9</sup> In the 2010 NGS FIP, EPA finalized federally enforceable emission limits for SO<sub>2</sub>, particulate matter (PM), and opacity, and control measures for dust for NGS. The 2010 FIP lowered the opacity limit from 40 percent to 20 percent and included requirements to control emissions associated with coal and ash handling and storage.

<sup>10</sup> *Protecting Visibility in National Parks and Wilderness Areas*, Committee on Haze in National Parks and Wilderness Areas, National Research Council, National Academy Press (1993).

<sup>11</sup> EPA has taken final action on our BART determination for the Four Corners Power Plant. See 77 FR 51620 dated August 24, 2012.

O'odham Nation, and other tribes located in Arizona focused on the importance of continued operation of NGS as a source of power to the Central Arizona Water Conservation District (CAWCD), the operating arm of CAP, in order for the federal government to meet obligations under existing water settlement agreements. The importance to tribes of continued operation of NGS and affordable water costs cannot be overemphasized. Detailed discussions of tribal interests in NGS, including studies submitted by the Hopi Tribe and the Gila River Indian Community, are provided in the TSD for this proposed rulemaking.

EPA has met with tribes on numerous occasions to discuss the significance of NGS to tribal economies and tribal water interests in Arizona.<sup>12</sup> Consultations with tribes included potential economic impacts associated with a BART determination for NGS, as well as potential impacts from EPA's Mercury and Air Toxics Standards (MATS) rulemaking.

In recognition of the unusual complexity of regulating NGS, representatives from EPA, including the Assistant Administrator and the Deputy Assistant Administrator for the Office of Air and Radiation and the Regional Administrator for Region 9, visited NGS and affected communities in the area. EPA officials have also met with additional stakeholders, at various locations, including EPA offices in San Francisco, California and Washington, DC, and offices of individual tribal governing councils and the Inter Tribal Council of Arizona.

#### ii. Information from NGS Owners

SRP, operator and part-owner of NGS, provided information to EPA outlining several uncertainties that significantly increase the financial risk of near-term investments in new air pollution controls, including uncertainties in plant ownership and lease agreements.<sup>13</sup>

One of the owners of NGS is the Los Angeles Department of Water and Power (LADWP), a public utility located in California. Under California law (Senate Bill 1368),<sup>14</sup> long-term investments in base load generation by California utilities must meet a carbon dioxide

emission performance standard based on a combined cycle natural gas-fired base load power plant. NGS and other traditional coal-fired power plants that operate without carbon capture and sequestration do not meet this standard. Therefore, LADWP will be prohibited from continued participation and long-term investments in NGS beyond its current contract term of 2019. As a result, LADWP has indicated its intention to sell its 21.2 percent ownership stake in NGS. The future owner of LADWP's share of NGS is currently uncertain.<sup>15</sup>

In addition, NGS's current site lease with the Navajo Nation, as well as several other agreements and contracts, expire in 2019. Table 1 lists several leases, agreements, and contracts that must be renewed to ensure continued operation of NGS into the future.<sup>16</sup> Although the owners of NGS are in negotiations with the Navajo Nation for a lease renewal to extend to 2044 and with Peabody Energy for a renewed coal supply contract, the outcomes of these negotiations are also not yet finalized.

TABLE 1—LEASES, AGREEMENTS, AND CONTRACT RENEWALS FOR NGS AND KAYENTA MINE

| Description  | Renewal year |
|--|--------------|
| Peabody Lease Renewal with Navajo Nation and Hopi Tribe .....              | 2017         |
| Coal Supply Contract between Peabody and NGS .....                         | 2019         |
| NGS Project Lease Renewal with Navajo Nation (Federal Rights of Way) ..... | 2019         |
| Water Intake/Water Line Renewal (Federal Rights of Way) .....              | 2019         |
| Railroad and Transmission Line Renewals (Federal Rights of Way) .....      | 2021         |
| Southern Transmission Line Easement (Federal Rights of Way) ....           | 2022         |

Because NGS is located in Indian country, lease and other rights-of-way agreement renewals must be approved by the Department of the Interior. These approvals, which are an unusual requirement for continued operation of a power plant, are federal actions that trigger review under the National Environmental Protection Act (NEPA).<sup>17</sup> For actions significantly affecting the environment, NEPA review requires the

development of an Environmental Impact Statement (EIS) and includes a substantial process for public involvement. The Department of the Interior estimates that NEPA review for approval of leases and other rights-of-way agreements may require approximately five years to complete.<sup>18</sup> Therefore, even if the Navajo Nation and the owners of NGS reach agreement on renewed leases and other rights-of-way shortly, the owners of NGS may not have a lease fully approved by the Department of the Interior until 2019 or later.

#### iii. Comments from Other Stakeholders

In addition to the identical electronic mail messages from private citizens, EPA received general comments, both in support of and in opposition to stringent air pollution controls at NGS, from numerous individuals, state and local agencies, industry, utility and water groups, environmental and community-based organizations, cities and municipalities in Arizona, U.S. and State Representatives, and the Governor and Treasurer of Arizona. All comments received on the ANPRM are available in the ANPRM docket.<sup>19</sup>

Several groups provided separate comment letters on the five-factor BART analysis discussed in the ANPRM, including the Arizona Department of Environmental Quality, the Utility Air Research Group, and a consortium of environmental and Navajo community organizations. The Colorado Department of Public Health and the Environment and the Attorney General of New Mexico submitted separate comments on potential co-benefits to mercury reduction resulting from certain NO<sub>x</sub> controls. Numerous groups and individuals, including elected officials in Arizona, stressed the importance of NGS to the Arizona economy and raised concerns that a stringent BART determination such as SCR might force closure of NGS or otherwise result in economic harm to cities, tribes, and agricultural water users in Arizona. Other commenters stressed the importance of reducing the plant's contribution to regional haze. EPA discusses comments, both in support of and in opposition to stringent controls at NGS, in more detail in the TSD for this proposed rulemaking.

<sup>18</sup> See email and attachment from Letty Belin, DOI to Janet McCabe, EPA, dated August 20, 2012, in the docket for this proposed rulemaking.

<sup>19</sup> See Docket #: EPA-R09-OAR-2009-0598 on [www.regulations.gov](http://www.regulations.gov).

<sup>12</sup> See document titled "Timeline of All Tribal Consultations on NGS.docx" in the docket for this proposed rulemaking.

<sup>13</sup> See March 12, 2012 letter from four owners of NGS to EPA regarding Pending BART Determination for Navajo Generating Station, in the docket for this proposed rulemaking.

<sup>14</sup> See information on SB 1368 Emission Performance Standards at [http://www.energy.ca.gov/emission\\_standards/](http://www.energy.ca.gov/emission_standards/)

<sup>15</sup> See, for example, 2012 Draft Integrated Resource Plan Executive Summary available at [https://www.ladwp.com/ladwp/faces/wcnav\\_externalId/a-p-doc?\\_adf.ctrl-state=a8ti68apu\\_29&\\_afLoop=234058941927000](https://www.ladwp.com/ladwp/faces/wcnav_externalId/a-p-doc?_adf.ctrl-state=a8ti68apu_29&_afLoop=234058941927000), or in the docket for this proposed rulemaking.

<sup>16</sup> Information in Table 1 is based on Table 1-3 on page 13 of the NREL report.

<sup>17</sup> Id.

iv. Involvement of Other Federal Agencies

Following the ANPRM, EPA received comments from other federal agencies that have authority to oversee interests and activities related to NGS. The Bureau of Reclamation, under the Department of the Interior, is a part-owner of NGS. However, Reclamation and four additional Interior agencies (National Park Service, Bureau of Indian Affairs, Office of Surface Mining, and U.S. Fish and Wildlife Service) also have regulatory authorities relating to NGS or the Kayenta coal mine that serves it. The U.S. Forest Service, an agency within the Department of Agriculture, has authority to protect visibility in the Class I areas in its jurisdiction. EPA has Clean Air Act authority to maintain air quality and improve visibility. The Department of Energy (DOE) Office of Energy Efficiency and Renewable Energy, Office of Indian Energy Policy and Programs, and National Laboratories have technical expertise and other resources related to clean energy development and production in Indian country.

In 2011, DOI entered into an interagency agreement with DOE to commission the National Renewable Energy Laboratory (NREL) to conduct a study with the goal of providing an objective assessment of issues related to the power sector that are important for understanding the potential impacts on power and water rates of BART options for NGS. Under phase 1 of an intended two-phase study, NREL conducted an analysis focusing on the potential effects from costs associated with NO<sub>x</sub> control options or NGS closure. NREL completed the first part of its study in January 2012 and provided public comments it received on the study to EPA in March 2012.<sup>20</sup> In June 2012, NREL completed a final chapter as part of its phase 1 study that provides a high-level examination of alternatives to NGS.<sup>21</sup>

Given the extent of federal and tribal interests in NGS, on January 4, 2013, EPA, DOI, and DOE signed a joint federal agency statement committing to collaborate on several short- and long-term goals, including analyzing and pursuing strategies for providing clean, affordable and reliable power, affordable and sustainable water, and sustainable economic development to key

stakeholders who currently depend on NGS.<sup>22</sup> The agencies will work together with stakeholders to identify and undertake actions that support implementation of BART, including seeking funding to cover expenses for pollution control or other necessary upgrades for the federal portion of NGS. The agencies will also work to jointly support a phase 2 report to analyze a full range of clean energy options for NGS over the next decades and work with stakeholders to develop a roadmap for achieving long-term, innovative clean energy solutions for NGS. This collaboration may span several years and EPA expects alternative strategies resulting from the collaboration may contribute to reductions in NO<sub>x</sub> emissions at NGS.

## II. EPA's Proposed Action

### A. A NO<sub>x</sub> BART Determination for NGS Is "Necessary or Appropriate"

The numerous Class I areas that surround NGS are sometimes known as the Golden Circle of National Parks.<sup>23</sup> Millions of tourists visit these areas, many visiting from other countries, to view the unique vistas of the Class I areas in this region.

As Congress recognized, visibility is an important value and must be protected in these areas. Currently, air quality and visibility are impaired in the Class I areas surrounding NGS. The National Park Service noted in 2008 that "[v]isibility is impaired to some degree at all units where it is being measured and remains considerably higher than the target natural conditions in many places, particularly on the hazy days."<sup>24</sup> Of the 11 mandatory Class I federal areas located within 300 km of NGS, eight national parks, including Grand Canyon, Canyonlands, and Capitol Reef, are among the areas monitored by the National Park Service.<sup>25</sup> NGS is one of many contributors to regional haze in these areas and Congress recognized that all sources that emit air pollutants that may

reasonably be anticipated to cause or contribute to visibility impairment would need to do their part to address the problem.

Because NGS is a subject-to-BART source that would undergo a BART determination if located on state land, and based on the importance of visibility in the Golden Circle of National Parks, EPA is proposing to find that a BART determination for NO<sub>x</sub> emissions from NGS is "necessary or appropriate" under the TAR. See 40 CFR 49.11.

Emissions of PM and SO<sub>2</sub> at NGS are controlled by hot-side electrostatic precipitators (HS-ESPs) and wet scrubbers, respectively. EPA finalized emission controls and limits for SO<sub>2</sub> and PM in our FIPs in 1991 and in 2010 (75 FR 10174). On February 16, 2012, EPA finalized the MATS rulemaking that set a lower emission limit for PM (77 FR 9304). The emission limits EPA established for SO<sub>2</sub> in 1991 were determined to achieve greater reasonable progress than would BART,<sup>26</sup> therefore the reasonable progress goals of CAA Section 169A(b)(2) for SO<sub>2</sub> at NGS are already satisfied. Because emissions of PM are well controlled at NGS through federally enforceable limits, EPA is not proposing that it is "necessary or appropriate" under the TAR to determine BART for PM emissions at NGS.

### B. Available and Feasible Control Technologies and Five Factor Analysis for NO<sub>x</sub> Emissions

Reducing NO<sub>x</sub> emissions from electric generating units generally involves: (1) Combustion controls to reduce the production of NO<sub>x</sub> from fuel-bound nitrogen and as a by-product of high temperature combustion reactions between atmospheric nitrogen (N<sub>2</sub>) and oxygen (O<sub>2</sub>) in the air; or (2) combustion controls in combination with post-combustion add-on controls to reduce the amount of NO<sub>x</sub> emitted in flue gas by converting NO<sub>x</sub> to diatomic nitrogen (N<sub>2</sub>) via a catalytic or non-catalytic process.

As discussed in detail in the TSD for this proposed rulemaking, SRP submitted to EPA a BART analysis in 2008 and several revisions thereafter. SRP identified the following control options as technically feasible at NGS for reducing NO<sub>x</sub> emissions: LNB/SOFA, flue gas recirculation (FGR), selective non-catalytic reduction (SNCR), and selective catalytic

<sup>20</sup> See "March 2012 Revision to NREL Report.pdf" and "Comments on NREL Report.pdf" in the docket for this proposed rulemaking.

<sup>21</sup> See June 2012 report by NREL titled "Navajo Generating Station and Clean-Energy Alternatives: Options for Renewables" in the docket for this proposed rulemaking.

