United States Department of the Interior

OFFICE OF THE SECRETARY
Washington, D.C. 20240

INTERIOR DEPARTMENT COMMENT ON NREL PHASE 1 REPORT

The National Renewable Energy Laboratory's (NREL) Report, "Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts" resulted from a request to NREL by the Department of the Interior (Interior) to develop and objectively synthesize factual information and analyses pertinent to the determination by the U.S. Environmental Protection Agency (EPA) of Best Available Retrofit Technology (BART) in a Federal Implementation Plan (FIP) for NGS. The study focuses primarily on the compilation of additional detailed information and completion of a comprehensive and objective analysis consistent with the five statutorily prescribed BART factors.[1] The study made no presumption about what the appropriate BART determination should be. Rather, its goal was to provide NGS stakeholders, including EPA, with additional data and input regarding the technical and economic feasibility of options for compliance with the Clean Air Act's BART requirement.

In preparing this report, NREL sought information from a wide array of NGS stakeholders, including Interior, the Navajo Nation, Hopi Tribe and other Arizona tribes, Salt River Project, Central Arizona Water Conservation District (operator of the Central Arizona Project [CAP]), the non-federal owners of NGS, conservation organizations and other groups representing local residents and stakeholders, and others.

The time constraints of EPA's BART rulemaking process required that NREL complete this report in a very short time period -- about five months -- to allow EPA sufficient time to review and consider the report prior to issuing a proposed BART rule. In the face of this tight schedule, NREL carried out an extraordinary amount of very high quality work on an extremely complex set of issues to produce this report.

The short time frame for this report was further limited by NREL's independent peer review process for the report. Each chapter of the report was reviewed by an independent outside expert in the subject matter of the chapter. This independent peer review further ensures the objectivity and absence of bias in the NREL report.

Interior has many different interests at stake in both the future of NGS and the BART rulemaking. Through the Bureau of Reclamation (Reclamation), the Department is the largest owner of NGS, with a 24.3% share of the plant's power production. Reclamation also constructed and oversees operation of the CAP. The Bureau of Indian Affairs

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[1] Cost of compliance; energy and non-air-quality environmental impacts of compliance; existing pollution control technology in use at the source; remaining useful life of the source; and the degree of improvement in visibility which may reasonably be anticipated to result from the use of the technology.

supports the interests of the many tribes interested in the future of NGS, including the Navajo Nation, the Hopi Tribe, and the many Arizona tribes which have contracts for CAP water. The National Park Service oversees all the national parks, including the Grand Canyon and the many other parks whose air quality is impacted by NGS emissions. Interior's Office of Surface Mining regulates the Peabody Coal Mine that provides coal to NGS. The U.S. Fish and Wildlife Service, as the agency charged with carrying out the federal Endangered Species Act and other federal wildlife laws, has interests in ensuring the protection of the species under its purview and the clean air and water on which those species depend. In addition, the Secretary's Indian Water Rights Office is in charge of negotiating and implementing Indian water settlements, including a number of settlements involving Arizona tribes that relinquished their senior water rights claims in return for affordable CAP water.

Interior believes that, overall, the NREL report provides an excellent review and synthesis of the many interests and processes that could be affected by EPA's BART rulemaking for NGS. Interior and its agencies are continuing to review both the NREL report and other new reports and information relevant to this proceeding; should any DOI agency find it appropriate to comment on specific matters in the NREL report or elsewhere, it will provide comments directly to EPA.

JANICE K. BREWER
Governor

SANDRA A. FABRITZ-WHITNEY
Director

ARIZONA DEPARTMENT OF WATER RESOURCES

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February 6, 2012

Transmitted via e-mail to:
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1617 Cole Boulevard
Golden, Colorado 80401

The Arizona Department of Water Resources (ADWR) has reviewed *Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts,* prepared by the National Renewable Energy Laboratory (NREL). We are concerned about the broad-reaching consequences that the costs associated with nitrogen oxides (NO_x) removal at the Navajo Generating Station (NGS) will have on water management efforts in the three-county Central Arizona Project (CAP) service area, and on existing and future Indian water rights settlements in Arizona. Further, the report fails to demonstrate an environmental benefit to those costs. EPA's efforts appear to be regulation for regulation's sake, rather than regulation designed to protect human health and welfare or provide a specific environmental benefit. In fact, the proposed action will have undesirable environmental and economic consequences throughout Arizona.

ADWR is also concerned that the time allowed for commenting on the report and the two-page, 12-pitch font limitations are insufficient to comprehensively review and analyze the report and fully express questions, concerns, and comments. We publish many reports that are subject to public review and comment. These processes are vital to fully vetting issues and providing the best possible public policy and work product. ADWR would never consider limiting comments in the manner prescribed in the instructions, particularly in light of the magnitude and breadth of potential consequences of the actions under consideration.

The Report states that "EPA's statutory authority in this particular proceeding focuses on visibility at national parks and other priority areas." It further states that EPA is required to "take into consideration the costs of compliance, the energy and nonair quality environmental impacts of compliance," and "the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology" (Pg ii, Executive Summary).

The report fails to provide clear evidence of visibility improvements that may be enjoyed through the imposition of NO_x controls at NGS. The report discusses discrepancies in the

modeling prepared on behalf of Salt River Project (SRP) and modeling conducted by EPA. SRP's modeling results rely on baseline data from rural monitoring sites at Mesa Verde and other locations of interest in the Four Corners region, presumably some of the very visual resources EPA is trying to protect. EPA's modeling results rely on "background ... data collected in more urban or agriculturally developed areas near Farmington that are impacted by local ammonia sources." The report further states that "If the model input ammonia values are too high compared to actual background ammonia concentrations that are mixed into the power plant plumes as they travel downwind of a source, the modeling process can significantly overestimate nitrate particle formation, thus overestimating visibility impact of the plumes." Such an overestimation of the visibility impact would also serve to overestimate the visibility improvement that may be derived from imposition of NO_X controls or closing NGS. The report further recommends on-going monitoring to assess the actual visibility improvements from NO_x and SO_2 reduction. ADWR recommends that this monitoring be conducted to assess the impact on visual resources from the SO_2 reduction and region-wide NO_x reduction already experienced prior to either imposition of selective catalytic reduction (SCR) or closure of NGS.

CAP Water is an integral element of Arizona's water management efforts. Significant volumes of CAP water were originally allocated to Arizona Indian Communities. Indian contracts totaled 286,100 acre-feet when the Secretary of Interior approved the original allocations in 1983. CAP water has since been an invaluable tool in State and Federal efforts to settle Indian Water Rights claims. Today, 555,806 acre-feet of CAP water is under contract to Arizona Indian Communities, having largely contributed to comprehensive settlements in six of the seven Indian Water Rights Settlements achieved since 1983. An additional 67,300 acre-feet of CAP Non-Indian Agricultural priority water has been reserved for future Indian settlements, including the pending White Mountain Apache and Navajo/Hopi Settlements.

The construction of NGS was a Federal decision. Increased power costs associated with either SCR implementation or closure of NGS will unduly fall on Arizona's Indian Communities and hamper the economic development of these impoverished nations made possible by the settlements. In our opinion, imposition of these costs onto the Tribes violates the spirit of the settlements to which the United States is a party.

Additionally, NGS and the Kayenta Coal Mine are collectively the largest employer on both the Navajo and Hopi Reservations. Closure of NGS would result in the direct loss of roughly 1,000 jobs and $100 Million in wages for members of these communities, thrusting additional poverty on the Navajo Nation and Hopi Tribe, greater than 35% of whose members already live in poverty. The indirect economic impact of the loss of these jobs would be substantially larger. Both the Navajo Nation and Hopi Tribe also receive considerable revenue from royalties paid by Peabody Energy. The Navajo Nation also receives lease revenues as the NGS is located on Navajo land. These revenue streams would be lost with the closure of NGS.

The 2007 Interim Operating Guidelines quantify reductions to Arizona's fourth priority Colorado River water supply under specified, low-reservoir storage conditions. "Firming" of this supply is an integral part of the State's water management efforts, ensuring critical water needs are met in times of shortage on the Colorado River, an increasing probability. These firming activities will benefit Colorado River water users along the main-stem of the River, Indian Tribes with CAP allocations, CAP Municipal and Industrial Users, and others. Additionally, Arizona has stored water to assist the State of Nevada in firming their Colorado River entitlement. Through the Indian Settlements, Arizona has contractual obligations to firm supplies for the future benefit of the settling Tribes. The Arizona Water Banking Authority (AWBA) conducts these firming activities. Imposing increased costs on the AWBA could unnecessarily complicate Arizona's ability to meet its overall firming goals, including its Indian Firming obligations.

In recent years, roughly 400,000 acre-feet of Excess CAP water has also been delivered to non-Indian agricultural users for direct use. ADWR fears that the increased cost of CAP water as a result of imposition of SCR or closure of NGS will force many users to return to pumping groundwater, thereby placing the firmed water at risk and resulting in water level declines and land subsidence, development and expansion of earth fissures, and water quality degradation.

While ADWR appreciates the opportunity to provide limited comments to the NREL Report, the arbitrary limitation on the public comments is of significant concern. Additionally, we do not believe, based on this study, that imposition of SCR or closure of the Navajo Generating Station is warranted given the economic and environmental consequences of the proposed actions and the lack of demonstrable environmental benefit that will be derived.

Respectfully Submitted,

Sandra Fabritz-Whitney
Director

Comment submitted February 6, 2012 to the Navajo Generating Station NREL Study Team by Alberta Green Energy:

Alberta Green Energy Inc. (AGE) offers the following viable solution in response to the request for comments to the National Renewable Energy Laboratory (NREL) Study on the Navajo Generating Station ("Study").

AGE is licensed to utilize and supply proven world-class gas plasma technology and/or plasma arc technology as developed by Advanced Plasma Power (APP). Data on the gas plasma technology is available at: www.advancedplasmapower.com (click on the Media icon both for videos and a 3D CAD walk-through of a gas plasma facility). Use of AGE plasma technologies would resolve the NOx, arsenic, mercury, particulates, and other air pollution issues at the Navajo Generating Station in a much more effective manner and at a much less expensive cost than the technology options currently presented in Chapter 3, "Control Technologies - Cost of Retrofits" on page 43 of the study.

The gas plasma technology subjects the waste elements in the Navajo Generating Station exhaust flow to extreme high temperatures (6000 - 8000 degrees Celsius) as well as intense ultra violet light in an enclosed vessel and literally deconstructs the constituent elements of the waste stream. The gas plasma units have no air emissions themselves, and the units already satisfy European Union 2050 air emission standards.

Based on the preliminary information available to us from the study and other sources we estimate capital costs for the installation of our systems to be in the 35 - 40% range of the SCR + baghouse control option as reflected in Table 1-9, page 18 of the Study. This includes operational redundancies in order to compensate for any scheduled or unanticipated maintenance and downtime of a gas plasma unit.

Similarly gas plasma unit operation and maintenance (O&M) costs can be expected to be only 40-50% of the O&M costs estimated in Table 3-11 "Costs for SCR and Polishing Baghouse" for operating SCR's and baghouses at NGS.

With the implementation of our plasma technologies, air emissions including NOx, arsenic, mercury, and particulates would be reduced to a small fraction of those currently being emitted. We estimate an across-the-boards 90%+ emissions reduction, which would be verified through scientific and engineering data and design evaluations by AGE appointed technical resources.

