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Subcommittee on Water and Power
Subcommittee on Indian and Alaska Native Affairs
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on
Protecting Long-Term Tribal Energy Jobs and Keeping Arizona Water and Power Costs Affordable: The Current and Future Role of the Navajo Generating Station

Chairmen McClintock and Young, Ranking Members Napolitano and Boren, and Members of the Subcommittees on Water and Power and on Indian and Alaska Native Affairs, thank you for the opportunity to submit testimony today on Protecting Long-Term Tribal Energy Jobs and Keeping Arizona Water and Power Costs Affordable: The Current and Future Role of the Navajo Generating Station (NGS). I also would like to thank Representatives Franks, Gosar and Grijalva for their interest and involvement with the Committee on this important issue.

My name is Richard H. Silverman. I am the General Manager of the Salt River Project Agricultural Improvement and Power District (Salt River Project), a political subdivision of the State of Arizona that provides retail electric service to 950,000 residential, commercial, industrial, agricultural and mining customers in Arizona. Salt River Project operates or participates in a broad portfolio of generating resources, including nuclear, coal, natural gas, hydroelectric and renewable facilities. Salt River Project also operates a water delivery system providing the primary water supply for an area of approximately 250,000 acres that includes major portions of the Arizona cities of Phoenix, Glendale, Mesa, Tempe, Chandler, Gilbert, Peoria, Scottsdale, and Tolleson. I am here today to provide an overview of the history of NGS, explain its importance to the southwest, provide an overview of the ongoing federal Environmental Protection Agency's (EPA) Best Available Retrofit Technology (BART) process, and describe the extensive and complex issues the participants in the plant are facing at this time.

NGS is a coal-fired generating station consisting of three units, each capable of producing approximately 750 megawatts (MW) of electric power, for a total plant rated output of 2,250 MW. Salt River Project is the operating agent for itself and the five other participants in NGS: the United States Bureau of Reclamation, Arizona Public Service Company, Los Angeles Department of Water and Power, NV Energy, and Tucson Electric Power Company. The plant, which is located on the Navajo Reservation near Page, Arizona, is an important energy provider for all of its participants. NGS provides critical baseload energy to meet each utility's customer needs year round (but especially during the peak summer months), and plays a key role in Central Arizona Water Conservation District's (CAWCD) delivery of water to Native American communities, farmers, and cities in Arizona. Yet, the participants in NGS currently are

faced with a set of complex issues that, when viewed in light of the potential EPA requirement for significant capital expenditures for emission controls that would result in imperceptible visibility improvement, threaten the long-term viability of the plant. Those issues include the need for lease extension and rights-of-way renewals, and the negotiation of key agreements for coal and water. Despite these challenges, however, we remain committed to working closely with the Native American, water and other stakeholders, and greatly appreciate our continued relationship with them and their continued engagement in issues affecting NGS.

United States' Interest in NGS

It is important to understand how the United States came to become the largest individual participant in NGS. In the 1960s, several southwest utilities, including Salt River Project, were jointly evaluating the construction of a series of plants that would make use of the quality low-sulfur coal resources located on the Navajo and Hopi Reservations. The utilities were planning the construction of several such plants – NGS Units 1-3, the addition of three more units at the Four Corners Generating Station, and another facility known at the time as Kaiparowits. All of the facilities required significant federal involvement for approval of tribal leases, issuance of federal rights-of-way, coal leases and permits, and execution of water service contracts. Only NGS subsequently was constructed and put into operation.

At the same time the utilities were considering the plants, a parallel process was underway for the development of the Central Arizona Project (CAP) under the Colorado River Basin Project Act of 1968. As the CAP initially was conceived, the power needed to pump Colorado River water into central and southern Arizona would be supplied through the construction of two additional hydrogeneration facilities on the Colorado River at Bridge Canyon and Marble Canyon. Objections raised by environmental organizations to the construction of new dams on the Colorado River led then-Secretary of the Interior, Stewart Udall, to broker a compromise that resulted in the foregoing of the construction of these two Colorado River dams in exchange for Congress authorizing the United States, through the U.S. Bureau of Reclamation, to acquire the right to output from a thermal electric power plant, NGS, for purposes of providing pumping power, and to provide a source of revenue to repay the federal debt incurred for CAP construction. As a result of the environmental compromise, the United States acquired a 24.3% entitlement to the output from NGS and became the plant's single largest participant.

Economic Importance of NGS

Today, in addition to providing the power to pump CAP water to the major metropolitan areas of Arizona, NGS provides energy to more than 3 million customers in Arizona, California and Nevada through its utility participants. As a baseload resource that produces energy on a 24x7 basis, NGS could not be easily replaced by other types of resources, including renewables. NGS plays a critical role in providing cost-efficient

baseload power to the southwest, helping the utilities control energy costs, especially important in these economic times.