<sup>22</sup> See *Joint Federal Agency Statement Regarding Navajo Generating Station*, dated January 4, 2013, in the docket for this proposed rulemaking.

<sup>23</sup> See *Navajo National Monument: A Place and its People, An Administrative History*, Hal K. Rothman, 1991, National Park Service, Chapter IV: "Land-Bound," 1938–1962, available at: [http://www.nps.gov/history/history/online\\_books/navajo/adhi/adhi4e.htm](http://www.nps.gov/history/history/online_books/navajo/adhi/adhi4e.htm).

<sup>24</sup> *Air Quality in National Parks*, 2008 Annual Performance & Progress Report, National Resource Report NPS/NRPP/ARD/NRR—2009/151, September 2009, p. 30, in the docket for this proposed rulemaking.

<sup>25</sup> Id. Appendix B. Note that the other three mandatory Class I Federal areas located within 300 km of NGS are Wilderness Areas that are managed by the U.S. Forest Service.

<sup>26</sup> See 56 FR 50172 (October 3, 1991) and 75 FR 10174 (March 5, 2010).

reduction (SCR).<sup>27</sup> The option that achieves the largest reduction in NO<sub>x</sub> emissions is a combination of combustion controls and post-combustion add-on controls, i.e., LNB/SOFA in combination with SCR. Although SRP identified FGR as technically feasible, it did not conduct additional analysis on FGR, based on its determination that FGR is less effective than LNB/SOFA.

For the control of NO<sub>x</sub> emissions, EPA has determined that the technologies identified by SRP are the main technically feasible NO<sub>x</sub> control technologies. For the most stringent control option (LNB/SOFA in combination with SCR), SRP determined that a 2+2 catalyst system (four-catalyst layer design with initial deployment of two catalyst layers) could achieve an emission rate of approximately 0.05 lb/MMBtu under ideal operating conditions in order to ensure compliance with an emission limit of 0.07–0.08 lb/MMBtu on a 30-day rolling average. SRP suggested that the 60 percent compliance margin between its intended design target (0.05 lb/MMBtu) and its suggested NO<sub>x</sub> emission limit (0.08 lb/MMBtu) is needed to allow for normal operating fluctuations associated with minor equipment upsets, fuel characteristics impacting NO<sub>x</sub> production, and SCR process delays due to load changes.

As discussed in more detail in the TSD for this proposed rulemaking, for several reasons, including information from a catalyst vendor that an SCR system at NGS using three layers of catalyst can meet a limit of 0.08 lb/

MMBtu and four layers of catalyst can meet a limit of 0.05 lb/MMBtu, EPA is proposing to determine that Units 1–3 can meet an emission limit of 0.055 lb/MMBtu using four layers of catalyst. EPA expects this proposed emission limit of 0.055 lb/MMBtu to provide an adequate compliance margin for normal fluctuations because compliance will be measured on a plant wide rolling average basis of 30 boiler operating days. EPA understands that Units 1–3 at NGS currently operate on a 3-year outage cycle and that if SCR is installed, catalyst replacement would be timed to coincide with outage cycles to reduce costs. EPA is specifically requesting comment on whether NGS can maintain its current 3-year outage cycle with four layers of catalyst to meet a limit of 0.055 lb/MMBtu and on the adequacy of the margin of compliance provided by the limit.

#### i. Factor 1: Cost of Compliance

The cost of compliance is expressed as the total capital cost of controls, the total annual cost of controls (i.e., annual operating costs plus amortized capital costs), and the cost effectiveness of controls. Cost effectiveness is expressed in cost per ton of pollutant reduced (\$/ton), and is calculated by dividing the total annual cost by the total amount of pollutant reduced per year. 40 CFR Part 51, Appendix Y, IV.D.4.c.

For this proposed rulemaking, EPA evaluated the total capital and total annual cost estimates SRP submitted to EPA for SCR (excluding additional costs for LNB/SOFA) in 2010 against the EPA Control Cost Manual.<sup>28</sup> EPA has

generally accepted the total capital and total annual cost estimates submitted by SRP, except that we have used an interest rate that is consistent with EPA cost analyses and eliminated three line item costs that are not included in the EPA Control Cost Manual. The costs presented in Table 2 for SCR+LNB/SOFA with four layers of catalyst represent EPA's estimate for SCR+LNB/SOFA at 0.055 lb/MMBtu. The TSD for this proposed rulemaking describes our analysis and rationale to support our revised cost analysis for SCR at NGS, as well as our cost analyses for SCR with 3 layers of catalyst at a level of 0.08 lb/MMBtu.

In January 2012, SRP provided updated cost estimates for SNCR and LNB/SOFA.<sup>29</sup> EPA did not make any revisions to these estimates. Although SRP's 2010 cost estimate for SCR and their 2012 cost estimate for SNCR excluded the costs of LNB/SOFA, the values shown in Table 2 are for SCR+LNB/SOFA and SNCR+LNB/SOFA. Between 2008 and 2012, SRP has suggested different emission rates achievable with SNCR, ranging from 0.15 lb/MMBtu to 0.20 lb/MMBtu. EPA evaluated SNCR+LNB/SOFA at a level of 0.18 lb/MMBtu, and LNB/SOFA at a level of 0.24 lb/MMBtu. Our evaluation of SNCR+LNB/SOFA at 0.18 lb/MMBtu is generally consistent with levels achieved at NGS during a SNCR demonstration test (0.16–0.17 lb/MMBtu), but lower than the emission limit of 0.20 lb/MMBtu SRP suggested as providing an adequate margin of compliance.<sup>30</sup>

TABLE 2—TOTAL CAPITAL AND TOTAL ANNUAL COSTS OF NO<sub>x</sub> CONTROLS ON UNITS 1–3 AT NGS

|  | LNB/SOFA* | SNCR+ LNB/<br>SOFA | SCR+ LNB/<br>SOFA (EPA<br>estimate) | SCR+ LNB/<br>SOFA (SRP<br>estimate) |
|--|-----------|--------------------|-------------------------------------|-------------------------------------|
| Total Capital Cost (\$ millions) .....                         | \$45      | \$84               | \$541                               | \$589                               |
| Total Annual Costs .....                                       | \$5       | \$29               | \$64                                | \$80                                |
| Annual NO <sub>x</sub> Reductions Estimated by EPA (tpy) ..... | 10,865    | 16,608             | 28,573                              | 26,180                              |

\* Costs for LNB/SOFA are actual costs expended over 2009–2011.

Average cost effectiveness and incremental cost effectiveness of SCR+LNB/SOFA, SNCR+LNB/SOFA, and LNB/SOFA are presented in Table 3. The SRP average and incremental cost effectiveness numbers reported in Table

3 come from SRP and are generally based on the assumption that SCR+LNB/SOFA would achieve an emission limit of 0.08 lb/MMBtu.<sup>31</sup> The EPA cost effectiveness values in Table 3 for SCR+LNB/SOFA are based on a NO<sub>x</sub>

emission limit of 0.055 lb/MMBtu and the EPA estimates for total annual cost

<sup>27</sup> BART Analysis for the Navajo Generating Station Units 1–3, Prepared for Salt River Project—Navajo Generating Station by ENSRAECOM, Document Number 05830–012–300, dated November 2007.

<sup>28</sup> See Salt River Project—Navajo Generating Station Units 1, 2, 3 SCR and Baghouse Capital Cost Estimate Report, Prepared by Sargent and Lundy,

Project Number 12656–001, August 17, 2010, in the docket for this proposed rulemaking.

<sup>29</sup> See Updated Best Available Retrofit Technology Analysis, Navajo Generating Station, from Kelly J. Barr, SRP to Deborah Jordan, EPA dated January 20, 2012, in the docket for this proposed rulemaking.

<sup>30</sup> See letter from Kelly J. Barr, SRP to Deborah Jordan, EPA dated July 20, 2012, in the docket for this proposed rulemaking.

<sup>31</sup> See Updated Best Available Retrofit Technology Analysis, Navajo Generating Station, from Kelly J. Barr, SRP to Deborah Jordan, EPA, dated January 20, 2012, in the docket for this proposed rulemaking.



in Table 2. EPA did not revise SRP cost estimates for LNB/SOFA or SNCR.<sup>32</sup>

**TABLE 3—AVERAGE AND INCREMENTAL COST EFFECTIVENESS FOR NO<sub>x</sub> CONTROLS ON UNITS 1–3 AT NGS CALCULATED BY EPA AND SRP**

|   | LNB/SOFA                     | SNCR+LNB/SOFA (\$/ton)           | SCR+LNB/SOFA (\$/ton)       |
|---|------------------------------|----------------------------------|-----------------------------|
| <b>Average Cost Effectiveness (Average for Units 1–3)</b>     |                              |                                  |                             |
| EPA .....   | \$486 per ton .....          | \$1,745 per ton .....            | \$2,240 per ton.            |
| SRP .....   | \$519 per ton .....          | \$1,481 per ton .....            | \$2,926 per ton.            |
| <b>Incremental Cost Effectiveness (Average for Units 1–3)</b> |                              |                                  |                             |
|   | SNCR+LNB/SOFA (vs. LNB/SOFA) | SCR+LNB/SOFA (vs. SNCR+LNB/SOFA) | SCR+LNB/SOFA (vs. LNB/SOFA) |
| EPA .....   | \$4,110 per ton .....        | \$2,933 per ton .....            | \$3,315 per ton.            |
| SRP .....   | \$3,135 per ton .....        | \$5,282 per ton .....            | Not calculated.             |

The average cost effectiveness of SCR+LNB/SOFA estimated by EPA is not substantially higher than the average cost effectiveness of SNCR+LNB/SOFA, and the incremental cost effectiveness of SCR+LNB/SOFA is lower than SNCR+LNB/SOFA (see Table 3).

The cost effectiveness values calculated by both EPA and SRP for SCR+LNB/SOFA are lower than or within the range of other BART evaluations that required SCR. For example, BART analyses for other electric generating facilities requiring SCR had a range of costs: Four Corners Power Plant (on the Navajo Nation) Units 1–5: \$2,500–\$3,200 per ton of NO<sub>x</sub> removed;<sup>33</sup> PacifiCorp Naughton Plant Unit 3 (Wyoming): \$2,830 per ton of NO<sub>x</sub> removed;<sup>34</sup> and Hayden Station (in Colorado) Units 1 and 2: \$3,400–\$4,100 per ton of NO<sub>x</sub> removed.<sup>35</sup>

Based on EPA's cost estimates and our analysis of average and incremental cost effectiveness, EPA has determined that SCR is cost effective at NGS.<sup>36</sup>

#### ii. Factor 2: Energy and Non-Air Quality Impacts

The BART Guidelines describe the second factor, the energy and non-air quality environmental impacts of compliance, as an examination of whether the use of the control technology would result in direct energy penalties or benefits, and whether there are environmental impacts other than air quality due to emissions of the pollutant in question or due to the control technology. The BART

Guidelines also state that under the energy impacts analysis, the reviewing authority may consider “whether a given alternative would result in significant economic disruption or unemployment.” 70 FR 39169. In selecting a “best” alternative, the BART Guidelines further state that “there may be unusual circumstances that justify taking into consideration the conditions of the plant and the economic effects of requiring the use of a given control technology.” 70 FR 39171. Thus, although neither the CAA nor the RHR require states or EPA to consider the affordability of controls or ratepayer impacts as part of a BART analysis, the BART guidelines allow (but do not require) consideration of “affordability” in the BART analysis.

EPA is exercising its discretion to include in this second factor an analysis to examine the viability of NGS's continued operation if new NO<sub>x</sub> controls are required. This analysis compares electricity generation costs after installing new NO<sub>x</sub> controls at NGS against the cost to purchase an equivalent amount of power on the wholesale market. Because stakeholders have expressed concern that installation of new controls at NGS may cause the facility to close, the purpose of this analysis is to assess whether it would be more economical for the owners of NGS to install controls and continue operation, or to retire the facility and purchase power in order to meet their obligations to supply electricity to their customers. EPA has also included an

analysis to estimate potential indirect impacts to ratepayers who use electricity supplied by SRP or water supplied by CAP. A complete discussion of other energy and non-air quality impacts is provided in the TSD for this proposed rulemaking.

As discussed previously, NGS is unique because it was constructed and is owned in part by the federal government to provide electricity to distribute water to tribes located in Arizona and a diverse group of other water users. NGS is also located on the Navajo Nation and the Kayenta Mine that supplies its coal is located on the reservation lands of both the Navajo Nation and the Hopi Tribe.

The Navajo Nation and the Hopi Tribe have expressed concern that requiring additional controls at NGS could result in lost employment, taxes, and royalties to their tribal governments if the owners of NGS chose to retire units or curtail operations rather than install new air pollution controls.

#### a. Affordability Analysis

As mentioned above, EPA conducted an analysis to estimate electricity generation costs if SCR or SNCR were installed at NGS within 5 years of a final rulemaking (i.e., by 2018 if this rule is finalized in 2013)<sup>37</sup> compared to costs to purchase an equivalent amount of power on the wholesale market. This analysis assumes that the owners of NGS would choose the least costly option for providing power to their

<sup>32</sup> See TSD for this proposed rulemaking for a discussion of small differences in cost effectiveness values for LNB/SOFA and SNCR+LNB/SOFA calculated by EPA and SRP, and shown in Table 3.