Waste products such as particulate, metals, ash and any other solids would be tapped from the plasma torch chamber and stabilized in the formation of either molten metal or inert plasmaroc both of which then become reusable commercial products. At this point C02 could also be sequestered to be utilized for commercial purposes to generate income.

Utilization of this gas plasma technology could result in making the Navajo Generating Station the first coal-fired facility in North America to meet or exceed all current and proposed air emission standards. This would establish the Navajo Generating Station as the cleanest power

generation facility in the Western United States (excluding hydro and nuclear facilities) and thereby could be used as a role model for application to additional coal-fired plants.

We respectfully encourage the Navajo Generating Station NREL Study Executive Committee to consider use of gas plasma technology as a viable air emission control option for the Navajo Generating Station.

Sincerely,

Douglas V. Fant
For Alberta Green Energy

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amwua
ONE FOR WATER™
Arizona Municipal Water Users Association

February 6, 2012

Department of the Interior
United States Federal Government
Washington, D.C.

RE: Navajo Generating Station Comments

To Whom It May Concern:

The Arizona Municipal Water Users Association (AMWUA) is a non-profit corporation established by cities and towns in Maricopa County, Arizona, for the development of an urban water policy. AMWUA works to advance the rational and effective management of Arizona's water resources. The municipal water systems owned and operated by the AMWUA member cities of Avondale, Chandler, Glendale, Goodyear, Peoria, Phoenix, Mesa, Scottsdale, Tempe and the Town of Gilbert, collectively provide water for over 3 million people, roughly 60 percent of the population of the State of Arizona. Each of the AMWUA members holds a long-term M&I subcontract for Central Arizona Project (CAP) water and, as a result, relies on the Navajo Generating Station (NGS) to provide the electrical energy necessary to deliver this CAP water from the Colorado River into Maricopa County. Because of our members' heavy reliance on CAP water and our long-standing commitment to sound water management in Arizona, AMWUA is commenting on the NGS Report.

The decision whether to require additional emission controls at NGS has significant implications for the AMWUA members who rely on CAP water as a critical component of their sustainable water supplies. The major goal of the State's water management efforts in central Arizona is to reduce and eventually eliminate the historical over-reliance on mined groundwater in order to protect the well-being of all residents and the economy of the State. Importation of Colorado River water through the CAP to the AMWUA municipalities and other water users in central Arizona has reduced Arizona's dependence on dwindling groundwater resources by providing a stable, renewable supply of water. AMWUA is concerned about any action that could negatively affect the CAP and the state's ability to achieve its water management objectives.

Our specific comments follow:

1. It appears from the report that additional emission controls at NGS may not result in any improvement in visibility. Page iv of the report states:

   "Evidence suggests that NOx emissions from Navajo Generating Station are a likely incremental contributor to haze at the Grand Canyon. **Whether the incremental contribution is significant or even perceptible is a matter of debate among experts in the field of visibility science**." (emphasis added)

If this is the case, it seems prudent to weigh whether the unquantifiable benefits of such controls are justifiable in light of the likely negative impacts.

2. Large increases in costs to install, operate, and maintain additional controls for the NGS will reduce the affordability of water in central Arizona. Increased water costs could force some users, such as agriculture, to revert to mining groundwater, threatening the State's ability to effectively manage its water supplies. Additionally, increases in the cost of CAP water may negatively impact both existing and future Indian water rights settlements.

3. While the report provides a reasonable basis for the cost impacts of the closure alternative, importing water into central Arizona also requires a reliable, steady energy supply. Projecting the unit cost and reliability of replacement power under this scenario is highly speculative. With the debate over the continued use of fossil fuels for generating electricity, alternative energy sources may in fact become more prevalent, bringing with them the attendant increased costs of energy from those alternative sources.

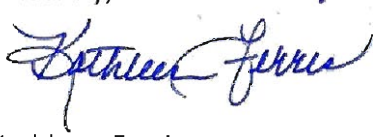
4. The report notes that one possible outcome is accepting the existing plant improvements to improve air quality, LNB/SOFA, with no additional retrofit, but the report does not evaluate this option.

5. The conclusion that installing SCR at NGS would cost less than shutting down the plant does not take into account the relationship between the timing of the determination that the additional controls are required and the resolution of numerous uncertainties surrounding continued operation of NGS beyond 2019.

6. Affordable electricity affects the health and well-being of Arizonans. The NGS provides significant amounts of power to three large electric utility providers in Arizona—Arizona Public Service, Salt River Project, and Tucson Electric Power. Substantial increases in electrical generation costs at the NGS will be passed on to Arizona residents and businesses through increased electricity rates. In many cases, these are the same residents and businesses that will also be impacted by increased water rates.

The final decision on additional controls at the NGS is extremely important and must be thoroughly assessed, understood, and communicated. AMWUA appreciates the opportunity to comment on the report.

Sincerely,



Kathleen Ferris
Interim Executive Director

KF:VD:MLA

Comments on National Renewable Energy Laboratory Technical Report
Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts

Prepared by: Arizona Public Service Company
Address: 400 N. 5th Street, Phoenix, Arizona 85004

Arizona Public Service Company (APS) appreciates this opportunity to provide comments on the National Renewable Energy Laboratory's report, "Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts" (NREL Report). APS is an investor-owned electric utility company serving over 1.1 million customers in Arizona. APS is owner/part-owner of three coal-fired power plants, several gas-fired power plants, and the nation's largest nuclear power plant, Palo Verde Generating Station. Specifically, APS is a part owner of the Navajo Generating Station (NGS), and therefore, is interested in commenting on the NREL Report.

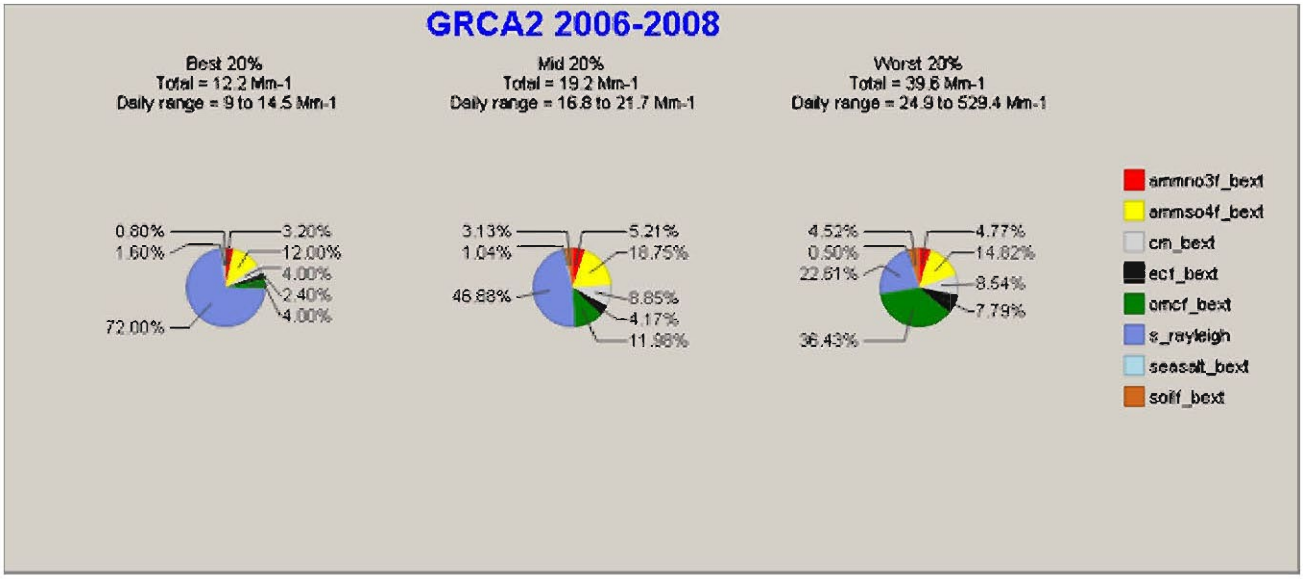
APS's comments are limited to Section 5 of the NREL Report, "Assessment of Visibility Science." Because our comments are not to exceed 2 pages, we will provide some general comments and would welcome the opportunity to supplement it later with more details, should NREL be interested in those. Our comments below are focused on three issues: SO_2 and NOx emissions and their relative contributions to total light extinction (visibility impairment); Use of CALPUFF 5.8 and IWAQM "default ammonia vales" which cause over-prediction of nitrate particle formation and their impacts on visibility impairment; and certain errors in Table 5-4 and 5-6 of the NREL Report.

In general, Section 5 provides a good summary of visibility science, especially as it applies to the arid Southwest. The Colorado Plateau, home to numerous National Parks and Wilderness Areas, has the best visibility in the nation. A quarter century of monitoring under the IMPROVE program show improving visibility trend in this region. Analyses of those data by the Grand Canyon Visibility Transport Commission and its successor, Western Regional Air Partnership (WRAP) show that visibility impairment on the Colorado Plateau is caused by sulfates, dust, and elemental/organic carbon particles in roughly equal proportions. Nitrates, on an average contribute less than 5% to the impairment.

APS agrees with the NREL Report's conclusion that it is unclear whether reducing NGS NOx emissions by retrofitting Selective Catalytic Reduction (SCR) would result in perceptible visibility improvement in the region. SO_2 and NOx emissions undergo complex chemical transformations in the atmosphere to form sulfate and nitrate particles. Those conversions are not linear; background ammonia concentrations and meteorological conditions play significant roles; and sulfate chemistry takes precedence over nitrate chemistry. The NREL Report concludes, "Even under cold weather conditions in this region, sulfate is usually dominant over nitrate, although the sulfate-to-nitrate ratio is smaller in the cold months." Figures 5-7 to 5-12 in the NREL Report show nitrate concentrations are much smaller than corresponding sulfate concentrations.

Figure 1 below shows the relative contributors to total light extinction at the Grand Canyon National Park (data from VIEWS Website) during the best 20%, middle 20%, and worst 20% visibility days during 2006-2008. In each of the three cases, nitrates contribute less than 5% of the total extinction compared to 12% to 19% by sulfates. Recalling that NOx emissions from ***all*** coal-fired power plants contribute less than 30% of overall NOx emissions, it is reasonable to conclude that power-plants' contributions to the total extinction will be even less than 5%. Therefore, significant reductions in NOx

emissions from NGS are not likely to produce significant reductions in their contributions to total extinction.



APS agrees with the NREL Report's conclusion, "Measurements specific to this region indicate that actual visibility impacts [from NO_x emissions] may not be as great as those estimated by CALPUFF 5.8 as applied by EPA" (Page 92). This over-prediction results from 2 aspects: use of incorrect background ammonia concentrations and flaws in the chemistry module in CALPUFF 5.8. It has been well-established that CALPUFF 5.8 over-predicts nitrate concentrations (e.g., see studies by Morris, 2001; Scire, 2003; Karamchandani, et al, 2008; Hoffnagle, 2012, and others). At the suggestion of the Modeling Group at EPA-OAQPS, in 2011 Scire (who developed the CALPUFF Model) evaluated revisions to the model's chemistry module recommended by a study sponsored by the American Petroleum Institute. Those evaluations resulted in the revised CALPUFF 6.4, currently available for public use. Again, at the suggestion of EPA-OAQPS, Scire tested the chemistry module against three other existing data sets; and the results of those tests are expected to be presented at the EPA's 10th Modeling Conference during March 13-15, 2012.

Background ammonia values were collected at numerous rural areas in the West and were summarized by Tombach (2011). Tombach showed that the IWAQM default ammonia value of 1 ppb throughout the year is not appropriate for the Four Corners region and much lower values should be used for CALPUFF modeling, consistent with recent field measurements. For example, background ammonia concentration measurements at the Mesa Verde National Park ranged from 0.2 ppm during winter months to 1.0 ppm during summer months, with intermediate values during spring and fall at 0.5 ppm (Sather, et. al., 2008). .Accordingly, the NREL Report should recommend using revised CALPUFF 6.4 model and actual ammonia concentrations in assessing potential visibility improvements from NOx emissions reductions at NGS.

Finally, two tables (5.4 and 5.6) in the NREL report appear to be erroneous. Table 5.4 (page 75) lists two sets of SO_2 and NOx emission numbers; unfortunately the two sets of numbers are identical. Clearly, one set of numbers is not valid. Table 5-6 (on page 84) lists two columns of ammonium nitrates concentrations during 2001-2005 and 2006-2010 for 9 Class I areas, and the last column shows "Percent Reduction." The numbers in the last column, presumably the difference between the other two, are not correct. NREL needs to review and correct the numbers in Table 5-6.

Arizona PIRG Education Fund

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February 6, 2012

U.S. Department of Interior
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RE: Comments on NREL Report, *Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts*

On behalf of the Arizona PIRG Education Fund, I am writing to comment on the National Renewable Energy Laboratory's recent analysis regarding Navajo Generating Station.

Although, the NREL analysis addresses a broad spectrum of issues, our comments focus on just one of those issues – the impact of pollution controls on water costs in Central Arizona. In short, NREL's analysis misrepresents the impact of pollution controls on water customers in Central Arizona.

NREL concludes that "Replacing Navajo GS power required for CAP pumps with market power under high price conditions would dramatically increase water rates."[1] While the cost of raw water will increase by a substantial percentage, the impact on water rates for municipal households is minimal. Calculating the impact on municipal customers – not raw water costs – is a critical, but omitted, component of this analysis. For example, under the high power price scenario illustrated in Table 4-23, long term subcontract water rates are projected to increase by $64/AF. The City of Phoenix is one of the largest subcontractors for Central Arizona Project water; in Phoenix, the typical household uses 0.37 AF/year (121,000 gallons/year).[2] Phoenix's water supplies are comprised of a mix of CAP water (45%)[3] and water from other supplies (local surface water supplies, groundwater, and recycled water). Given these two factors, the typical Phoenix household uses 0.17 AF of water from CAP each year. Even under the high rate increases described above, the average Phoenix household would see water bills rise by $10.66/yr, or $0.89/month.

This rate impact is comparable to or less than rate increases the Phoenix water utility has imposed in recent years. For example, from 2009 to 2010, a typical household saw its annual water bill rise by over $17. Even with these rate increases, Phoenix households pay less for water than residents in many other cities in the region (Figure 1).

In sum, the pollution controls may impose a cost on the price of *raw water supplies* that may indeed have a significant impact on agricultural users and Tribal users. However, the impact on municipal customers, who bear the brunt of the cost increases, is marginal.

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[1] NREL, Navajo generating Station and Air Visibility Regulations: Alternatives and Impacts, p. 67.
[2] Western Resource Advocates, 2010. Arizona Water Meter.
[3] City of Phoenix Water Services Department, 2011, 2011 Water Resource Plan

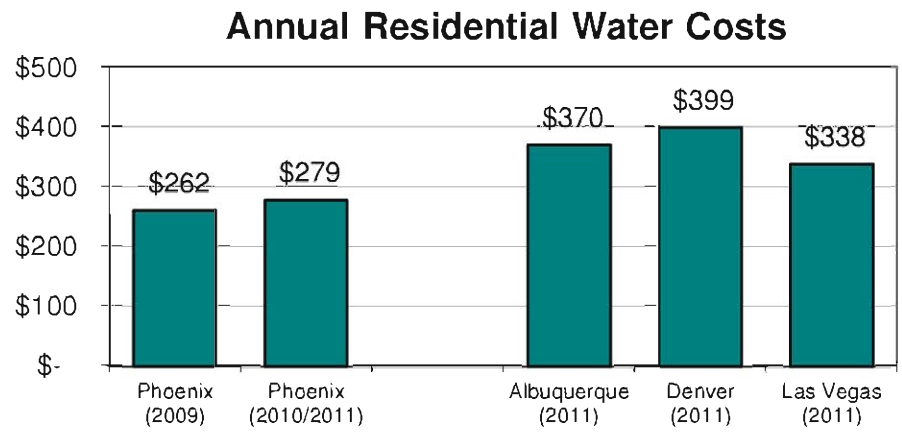

Figure 1. Residential water costs in Phoenix in 2009 and 2010/2011 were lower costs in several other southwestern cities. (All costs reflect household use of 0.37 AF of water.)

Second, the cost analysis is inconsistent with regard to the price of wholesale power. Wholesale power revenues are used to meet CAP's repayment obligations and are dedicated to the Development Fund. Accordingly, surplus power revenues (or the lack of) directly impact the prices paid by CAP water customers. In calculating the value of Navajo GS surplus power, NREL assumed power could be sold at $27/MWh.[4] However, NREL assumes the cost of replacement power from an NGS shutdown would be $32.44 - $49.48/MWh (Table 4-19). The price of replacement power should be comparable to the prices paid (and revenues generated) by Navajo GS surplus power.

In conclusion, the relationship between reliable, affordable drinking supplies in Central Arizona and the Navajo Generating Station is complex and critical to understand. In determining the appropriate pollution controls, we encourage EPA to consider the cost impact on *ratepayers*, not on raw water costs. The strictest pollution controls would lead to a small rise in municipal water rates.

Sincerely,

Diane E. Brown
Executive Director

[4] NREL, Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts, p. 56.

Comments to the NREL report, *Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts* (the "Report")

Central Arizona Water Conservation District ("CAP")
23636 N. 7th Street, Phoenix, Arizona 85024

In the Report, NREL accurately declares that "the question fundamental to this proceeding" is "how reducing NO_x from NGS would contribute to improved visibility at the Grand Canyon and other areas of concern." (Report, p. IV). The answer to this fundamental question is, at best, inconclusive. Consequently, there is no justification for installing SCR or other control technologies at a price tag of $500 million to $1.1 billion, as there is no known or expected effect on visibility that can reasonably be anticipated to result. The pollution control system currently in place at NGS, including LNB/SOFA, is BART.

In determining what technologies constitute BART, the Clean Air Act ("CAA") requires EPA to consider five factors. While the fundamental factor of visibility trumps all others, the Report also addresses the costs of compliance, existing pollution control technology in use at the source, energy and non-air quality environmental impacts of compliance, and remaining useful life. NREL's analysis of these issues warrants comment as follows, including a more in-depth review of the visibility aspect. Note that CAP will also submit separate, more detailed comments to EPA and DOI.

1. **Additional Control Technologies Yield Imperceptible Changes in Visibility.** The CAA states that EPA "shall take into consideration...the degree of improvement in visibility which may *reasonably be anticipated* to result" from use of proposed BART technology. Id. NREL examined the modeling used by all parties to this proceeding, and concluded that whether any incremental contribution to haze by NGS "is significant or even perceptible is a matter of debate among experts in the field of visibility science." (Report, pp. 113, IV).

According to the Report, NGS "is already using the best available control for reduction of SO_2, the pollutant with the largest potential to impact visibility." (Report, p. 85). These sulfate particles are 3-5 times or more significant than nitrates in calculated visibility impacts in the Southwest. (Report, p. 90). With regard to NO_x, upon completion of the installation of LNB/SOFA in 2011 at a cost of $45 million, NGS achieved a NO_x emission rate of slightly more than 0.21 lb/mmBtu, or nearly 25% less than the presumptive BART emission limit of 0.28 lb/mmBtu established by EPA for facilities similar to NGS in design and type of coal used. Against this background, NREL could not conclude that additional retrofit would have any effect on visibility. Indeed, the Report states that "[t]he body of research to date is inconclusive as to whether removing approximately two-thirds of the current NO_x emissions from NGS would lead to any perceptible improvement in visibility at the Grand Canyon and other areas of concern." (Report, pp. 113, IV).

2. **EPA's Visibility Modeling Methodology is Flawed.** NREL also calls into question EPA's modeling, which suggests at least the possibility of perceptible haze, stating that "[m]easurements specific to this region indicate that actual visibility impacts may not be as great as those estimated by CALPUFF 5.8 as applied by EPA." (Report, p. 92). With respect to measures of background ammonia, which affect visibility outcomes, "EPA's ammonia background values correspond more closely with data collected in more urban or agriculturally

developed areas near Farmington that are impacted by local ammonia sources." Id. On the other hand, SRP's ammonia background levels match more closely with similar rural and isolated sites, causing NREL to conclude that "use of the SRP ammonia background values in CALPUFF produces a much better comparison between modeled and measured values." (Report, p. 80). This is critical, because if ammonia values are too high, "the modeling process can significantly overestimate nitrate particle formation, thus overestimating visibility impact" of power plant plumes as they travel downwind of a source. (Report, p. 92).

3. **Excessive Costs Do Not Support Additional Pollution Controls.** The Report's "cost of compliance" analysis is incomplete and misleading. In light of the extremely high cost of retrofit and lack of resulting visibility benefits, the Report nonetheless fails to evaluate the recently added LNB/SOFA as BART. Failure to examine this alternative as BART results in a false choice between two stark alternatives—SCR retrofit or plant shutdown.

Moreover, the Report's conclusions regarding the costs and likelihood of plant shutdown are based on a "best case" scenario that makes unrealistic assumptions and ignores critical considerations. While conceding that "key uncertainties could affect the basic economics," NREL disregards the likelihood of these uncertainties. (Report, p. iii). For example, the Report does not examine the critical relationship between the timing of the BART determination and the resolution of doubts pertaining to renewal of the plant site lease, rights-of-way, the cost of coal, and other factors—doubts that may not be resolved until 2019. Instead, the Report simply assumes the cost of SCR's would be amortized over 20 years, and a low cost of capital that is speculative at best. (Report, p. 59). With that, NREL concludes that installing SCR or SCR with baghouses and sorbent injection would "likely" be less expensive than shutdown of NGS. (Report, p. iii). In fact, it is entirely likely that mandated retrofit before the critical plant extension issues can be resolved would render shutdown as the least-cost option.

4. **Demand for CAP Water is not Inelastic – High Energy Costs Affect Demand.** The Report does shed light on the substantial increases in the cost of CAP water should additional retrofit be required. However, NREL's assumption that demand for CAP water is inelastic is simply not realistic. CAP's tribal and agricultural customers will face price increases of 16-32% if EPA requires SCR or SCR with baghouses. This will prompt some users to return to the use of finite groundwater supplies, defeating one of the principal rationales for the existence of CAP and resulting in even higher costs for remaining CAP customers.