<sup>33</sup> 77 FR 51619 (August 24, 2012).

<sup>34</sup> 77 FR 33021 (June 4, 2012).

<sup>35</sup> See Colorado Department of Public Health BART Determination for Public Service Company—

Hayden Station, available at <http://www.colorado.gov/cs/Satellite/CDPHE-AP/CBON/1251595092457>, and in the docket for this proposed rulemaking.

<sup>36</sup> EPA's Cost Control Manual does not include indirect or ancillary costs such as water rates in the evaluation of cost-effectiveness under factor 1. EPA is considering those costs under factor 2.

<sup>37</sup> Given the time that will likely be required for full public discussion of this proposal, consideration of the information submitted during the public comment, and the possibility of a supplemental proposal following comments we receive on Alternatives 2 and 3, it is possible that this rule may not be finalized until 2014, in which case the timeframe for compliance would also shift, from 2018 to 2019.



customers. The results of this analysis are summarized briefly here.

Our analysis is based on a 25-year discounted cash flow model that calculates the net present value (NPV) of the total revenue required to generate electricity at NGS over 2012–2036 for several different operating scenarios. The model assumes a 20-year

amortization period for scenarios involving installation of new air pollution controls and uses a 25-year discounted cash flow to account for the approximate 5-year period between the present day and the installation of new controls. The scenarios include: The current Business As Usual (BAU) scenario that accounts for installation in

2009–2011 of LNB/SOFA, the installation of SNCR on all units at NGS by 2018, the installation of SCR on all units by 2018, and the scenario of purchasing energy on the wholesale market beginning in 2018 and thereafter.<sup>38</sup> The results are shown in Table 4.

**TABLE 4—NET PRESENT VALUE (NPV) OF TOTAL REVENUE REQUIRED TO GENERATE ELECTRICITY OVER 2012–2036 WITH NO<sub>x</sub> CONTROLS COMPARED TO EQUIVALENT WHOLESALE MARKET POWER PURCHASES**

|  | Business as usual (BAU) (LNB/SOFA) | Increase from BAU if SNCR | Increase from BAU if SCR | Increase from BAU if power purchased on market |       |         |
|--|------------------------------------|---------------------------|--------------------------|--|-------|---------|
|  |                                    |                           |                          | Low  | Mid   | High    |
| NPV (\$ millions) .....                | \$7,766                            | \$278                     | \$648                    | \$673  | \$951 | \$1,040 |
| Percent Increase compared to BAU ..... | n/a                                | 4%                        | 8.3%                     | 8.7%   | 12.2% | 13.4%   |

We estimate that the retrofit of all three units at NGS with SCR would result in an incremental increase in the NPV of the revenue required to generate electricity at NGS of \$648 million over the business as usual (BAU) case, which is lower than the increase over BAU of the cost to purchase the equivalent amount of electricity on the wholesale

market considering the low, mid, and high market trends (\$673—\$1,040 million). These results shows that although SCR would increase the cost of electricity generation by 16 percent in 2018 (see Table 5), on a 25-year NPV basis, installation and operation of SCR remains less than the total cost to purchase electricity on the wholesale

market from elsewhere in the West. The analysis conducted by NREL shows similar results that also indicate that installation of SCR at NGS by 2018 would likely cost less than replacing it with power purchased from elsewhere in the West.<sup>39</sup>

**TABLE 5—INCREASE IN ELECTRICITY GENERATION COSTS IN 2018 IF SCR INSTALLED AT NGS**

|   | Business as usual electricity generation cost | Electricity generation cost with SCR | Percent increase compared to BAU |
|---|---|--------------------------------------|----------------------------------|
| Bureau of Reclamation .....               | 3.27 cents/kWh .....                          | 3.73 cents/kWh .....                 | 14                               |
| Publicly-Owned Utilities (SRP, LADWP) ..  | 3.49 cents/kWh .....                          | 3.97 cents/kWh .....                 | 14                               |
| Investor-Owned Utilities (APS, TEP, NPC). | 3.88 cents/kWh .....                          | 4.61 cents/kWh .....                 | 19                               |
| Average Total Plant .....                 | 3.56 cents/kWh .....                          | 4.13 cents/kWh .....                 | 16                               |

Table 5 shows that the increase in electricity generation cost for the owners of NGS, ranging from a 14 percent increase for Reclamation and the publicly-owned utilities to an estimated 19 percent increase for the investor-owned utilities, would differ based on how each owner recovers capital investments. In other words, the increase in electricity generation costs for investor-owned utilities is higher because the capital recovery includes a rate of return for investors.

#### b. Electricity and Water Rate Analysis

In order to determine how the projected increase in electricity generation cost would affect retail customers, EPA also estimated the potential increase in retail electricity rates for SRP customers, and the potential increase in CAP water rates.<sup>40</sup>

As discussed previously, Reclamation owns 24.3 percent of NGS for the benefit of the CAP. Power from NGS is used by CAP to pump surface water from the Colorado River to much of Arizona. Construction of CAP was authorized by Congress in 1968 under the Colorado

River Basin Project Act to deliver Arizona's surface water entitlement of the Colorado River to the state.

Under the Colorado River Basin Project Act, any electricity owned by Reclamation based on its percentage ownership of NGS that is not used by CAP (excess power) is sold. The Colorado River Basin Project Act requires profits from Reclamation's excess power sales to be deposited in the Lower Colorado River Basin Development Fund (Development Fund). The Development Fund was originally authorized under the

<sup>38</sup> The results reported here assume that LADWP's share of NGS is purchased by another publicly-owned utility. Results from other scenarios (e.g., if LADWP's share is purchased by an investor-owned utility) are discussed in the TSD for this proposed rulemaking.

<sup>39</sup> NREL further concludes that even with electricity generation rate increases resulting from

SCR, NGS would still be one of the lowest cost generators in the Desert Southwest.

<sup>40</sup> The NREL analysis commissioned by DOI, as well as separate studies commissioned by other stakeholders, conducted similar rate analyses. Two studies by Harvey Economics, one commissioned by SRP and the other commissioned by the Gila River Indian Community examined potential impacts to electricity rates and Tribal and non-

Tribal CAP water users in Arizona. A third study by Arizona State University commissioned by SRP examined the contribution of NGS and the Kayenta Mine to the broader regional and Arizona economy. Although EPA has included these studies in the docket for our proposed rulemaking, EPA is not providing a critical review or assessment of the methodologies of those studies.

Colorado River Basin Project Act to repay construction costs of CAP to the federal government. Subsequent settlement acts with several tribes, however, have authorized use of the Development Fund to pay the delivery portion of the cost of CAP water (also called fixed operation, maintenance and replacement costs, or OM&R costs)<sup>41</sup> for certain Indian tribes, and to pay the costs to construct the delivery systems to bring CAP water to certain Indian tribes.

CAP's 336-mile water delivery system was completed in 1993 and delivers 1.5 million AF of water annually to Maricopa, Pima, and Pinal Counties through a series of canals and pumping stations. The CAP water delivery system is required to pump water up an elevation of 3,000 feet from Lake Havasu to the city of Tucson. The Central Arizona Water Conservation District (CAWCD) is the operating entity for CAP. According to CAWCD, CAP water

currently meets over 20 percent of Arizona's total water demands, and within CAP's service area, which encompasses about 80 percent of Arizona's water users and taxpayers, CAP water meets about 50 percent of the municipal demands. Approximately 40 percent of CAP's water delivery supply is dedicated to Native American use.

Our analysis indicates that, although SRP's cost to generate electricity would increase by 16 percent if SCR were installed (Table 5), the maximum increase for SRP's retail customers is estimated to be 0.06 cents per kWh, an increase of 0.66 percent (Table 6). For customers of the utilities that have a portfolio of power generating sources, e.g., all NGS owners except Reclamation,<sup>42</sup> the increased electricity generation cost at NGS from installation of SCR would flow into a broader consumer retail rate calculation based on the entire portfolio of the utility's electricity generation assets and

purchase power contracts, which typically include coal (including other coal plants in addition to NGS), natural gas, nuclear, and some renewable energy. Therefore, the increase in retail rates paid by SRP customers is not expected to be proportional, on a percentage basis, to SRP's increase in electricity generation costs at NGS.

In contrast, Reclamation's share of power produced by NGS is used by CAP or sold for the benefit of the Development Fund. CAP relies on NGS for over 90 percent of its power needs. The estimated 14 percent increase in the electricity generation cost for Reclamation (Table 5), would translate into a 14 percent increase in the portion of the CAWCD water rate associated with the electrical cost of pumping water (energy costs, or variable OM&R), as shown in Table 6, because NGS is CAP's main source of power.

TABLE 6—PROJECTED ELECTRICITY AND WATER RATES IN 2018 IF NO<sub>x</sub> CONTROLS ARE INSTALLED AT NGS

|  | BAU<br>(LNB/SOFA) | SNCR              |                  | SCR               |                  |
|--|-------------------|-------------------|------------------|-------------------|------------------|
|  |                   | Rate increase     | Percent increase | Rate increase     | Percent increase |
| Electricity Rate to SRP Customers .....                      | 9.26 cents/kWh .. | 0.02 cents/kWh .. | 0.2              | 0.06 cents/kWh .. | 0.66             |
| CAWCD Water Rate paid by M&I Users .....                     | \$141/AF .....    | \$2.99/AF .....   | 2.1              | \$8.40/AF .....   | 6.0              |
| (fixed + variable OM&R) .....                                |                   |                   |                  |                   |                  |
| CAWCD Water Rate paid by Tribal and Agricultural Users ..... | \$58/AF .....     | \$2.99/AF .....   | 5.2              | \$8.40/AF .....   | 14               |
| (variable OM&R) .....  |                   |                   |                  |                   |                  |

Municipal and industrial (M&I) users of CAP water pay not only energy costs (variable OM&R) but also delivery costs (fixed OM&R) of water. Total water rates in 2018 for M&I users are projected by CAWCD to be \$141 per AF; therefore, a rate increase from SCR of \$8.40 per AF represents a 6 percent increase in CAP water rates.<sup>43</sup> However, the actual increase to total water costs would depend on the user's individual degree of reliance on CAP water. For example, the city of Phoenix relies on CAP for 45 percent of its water supply. Therefore, a 6 percent increase in CAP water rates would effectively result in a 4 percent overall water cost increase to customers in Phoenix because CAP water represents only a portion of its water.

In contrast to M&I users, as part of the Arizona Water Settlements Act of 2004, agricultural water users and tribes pay only the energy costs of CAP water;

therefore, the same \$8.40 per AF increase in water rates represents a 14 percent increase. EPA is aware of 13 tribes located in Arizona that currently have CAP water allocations through settlement agreements or use CAP water under contract (see Table 7 and the TSD for this proposed rulemaking for additional information and references). EPA does not have information regarding the degree of reliance on CAP water for tribes or agricultural water users. However, agricultural or tribal customers that have non-CAP sources of water will experience a smaller percentage increase in total water costs than users that rely entirely on CAP water (e.g., see Phoenix example discussed above).

TABLE 7—TRIBES WITH CAP ALLOCATIONS OR CAP CONTRACTS

| Tribes  | CAP Allocation or contract volume (acre feet per year) |
|---|--|
| Gila River Indian Community ...                 | 311,800  |
| Ak-Chin Indian Community .....                  | 85,000   |
| Tohono O'odham Nation .....                     | 74,000   |
| San Carlos Apache Tribe .....                   | 60,665   |
| White Mountain Apache Indian Tribe .....        | 23,782   |
| Fort McDowell Yavapai Nation                    | 18,233   |
| Salt River Pima-Maricopa Indian Community ..... | 13,300   |
| Navajo Nation .....                             | 6,411  |
| Yavapai-Apache Nation (Camp Verde) .....        | 1,200  |
| Hopi Tribe .....                                | 1,000  |
| Pascua Yaqui Tribe .....                        | 500  |
| Yavapai-Prescott Tribe .....                    | 500  |
| Tonto Apache Nation .....                       | 128  |

<sup>41</sup> CAWCD calls the delivery portion of water costs the "fixed OM&R" costs and the energy portion of water costs (the portion associated with NGS power costs) the "variable OM&R" costs.

<sup>42</sup> Although the Bureau of Reclamation has constructed dams that generate hydroelectric power, EPA understands that CAP's main source of

power comes from Reclamation's ownership share in NGS.

<sup>43</sup> For comparison, two Navajo non-governmental organizations, the To Nizhoni Ani and Black Mesa Water Coalition, provided information on their water costs to EPA in the docket for this proposed rulemaking. This information stated that members

of the Navajo Nation, who do not get water from CAP, pay much higher costs for water than CAP customers, ranging from one to four cents per gallon (equivalent to over \$3,000 to over \$13,000 per acre foot of water).