5. **Disproportionate Effect on Tribes and Agricultural Users.** The Report accurately concludes that, should EPA select SCR or SCR/baghouses as BART, the economic impacts would fall disproportionately on tribes and agricultural users. Beyond the cost increases, non-air quality impacts to jobs and the economy of Navajo and Hopi reservations would be significant.

Ultimately, NREL's answer to the "fundamental question" is that the evidence fails to support that additional retrofitting of NGS will result in improved visibility. Without convincing evidence that any retrofit beyond LNB/SOFA will have a positive effect on visibility in the Grand Canyon and other Class 1 areas, the massive expenditures contemplated are not justified when taking into account the requirements of the CAA to consider costs and degree of reasonably anticipated visibility improvement. Finally, in addition to the comments specifically set forth above, CAP fully supports the comments submitted by the Salt River Project.

February 6, 2012

U.S. Department of the Interior
NGS_Report_Comment@ios.doi.gov

RE: Comments on the NREL Report, *Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts*

The Environmental Defense Fund (EDF) submits its comments on the NREL report cited above. We are joined in these comments by the Forgotten People, the National Parks and Conservation Association, and Western Resource Advocates.

EDF appreciates the extraordinary efforts taken by NREL to compile and present the multitude of issues surrounding the operation and financing of Navajo Generating Station and the associated Kayenta mine. Our comments focus on the assessment of visibility science and a concern about the lack of clarity regarding the financing of sulfur dioxide (SO_2) emissions controls in the early 1990's.

Visibility Analysis

On page 77, Table 5-2 compares the modeling procedures used by Salt River Project (SRP) and the Environmental Protection Agency (EPA). The background ammonia used in the most recent SRP assessment is taken from a regional model (CMAQ) rather than monitored data. That CMAQ model run was quality-assured for best results in the southeastern U.S., not for predictions in the southwest. As noted later on page 92, the largest difference in visibility impact modeling is due to the input value of background ammonia. Choosing modeled ammonia concentrations from efforts focused on predicting air quality in the southeastern U.S. rather than monitored ammonia data from across the desert southwest region is highly questionable.

On page 73 and again on page 80 the report mentions a study by R. Henry that finds the consistent deciview (dv) threshold of perceptible change is higher than the 1.0 threshold that EPA defines as generally perceptible. That study examined the threshold for color perception changes. Other studies suggest that observers may be more sensitive to achromatic changes.[1] The report also states that the SRP studies find no perceptible improvement from installation of SCR while the EPA study finds perceptible impairment.

It is important to note that both the SRP and EPA modeling find significant contribution to visibility impairment from NGS as defined by the regional haze regulations. This is especially true when considering the cumulative impacts of NGS across eleven Class I areas. All visibility assessments done to date demonstrate that NGS' NO_X emissions are a significant contributor to human-caused visibility

[1] Tombach I., R. Henry, L.W. Richards. 1998 A Critical Review of Knowledge About Human Perception and Visibility Change, 98-MAI.01

impairment at many Class I areas. EPA noted in the preamble to the final BART rule requiring SCR levels of control at the San Juan Generating Station that "...a perceptible visibility improvement is not a requirement of the BART determination as a visibility improvement that is not perceptible may still be determined significant." [2]

Table 5-8 compares the cost/benefit calculations for various facilities based on maximum dv impact in a Class I area for various sources in the region. It does not include a number of BART determinations by States and EPA where SCR was determined to be BART for NO_X emissions. Examining final BART decisions requiring SCR at 11 power plants in the West, using the metric of annualized cost per 1 dv improvement of the 98th percentile at the most affected Class I area, finds a range from approximately $6.4 million per year per dv to $51.4 million per year per dv. The cost benefit metric for SCR at NGS at approximately $33 million per year per dv is within that range. In addition, most of the power plants do not significantly affect as many Class I areas as NGS. The large number of Class I areas that would see a significant contribution toward visibility improvement strengthens the cost benefit consideration for SCR at NGS.

Financing of Bureau of Reclamation's Share of Environmental Controls

On page 22 the report indicates that the U.S. Bureau of Reclamation costs of SO_2 scrubbers in 1992 was $102 million, close to the projected costs of installing SCR at $113 to $132 million. The estimates of water rate changes developed by NREL for SCR plus other controls assumed the Central Arizona Water Conservation District (CAWCD) would finance capital costs at 5% and recover capital and operating costs from CAP rates. It is unclear from the report whether that was the mechanism used to finance the SO_2 scrubbers. The report implies that the Bureau's costs for SO_2 scrubbers at NGS are paid by the CAWCD to the Lower Colorado Basin Development Fund over a 50-year period. The report should have clearly presented the funding mechanism the Bureau of Reclamation used for the SO_2 scrubbers as well as historical CAP water rates during the period of payment for the SO_2 scrubbers. Such information would illuminate how water rates might be affected by the costs of additional environmental controls.

We appreciate the opportunity to provide comments on the NREL study. We encourage the Department and the EPA to cooperate in addressing the environmental impacts of NGS as well as protecting economic and social values of the region.

Bruce Polkowsky, contractor on behalf of
Environmental Defense Fund
Boulder CO

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[2] 76 *FR* 52427

USDA United States Department of Agriculture | Forest Service | Washington Office | 1400 Independence Avenue, SW Washington, DC 20250

File Code: 2580
Date: FEB 03 2012

Letty Belin
Counselor to the Deputy Secretary
Department of Interior
NGS_Report_Comment@ios.doi.gov

Dear Ms. Belin:

The United States Forest Service is grateful for the opportunity to provide the following comments on the document entitled *Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts* generated by the Department of Energy's National Renewable Energy Laboratory (NREL). The report provides significant information regarding air pollution control options at the Navajo Generating Station (NGS), the economics of water and power delivery, and potential social/economic impacts of Native American interests. We are encouraged by the report findings that installing selective catalytic reduction controls would not significantly change the amount of energy provided by NGS, and that on-site power plant and mine employment would be unchanged.

The USDA Forest Service plays a significant national role in the development and assessment of visibility science. As such, our review is focused primarily on this aspect of the study. Importantly, we are concerned that the third party visibility modeling results presented in this report have not met the burden of scientific testing and documentation needed to support the modeling conclusions. These undocumented methods may jeopardize the integrity of the Best Available Retrofit Technology (BART) modeling process and potentially undermine prior BART determinations (and thus emissions reductions) made in other states and EPA Regions. Our technical comments are attached.

Sincerely,

LESLIE A. C. WELDON
Deputy Chief, National Forest System

Enclosure

01/31/2012

Attachment

USDA Forest Service Technical Comments on Study:
"Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts"

Visibility Science

While the report provided a cursory summary of the myriad of issues affecting visibility science, much of the focus of the visibility science section is on CALPUFF modeling studies that were conducted by Salt River Project (SRP) and the Environmental Protection Agency (EPA) and two key underlying elements in that modeling (regardless of model version): assumptions of background ammonia values and horizontal grid resolution.

The report concludes that the largest source of difference in the modeling conducted by EPA and SRP lies in the background ammonia values assumed without addressing additional differences in modeling techniques. Summaries of modeling conducted for SRP using a version of the CALPUFF system (v6.302) with updated chemistry for the Hayden Power Plant BART determination in Colorado showed that the use of the ammonia limiting method (ALM) yielded approximately a 70% reduction in the maximum impact with 104 and 115 fewer days above the 0.5 and 1.0 dv thresholds respectively.[1] Change in grid resolution alone accounted for approximately a 17% reduction in maximum impacts and 50 fewer days above either the 0.5 or 1.0 dv thresholds at the Mt. Zirkel Wilderness Area.[1] Changing to the newer chemical mechanism within the CALPUFF model only accounted for approximately a 25% reduction in maximum impact and only 28 and 8 fewer days above the 0.5 and 1.0 dv thresholds respectively.[1] These summaries clearly indicate that the ALM technique and enhanced horizontal grid resolution as the primary drivers in reducing modeled impacts in the CALPUFF system (v6.4) and that the effect of the enhanced chemistry is secondary to these techniques.

The report cited that in August 2011 EPA rejected the newer CALPUFF version for use in BART because it "*...has not been adequately tested and subjected to public review and comment.*"[2] We believe it is important to for the reader to note that, while the v 6.4 may indeed refine CALPUFF's secondary aerosol estimates, the SRP analysis (noted above) for Hayden demonstrated that it was the ALM technique and the increased horizontal grid resolution that likely accounted for the greatest changes in modeled impacts noted between the 2011 SRP and 2009 EPA modeling analyses. It is crucial to understand that it was insufficient technical justification provided by the CALPUFF model developer for either technique which ultimately led to the EPA rejection of the v6.4 analysis provided by Public Service Company of New Mexico (PNM) to EPA for its federal implementation plan (FIP) for the San Juan Generating Station (SJGS). EPA identified a number of issues with the appropriateness of the techniques and estimates using v6.4. Most of the modeling procedures employed by the 2011 SRP analysis are identical to the procedures of the PNM analysis for the SJGS FIP and 2010 SRP Hayden analysis. EPA noted the following in the SJGS FIP:

- *Commenters failed to establish the scientific basis for use of a higher resolution meteorological grid (1-km) for modeling of visibility impacts using the CALPUFF modeling*

system. Commenters did not provide statistical analysis showing better performance of the higher resolution meteorological fields were provided, did not established the relationship between grid resolution and chemistry conversion equations, and did not adequately explain the relationship of grid resolution to better air quality model performance.[3]

- *Lack of documentation, adequate technical justification, and validation for the development and use of the ammonia limiting method (ALM). EPA and the FLMs have previously reviewed protocols proposing using ALM and the EPA and FLMs have not approved the use of the proposed ALM procedure.*[3,5]
    - *Each of the papers cited were presented as part of general proceedings at conferences, and therefore do not reflect the thoroughness of a formal peer review process that would be associated with submission to mainline scientific journals and did not consider these references suitable for establishing the validity of the model or post-processing techniques or demonstrating that these models have undergone independent scientific peer review as necessary for reviewing models in accordance with federal regulations.*[4]
    - *The evaluation techniques utilized by the developer are not appropriate for evaluation of the chemical mechanisms of the CALPUFF system. These techniques were deemed not satisfactory for purposes of model performance evaluations for full science chemistry models and did not consider the analysis techniques presented by the model developer sufficient to demonstrate that the model is not biased in accordance with federal modeling regulations.*[4]

While more accurate quality modeling methodologies should always be sought, federal air quality modeling regulations have been developed to ensure that the selection and application of air quality models are done so in a consistent manner. Consistency ensures that the public has a common basis for estimating pollutant concentrations and specifying emissions limitations. The federal modeling regulations provide a consistent basis for selecting the most accurate models and databases for air quality assessments such as BART.[6] EPA published guidance on May 15, 2009 which included a significant discussion on the use of 1-km grid resolutions with the CALPUFF system.[7] In this guidance, EPA cited the lack of technical foundation for use of higher resolutions as the primary basis of its recommendation to maintain grid resolutions at no higher than 4-km. Likewise, EPA's dismissal of v6.4 for the SJGS FIP was done so on this basis. Despite the publication of EPA guidance in 2009 describing the necessity of greater documentation prior to acceptance, the SRP and PNM analyses continued to proffer the same techniques without offering any concrete technical analysis to demonstrate that the techniques enhance meteorological and air quality model accuracy. Without this, the public cannot be assured that the proposed techniques do not bias model predictions towards underestimation as is required under federal modeling regulation.[8] Unfortunately, the report yields significant deference to the 2011 SRP analysis to draw conclusions that modeling conducted by EPA as part of its 2009 ANPR likely overestimates the benefit of NOx controls on nitrate formation without a proper analysis of the 2011 EPA decision to disallow use of v6.4. Therefore, we believe it to be imprudent of a government report to lend such strong credence to modeling results when such modeling has not met the burden of scientific testing and documentation necessary as mandated by federal regulation.

Further, while the report correctly explains that CALPUFF is used as a screening tool to provide a relative comparison on the visibility change that might result from various control options, it does not adequately explain that screening methods are, by their very nature, intended to provide preliminary, conservative estimates of air concentrations and that the modeling methodologies described in the BART guidelines were developed bearing in mind that CALPUFF concentration estimates would be conservative.[9,10]

References

1. SRP, 2010: Preliminary Prehearing Statement of Salt River Project Agricultural Improvement and Power District Regarding Proposed Revisions to the Regional Haze State Implementation Plan and Regulation No. 3, Part F Best Available Retrofit Technology Requirements
2. NREL, 2011: Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts, p. 77.
3. EPA, 2011: Approval and Promulgation of Implementation Plans; New Mexico; Federal Implementation Plan for Interstate Transport of Pollution Affecting Visibility and Best Available Retrofit Technology Determination. See 76 FR 52436
4. EPA, 2011: Approval and Promulgation of Implementation Plans; New Mexico; Federal Implementation Plan for Interstate Transport of Pollution Affecting Visibility and Best Available Retrofit Technology Determination. See 76 FR 52432
5. USFS, 2011: CALPUFF Reviewer's Guide, p. 5-1,2
6. Section 1.0(d) to 40 CFR Part 51, Appendix W
7. EPA, 2009: Model Clearinghouse Review of CALPUFF Modeling Protocol for BART. 14 pp.
8. Section 3.2.2 to 40 CFR Part 51, Appendix W
9. Section 4.2.1.1(a) to 40 CFR Part 51, Appendix W
10. EPA 2005, Final Rule, Regional Haze Regulations and Guidelines for Best Available Retrofit Technology (BART) Determinations. See 70 FR 39123

COMMENTS OF THE GILA RIVER INDIAN COMMUNITY AND THE AK CHIN INDIAN COMMUNITY ON THE NREL NGS REPORT

February 6, 2012

The National Renewable Energy Laboratory (NREL) conducted a study entitled "Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts" under an Interagency Agreement between the Department of the Interior (Interior) and Department of Energy (DOE). The Gila River Indian Community ("Community") and the Ak Chin Indian Community ("Ak Chin") jointly submit these initial limited comments to the NREL Report. The Community and Ak Chin reserve the right to submit additional, more extensive comments in writing to the Department of the Interior and the Environmental Protection Agency as part of the on-going consultations with those agencies.

1 The impact of the proposed BART implementation scenarios on the Lower Colorado River Basin Development Fund (LCRBDF) as described in the NREL report are seriously understated. Because the impacts on the LCRBDF were estimated improperly, the important, negative effects on the GRIC and the other CAP contract entitlement tribes from reduced monies into the LCRBDF were missed. The problem lies in the understated NGS surplus power revenue projections which feed the LCRBDF.

This shortcoming is explained by the incorrect assumption in the NREL report related to the relationship between the cost of NGS power generation and the price of NGS surplus power. NREL assumes the cost and price which existed at the time of their study would continue over the long term. In fact, costs of NGS power have recently been high due in part to spiking coal prices (nearly double nationwide since 2000), and a depressed market price for power due to economic conditions, among other factors. For example, the NREL impact estimates on the LCRBDF assume that the current NGS surplus power sales price will stay at current levels.

The current market ranges between $19 per megawatt-hour (MWH) off-peak to $35MWH on-peak. This is compared with the market price five or so years ago when power was selling for $40 - $45 for MWH power off-peak, $80 per MWH on-peak. The point is, by fixing in place the cost and price of NGS surplus power, the negative effects of the BART scenarios on the LCRBDF are not apparent. However, projecting even a return to more normal market conditions, much less power price escalation over the long term, would reveal the diminished revenues to the LCRBDF from the proposed BART scenarios.

Why is this important to the Community, Ak Chin and the other CAP Settling Tribes? A primary purpose of the LCRBDF is to pay the Tribes' portion of CAP fixed operations, maintenance and replacement costs for CAP water. If the LCRBDF cannot pay those obligations, then the CAP Settling Tribes would be obligated to do so, which would result in a tripling of CAP water costs at current rates. Such an increase would render CAP water use by the C to be infeasible, resulting in:

- A breach of understanding that the GRIC would only be obligated to pay CAP energy costs.
- A reduction or cessation of GRIC and perhaps other Indian agriculture.

- A loss of investment in GRIC and other Indian irrigation facilities.
- A lost opportunity for the GRIC using the CAP water for non-agricultural purposes.
- A possible return of the CAP water to the CAWCD with unpaid costs, prompting a fiscal crisis for that organization and the rest of the CAP water users throughout Arizona.

We believe these risks are real and that they are heightened by the proposed BART implementation impacts on the LCRBDF.

2. In the NREL Report, on pages 2 to 3, NREL notes that the its study will include a supplemental volume examining alternative generating options to prepare for a smooth transition from coal to clean energy.

As an initial comment, the Community and Ak Chin disagree with the notion that coal cannot be "clean energy". The very measures under consideration now in the current BART proceeding, and in simultaneous rulemaking proceedings, are supposedly intended to make coal a cleaner source of power. The underlying assumption that coal can never be clean enough is problematic and indicates a troubling pre-disposition on the part of NREL as it approached this subject.

If the Administration position, however, is to transition away from coal-generated electrical power at NGS, we agree with NREL that it is important now to prepare for a smooth transition for the affected Tribes from coal to a different source of energy for both the CAP and for the subsidies on which those tribes with water settlements in Arizona rely.

To that end, we strongly urge NREL to include in its supplemental study an examination of the need to develop solar or other renewable energy facilities, on Indian Reservation lands, with the net revenues of which solely dedicated to replacing the loss in subsidy supports to those tribes with water settlements in Arizona ("CAP Settling Tribes").

While solar facilities developed on any Indian Reservation arguably could have the revenues of the facility dedicated to such a purpose, it would make most sense to site such a facility on the lands of an affected CAP Settling Tribe. Such a solar facility would need to be subsidized to a certain degree, in order to produce a revenue stream that would suffice to offset the lost subsidies on which CAP Settling Tribes rely. The extent of such a subsidy would be directly related to the amount of lost subsidies.

Finally, we note that given the substantial underestimation of the effect of the BART on the sale of surplus NGS power, and the failure to take account of other concurrent regulatory rulemakings, it is possible that the issue of transition to solar based subsidies may already be one that needs to be addressed, and not something that can wait for the future supplemental report.

THE HOPI TRIBE

Le Roy N. Shingoitewa
Chairman

Herman Honanie
Vice-Chairman

February 6, 2012

Navajo Generating Station Study Commission
U.S. Department of the Interior,
1849 C Street NW
Washington, DC 20240

Dear Commissioners:

In response to the Phase One Navajo Generating Station Study ("NREL NGS Report") comment period, the Hopi Tribe submits the following:

- In December 2011 comment period; the Hopi Tribe requested that the NREL NGS Report distinguish the tribal membership of the employees at the Kayenta Mine. We note that Peabody Energy and the Salt River Project state they do not collect specific membership however the NREL NGS Study statement generalizes that both the Navajo and Hopi Tribes constitute a significant portion of the on-site labor force at the plant and at the mine. We point to the NREL NGS Report Page 95 that eighty-three (83) of the management or a professional role at the Power Plant are Navajo-preference positions and does not make the distinction out of how many management positions.

- NREL NGS Map 6-1 does not reflect the Hopi Tribe's Moenkopi District Reservation which consists of over 60,000 acres of Hopi Land, nor does the Map accurately reflect the partitioned lands as well as the Hopi Tribe's ranch lands.

- The Hopi Tribe submits for the record Vice Chairman Herman G. Honanie's testimony given at the Arizona Inter-Tribal Council Department of the Interior Navajo Generating Station Meeting on August 31, 2011.

- Correction: The Navajo Generating Station accounts for 65% of the Hopi Tribe's revenues.

On July 21, 2011, the Hopi Tribal Council enacted Resolution H-066-2011 requires the Tribe's stance as neutral in response to developments regarding the Environmental Protection Agency's (EPA) proposed actions against the Navajo Generating Station. This Council action is a result of

the Little Colorado River Adjudication settlement and how it would be tied into the operability of NGS resulting in significant costs and increased rates to NGS power users.

The NGS issue is a difficult one for the Hopi Tribe. We are acutely aware of the decisions made by our Trustee, the Department of Interior, and how those federal policy decisions impact the Hopi Tribe. The Hopi Tribe has always been concerned about the effects of NGS on the pristine quality of our air and water used by Peabody in supplying coal to NGS. We also understand that coal revenues are important to the Tribe and benefit the Hopi people.

Thank you for providing the Hopi Tribe an opportunity to submit further comments and if you have any questions, please feel free to direct them to me.

Respectfully,

LeRoy N. Shingoitewa
Chairman
The Hopi Tribe

Attachments

Navajo Nation Comments on National Renewable Energy Laboratory Energy Analysis for Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts

Given the limited amount of time the NREL had to develop this study, the report satisfies the study objectives of describing alternatives and impacts of air visibility regulations on the Navajo Generating Station ("NGS"). The report captured some important aspects of Navajo Nation ("Nation") concerns and perspectives regarding impacts to the Nation. However, the report disregarded a number of important primary references that are considered by the Nation as significant in understanding the larger context of NGS and the impacts of air regulations, particularly the non-air quality impacts. The Nation submits the following comments.

Trust Responsibility

Understandably, the time limitations and scope of the study precluded an examination of a number of issues and topics that the Nation advocated for inclusion to convey a more realistic portrayal of the importance of federal responsibilities to tribes in the context of federal rulemaking. USEPA, like all federal agencies, bears a trust responsibility to Indian tribes that derives from treaties and federal common law. The trust responsibility includes the obligation to consult with tribes when agency action is likely to affect them. The duty to consult is memorialized in Executive Order 13175 and USEPA's own *Policy on Consultation and Coordination with Indian Tribes*. Tribal consultations are necessary to evaluate any substantial, direct effects that agency decisions will have on tribes. In the BART determination for NGS, USEPA will make a regulatory decision concerning a coal-fired power plant located on the Nation pursuant to a lease approved by the Navajo government. The Kayenta Mine, located on Navajo Land, which produces the coal fuel for NGS, also faces impacts from the BART determination. While a BART decision for NGS has the potential to have far-reaching implications for many Indian tribes, no tribe will be affected more significantly than the Navajo Nation.