In its analysis, NREL estimated a low and high range of potential water rate increases based on SCR installation and operation cost estimates from the National Park Service and from SRP (see

Table 8). NREL's estimates of increased water rates from the installation and operation of SCR are consistent with our estimates. Separate analyses for the Gila River Indian Community and SRP by

Harvey Economics estimated pumping cost increases that are slightly lower than NREL and EPA estimates.

TABLE 8—COMPARISON OF PROJECTED WATER RATE INCREASES FROM SCR INSTALLATION ESTIMATED BY EPA AND OTHER STUDIES

|   | NREL High       | EPA             | NREL Low        | Harvey         |
|---|-----------------|-----------------|-----------------|----------------|
| CAP Water Rate Increase .....                   | \$8.58/AF ..... | \$8.40/AF ..... | \$7.10/AF ..... | \$6.60/AF      |
| Increase to M&I Users .....                     | 7% .....        | 6% .....        | 6% .....        | Not calculated |
| Increase to Tribes and Agricultural Users ..... | 16% .....       | 14% .....       | 13% .....       | 11%            |

#### c. Summary of EPA's Affordability and Rate Impacts Analyses

Based on our analyses, the 25-year NPV of costs to produce power at NGS with SCR installed and operated on all units should be below the market prices of wholesale power.

However, as discussed previously in section I.G.ii, EPA understands that the timing of regulatory compliance is an important consideration given potential ownership changes and that the current term of NGS's lease with the Navajo Nation, as well as other leases and rights-of-way agreements, extend only to 2019. Based on public statements made by stakeholders, and as indicated in the March 2012 NREL report, the owners of NGS intend to pursue a renewed lease agreement with the Navajo Nation that extends to 2044. However, until a renewed lease that supports continued long-term operation of NGS is negotiated and approved by DOI, significant capital investment needed to modernize NGS with new air pollution controls may be viewed unfavorably without additional certainty that the costs can be recovered over a reasonable amortization period.

Our analysis also shows that increased electricity rates to customers of the utilities that own NGS should be relatively low. However, because of CAP's nearly complete reliance on NGS for power, we estimate that CAP water rates would increase by \$8.40 per AF, representing a 6 percent increase in rates to M&I users and a 14 percent increase to tribes and agricultural water users.

EPA understands that a potential increase in water rates to tribes is a critical issue for them. We note that, as described in the following section, past pollution control investments at this facility have made use of alternative financing methods that limited impacts on CAP water rates. Furthermore, the NREL report indicated that mechanisms may exist to help avoid or mitigate the estimated level of impact. EPA, in

conjunction with DOI and DOE, have committed to work together on several short- and long-term goals, including innovative clean energy options for electricity generation and seeking funding to cover expenses for the federal portion of pollution control at NGS. However, it is not clear at this time whether or what type of mechanisms might be available to lessen increased costs. Therefore, as explained further below, EPA believes that the potential economic impacts discussed in this section argue for thoughtful consideration of how flexibility in the compliance timeframe can be provided consistent with the air quality goals of the Clean Air Act.

EPA seeks comment on opportunities to reduce and/or avoid significant impacts on tribes while ensuring visibility protection for the 11 affected Class I areas.

#### iii. Factor 3: Existing Controls at the Facility

As stated previously, NGS currently uses hot-side ESPs to control PM. To reduce emissions of SO<sub>2</sub>, SRP installed wet limestone FGDs over the period 1997–1999 on each unit, as required under a FIP issued by EPA on October 3, 1991 (56 FR 50172, codified at 40 CFR 49.5513(d)(1)), to remedy visibility impairment at the Grand Canyon National Park that was reasonably attributable to NGS. The total cost of the FGD units was \$420 million. Reclamation's 24.3 percent share of the FGD units was funded through CAP construction appropriations and CAWCD is repaying these costs to the federal government as part of total CAP project costs over a 50-year period. The 1991 FIP set an emission limit for SO<sub>2</sub> of 0.10 lb/MMBtu on a plant-wide rolling annual average basis. On March 5, 2010 (75 FR 10174), EPA issued a gap-filling FIP for NGS to federalize emission limits for PM of 0.06 lb/MMBtu on a plant-wide 3-hour average basis, an opacity limit of 20 percent, and a 3-hour average SO<sub>2</sub> limit of 1 lb/

MMBtu. The SO<sub>2</sub> emission limit in the final 2010 FIP ensures that actual SO<sub>2</sub> emissions from NGS will remain 90 percent lower on an annual basis than they were before the scrubbers were installed to comply with the 1991 visibility FIP. Additionally, EPA's final MATS rule set a filterable PM limit of 0.03 lb/MMBtu. This limit applies to Units 1–3 at NGS.

Prior to 2009, NGS used close-coupled over fire air (CCOFA) to control NO<sub>x</sub> emissions. In April 2009, SRP submitted a Prevention of Significant Deterioration (PSD) permit application to EPA Region 9 to voluntarily install and operate advanced combustion controls (LNB/SOFA) on Units 1–3. The LNB/SOFA triggered PSD review for significant increases in emissions of carbon monoxide (CO). Reclamation's share of the LNB/SOFA installation was funded from the Development Fund. These costs were then reimbursed by SRP on an amortized basis and the remaining balance was reimbursed by CAWCD.<sup>44</sup> Because SRP submitted its permit application for the LNB/SOFA modification after EPA had begun its BART analysis for NGS, in the Ambient Air Quality Impact Report (AAQIR)<sup>45</sup> for the proposed PSD permit (AZ 08–01) EPA stated that:

The early installation of the LNB/SOFA systems will not affect the baselines for cost or visibility improvements in the BART determination, and therefore will not influence EPA's determination of the proper NO<sub>x</sub> reductions required to be achieved from BART.

Additionally, in an agreement<sup>46</sup> regarding the EPA proposed PSD permit AZ 08–01, signed November 19, 2008, by Bill Heddon, Executive Director of Grand Canyon Trust (GCT) and Richard

<sup>44</sup> See page 22 of NREL report.

<sup>45</sup> See EPA's Ambient Air Quality Impact Report, dated October 2008, for the proposed PSD permit for NGS, in the docket for this proposed rulemaking.

<sup>46</sup> See Agreement between Grand Canyon Trust and Salt River Project on NGS dated November 19, 2008, in the docket for this proposed rulemaking.

Hayslip, Associate General Manager of SRP, GCT agreed to withdraw its November 14, 2008, comment letter to EPA, provided SRP understood that:

Grand Canyon Trust stands by its support for the installation of low-NO<sub>x</sub> burners and separated overfire air at the Navajo Generating Station as long as their installation and operation will not prejudice in any way the implementation of more effective NO<sub>x</sub> and particulate matter controls (including SCR or SNCR, and baghouse technology) to more fully address Navajo's visibility impacts under the reasonable attribution and regional haze programs.

SRP installed LNB/SOFA combustion controls on Unit 3 in 2009, on Unit 2 in 2010, and on Unit 1 in 2011. Therefore, all three units currently operate with modern advanced combustion controls and are required to meet the NO<sub>x</sub> limit set in the final PSD permit issued by EPA on November 20, 2008, of 0.24 lb/MMBtu on a 30-day rolling average.<sup>47</sup>

Because EPA, GCT, and SRP agreed that the installation of advanced combustion controls would not affect or prejudice our BART determination for NGS, EPA's analysis of the cost effectiveness of SCR used the baseline emission rate from 2001–2003, prior to the installation of the LNB/SOFA. However, because EPA's proposed BART determination is being issued for public comment in 2013, after the installation of advanced combustion controls has been completed on all units, EPA is also providing cost effectiveness information calculated using LNB/SOFA as the baseline, which is equivalent to calculating incremental cost effectiveness of SCR+LNB/SOFA compared to LNB/SOFA alone (see Table 3). These values are also discussed as the incremental cost effectiveness estimates in Section 3 of the TSD for this proposed rulemaking. The affordability and rate impact analysis, discussed above, considers the installation of LNB/SOFA over the period of 2009–2011 as expenditures that have already occurred; therefore, additional calculations for the analysis using LNB/SOFA as baseline are not needed.

Based on the information above, EPA is proposing to determine that consideration of the existing controls at NGS does not warrant eliminating SCR as the top technically feasible and cost effective NO<sub>x</sub> emission control technology for NGS.

#### iv. Factor 4: Remaining Useful Life of Facility

EPA is proposing to determine that the appropriate remaining useful life for NGS, as used as an amortization period for the cost of controls, should be 20 years. The various uncertainties currently facing NGS, including ownership changes and current lease and right-of-way agreement negotiations, could affect NGS's ability to operate into the future; however, without an enforceable obligation for a shorter useful life, EPA has determined it is most appropriate to rely on a 20-year useful life as the default for amortization purposes.

EPA also understands from recent discussions on the lease renewal for NGS that the owners may be negotiating the renewal lease period to end in 2044 (over 30 years from 2013). Although a 30-year amortization period may be more realistic for NGS, a longer amortization period would reduce the annualized cost of capital improvements and, thus, decrease the \$/ton cost effectiveness value. Because the use of the shorter amortization period is more conservative (increases the \$/ton cost effectiveness value), EPA's calculations of cost effectiveness in our analysis rely on a 20-year amortization period. However, EPA recognizes that if the capital costs of controls can be amortized over a longer period, the cost effectiveness of new controls would appear more favorable.

The default amortization period used in the EPA Control Cost Manual is 20 years,<sup>48</sup> and given the indications that the remaining life of NGS could be shorter or longer, EPA is proposing to determine that use of a 20-year remaining useful life is appropriate.

#### v. Factor 5: Degree of Visibility Improvement

The fifth factor to consider under EPA's BART guidelines is the degree of visibility improvement from the BART control options. See 59 FR 39170. The BART guidelines recommend using the CALPUFF air quality dispersion model to estimate the visibility improvements from alternative control technologies at each nearby Class I area, typically those within a 300 km radius of the source, and to compare these to each other and to the impact of the baseline (i.e., current) source configuration. EPA included in our modeling analysis the 11 Class I areas that are within 300 km of NGS. These areas are listed in Table

10 below, along with estimated visibility impacts.

Visibility is often described in terms of visual range in kilometers or miles. The deciview scale is an alternative measure of visibility impairment: lower deciview values represent better visibility and greater visual range, while increasing deciview values represent increasingly poor visibility.

EPA's BART guidelines recommend comparing visibility improvements between control options using the 98th percentile of 24-hour delta deciviews, which is roughly equivalent to the facility's 8th highest visibility impact day. The 98th percentile is recommended rather than the maximum value to avoid undue influence from unusual meteorological conditions. The "delta" refers to the difference between total deciview impact from the facility including natural background, and deciviews of natural background alone, so "delta deciviews" is the estimate of the facility's impact on visibility. In practice, "deciview impact" is often used in place of "delta deciview impact" and the two terms should be assumed to have the same meaning.

In the BART guidelines, EPA noted that a 1.0 deciview impact from a source is sufficient to "cause" visibility impairment and that a source with a 0.5 deciview impact would "contribute" to visibility impairment.

CALPUFF modeling is generally performed according to a modeling protocol, which sets out the model version, choice of geographic domain, input preparation procedures, and the various model settings to be used. EPA's modeling for this proposed rulemaking generally followed the same approach in SRP's modeling,<sup>49</sup> which in turn was based on the 2006 Western Regional Air Partnership (WRAP) protocol,<sup>50</sup> developed for subject-to-BART screening modeling of NGS and other western facilities. The WRAP protocol was reviewed by multiple regulatory agencies, including EPA, the National Park Service, the U.S. Forest Service (USFS), and air agencies of WRAP member states; it was accepted by

<sup>49</sup> The SRP approach, and differences from the WRAP protocol, are described in Appendix A of *Revised BART Analysis for the Navajo Generating Station Units 1–3*, ENSR Corporation, Document No. 05830–012–300, January 2009, Salt River Project, Tempe, AZ, in the docket for this proposed rulemaking.

<sup>50</sup> CALMET/CALPUFF Protocol for BART Exemption Screening Analysis for Class I Areas in the Western United States, Western Regional Air Partnership (WRAP); Gail Tonnesen, Zion Wang; Ralph Morris, Abby Hoats and Yiqin Jia, August 15, 2006. Available on UCR Regional Modeling Center web site, BART CALPUFF Modeling, <http://pah.cert.ucr.edu/aqm/308/bart.shtml>.

<sup>47</sup> See final PSD permit issued by EPA Region 9 dated November 20, 2008, in the docket for this proposed rulemaking.

<sup>48</sup> See EPA Control Cost Manual, Section 6, page 2–48, available from [http://www.epa.gov/ttn/catc1/dir1/c\\_allchs.pdf](http://www.epa.gov/ttn/catc1/dir1/c_allchs.pdf).

WRAP states for use in their Regional Haze SIPs. Differences between the SRP approach and the WRAP approach are discussed in more detail in the TSD for this proposed rulemaking.

While EPA generally followed the SRP approach, EPA used different ammonia background concentrations and a different method for converting CALPUFF concentrations to visibility impact estimates. These differences, described in detail below, result in substantial differences in predicted visibility impacts.