Permit Limit Unchanged

The Nation had recommended a change to the Pre-LNB/SOFA permit limit that appeared in the table for NO_x Permit Limits and Technological Performance in the draft NREL study. However, the Nation notes that the Pre-LNB/SOFA permit limit is unchanged in Table 3-2. The Nation recommended a correction to reflect the change of 0.36 lb/MMBtu to 0.40 lb/MMBtu, and a change in the percent reduction from 33% to 40% reduction. This also remained unchanged.

Models, Future Studies and Other Evidence-Based Reports

Throughout the NREL study, numerous qualifying statements allude to improvements in instruments, such as studies, models and other evidence-based reports that could provide better interpretation, analysis, and understanding of the wide-range of issues implicated by the BART rulemaking for NGS. The potential to increase the understanding of stakeholders, including USEPA, regarding the issues surrounding NGS and the impacts of air visibility regulations can be addressed partly through objective analysis of improved modeling results that USEPA refuses to accept and new studies and reports that currently do not exist.

The Nation continues to support future dedicated efforts, particularly support by the respective federal agencies, that will result in studies or reports that can be used to chart courses to achieve the best reductions in emissions, and simultaneously continue to meet the economic and environmental needs of the Nation.

Groundwater Issues

The study discusses concerns raised by NGOs about alleged injury to groundwater attributable to the Kayenta Mine. The Nation has participated in numerous assessments of the impacts of the mine's groundwater use. These include the on-going USGS Black Mesa Monitoring Program (http://az.water.usgs.gov/projects/9671-9E9/), development of groundwater models by the USGS and others, and participation in preparation of Cumulative Hydrologic Impact Assessments by OSMRE. Based on these assessments, the Nation has concluded that the mine's pumping has not affected water quality, and drawdown effects are localized and temporary. Pumping from the N-Aquifer does not impact springs issuing from overlying aquifers; the data on impacts on N-Aquifer springs are inconclusive.

Visibility Science

The section of the study pertaining to visibility science effectively related that there have been significant reductions in regional SO_2 and NO_x emissions. The reductions have occurred in large part due to federal rules established to improve visibility in Class I areas, including the installation of emissions controls at NGS, and the Nation assuming its role as environmental regulator for purposes of the Clean Air Act ("CAA"). Most notably, NGS voluntary installed LNB/SOFA during the period from 2009 to 2011, meeting the presumptive BART limits for NO_x, which likely contributed to the overall decline in emissions of SO_2 and NO_x.

The Nation concurs in the findings in this section and finds the information encouraging with respect to the potential for future collaboration among agencies to design studies that will serve in the evaluation of visibility improvement and use of appropriate control technology that will meet the national visibility goal while protecting tribal resources. The fact that there are different and somewhat conflicting positions on whether installation of SCR will result in perceptible visibility improvement underscore the need to strengthen, and collaborate on, the best methodology(ies) to use in evaluating the degree of improvement in visibility on a case-by-case basis.

Finally, the Nation does not concede that SCR is BART for NGS. The Nation continues to support a determination that LNB/SOFA is BART for NGS.LNB/SOFA presents the best scenario for meeting BART, with reasonable costs of compliance that will mitigate the economic impact to the Nation. The Nation has previously stated, in its comments to the Advance Notice of Proposed Rulemaking, that it supports a phased approach to emission controls consistent with the glide path to pristine conditions. Installation of LNB/SOFA as a first step is consistent with the CAA and the Regional Haze Rule, and satisfies the BART requirement for the current planning period.

From: doug.kupel@phoenix.gov [mailto:doug.kupel@phoenix.gov]
Sent: Monday, February 06, 2012 12:44 PM
To: NGS_Report_Comment
Subject: City of Phoenix Comments on Navajo Generating Station NREL Study

City of Phoenix Comments on "Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts"

The City of Phoenix (City) has a large interest in projected impacts from the Navajo Generating Station (NGS) being required to adopt Selective Catalytic Reduction (SCR) or SCR plus baghouse and sorbent injection (SCR plus BH&SI) as Best Available Retrofit Technology (BART) to control NOx emissions. The additional possibility of plant closure, now raised as an alternative in the NREL report, and the resulting projected increase in CAP water rates for municipal and industrial users estimated from $33.00 to $64.00 per acre foot, could have serious implications on water rates in the City and for the City's water customers.

The population in the City's water service area is an estimated 1.455 million persons based on the 2010 US Census. The Phoenix service area represents about 39 percent of Maricopa County's population and 23 percent of the total population of Arizona. The incorporated area of Phoenix covers 546 square miles. In addition to the Phoenix service area, the City also serves portions of the Town of Paradise Valley and provides treatment services to adjacent providers on a limited basis. In a normal supply year, the City meets more than 90 percent of its water demands from surface sources. These include water from the Salt and Verde Rivers delivered through the Salt River Project and water from the Colorado River delivered by the Central Arizona Project. For the years from 2007 thru 2010 forty-four percent (44%) of the City's surface water supplies were delivered through the CAP.

Costs for CAP water form a large percentage – from 75 to 80 percent – of the City's overall cost for water. The City and its water customers have strong concerns regarding financial and water supply impacts that may stem from the three proposed actions discussed in the NREL report.

In October of 2011, the City provided information requested by NREL during the study. We appreciate the opportunity to provide these comments on the final report.

1. Large increases in costs to install, operate, and maintain additional controls for the NGS will reduce the affordability of water and energy in central Arizona. These increased costs could have a negative impact on the local and regional economy.

2. High energy prices and resulting higher rates for CAP water could reduce the ability of water users in Arizona to purchase CAP water. As one example, these increased CAP water costs might negatively impact the ability of the Arizona Water Banking Authority (AWBA) to store water in anticipation of future droughts and shortages. With the addition of increased CAP water costs due to emissions controls at NGS, the ability of the AWBA to store water for emergencies could be hampered. If the AWBA is unable to meet the City's need for water banking the City would likely have to expend additional resources to acquire and develop other water supplies for drought protection.

3. The City anticipates that it will continue to use CAP water even if the price of that water increases. A major reason that the City must have CAP water is to demonstrate that it has a 100 year Assured Water Supply (AWS) or it will be out of compliance with state law. As a matter of state law, water providers in Arizona must demonstrate a 100 year AWS that must be based primarily on renewable supplies such as surface water. The main goal of this legislation is to reduce reliance on non-renewable supplies such as groundwater in order to achieve "safe yield" as required by the 1980 Arizona Groundwater Management Act. While the rationale for concluding that CAP demand is inelastic appears to have been based on the fact that municipal water providers do not have alternate supplies to replace

CAP water should prices rise, this does not imply that the price increase is free from impacts.

4. Because the report assumes that CAP water use will be unaffected by price increases, the report does not recognize the potential impact of significant increases in the cost of CAP water on both existing and future Indian water rights settlements. Existing settlements may be challenged by increasing CAP costs. As part of these settlements, Phoenix leases or plans to lease CAP water from several Tribes, including the Fort McDowell Indian Community, the Salt River Pima-Maricopa Indian Community, the Gila River Indian Community, and the White Mountain Apache Tribe. These settlements and leases are the foundation for the successful resolution of long-standing water rights issues in central Arizona.

5. Affordable water is a fundamental resource that affects the health and well-being of Arizonans. Substantial increases in electrical generation costs at the NGS more than likely will be passed on to Phoenix residents and businesses through increased water rates. This creates a hardship for those ratepayers. Phoenix must protect its ratepayers by keeping rates as low as possible while maintaining a strong and reliable system. Increased energy costs attributable to emission controls for visibility improvements may compromise this delicate balance.

Douglas E. Kupel, Ph.D.

For Jerome E. Miller
Deputy City Manager

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Ladies & Gentlemen:

This communication provides the comments of the Central Arizona Irrigation and Drainage District (CAIDD), Maricopa-Stanfield Irrigation & Drainage District (MSIDD) and New Magma Irrigation and Drainage District (NMIDD) (the "Districts") on the above referenced NREL NGS Study. I serve as General Counsel to the Districts, which combined, serve Central Arizona Project ("CAP") water to over 200,000 acres in Pinal County, Arizona.

In 2011, the Districts delivered nearly 500,000 acre feet of CAP water, both for direct and in lieu storage uses, to their growers and landowners. These deliveries constitute roughly 70% of total CAP agricultural water deliveries in 2011. In addition, MSIDD and CAIDD also pumped substantial amounts of groundwater for delivery to their growers from wells either owned or leased by these Districts. The farming in these Districts, as well as neighboring districts and Reservations, constitute an important part of the local and regional economy for Central Arizona.

The foregoing background is important because the NREL NGS Study significantly underestimates the amount of CAP water currently being utilized by non-Indian agricultural users. In addition, it severely underestimates the price impact on those non-Indian agricultural users should either the Selective Catalytic Reduction ("SCR") scenario, the SCR plus Baghouse & Sorbent Injection ("BH & SI") scenario, or the NGS Shut Down scenario, be the final BART as determined by EPA.

The primary focus of these comments is on Chapter 4, "Central Arizona Project and Navajo Generating Station". Nevertheless, it is extremely important to focus on the legal standard EPA must follow in making its BART decision:

> "...take into consideration the costs of compliance, the energy and non air quality environmental impact of compliance, any existing pollution control technology in use at the source, the remaining useful life of the source, and the degree of improvement in visibility which may reasonably be anticipated to result from the use of such technology." (Emphasis Added)

The NGS Shut down scenario clearly does not meet the BART legal standard when considering the impact on the Tribes as set forth in Chapter 6, and the unclear and highly disputable beneficial impact on air visibility as outlined in Chapter 5, . A more comprehensive analysis by NREL on the economic impacts of all but the "Base" scenario on Indian and non-Indian CAP agricultural water users alike would have revealed a similar result.

Figure 4-2 on page 58 of the NREL NGS Study indicates that non-Indian Agriculture received deliveries of only 400,000 acre feet in 2010. This chart does not take into account the considerable amount of water under contract to "M&I Subcontractors", "M&I Excess" contractors, and "Federal Subcontract-Off Reservation" users that actually were delivered to non-reservation agricultural lands for in-lieu storage purposes. When these amounts are taken into consideration, the non-Indian agriculture sector uses over 50% of total CAP water deliveries annually. This serves two important federal and state water policy goals. It allows Arizona to utilize its full CAP annual entitlement which was one of the primary purposes of the creation of the Arizona Water Banking Authority and in-lieu storage programs. It also serves to significantly reduce groundwater pumping in Central Arizona, a key condition of the original CAP Enabling Legislation in 1968. These

critical water management goals would be placed in jeopardy should CAP agricultural water cost be increased by the EPA BART decision as outlined in Chapter 4.

Evidence of the foregoing was presented to NREL representatives on September 21, 2011 by members of the agricultural CAP water user community at the offices of MSIDD. Attending that meeting was a representative from Farm Credit Services, the primary agricultural crop financing entity in Central Arizona. He presented to NREL annual crop budgets that clearly show current water costs as the highest input cost for farmers in Districts receiving CAP water. The Farm Credit study provided to NREL concluded the following:

> "From a competitive standpoint, the Pinal County water districts have some of the highest water costs in areas financed by Farm Credit Services Southwest. If water costs were increased by $16.30 (per acre foot), it would raise the per acre cost by $44…leaving a negative margin which is not financeable." (Emphasis Added)

Nowhere does this discussion or documentation appear in the NREL Study. Instead, on page 60, the following conclusion is stated:

> "Although high prices for CAP water may prompt some water users to seek other available water sources, there is no easy way to quantify such a curtailment in CAP water demand. Therefore, the analysis in this section assumes that CAP water demand will remain fixed regardless of price."