The values of ammonia background concentrations are important because ammonia is a component of particulate ammonium sulfate and ammonium nitrate, both of which degrade visibility. Ammonia is present in the air from both natural and anthropogenic sources. The latter may include motor vehicles, livestock operations, fertilizer application associated with farming, and ammonia slip from the use of ammonia in SCR and SNCR technologies to control NO<sub>x</sub> emissions. Sensitivity of the model results to other ammonia assumptions are discussed in the TSD, and do not change the ranking of control options for evaluating visibility improvement, or the overall conclusions of the visibility analysis.

The U.S. Forest Service informed EPA that the ammonia background concentrations modeled by Arizona Public Service for the Four Corners Power Plant in January 2008 were lower than observed concentrations.<sup>51</sup> The USFS recommended a method of back-calculating the ammonia background based on monitored values of sulfate and nitrate. EPA's ANPRM provided modeling results based on using the USFS's back-calculation methodology, for both Four Corners and NGS.

The visibility modeling supporting today's proposal for NGS uses a constant ammonia background of 1 ppb, which is the default value recommended for western areas by the Interagency Workgroup on Air Quality Modeling.<sup>52</sup> The TSD describes the

results of sensitivity simulations using different concentrations of background ammonia. This includes supplemental modeling using a range of 0.2–1 ppb ammonia background concentrations as used by SRP, as well as supplemental modeling using back-calculated ammonia concentrations,<sup>53</sup> with a thorough discussion of the back-calculation methodology.

Aside from the background ammonia assumptions, the other significant difference between EPA's modeling approach and the SRP approach is the procedure for calculating visibility impacts within CALPOST, a CALPUFF post-processor. This difference has two aspects, the "visibility method" used to convert CALPUFF pollutant concentrations into deciviews, and the choice of natural background conditions, which affects the calculation of delta deciviews.

A key choice in the visibility method is between Method 6 and Method 8, implementing the original and the revised IMPROVE equation, respectively. The IMPROVE equation converts monitored or modeled pollutant concentrations into extinction, which is the fraction of light removed from a sight path; deciviews are calculated from extinction. Many BART assessments were performed before the revised IMPROVE equation was incorporated into CALPUFF, so the original equation was generally used for past assessments. However, in this proposal EPA is primarily relying on the revised IMPROVE equation. The revised IMPROVE equation is currently preferred by the Federal Land Managers,<sup>54</sup> because it has less bias in estimating visibility under the worst visibility conditions.<sup>55</sup> As discussed in the TSD, EPA performed sensitivity simulations and found that using the original IMPROVE equation would on average give baseline impacts about 3 percent lower than using the revised equation, with a range of 15 percent lower to 9 percent higher depending on the Class I area.

The BART Guidelines recommend that visibility impacts should be estimated in deciviews relative to natural background conditions, that is, in delta deciviews. In accordance with the BART Guidelines, EPA used the average of the best 20 percent days as background.<sup>56</sup>

Table 9 presents the visibility impacts of the 98th percentile of 24-hour delta deciviews for each Class I area for each year, averaged over 2001–2003.<sup>57</sup> For each Class I area, the table shows the deciview impact for the base case, and the deciview improvement from that baseline impact when controls are applied. Also shown are the cumulative deciview impacts, which are the simple sum of impacts or improvements over all the Class I areas. Table 10 shows the average number of days with a baseline impact or improvement of at least 0.5 dv; it also shows two "dollars per deciview" measures of cost effectiveness, both of which divide the total annual cost of the control in millions of dollars per year by an improvement in deciviews. For the first metric, "\$/max dv", annual cost (Table 2) is divided by the 98th percentile deciview improvement at the Class I area with the greatest improvement (Table 9). The second metric, "\$/cumulative dv", divides annual cost by the cumulative 98th percentile deciview improvement. In assessing the degree of visibility improvement from controls, EPA relied heavily on the maximum deciview improvement among the Class I areas and the number of areas showing improvement (i.e., all 11 Class I areas), with cumulative improvement providing a supplemental measure that combines information on the number of areas and on individual area improvement. The \$/dv metrics shown in Table 10 provide additional, cost-related information that supplements to the cost effectiveness (\$/ton) that was considered in Factor 1: Cost of Compliance.

<sup>51</sup> Letter from Rick Cables (Forest Service R2 Regional Forester) and Corbin Newman (Forest Service R3 Regional Forester) to Deborah Jordan (EPA Region 9 Air Division Director) dated March 16, 2009, document number 0016 in the docket for the ANPRM: EPA-R09-OAR-2009-0598.

<sup>52</sup> Interagency Workgroup On Air Quality Modeling (IWAQM) Phase 2 Summary Report And Recommendations For Modeling Long Range Transport Impacts (EPA-454/R-98-019), EPA OAQPS, December 1998, available at: <http://www.epa.gov/scram001/7thconf/calpuff/phase2.pdf>, and in the docket for this proposed rulemaking.

<sup>53</sup> Ammonia concentrations for Mesa Verde National Park were not based on the back-calculation method for these simulations, but instead were derived from measured ammonia

concentrations in the Four Corners area, as described in Mark E. Sather et al., 2008. "Baseline ambient gaseous ammonia concentrations in the Four Corners area and eastern Oklahoma, USA". *Journal of Environmental Monitoring*, 2008, 10, 1319–1325, DOI: 10.1039/b807984f).

<sup>54</sup> Federal Land Managers' Air Quality Related Values Work Group (FLAG) Phase I Report—Revised (2010), U.S. Forest Service, National Park Service, U.S. Fish and Wildlife Service, October 2010. Available on web page <http://www.nature.nps.gov/air/Permits/flag>.

<sup>55</sup> Pitchford, Marc, 2006, "New IMPROVE algorithm for estimating light extinction approved for use", The IMPROVE Newsletter, Volume 14, Number 4, Air Resource Specialists, Inc.; web page: [http://vista.cira.colostate.edu/improve/Publications/news\\_letters.htm](http://vista.cira.colostate.edu/improve/Publications/news_letters.htm); Revised IMPROVE

*algorithm for Estimating Light Extinction from Particle Speciation Data*, IMPROVE, January 2006. web page: [http://vista.cira.colostate.edu/improve/publications/graylit/gray\\_literature.htm](http://vista.cira.colostate.edu/improve/publications/graylit/gray_literature.htm).

<sup>56</sup> It is worth noting that an EPA guidance memo suggests that the comparison can use either annual average background conditions, or the average of the best (cleanest) 20 percent of days. "Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations", memorandum from Joseph W. Paisie, EPA OAQPS, July 19, 2006, p. 2.

<sup>57</sup> EPA did not average the 98th percentiles from each year as did SRP, rather EPA used the 98th percentile from all the daily values from the three years taken together. This does not significantly affect the overall results.

TABLE 9—EPA MODELING RESULTS—BASELINE IMPACTS AND IMPROVEMENT FROM NO<sub>x</sub> CONTROLS, 98TH PERCENTILE DELTA DECIVIEWS (DV) FROM 2001–2003, USING 1 PPB AMMONIA BACKGROUND

| Class I area              | Distance to<br>NGS | Baseline<br>impact | Improvement<br>from LNB/SOFA |     | Improvement<br>from<br>SNCR+LNB/<br>SOFA |     | Improvement<br>from SCR+LNB/<br>SOFA |     |
|---------------------------|--------------------|--------------------|------------------------------|-----|--|-----|--------------------------------------|-----|
|                           | (km)               | (dv)               | (dv)                         | (%) | (dv)                                     | (%) | (dv)                                 | (%) |
|                           |                    |                    |                              |     |  |     |                                      |     |
| Arches NP .....           | 245                | 4.5                | 1.7                          | 37  | 2.2                                      | 50  | 3.5                                  | 77  |
| Bryce Canyon NP .....     | 96                 | 4.9                | 1.6                          | 33  | 2.3                                      | 46  | 3.6                                  | 74  |
| Canyonlands NP .....      | 173                | 6.0                | 2.1                          | 35  | 2.9                                      | 48  | 4.6                                  | 76  |
| Capitol Reef NP .....     | 90                 | 7.7                | 2.1                          | 28  | 3.1                                      | 40  | 5.4                                  | 71  |
| Grand Canyon NP .....     | 29                 | 8.4                | 1.9                          | 23  | 2.9                                      | 35  | 5.4                                  | 64  |
| Mazatzal WA .....         | 279                | 1.5                | 0.6                          | 41  | 0.8                                      | 52  | 1.1                                  | 75  |
| Mesa Verde NP .....       | 253                | 3.2                | 1.3                          | 42  | 1.8                                      | 55  | 2.6                                  | 81  |
| Petrified Forest NP ..... | 235                | 3.4                | 1.4                          | 41  | 1.8                                      | 54  | 2.7                                  | 78  |
| Pine Mountain WA .....    | 287                | 1.3                | 0.5                          | 41  | 0.7                                      | 54  | 1.0                                  | 75  |
| Sycamore Canyon WA .....  | 204                | 2.4                | 0.9                          | 37  | 1.2                                      | 50  | 1.8                                  | 75  |
| Zion NP .....             | 134                | 4.4                | 1.4                          | 31  | 2.0                                      | 45  | 3.3                                  | 76  |
| Cumulative .....          |                    | 48                 | 16                           | 33  | 22                                       | 45  | 35                                   | 73  |

TABLE 10—EPA MODELING RESULTS FROM 2001–2003, USING 1 PPB AMMONIA BACKGROUND—ADDITIONAL VISIBILITY METRICS

|   | Baseline<br>Impact | Improvement From<br>LNB/SOFA |     | Improvement from<br>SNCR+LNB/SOFA |     | Improvement From<br>SCR+LNB/SOFA |     |
|---|--------------------|------------------------------|-----|-----------------------------------|-----|----------------------------------|-----|
| Average number of days greater than or equal to 0.5 dv at Class I area with most-impacted Baseline (Canyonlands NP) ..... | 130                | 27                           | 21% | 44                                | 34% | 72                               | 55% |
| \$/max dv (millions) .....  | n/a                | \$2.5                        |     | \$9.3                             |     | \$11.8                           |     |
| \$/cumulative dv (millions) .....   | n/a                | \$0.3                        |     | \$1.3                             |     | \$1.8                            |     |

As shown in Tables 9 and 10, the modeled visibility benefits of SCR+LNB/SOFA are substantially greater than those of SNCR+LNB/SOFA or LNB/SOFA. The modeled 98th percentile visibility improvement due to installation of LNB/SOFA equals or exceeds 0.5 deciviews at all 11 Class I areas, exceeds 1 deciview at most of these Class I areas, and reaches 2.1 deciviews at two of these Class I areas. For SNCR+LNB/SOFA, the modeled visibility improvement exceeds 0.5

deciviews at all 11 Class I areas, exceeds 1 deciview at most of these Class I areas, and reaches roughly 3 deciviews at three of these Class I areas. For SCR+LNB/SOFA, the improvement exceeds 1 deciview at all 11 Class I areas, exceeds 2 deciviews at most of these areas, and reaches 5.4 deciviews at two of these areas.

EPA is proposing to determine that the anticipated visibility benefits of NO<sub>x</sub> controls at NGS supports SCR+LNB/SOFA as the most stringent

technically feasible and cost effective NO<sub>x</sub> emission control technology for NGS.

#### C. EPA's Proposed NO<sub>x</sub> Emission Limit for NGS

The BART Guidelines give states and EPA discretion in determining the relative weight of each factor in making a BART determination. A summary of the results of EPA's factor analysis is shown in Table 11.

TABLE 11—SUMMARY OF EPA'S FIVE FACTOR NO<sub>x</sub> BART ANALYSIS FOR NGS

| Factor  | LNB/SOFA   | SNCR+LNB/SOFA        | SCR+LNB/SOFA                                    |
|---|--|----------------------|---|
| Limit(lb/MMBtu) .....                                 | 0.24 .....   | 0.18 .....           | 0.055.  |
| 1 Average Cost Effectiveness .....                    | \$486/ton .....  | \$1,745/ton .....    | \$2,240/ton.                                    |
| Incremental Cost Effectiveness .....                  | N/A .....  | \$ 4,110/ton .....   | \$2,933/ton (v. SNCR),<br>\$3,315/ton (v. LNB). |
| 2 Comparison of SCR vs. Market (compliance by 2018).  | Increase in Net Present Value from SCR = \$648 million vs. NPV from Market Cases = \$673–\$1040 million. |                      |   |
| SRP Electricity Rate in 2018 (compliance by 2018)     | 9.26¢/kWh (Baseline) .....   | 9.28¢/kWh .....      | 9.32¢/kWh.                                      |
| Energy-Only Water Rate in 2018 (compliance by 2018).  | \$58/acre-foot (Baseline) ....   | \$61/acre-foot ..... | \$66/acre-foot.                                 |
| 3 Existing Controls .....                             | LNB/SOFA installed in 2009–2011  |                      |   |
| 4 Remaining Useful Life .....                         | EPA Default Amortization Period is 20 years. NGS seeking to extend lease to 2044                         |                      |   |
| 5 Highest Visibility Benefit of Controls .....        | 2.1 dv .....   | 3.1 dv .....         | 5.4 dv.   |
| Sum of Visibility Benefit from 11 Class I areas ..... | 16 dv .....  | 22 dv .....          | 35 dv.  |

Based on our five factor analysis, EPA is proposing to determine a plantwide emission limit of 0.055 lb/MMBtu as BART for NGS, based on a rolling average of 30 boiler operating days, achievable with the installation of SCR. We are proposing this emissions limit as BART for NO<sub>x</sub> because: (1) The average and incremental costs of SCR are cost effective; (2) EPA anticipates that the installation and operation of SCR to meet the proposed BART limit should not cause the owners of NGS to retire units and that the history of funding air pollution control at NGS suggests that other significant impacts may be avoided or mitigated; (3) the voluntary installation of LNB/SOFA in 2009–2011 at NGS has achieved some NO<sub>x</sub> reductions, but not the level achievable with SCR; (4) NGS is projected to continue operation at least to 2044; and (5) the anticipated visibility improvements from SCR would be significant at 11 Class I areas. Based on these factors, EPA is proposing to determine that an emission limit of 0.055 lb/MMBtu is BART for NGS. This emission limit represents a reduction of nearly 80 percent from the existing permitted NO<sub>x</sub> emission limit.

#### *D. EPA's Proposed BART Alternative*

Under the CAA, compliance with emission limits determined as BART must be “as expeditious as practicable but in no event later than five years” after the effective date of the final BART determination (See CAA 169A(b)(2)(A) and (g)(4)). That date would be 2018, if the rule is finalized in 2013, or 2019 if, due to a need for extended public discussion or a supplemental proposal, the rule is finalized in 2014.<sup>58</sup> As previously stated, EPA recognizes that the circumstances related to NGS create unusual and significant challenges for a 5-year compliance schedule. We therefore have considered other options that are consistent with the CAA and RHR, that also provide for a more flexible, extended compliance schedule.

EPA's BART regulations allow an alternative to BART provided the alternative results in greater reasonable progress than would have been achieved through installation of BART. 40 CFR 51.308(e)(2). The regulations provide that an alternative to BART must ensure that all necessary emission reductions occur during the period of the first long-term strategy for regional haze, or in 2018 for States that were required to submit regional haze SIPs in December 2007. 40 CFR 51.308(e)(2)(iii). Thus, the

RHR provided five additional years for the implementation of alternatives to BART (known as “better than BART”).

In today's proposal, we are proposing a BART alternative (Alternative 1) for NGS that would require the plant to meet a NO<sub>x</sub> limit of 0.055 lb/MMBtu on one unit per year in 2021, 2022, and 2023. We also describe and solicit comment on a framework for extending the compliance schedule beyond 2023, and will issue a supplemental proposal if we receive comments supporting a later compliance date.

#### *i. Compliance Flexibility Is Necessary or Appropriate*

EPA is proposing an alternative to provide the owners of NGS options for flexibility in achieving emissions reductions required under our proposed BART determination. SRP expressed concern that the owners of NGS may choose to retire the facility if faced with the financial risk of making a large capital investment within 5 years without also having certainty that the lease and contract re-negotiations would conclude in a timely and favorable manner. EPA understands that the owners of NGS face numerous uncertainties and the unusual requirement to comply with NEPA for lease and other rights-of-way approvals, which apply only to NGS and Four Corners Power Plant. EPA also understands the importance of the continued operation of NGS and the Kayenta Mine to the Navajo Nation and Hopi Tribe as a source of direct revenues through lease payments or coal royalties, as well as the importance of Reclamation's share of NGS to supply water to many tribes located in Arizona in accordance with several water settlement acts.

In this proposal, EPA is proposing Alternative 1 as a “better than BART” alternative that addresses the uncertainties described in the previous section. We are also requesting comment on two other alternatives that provide longer schedules for compliance. Because we would need additional information to propose to approve a longer compliance schedule beyond the timeframe in Alternative 1, we would supplement our proposal if we intend to finalize either of the longer compliance schedules discussed below. As discussed below, all of the alternatives include a NO<sub>x</sub> emission rate of 0.055 lb/MMBtu, but vary in the amount of time provided for compliance. Alternative 1 and the other two on which we are soliciting comment assume that NGS will continue to operate well into the future, but EPA recognizes that there may be

changes in energy demand or in how energy is supplied in this region that could form the basis of other options. EPA welcomes comment on our proposed BART determination and proposed alternative (Alternative 1), as well as the other alternatives we describe here and other options from interested parties.

#### *ii. Background on Alternative Measures to BART*

EPA has previously provided flexibility to the Four Corners Power Plant (FCPP), also located on the Navajo Nation, to achieve emission reductions of NO<sub>x</sub> under either BART or an alternative measure to BART. 77 FR 51619 (August 24, 2012). Changes in ownership at FCPP and differences between the five boilers operated at FCPP, contributed, in part, to a decision by the owners of FCPP to put forth an alternative emission control strategy that included closure of the three smaller and less efficient units and somewhat delayed installation of SCR on the two largest units, resulting in greater emission reductions than under EPA's proposed BART determination. On February 25, 2011, EPA proposed this alternative emission control strategy as an alternative measure that would result in more progress towards achieving visibility improvements in the surrounding Class I areas (76 FR 10530). In that Supplemental Proposal, EPA put forth the legal and historical background for proposing a BART Alternative (76 FR 10533). Briefly, the RHR allows states (and EPA) the ability to consider alternatives to BART (40 CFR 51.308(e)(2)). The regulation requires a demonstration, based on a weight of evidence evaluation, that the alternative measure will achieve greater reasonable progress than would have resulted from installation and operation of BART. The regulation provides that:

[i]f the distribution of emissions is not substantially different than under BART, and the alternative measure results in greater emission reductions, then the alternative measure may be deemed to achieve greater reasonable progress.

40 CFR 51.308(e)(3). The RHR also requires that emission reductions from the alternative program take place during the period of the first long-term strategy for regional haze (40 CFR 51.308(e)(2)(iii)), which ends in 2018. EPA's final action on FCPP required the facility to achieve emission reductions under the alternative emission control strategy by July 31, 2018.

<sup>58</sup> For simplicity, EPA has assumed the rule will be finalized in 2013 in our analysis of alternatives to BART.



### iii. Legal Rationale for Extending Compliance Schedule for Alternative Measures for NGS

For NGS, EPA is proposing a BART alternative (Alternative 1) consistent with 40 CFR 51.308(e)(2). In particular, EPA is proposing that consideration of a compliance schedule beyond 2018 for Alternative 1 at NGS is appropriate for several reasons, including the singular importance of NGS to many tribes located in Arizona and their water settlement agreements with the federal government, the numerous uncertainties facing the owners of NGS, the requirement for NEPA review of a lease extension, and the early and voluntary installation of modern combustion controls over the 2009–2011 timeframe. The timeframe for compliance would not, in itself, avoid or mitigate increases in water rates for tribes located in Arizona; however, it would provide time for the collaborating federal agencies to explore options to avoid or minimize potential impacts to tribes, including seeking funding to cover expenses for the federal portion of pollution control at NGS.

EPA is exercising its authority and discretion under section 301(d)(4) of the Clean Air Act, 42 U.S.C. 7601(d)(4), and 40 CFR 49.11(a) to propose an extended timeframe for an alternative measure under the RHR for NGS. EPA considers this extension of time to be consistent with the general programmatic requirements. In the 1999 RHR, EPA provided states with the flexibility to adopt alternatives to BART but required any such alternative to be fully implemented by the end of the first planning period. 40 CFR 51.308(e)(2)(iii). States and regulated sources accordingly had almost 20 years under the RHR to design and implement alternative measures to BART. Because of the myriad stakeholder interests and complex governmental interests unique to NGS, we are only now addressing the BART requirements for NGS. Given the timing of our proposed action, any BART alternative would need to be fully implemented on the same timeframe as BART, under the current regional haze regulations. For all the reasons explained above, we consider it appropriate to consider an extended compliance period for NGS. Therefore, notwithstanding the requirements in 40 CFR 51.308(e)(2)(iii) for BART alternatives to be implemented by 2018 (if the rule is finalized in 2013), we are proposing in Alternative 1 to require that emission reductions from an alternative to BART at NGS take place by 2023.

Our proposal to require emission reductions by 2023 is also supported by the Tribal Authority Rule codified at 40 CFR 49.11(a). The TAR reflects EPA's commitment to promulgate "such Federal implementation plan *provisions as are necessary or appropriate* to protect air quality" in Indian country where a tribe either does not submit a tribal implementation (TIP) or does not receive approval of a submitted TIP. (Emphasis added.)

The use of the term "provisions as are necessary or appropriate" indicates EPA's determination that it may only be necessary or appropriate to promulgate a FIP of limited scope. The United States Court of Appeals for the Tenth Circuit has previously endorsed the application of this approach in a challenge to the FIP for the Four Corners Power Plant, stating: "[40 CFR 49.11(a)] provides the EPA discretion to determine what rulemaking is necessary or appropriate to protect air quality and requires the EPA to promulgate such rulemaking." *Arizona Public Service Company v. EPA*. The court went on to observe: "Nothing in section 49.11(a) requires EPA \* \* \* to submit a plan meeting the completeness criteria of [40 CFR part 51] Appendix V." *Id.* While the decision in *Arizona Public Service Company* focused on 40 CFR Part 51 Appendix V, EPA believes the same considerations apply to the promulgation of a FIP intended to address the objectives set forth in 40 CFR 51.308(e)(2). In particular, EPA has discretion to determine if and when a FIP addressing the objectives set forth in 40 CFR 51.308(e)(2) should be promulgated, which necessarily includes discretion to determine the timing for complying with the requirements of any such FIP.

### iv. Description and Analysis of a Proposed Alternative Measure to BART

EPA recognizes that the owners of NGS elected to install modern LNB/SOFA on one unit per year at the facility over the 2009–2011 timeframe. The NO<sub>x</sub> reductions achieved by installing the modern LNB/SOFA were not required under any regulatory program of the CAA; therefore, installation of new combustion controls (i.e. LNB/SOFA) was voluntary. SRP obtained a pre-construction PSD permit from EPA in 2008 for a significant increase in CO emissions, a criteria pollutant that does not impair visibility, as a result of the installation and operation of new combustion controls. EPA notes that LNB/SOFA is a potential control option evaluated in this BART analysis, and that LNB/SOFA is typically used in conjunction with installation of SCR or

SNCR to first reduce emissions of NO<sub>x</sub> formed during combustion before further control by the downstream post-combustion control system. EPA recognizes that the owners of NGS could have waited until a final BART determination was issued and effective before installing any new controls, including the LNB/SOFA.

SRP's early and voluntary installation of LNB/SOFA over the 2009–2011 timeframe resulted in more NO<sub>x</sub> emissions reductions during the 2009–2018 period than if LNB/SOFA were installed concurrently with SCR by 2018. Our BART proposal requires NGS to achieve the BART limit of 0.055 lb/MMBtu no later than 5 years after our final rule. For purposes of this evaluation, we are assuming the rule is finalized in 2013 and that NGS would be required to meet the emissions limit achievable with SCR+LNB/SOFA 5 years after 2013, or by 2018. EPA is proposing to apply these early and voluntary NO<sub>x</sub> emission reductions as a credit in our analysis of BART alternatives. EPA has determined that application of a credit for NO<sub>x</sub> reductions achieved by LNB/SOFA during the 2009–2018 period is appropriate here because if LNB/SOFA were not already installed at NGS, the BART determination EPA is proposing today would have incorporated installation of LNB/SOFA in combination with SCR as BART. We calculate that the early NO<sub>x</sub> emission reductions achieved by installation of LNB/SOFA in the 2009–2011 timeframe at NGS totals 92,715 tons.<sup>59</sup> EPA is proposing to find that an alternative is "better than BART" if the adjusted total NO<sub>x</sub> emissions over the 2009–2044 timeframe (i.e., emissions remaining after subtracting 92,715 tons for the LNB/SOFA credit for early and voluntary emission reductions) are less than total emissions under our proposed BART determination for the same period (i.e., 358,974 tons).

We are proposing in Alternative 1, as an alternative to BART, to require NGS to meet a NO<sub>x</sub> limit of 0.055 lb/MMBtu on one unit per year in 2021, 2022, and 2023. EPA notes that the installation years for Alternative 1 coincide with scheduled major outages at NGS.

As shown in Table 12 below, EPA has calculated that the total amount of NO<sub>x</sub> that would be emitted from NGS over the 2009–2044 timeframe under EPA's proposed BART determination will

<sup>59</sup> See spreadsheet titled "BART Alternatives.xlsx" in the docket for this proposed rulemaking.

equal 358,974 tons.<sup>60</sup> EPA has also calculated that the total NO<sub>x</sub> emissions over 2009–2044 under Alternative 1, with the credit for the actual early and voluntary emission reductions, will be 338,189 tons. Based on its adjusted total

NO<sub>x</sub> emissions, Alternative 1 meets the “better than BART” threshold (i.e., 338,189 tons is less than 358,974 tons). Therefore, EPA is proposing Alternative 1 (compliance with BART emission limits on one unit per year in 2021,

2022, and 2023) as a better-than-BART alternative that results in greater reasonable progress than would be achieved under BART.