The underscored portion of this conclusion is clearly erroneous and cannot be supported by the clearly understandable data presented to NREL. If crop financing is not available due to much higher water costs, CAP water use will be substantially reduced, agricultural lands will go out of production, and the local economies will suffer. It's troubling that NREL made no effort to include these analyses let alone evaluate their merit. In section 6.2, reference is made to reduced farm profit margins for the Gila River Indian Community as a result of selection of certain BART scenarios by EPA, but no such comment is made regarding non-Indian agriculture when similar data provided by MSIDD, an adjacent neighbor to GRIC. Recent history for these Districts illustrates that when CAP water costs substantially increase, CAP water use dramatically decreases, groundwater use increases to a degree, and lands go out of production. This exact scenario resulted in two of the Districts seeking municipal bankruptcy protection in the 1990's. These results are much more severe than "reduced margins". Again, it must be emphasized that the only "other available water sources" for most of the Districts is pumped groundwater, which, as mentioned previously, runs at cross purposes with the CAP enabling legislation.

The critical impact of the BART decision on the 2004 Arizona Water Settlement Act, is referenced only in passing. One such impact is the lost promise of "affordable" CAP water for Indian and non-Indian agriculture water users (until 2030) which was a key to achieving the final settlement. Should EPA undo this important benefit agreed to in contract by the Department of Interior, and blessed by Congress, much of the settlement could unravel and the resulting chaos in the Arizona Water Community can not be overstated.

In conclusion, although NREL accurately predicts resulting cost increases to CAP water users (including agricultural water users – as clarified above) under the various BART scenarios, it fails to draw some obvious conclusions which are clearly relevant in applying the legal standard of "cost of compliance" which EPA must follow in making its BART decision. Hopefully EPA will not ignore these clear conclusions as well.

Water Resources

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6 February 2012

VIA EMAIL: NGS_Report_Comment@ios.doi.gov

Department of the Interior
Washington DC

RE : Report regarding "Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts" prepared by the National Renewable Energy Laboratory ("NREL")

The City of Scottsdale, Arizona Water Resources Division provides drinking water and sewer service to more than 87,000 customers within Scottsdale, which is located in the metropolitan Phoenix area of central Arizona. We are the third largest subcontractor for Central Arizona Project (CAP) municipal water in the state, and we expect to rely upon CAP water for over two-thirds of our projected demand for potable water.

The CAP relies exclusively on the NGS to supply the energy needed to deliver water to its customers, including Scottsdale. Therefore, we have a great deal at stake in the outcome of the BART rulemaking currently underway at EPA. The NREL study is a key input into EPA's development of that rule. We read it with great interest, and appreciate the opportunity to comment on the report and its findings. Our comments will focus primarily on those aspects of the report that relate to the direct cost impacts on the City of Scottsdale as a CAP water customer.

Scottsdale is supportive of protecting our environment. However, it appears some of the emission control alternatives go beyond providing reasonable and rational environmental protection to the point of requiring significant financial commitments with no guarantee of achieving perceptible visibility improvements as a justifiable return on those investments.

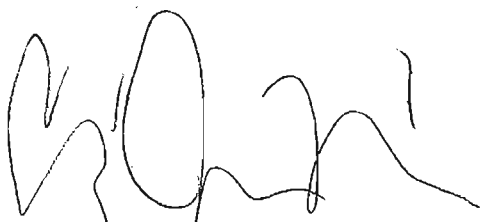
The use of CAP water is a critical component of Scottsdale's long-term water supply sustainability strategy. Key components of this strategy are maximizing use of renewable water supplies while minimizing groundwater pumping, reusing reclaimed wastewater for non-potable purposes such as golf course irrigation, and recharging our groundwater aquifer in order to balance any necessary groundwater pumping. Any increase in the cost of CAP water (the City's primary renewable water supply) would negatively affect the City's ability to continue to provide an assured and sustainable water supply for its customers. The various cost alternatives evaluated in the report could result in increases in the City's raw water costs of up to 52%. This increased water cost would directly result in a significant rate increase to the City's water customers.

The report concludes that the only alternative proposed that would significantly increase the cost of power to CAP's municipal water customers is the complete shutdown of the NGS. It infers that this shutdown is unlikely. This conclusion ignores the critical relationship between the timing of the BART determination and the resolution of numerous uncertainties surrounding continued operation of the NGS and the Kayenta mine beyond 2019. These uncertainties, combined with the potential increase in costs associated with installing emission controls, could very well result in a decision by the plant's owners to shut down the plant in a time frame that would leave very little opportunity for CAP to develop alternative and affordable power sources to the NGS.

Another issue of direct concern to the City is the cost burden that installation of unreasonable emissions controls on the NGS would impose upon the Tribal users of CAP water, particularly the potential availability of power revenues from the Lower Basin Development Fund. These funds were a key component of the Arizona Water Settlement Act, and we are concerned that settlements may be challenged on the grounds of a breach of federal trust responsibility to the Tribes and that future settlements could be derailed by increasing CAP water costs..

The City is a party to water rights settlements with several Tribal CAP customers. These settlements have helped provided the City with water supply certainty by settling of significant tribal water rights claims. Scottsdale has also entered into leases with these communities, which are a major component of the City's water supply. The reopening and renegotiating of any of these settlements would increase the uncertainty related to our water supply future. This is of great concern to the City of Scottsdale as it works to provide a secure sustainable water supply for its citizens.

Again, we appreciate the opportunity to review and comment on the NREL report. We urge the EPA to fully consider the critical role that the NGS plays in providing a sustainable water supply future for Arizona as it evaluates this report and proceeds with the BART rulemaking. We look forward to further participation in the rulemaking process.



Elizabeth Miller
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Comments on National Renewable Energy Laboratory Technical Report
Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts

Prepared by: Salt River Project Agricultural Improvement and Power District
Address: P.O. Box 52025 PAB352, Phoenix, Arizona 85072-2025

Salt River Project Agricultural Improvement and Power District (SRP) appreciates the opportunity to provide comments on the technical report prepared by the National Renewable Energy Laboratory (NREL) on the Navajo Generating Station (NGS) ("NREL Report"). SRP is a political subdivision of the State of Arizona that provides retail electric services to more than 930,000 residential, commercial, industrial, agricultural and mining customers in Arizona. SRP is an owner of NGS and is the operating agent for the plant.

SRP's comments on the NREL Report are outlined below. Since NREL restricted comments on the report to two pages, this document was prepared to comply with that limitation. SRP will submit more detailed comments on the report in a separate document.

1. NREL's assessment of visibility science clearly supports SRP's position that Selective Catalytic Reduction (SCR) is not Best Available Retrofit Technology (BART) for NGS.

In its assessment of visibility science in Chapter 5 of the report, NREL reaches conclusions that are missing from the Executive Summary and Conclusions sections of the report, and are critically important in the pending BART determination for NGS:

- Page 76: "[Sulfur dioxide] SO_2 has been the initial focus [of power plant emission control requirements] because sulfate has a larger impact on regional haze compared to nitrate."
- Page 92: "Measurements specific to this region indicate that actual visibility impacts [from nitrogen oxide emissions] may not be as great as those estimated by CALPUFF v5.8 as applied by EPA."
- Page 90: "Installation of [Selective Catalytic Reduction] SCR technology on Navajo GS would result in a calculated cost/benefit ratio [in dollars per deciview] larger than those calculated for [Best Available Retrofit Technology] BART controls proposed for other units in the region....even if EPA determines that these other facilities should install SCR, the cost/benefit values for Navajo GS based on EPA modeling/analysis for Navajo would be higher..."

NREL's assessment of visibility science clearly supports SRP's position that SCR is not BART for NGS. NREL's conclusions in this chapter are further supported by the data provided in SRP's updated BART report submitted to the United States Environmental Protection Agency (EPA) on January 20, 2011.

2. NREL's economic analysis is flawed because it ignores critical considerations involved in a decision to keep NGS online.

NREL's statement that the cost of SCR and baghouses is less than the cost of shutting down

NGS and replacing it with purchased power ignores the following considerations:

- ***Site Lease and Coal Supply Costs.*** NREL's analysis is conducted based on the current cost of operating NGS. In reality, the future cost of coal and the plant site lease will be meaningfully higher due to the renegotiation of the existing agreements, assuming that those agreements can be successfully extended.
- ***Cost Recovery Timeline.*** The report assumes that the capital costs associated with SCR would be recovered over 20 years. However, from an investment risk perspective, each owner must also take into consideration the possibility that those costs may need to be recovered by 2019 in the event that the equipment is installed and the plant is still shutdown due to other factors.
- ***Assumptions about Resource Alternatives.*** The report assumes that NGS capacity could be easily replaced with market purchases since there is excess capacity in the region. While this may be the case from a near-term regional perspective, the assumption is inconsistent with a utility's obligation to serve its customers, which requires dependable capacity and cost control. These requirements are not met with an assumption of market-based energy purchases. Moreover, to the extent load continues to grow, any excess regional capacity will diminish and the capacity will need to be replaced.
- ***Uncertainties Concerning Future Ownership.*** The continued participation of each of the owners, especially LADWP, is uncertain for the reasons discussed by NREL on Page 10 of the report.

NREL should have clearly recognized that if the EPA requires costly additional emission controls such as SCR as BART, the NGS owners would be forced to decide whether to make large capital investments without any certainty that the plant could continue to operate beyond 2019 and without certainty regarding the future costs of operating NGS due to the potentially higher lease and coal costs. These factors could put the plant at a significant risk of closure. NREL's economic conclusions are flawed because they fail to account for these considerations.

3. *While the report does not recommend or endorse a specific control technology as BART, it clearly supports SRP's position that Low-NO_x Burners and Separated Overfire Air (LNB/SOFA) is BART for NGS.*

The NREL Report was commissioned to provide factual and objective information to the United States Environmental Protection Agency (EPA) for consideration in the development of a BART proposal for NGS. The requirement to assess and install BART comes from EPA's Regional Haze Rule (RHR). The RHR requires BART to be determined based on a case-by-case evaluation of each control option, considering factors such as the cost of each technology and the degree of visibility improvement that can be achieved by each technology.

NREL concludes that it is not clear that installing SCR would result in a perceptible visibility improvement at nearby national parks and wilderness areas (Class I areas). NREL also acknowledges the significantly higher capital cost of SCR relative to LNB/SOFA. This significantly higher SCR cost, coupled with NREL's uncertainty regarding whether SCR can achieve a perceptible improvement in Class I areas, supports SRP's position that LNB/SOFA - a technology voluntarily installed by the NGS owners between 2009 and 2011 - is BART for NGS.

WESTERN RESOURCE
ADVOCATES

February 6, 2012

U.S. Department of the Interior
NGS_Report_Comment@ios.doi.gov

RE: Comments on NREL Report, *Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts*

Western Resource Advocates hereby submits its comments on the NREL report cited above. We are joined in these comments by the Grand Canyon Trust, the Sierra Club, the Environmental Defense Fund, and Forgotten People.