TABLE 12—ANALYSIS OF PROPOSED BART ALTERNATIVE

|                                 | BART          | Alternative 1                          |
|---------------------------------|---------------|--|
| Installation Years .....        | by 2018 ..... | 2021, 2022, and 2023.                  |
| Total Emissions (tons) .....    | 358,974 ..... | 430,904.                               |
| LNB/SOFA Credit (tons) .....    | n/a .....     | 92,175.                                |
| Adjusted Emissions (tons) ..... | n/a .....     | 338,189.                               |
| Better than BART? .....         | n/a .....     | Yes.<br>(338,189 tons < 358,974 tons). |

#### E. Analysis of Additional Alternative Compliance Schedules

To the extent that there may be interest in additional flexibility beyond the 2021–2023 compliance schedule under Alternative 1, EPA has evaluated two additional compliance schedules, using the “better than BART” analysis framework described above, to evaluate additional time for compliance, i.e., compliance on one unit per year in 2023, 2024, and 2025 (Alternative 2) and compliance on one unit per year in 2024, 2025, and 2026 (Alternative 3). EPA is not proposing Alternatives 2 and 3 because these alternatives require additional information from stakeholders in order to meet the “better than BART” threshold. We are soliciting comment on Alternatives 2 and 3, and, if appropriate, will supplement this proposal before finalizing any alternative to BART that extends the compliance schedule beyond the timeframe proposed in Alternative 1.

As shown in Table 13, Alternatives 2 and 3 do not, as currently evaluated, meet the “better than BART” threshold because the adjusted emissions (accounting for the LNB/SOFA credit for early NO<sub>x</sub> reductions) exceed total emissions under BART. Table 13 refers

to the amount by which the alternative exceeds BART as the “NO<sub>x</sub> emissions reduction deficit.” For Alternatives 2 and 3, the NO<sub>x</sub> emission reduction deficits are 15,179 tons and 33,160 tons, respectively, showing that as the compliance dates under a given alternative extend further into the future, the NO<sub>x</sub> emission reduction deficit grows. Because Alternatives 2 and 3 do not by themselves meet the “better than BART” threshold, EPA views Alternatives 2 and 3 as viable only if the owners of NGS achieve additional emission reductions to bridge the deficit in NO<sub>x</sub> emission reductions. These additional emission reductions could be implemented as short-term (e.g., for some subset of the period 2009–2044) or long-term (e.g., achieved annually until 2044) measures.

As shown in Table 13, if the owners of NGS complied with the schedule under Alternative 2 and implemented a short-term emission reduction bridge (for example, over a 10-year period from 2013–2023), the owners of NGS would need to achieve additional NO<sub>x</sub> emission reductions of 1,518 tons per year. Similarly, implementing a long-term emission reduction bridge (for example, over the period of 2013–2044)

would require additional NO<sub>x</sub> emission reductions of 490 tons per year. The short and long term emission reduction bridges in Table 13 provide examples of how additional emission reductions might be distributed over time. The actual annual emission reductions that NGS would need to bridge the NO<sub>x</sub> deficit would depend, not only on the size of the deficit, but on the specific measures and time periods chosen by the owners of NGS. Depending on the magnitude of the required emission bridge, EPA anticipates that reductions could be achieved without expending substantial funds before the lease, NEPA review, and other processes are completed. Such reductions could be implemented as NO<sub>x</sub> reductions achieved annually in equal increments to meet the emissions bridge, or some other structure that achieves the total emission reductions at different intervals. Thus, EPA is soliciting comment on how NGS could achieve the emission reduction bridge necessary for these longer compliance schedules to meet the “better than BART” threshold and will supplement our proposal before an alternative with a compliance schedule beyond 2023 is finalized.

TABLE 13—ANALYSIS OF ADDITIONAL ALTERNATIVES

|   | BART          | Alternative 2                  | Alternative 3             |
|---|---------------|--------------------------------|---------------------------|
| Installation Years .....                | by 2018 ..... | 2023, 2024, and 2025 .....     | 2024, 2025, and 2026.     |
| Total Emissions (tons) .....            | 358,974 ..... | 466,869 .....                  | 484,849.                  |
| LNB/SOFA Credit (tons) .....            | n/a .....     | 92,175 .....                   | 92,175.                   |
| Adjusted Emissions (tons) .....         | n/a .....     | 374,154 .....                  | 392,134.                  |
| Better than BART? .....                 | n/a .....     | No .....                       | No.                       |
| Emission Reduction Deficit (tons) ..... | n/a .....     | 15,179 .....                   | 33,160.                   |
| Short-term Emission Bridge (tpy) .....  | n/a .....     | 1,518 tpy over 2013–2023 ..... | 3,015 tpy over 2013–2024. |
| (years in place) .....                  |               |                                |                           |

<sup>60</sup> Emissions over 2009–2044 for EPA’s proposed BART determination are calculated assuming compliance with a proposed limit of 0.055 lb/MMBtu by 2018, and actual installation years for LNB/SOFA, i.e., 2009–2011 period. EPA has

selected the period 2009–2044 as most appropriate because it includes the early installation dates for LNB/SOFA and extends until the anticipated 2044 termination date of the new site lease currently under negotiation between the Navajo Nation and

the owners of NGS. Other timeframes can be used for the “better than BART” analysis (e.g., 2001–2064), however, these timeframes are unlikely to materially alter the analysis.

TABLE 13—ANALYSIS OF ADDITIONAL ALTERNATIVES—Continued

|   | BART      | Alternative 2                | Alternative 3             |
|---|-----------|------------------------------|---------------------------|
| Long-term Emission Bridge (tpy) .....<br>(years in place) ..... | n/a ..... | 490 tpy over 2013–2044 ..... | 1,070 tpy over 2013–2044. |

In summary, EPA is requesting comment on technically and economically feasible technologies or mechanisms to serve as enforceable emission reduction bridges (whether short or long term) that would allow consideration of alternatives that would not otherwise meet the “better than BART” threshold for NO<sub>x</sub> (e.g., Alternatives 2 or 3 or other alternatives suggested by stakeholders during the public comment period for this proposed rule). EPA also seeks comment on the schedule on which reductions from an emissions bridge would need to be achieved. If EPA receives proposals from stakeholders during the comment period that put forth a plan for specific emission reduction bridges to bring total emissions over 2009–2044 of an extended compliance schedule (beyond 2023) at or below the “better than BART” threshold of 358,974 tons, EPA may issue a supplemental proposal for public comment.

#### F. Solicitation of Comments

EPA is requesting comment on our proposed level of BART control of 0.055 lb/MMBtu for NO<sub>x</sub>. We are also requesting comment on our proposed BART Alternative 1 with a compliance timeframe of 2021–2023, resulting in greater reasonable progress than would otherwise be achieved under BART by crediting NGS for its early and voluntary installation of LNB/SOFA.

EPA is requesting comment on Alternatives 2 and 3 that provide additional time for compliance and would require the owners of NGS to implement additional emission reductions in order to assure greater reasonable progress than would otherwise be achieved under BART. In particular, we are requesting comment from stakeholders on potential technologies that can serve to bridge the NO<sub>x</sub> emission reduction deficit for compliance schedules that do not, by themselves, meet the “better than BART” threshold (i.e., Alternatives 2 and 3). EPA will publish a supplemental proposal before we would finalize any alternative that requires an emission reduction bridge to be “better than BART”.

In recognition of the importance of NGS to the local and regional economy and the multitude of interests and stakeholders involved, EPA is providing

a 90-day comment period on this proposed rulemaking and will continue to engage in consultation with tribes located in Arizona during the rulemaking process. EPA seeks comment on the analysis and conclusions presented in this proposal and invites suggestions for other alternatives that reduce NO<sub>x</sub> emissions at NGS and its contribution to visibility impairment while providing long-term, sustainable benefits to tribes.

#### IV. Administrative Requirements

##### A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563: Improving Regulation and Regulatory Review 13563

This action proposes a source-specific FIP for the Navajo Generating Station on the Navajo Nation. Under the terms of Executive Order (EO) 12866 (58 FR 51735, October 4, 1993) and EO 13563 (76 FR 3821, January 21, 2011), because this proposed rule applies to only one facility, it is not a rule of general applicability. This proposed rule, therefore, is exempt from review under EO 12866 and EO 13563.

##### B. Paperwork Reduction Act

This action does not impose an information collection burden under the provisions of the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. Burden is defined at 5 CFR 1320.3(b). Under the Paperwork Reduction Act, a “collection of information” is defined as a requirement for “answers to \* \* \* identical reporting or recordkeeping requirements imposed on ten or more persons \* \* \*.” 44 U.S.C. 3502(3)(A). Because the proposed FIP applies to a single facility, Navajo Generating Station, the Paperwork Reduction Act does not apply.

##### C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small

organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of today’s proposed rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration’s (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this proposed action on small entities, I certify that this proposed action will not have a significant economic impact on a substantial number of small entities. The Navajo Generating Station is not a small entity and the FIP for Navajo Generating Station being proposed today does not impose any compliance requirements on small entities. *See Mid-Tex Electric Cooperative, Inc. v. FERC*, 773 F.2d 327 (D.C. Cir. 1985). We continue to be interested in the potential impacts of the proposed rule on small entities and welcome comments on issues related to such impacts.

##### D. Unfunded Mandates Reform Act (UMRA)

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), 2 U.S.C. 1531–1538, requires Federal agencies, unless otherwise prohibited by law, to assess the effects of their regulatory actions on State, local, and tribal governments and the private sector. Federal agencies must also develop a plan to provide notice to small governments that might be significantly or uniquely affected by any regulatory requirements. The plan must enable officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant Federal intergovernmental mandates and must inform, educate, and advise small governments on compliance with the regulatory requirements.

This rule does not contain a Federal mandate that may result in expenditures of \$100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year.

EPA anticipates the annual cost to the private sector of this proposed rule to be \$64 million per year (see Table 2). Thus, this rule is not subject to the requirements of sections 202 or 205 of UMRA. This proposed rule will not impose direct compliance costs on state, local or tribal governments. This proposed action will, if finalized, reduce the emissions of NO<sub>x</sub> from a single source, the Navajo Generating Station.

In developing this rule, EPA consulted with small governments pursuant to a plan established under section 203 of UMRA to address impacts of regulatory requirements in the rule that might significantly or uniquely affect small governments. EPA put forth an Advanced Notice of Proposed Rulemaking on August 28, 2009 regarding our intention to propose a BART determination for NGS and the Four Corners Power Plant. We received comments from numerous small governments, including tribal governments, and governments of several towns in Arizona. This proposed rule will not impose direct compliance costs on any small governments. However, increased electricity and water costs associated with this proposed rule may indirectly affect small governments.

#### *E. Executive Order 13132: Federalism*

This action does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the states, or in the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. This action proposes emission reductions of NO<sub>x</sub> at a specific stationary source located in Indian country. Thus, Executive Order 13132 does not apply to this action.

#### *F. Executive Order 13175: Consultation and Coordination With Indian Tribal Governments*

Under Executive Order 13175 (65 FR 67249, November 9, 2000), EPA may not issue a regulation that has tribal implications, that imposes substantial direct compliance costs, and that is not required by statute, unless the federal government provides the funds necessary to pay the direct compliance costs incurred by tribal governments, or EPA consults with tribal officials early in the process of developing the proposed regulation and develops a tribal summary impact statement.

EPA has concluded that this action will have tribal implications, and consequently EPA has consulted with

tribal officials during the process of developing the proposed regulation. The proposed regulation will neither impose substantial direct compliance costs on tribal governments, nor pre-empt tribal law. However, several tribes located in Arizona have expressed concerns regarding the potential impact of this regulation on their economic interests. The Navajo Nation and Hopi Tribe focused on the significant contribution of coal-related royalties, taxes and employment at NGS and the Kayenta Mine to their economies. Comments from other Arizona tribes focused on the importance of NGS as a source of power to the CAP in order for the federal government to meet obligations under existing water settlement agreements. The importance to tribes of continued operation of NGS and affordable water costs cannot be overemphasized. In Section II.B.ii, EPA explains in detail the tribal information that we received and considered in this proposed rulemaking.

In order to understand more fully the concerns of the tribes, senior level EPA officials from both Washington, DC and San Francisco have personally visited the NGS facility in Page, Arizona. EPA sent invitations to all tribes in Arizona to consult with EPA during the development of our BART determination for NGS. We received correspondence and comments on our ANPRM from officials of numerous tribes, including the Navajo Nation, the Hopi Tribe, the Gila River Indian Community, the Ak-Chin Indian Community, the Tohono O'odham Nation, the Fort McDowell Indian Community, the Pascua Yaqui Tribe, and the Salt River-Pima Maricopa Indian Community. On September 16, 2011, and February 8, 2012, EPA held consultation sessions about NGS with representatives from approximately eleven tribes participating in one or both meetings. Additionally, EPA had in-person consultation meetings with tribal representatives prior to this proposal on August 7 and August 27, 2012. Representatives from nine tribes attended. In addition to formal consultation, EPA has had numerous meetings and conference calls with tribes at their request throughout the process of developing the action we are proposing today. A timeline of all correspondence and consultation with tribes on NGS is included in the docket for this proposed rulemaking.<sup>61</sup> EPA will continue to consult with Tribal officials during the public comment

period on the proposed FIP. Several tribes, including the Navajo, submitted comments which EPA considered in developing this proposed action. Therefore, EPA has allowed tribes to provide meaningful and timely input into the development of this proposed rule and will continue to consult with affected tribes prior to finalizing our BART determination or any alternative to BART. The technical support document for this proposed rulemaking provides a detailed discussion of comments received from tribes during the comment period for the ANPRM and subsequent consultation and correspondence, and EPA's responses to those comments.

#### *G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks*

Executive Order 13045: *Protection of Children from Environmental Health Risks and Safety Risks* (62 FR 19885, April 23, 1997), applies to any rule that: (1) is determined to be economically significant as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This proposed rule is not subject to Executive Order 13045 because it requires emissions reductions of NO<sub>x</sub> from a single stationary source. Because this proposed action only applies to a single source and is not a proposed rule of general applicability, it is not economically significant as defined under Executive Order 12866, and does not have a disproportionate effect on children. However, to the extent that the rule will reduce emissions of NO<sub>x</sub>, which contribute to ozone and fine particulate matter formation as well as visibility impairment, the rule will have a beneficial effect on children's health by reducing air pollution that causes or exacerbates childhood asthma and other respiratory issues.

#### *H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use*

This action is not subject to Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is exempt under Executive Order 12866.

<sup>61</sup> See document titled: "Timeline of All Tribal Consultation on NGS.docx", in the docket for this proposed rulemaking.

### *I. National Technology Transfer and Advancement Act*

Section 12(d) of the National Technology Transfer and Advancement Act of 1995 (NTTAA), Public Law 104–113, 12 (10) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards (VCS) in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. VCS are technical standards (e.g., materials specifications, test methods, sampling procedures and business practices) that are developed or adopted by the VCS bodies. The NTTAA directs EPA to provide Congress, through annual reports to OMB, with explanations when the Agency decides not to use available and applicable VCS.

Consistent with the NTTAA, the Agency conducted a search to identify potentially applicable VCS. For the measurements listed below, there are a number of VCS that appear to have possible use in lieu of the EPA test methods and performance specifications (40 CFR Part 60, Appendices A and B) noted next to the measurement requirements. It would not be practical to specify these standards in the current proposed rulemaking due to a lack of sufficient data on equivalency and validation and because some are still under development. However, EPA's Office of Air Quality Planning and Standards is in the process of reviewing all available VCS for incorporation by reference into the test methods and performance specifications of 40 CFR Part 60, Appendices A and B. Any VCS so incorporated in a specified test method or performance specification would then be available for use in determining the emissions from this facility. This will be an ongoing process designed to incorporate suitable VCS as they become available.

### *J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations*

Executive Order 12898 (59 FR 7629, February 16, 1994), establishes federal executive policy on environmental justice. Its main provision directs federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority populations and low-income populations in the United States.

EPA has determined that this proposed rule, if finalized, will not have disproportionately high and adverse human health or environmental effects on minority or low-income populations because it increases the level of environmental protection for all affected populations without having any disproportionately high and adverse human health or environmental effects on any population, including any minority or low-income population. This proposed rule requires emissions reductions of NO<sub>x</sub> from a single stationary source, Navajo Generating Station.

### **List of Subjects in 40 CFR Part 49**

Environmental protection, Administrative practice and procedure, Air pollution control, Indians, Intergovernmental relations, Reporting and recordkeeping requirements.

Dated: January 17, 2013.

**Jared Blumenfeld**,  
Regional Administrator, Region 9.

Title 40, chapter I of the Code of Federal Regulations is proposed to be amended as follows:

### **PART 49—[INDIAN COUNTRY: AIR QUALITY PLANNING AND MANAGEMENT]**

■ 1. The authority citation for part 49 continues to read as follows:

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

■ 2. Section 49.5513 is amended by adding paragraph (j) to read as follows:

#### **§ 49.5513 Federal Implementation Plan Provisions for Navajo Generating Station, Navajo Nation.**

\* \* \* \* \*

(j)(1) *Applicability.* Regional Haze Best Available Retrofit Technology limits for this plant are in addition to the requirements of paragraphs (a) through (i) of this section. The provisions of this paragraph (j) are severable, and if any provision of this paragraph (j), or the application of any provision of this paragraph (j) to any owner/operator or circumstance, is held invalid, the application of such provision to other owner/operators and other circumstances, and the remainder of this paragraph (j), shall not be affected thereby.

(2) *Definitions.* Terms not defined in this paragraph (j)(2) shall have the meaning given to them in the Clean Air Act or EPA's regulations implementing the Clean Air Act and in paragraph (c) of this section. For purposes of this paragraph (j):

(i) *Boiler operating day* means a 24-hour period between 12 midnight and

the following midnight during which any fuel is combusted at any time in the steam-generating unit. It is not necessary for fuel to be combusted the entire 24-hour period.

(ii) *Coal-fired unit* means any of Units 1, 2, or 3 at Navajo Generating Station.

(iii) *Continuous emission monitoring system* or *CEMS* means the equipment required by 40 CFR Part 75 and this paragraph (j).

(iv) *Emissions limitation* or *emissions limit* means the federal emissions limitation required by this section.

(v) *Group of coal-fired units* means Units 1, 2 and 3 at Navajo Generating Station.

(vi) *lb* means pound(s).

(vii) *NO<sub>x</sub>* means nitrogen oxides expressed as nitrogen dioxide (NO<sub>2</sub>).

(viii) *Owner(s)/operator(s)* means any person(s) who own(s) or who operate(s), control(s), or supervise(s) one more of the units of the Navajo Generating Station.

(ix) *MMBtu* means million British thermal unit(s).

(x) *Operating hour* means any hour that fossil fuel is fired in the unit.

(xi) *Unit* means any of Units 1, 2, or 3 at Navajo Generating Station.

(xii) *Valid data* means CEMs data that is not out of control as defined in 40 CFR Part 75.

(3) *Compliance date.* The owner/operator may elect to comply with the NO<sub>x</sub> emission limitations in this paragraph (j) either:

(i) Within five years of the effective date of the final rulemaking, or

(ii) On one coal-fired unit per year by 2021, 2022, and 2023.

(4) *NO<sub>x</sub> emission limitations.* The owner/operator of each coal-fired unit subject to this paragraph (j) shall not emit or cause to be emitted NO<sub>x</sub> in excess of the following:

(i) Under paragraph (j)(3)(i) of this section: within 5 years of the effective of the final rule, 0.055 pounds per million British thermal units (lb/MMBtu) from any group of coal-fired units, averaged on a rolling average basis over 30-boiler-operating days.

(ii) Under paragraph (j)(3)(ii) of this section:

(A) After 2021, 0.178 lb/MMBtu from any group of coal-fired units, averaged on a rolling basis over 30-boiler-operating days.

(B) After 2022, 0.117 lb/MMBtu from any group of coal-fired units, averaged on a rolling basis over 30-boiler-operating days.

(C) On and thereafter 2023, 0.055 lb/MMBtu from any group of coal-fired units, averaged on a rolling basis over 30-boiler-operating days.

(5) *Continuous emission monitoring system.* (i) At all times after the dates

specified in paragraph (j)(3) of this section, the owner/operator of each unit shall maintain, calibrate, and operate a CEMS, in full compliance with the requirements found at 40 CFR Part 75, to accurately measure NO<sub>x</sub>, diluent, and stack gas volumetric flow rate from each unit. Valid data means data recorded when the CEMS is not out-of-control as defined by Part 75, as defined in paragraph (j)(2) of this section. All valid CEMS hourly data shall be used to determine compliance with the emission limitations for NO<sub>x</sub> in paragraph (j)(4) of this section for each unit. If the CEMS data is not valid, that CEMS data shall be treated as missing data and not used to calculate the emission average. CEMS data does not need to be bias adjusted as defined in 40 CFR Part 75. Each required CEMS must obtain valid data for at least 90 percent of the unit operating hours, on an annual basis.

(ii) The owner/operator of each unit shall comply with the quality assurance procedures for CEMS found in 40 CFR Part 75. In addition to these Part 75 requirements, relative accuracy test audits shall be calculated for both the NO<sub>x</sub> pounds per hour measurement and the heat input measurement. The calculation of NO<sub>x</sub> pounds per hour and heat input relative accuracy shall be evaluated each time the CEMS undergo relative accuracy testing.

(6) *Compliance Determination for NO<sub>x</sub>*. (i) The 30-day rolling average NO<sub>x</sub> emission rate for each group of coal-fired units shall be calculated for each calendar day, even if a unit is not in operation on that calendar day, in accordance with the following procedure: step one, for each unit, sum the hourly pounds of NO<sub>x</sub> emitted during the current boiler-operating day (or most recent boiler-operating day if the unit is not in operation), and the preceding twenty-nine (29) boiler-operating days, to calculate the total pounds of NO<sub>x</sub> emitted over the most recent thirty (30) boiler-operating day period for each coal-fired unit; step two, for each unit, sum the hourly heat input, in MMBtu, during the current boiler-operating day (or most recent boiler-operating day if the unit is not in operation), and the preceding twenty-nine (29) boiler-operating days, to calculate the total heat input, in MMBtu, over the most recent thirty (30) boiler-operating day period for each coal-fired unit; step three, sum together the total pounds of NO<sub>x</sub> emitted from the group of coal-fired units over each unit's

most recent thirty (30) boiler-operating day period (the most recent 30 boiler-operating day periods for different units may be different); step four, sum together the total heat input from the group of coal-fired units over each unit's most recent thirty (30) boiler-operating day period; and step five, divide the total pounds of NO<sub>x</sub> emitted from step three by the total heat input from step four for each group of coal-fired units, to calculate the 30-day rolling average NO<sub>x</sub> emission rate for each group of coal-fired units, in pounds of NO<sub>x</sub> per MMBtu, for each calendar day. Each 30-day rolling average NO<sub>x</sub> emission rate shall include all emissions and all heat input that occur during all periods within any boiler-operating day, including emissions from startup, shutdown, and malfunction.

(ii) If a valid NO<sub>x</sub> pounds per hour or heat input is not available for any hour for a unit, that heat input and NO<sub>x</sub> pounds per hour shall not be used in the calculation for that 30 boiler operating day period.

(7) *Recordkeeping*. The owner or operator of each unit shall maintain the following records for at least five years:

(i) All CEMS data, including the date, place, and time of sampling or measurement; parameters sampled or measured; and results as required by Part 75 and as necessary to calculate each unit's pounds of NO<sub>x</sub> and heat input for each hour.

(ii) Each calendar day rolling average group emission rates for NO<sub>x</sub> calculated in accordance with paragraph (j)(5)(i) of this section.

(iii) Each unit's 30 boiler operating day pounds of NO<sub>x</sub> and heat input.

(iv) Records of quality assurance and quality control activities for emissions measuring systems including, but not limited to, any records required by 40 CFR Part 75.

(v) Records of the relative accuracy calculation of the NO<sub>x</sub> lb/hr measurement and hourly heat input.

(vi) Records of all major maintenance activities conducted on emission units, air pollution control equipment, and CEMS.

(vii) Any other records required by 40 CFR Part 75.

(8) *Reporting*. All reports and notifications under this paragraph (j) shall be submitted to the Director, Navajo Environmental Protection Agency, P.O. Box 339, Window Rock, Arizona 86515, and to the Director of Enforcement Division, U.S. EPA Region IX, at 75 Hawthorne Street, San

Francisco, CA 94105. (i) The owner/operator shall notify EPA within two weeks after completion of installation of NO<sub>x</sub> control technology on any of the units subject to this section.

(ii) Within 30 days after the first applicable compliance date in paragraph (j)(3) of this section and within 30 days of every second calendar quarter thereafter (i.e., semi-annually), the owner/operator shall submit a report that lists for each calendar day, calculated in accordance with paragraph (j)(6) of this section, total lb of NO<sub>x</sub> and heat input (as used to calculate compliance per paragraph (j)(4) of this section, for each unit's last 30 boiler operating days. Included in this report shall be the results of the last relative accuracy test audit and the calculated relative accuracy for lb/hr NO<sub>x</sub> and heat input performed 45 days prior to the end of that reporting period. The end of the year report shall also include the percent valid data for each NO<sub>x</sub>, diluent, and flow monitor used in the calculations of compliance with paragraph (j)(4) of this section.

(9) *Enforcement*. Notwithstanding any other provision in this implementation plan, any credible evidence or information relevant as to whether the unit would have been in compliance with applicable requirements if the appropriate performance or compliance test had been performed, can be used to establish whether or not the owner or operator has violated or is in violation of any standard or applicable emission limit in the plan.

(10) *Equipment Operations*. At all times, including periods of startup, shutdown, and malfunction, the owner or operator shall, to the extent practicable, maintain and operate the unit including associated air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Regional Administrator, or their designee, which may include, but is not limited to, monitoring results, review of operating and maintenance procedures, and inspection of the unit.

(11) The affirmative defense provisions of paragraphs (c)(1) and (g)(3) of this section, related only to malfunctions, apply to this paragraph (j).

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