We recognize the vast amount of review and analysis undertaken in the preparation of the report and commend NREL for accomplishing a wide range of assessments within a very limited time period. In these comments we address the report's conclusions: a) that the cost of SCR is likely less than the cost of shutting down the Navajo Generating Station (NGS) and replacing the foregone power and energy with purchases from the market, and b) that early retirement of NGS must necessarily be inimical to the Navajo Nation and Hopi Tribe.

The all-or-nothing options studied for NGS are inappropriately narrow and stuck in time; what's also needed is a forward-looking analysis that considers a full range of scenarios for a gradual transition from coal to cleaner resources. In particular, the report evaluates only two sets of options – a) continued operation of NGS with a set of possible environmental controls to reduce some emissions, and b) complete shutdown of NGS and replacement of the energy and capacity with wholesale market purchases.

Given the complexity of the situation and the need to invent more creative solutions, additional options must be addressed as is being done regarding the Four Corners power plant. One such option is an early shutdown of one or two NGS units and replacement of some of the foregone energy and capacity with renewable resources. This might occur, for example, if some owners of NGS turn to other resources while the Bureau of Reclamation continues to receive power from one of the NGS units. Investment in renewable resources could benefit the Navajo Nation and Hopi Tribe by providing income and jobs and while reducing air pollution.

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The study fails to explicitly account for important aspects of energy industry economics, such as uncertain coal prices, uncertainty over what happens to LADWP's share of NGS, and safeguards against the costs of complying with possible future carbon dioxide regulations. At 16 million metric tons in 2010, NGS is the largest emitter of carbon dioxide in Arizona and one of the largest in the nation (http://ghgdata.epa.gov/ghgp/main.do). This situation imposes a significant risk on the plant owners by exposing them to the potential cost of complying with future regulation of greenhouse gases.

The NREL report does not address the health impacts of operating NGS or the health benefits of reducing emissions from the power plant. The Clean Air Task Force (http://www.catf.us/coal/problems/power_plants/existing/) presents estimates of the health impacts of fine particulate matter associated with NGS emissions in 2010. These include the following annual impacts at a combined cost of $128 million a year: 16 premature deaths, 25 heart attacks, 300 asthma attacks, 12 hospital admissions, 11 chronic bronchitis cases, and 15 asthma emergency room visits. Over a 15-year period, these are large impacts on the public.

Additional work should be carried out to assess the health benefits of reducing emissions from NGS, including retiring some or all of the units and replacing them with cleaner resources. Such studies have been conducted in other cases. One example is found in the Declaration of George D. Thurston in Opposition to Petitioners' Motion for Stay, Public Service of New Mexico v. EPA, filed in the U.S. Court of Appeals, Tenth Circuit, Case No. 11-9557. Another example is the Supplemental Answer Testimony of Leland Deck in Docket No. 07A-447E before the Colorado Public Utilities Commission, filed on May 27, 2008 on behalf of Western Resource Advocates.

In sum, resolution of the air pollution problems at NGS requires a much more comprehensive analysis that considers realistic transition options, health impacts, and uncertainties in coal costs and costs of compliance with potential future environmental regulations. The NREL analysis is simply too constrained to lead to any policy conclusions.

We appreciate the opportunity to provide comments on this important matter and urge the Department of the Interior and EPA to address the many issues surrounding the future of NGS, to accelerate the transition to cleaner energy resources to benefit Arizona, the tribes, the agriculture sector, and the environment, and to foster creative solutions among stakeholders.

David Berry
Chief of Policy Analysis
Western Resource Advocates

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Governor

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Officially known as the Zuni Tribe of the Zuni Indian Reservation

February 1, 2012

Letty Belin, Counselor to the Deputy Secretary
U. S. Department of Interior
1849 C Street NW
Washington, DC 20240

RE: Comments on Navajo Generating Station and Air Visibility Regulations:
Alternatives and Impacts

Dear Ms. Belin,

The Pueblo of Zuni provides the following comments on the National Renewable Energy Laboratory (NREL) Analysis of the Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts dated January 2012.

The Pueblo of Zuni has been pursuing renewable energy projects opportunities, and recently completed feasibility studies of several solar power generation projects on its lands in Arizona and New Mexico. Zuni has excellent solar resources, very good proximity to high voltage electric transmission lines, and suitable project sites. Proposed solar projects from 10 MW to 200 MW are considered feasible at their current sites at Lich-N- Haven/Davis in Arizona and Western Border in New Mexico. Zuni is pursuing development at this time, with the intention to construct projects within a 2 to 5 – year time horizon.

Zuni requests that its proposed solar generation facilities be included in the supplemental study planned by NREL as possible replacements for some of the Navajo Generating Station electric generation, should NGS be shut down. Zuni is also interested in participation in a possible tribal consortium effort to replace NGS generation discussed at the Inter-Tribal Council of Arizona January 27, 2012 meeting.

We look forward to the release of further analyses of the options and would be pleased to provide additional information as needed.

Sincerely,

Arlen P. Quetawki, Sr. Governor

Enclosure
EPA Corrections to NREL Phase I Study on Navajo Generating Station

1. EPA regulatory actions on pages 12 and 14 are not accurately described. The Report states that the plant will be subject to a number of regulations and implies that they will require additional investments. In many cases, we do not know whether NGS would be affected (e.g., in cases where standards have not been set, rules have not been finalized, or designations have not been completed). If NGS were affected by many of these actions, it is likely that actions NGS has already taken or will take for MATS or BART would cover some of their obligations. Therefore, except in the case of finalized rules, EPA actions should be presented as "potentially affecting NGS," including in the title of the table on page 12.
    a. Utility Mercury and Air Toxics Standard. The report incorrectly states that MATS sets emission limits for organic compounds. The final rule sets work practice standards for organic compounds.
    b. Cooling water intake. The rule will "minimize" not "prevent" impingement/entrainment of aquatic life.
    c. Coal Combustion Residues. EPA has no public date for finalizing this rule. The status should read "pending". The summary should read "EPA has proposed to regulate coal ash to address the risks from the disposal of the wastes, such as residues from the combustion of coal in power plants, generated by electric utilities and independent power producers. The target date for release of a final rule will be determined pending a full evaluation of all the information and comments EPA received on the proposal."
    d. Ozone and PM NAAQS. The report states that EPA has proposed a revised ozone standard. In September 2011, EPA chose not to finalize that revised standard and instead has begun implementing the ozone NAAQS promulgated in 2008. EPA is also conducting the 5 year review of the ozone NAAQS required by statute and expects a proposal in 2013. As a result, the schedule box for this action should read "pending". The text under "summary of action" for the PM NAAQS should also be used for the summary of action for the ozone NAAQS. Finally, since the ozone and PM NAAQS are the same type of process now, both should be characterized as "reviews" or neither should be characterized as a "review."
    e. Transport Rule. Also on the table on pg. 12, the Transport Rule II is no longer on EPA's Regulatory Agenda. As a result, this rule should be removed from the table.
    f. Utility Boiler GHG NSPS. The Summary should read "EPA is under a court settlement to set NSPS standards for this source category for GHG emissions. Under the NSPS provisions, the agency will also establish guidelines for states to use in regulating existing sources such as Navajo GS. This process could lead to GHG requirements for Navajo GS.
    g. California Senate Bill 1368. The California GHG emission performance standards does not impose any requirements on NGS, rather it affects one of the co-owners of NGS (Los Angeles Department of Water and Power). We suggest the text be adjusted to reflect this.

2. The discussion on MATS on page 51 is not current – it describes the potential need for baghouses and sorbent injection to control SO_3 and sulfuric acid mist (both contribute to the condensable fractions of particulate matter). The final MATS rule set a filterable only PM limit of 0.03 lb/MMBtu, therefore, discussion of SO_3 and sulfuric acid controls is not relevant for MATS implementation and should not be characterized as such. EPA notes that source tests show that NGS generally already achieves 0.03 lb/MMBtu (filterable PM). Additionally, references to proposal and final rule dates associated with MATS are inconsistent in the report and do not correctly distinguish between signature dates and publication dates. The publication date of the final MATS rule in the Federal Register is February 16, 2012.

3. In Table 3-11 on page 51, the costs labeled "SCR with sorbent injection and polishing baghouse" appear to be consistent with Sargent and Lundy cost estimates for SCR and DSI only (i.e., polishing baghouse not included). As noted above, theses costs are unlikely to be applicable to MATS implementation based on the final MATS rule.

4. Page 88. Most sources will have 4 years to comply with MATS, until early 2016 (3 years available to all sources + 4th year that EPA expects to be widely available from permitting authorities to enable sources to complete compliance activities).

5. Table 5-1 on page 75 reports emissions of NO_x and SO_2 emissions that are identical. This appears to be a typographical error.

6. The narrative describing Table 5-6 on page 84 and the numerical values in the table are inconsistent. The narrative describes a reduction in nitrate concentrations over time, but the values in the table shows a dramatic increase. Additionally, the percent reduction numbers do not seem to reflect the actual values in the table.

7. On page 93, the statement that Mohave Generating Station in southeastern Nevada closed at the end of 2005, due *largely* to the cost of retrofitting the power plant with SO_2 scrubbers is misleading. EPA understands that the spray dryers with high velocity baghouses were expected to cost $250 million, and that additional expenses at the time that were unrelated to the new scrubbers included a new slurry pipeline ($250 million) and upgrades/life extension of the plant ($500 million) were three times higher than the cost of new controls. Therefore, Mohave closed *in part*, due to the cost of new air pollution controls, but many other factors existed that affected decisions related to closure.

8. On page 101, the report is misleading in its description of the permitting of Desert Rock. Although EPA requested a voluntary remand of the final permit to incorporate new applicable requirements, the project applicant has not responded to our multiple requests for an amended permit application; we most recently sent a letter in December 2011 and will follow up with another letter providing a deadline after which we will consider the application withdrawn.

9. Table 3-4 on page 45, should also list Springerville Units 3 and 4 as plants with installed SCR technology. Although Springerville is operated by Tucson Electric Power, Unit 4 is owned by SRP. These units came on line in 2007 and 2009.

10. The information on pages 45-47 should include any available cost information for the planned retrofit of Unit 2 at Coronado Generating Station – another SRP facility. The Consent Decree for Coronado requires the SCR be installed and operational by June 1, 2014.

11. On pg. IV of the Executive Summary, the report states that LNB with SOFA have reduced NO_x emissions at the plant by 40% relative to the plant's air permit before controls were added. The percent control would be lower (~30% reduction from LNB/SOFA) if the calculation was done comparing pre-project actual emission rates to limits after installation of LNB/SOFA.

12. On pg IV of the Executive Summary, the report then cites a 78% reduction if SCR were installed and 50-60% reduction if SNCR were installed. A control efficiency of 50-60% from SNCR is higher than typically cited for SNCR alone. SRP recently estimated SNCR could achieve 0.15 – 0.18 lb/MMBtu at NGS (a 25 – 38% reduction on top of permitted levels of 0.24 lb/MMBtu with LNB/SOFA). Because LNB/SOFA is already installed and operational at NGS, control efficiencies from SNCR and SCR alone should either be calculated using a baseline of 0.24 lb/MMBtu, or if 0.35 lb/MMBtu is used as the baseline, should be reported as a control efficiency based on SNCR + LNB/SOFA or SCR+LNB/SOFA (i.e., to be more consistent with values reported in Table 3-2 of NREL report).