Both NGS and the Kayenta mine that provides coal to the plant are vital economic drivers for the Navajo Nation, Hopi Tribe, the Town of Page, Coconino County, Arizona, the State of Arizona and 10 Native American Communities. NGS provides high-paying jobs for 540 skilled workers, of which more than 80 percent are Navajo.[1] During annual overhauls, NGS and its contractors employ more than 1,000 temporary skilled workers, contributing significantly to the Page economy during the tourism off-season. The Kayenta Coal Mine, operated by Peabody Western Coal Company and located on the Navajo and Hopi Reservations, supplies the coal for NGS via a dedicated 78 mile rail line and employs an additional 420 or so skilled workers, primarily members of the Navajo Nation and Hopi Tribe. NGS is the only remaining purchaser of coal from the Kayenta mine and there currently is no means to transport coal from the mine to any other purchaser. The high-paying jobs at NGS and the mine support many other jobs in Page and the surrounding area, and NGS tax payments benefit local schools and other governmental functions.

NGS and the mine have a combined annual operating budget of approximately $700 million. This includes more than $140 million in direct payroll for almost 1,000 employees, employee benefits, coal royalty payments to the Navajo Nation and Hopi Tribe, permits, lease fees and scholarships. The amount paid to the Navajo Nation is expected to increase if the lease is extended beyond 2019 and the rights-of-way for NGS are renewed. Coal royalties, which also can be expected to increase some over time, currently provide about $14 million annually to the Hopi Tribe, which represents 88 percent of the Hopi Tribal government's annual revenue.

NGS also is a key component for the United States in meeting its federal trust responsibilities under the 2004 Arizona Water Settlements Act (AWSA), Public Law 108-451, and other Arizona Indian water rights settlements. Revenues generated by the sale of surplus power from NGS help fund repayment of the federal debt for the CAP and, as a consequence of the AWSA, underwrite the cost of delivering CAP water to Arizona's Indian tribes, fund the construction of CAP water delivery facilities for these tribes, and provide a settlement fund for future Arizona Indian water settlements. Without these NGS-generated revenues, Arizona's tribes could not afford to use their CAP water entitlements for re-establishing their agricultural economies on their reservation lands, and none of the other benefits accruing to Arizona tribes under the AWSA would materialize. Allowing these critical revenues to fade away through closure of NGS would turn the benefits provided to the tribes under the AWSA into another unfulfilled promise.

[1] The average NGS wage with benefits is approximately $105,000 compared to an average of $48,000 for Coconino County.

Environmental Controls at NGS

The participants in NGS have consistently ensured that the plant complies with applicable environmental regulations. Even prior to the passage by Congress of two key environmental regulations at issue here – the Clean Air Act and the National Environmental Policy Act (NEPA) – the NGS participants agreed in the lease with the Navajo Nation to install emissions control equipment to address particulate matter. During the 1970s' construction of NGS, the participants installed $200 million in environmental control equipment, including hot side electrostatic precipitators (ESPs) with a design efficiency to remove 99.5 percent of particulate matter. The ESPs capture fly ash, which is then available for use in concrete, cement and other construction materials.

In 1977, Congress amended the Clean Air Act, adding a new Section 169A that established as a national visibility goal "the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory class I Federal areas which impairment results from man-made air pollution." CAA § 169A(a)(1). Section 169A directed EPA to develop appropriate regulations to make "reasonable progress" toward that visibility goal. Congress did not set a deadline to attain the goal in 1977, but it required EPA to balance the cost of emission controls and resulting visibility improvement in determining "reasonable progress." In response, EPA issued its "Phase I" visibility regulations to deal with visibility impairment caused by large, individual sources, designated "Plume Blight" or "Reasonably Attributable Visibility Impairment" ("RAVI"), but deferred adopting "Phase II" rules to deal with regional haze caused by a multitude of sources, pending advances in the science of visibility impairment.

In the late 1990s, pursuant to an earlier evaluation process under Section 169A, the NGS participants installed wet limestone scrubbers on all three units to address visibility issues at a cost of approximately $420 million pursuant to a 1991 agreement with environmental groups and the EPA. The scrubbers eliminate more than 90 percent of sulfur dioxide (SO_2) from plant emissions and, in conjunction with the plant's use of low-sulfur coal, resulted in NGS becoming a top performer in its class in reducing SO_2 emissions.

In the 1990 Amendments to the Clean Air Act, Congress added a new Section 169B, which directed EPA to undertake a comprehensive, five-year visibility research program and issue Phase II regulations to deal with regional haze. Although that program did not materialize due to a lack of funding, Section 169B also established the Grand Canyon Visibility Transport Commission ("GCVTC") and charged it with the responsibility of assessing existing visibility conditions and recommending measures to improve visibility in 16 Class I areas on the Colorado Plateau, including the Grand Canyon. After extensive technical studies and a stakeholder process conducted over a five-year period, the GCVTC issued its final report in 1996. Salt River Project and the other utility participants of NGS all were active participants in the process.

According to the GCVTC's final report, visibility impairment in Class I areas on the Colorado Plateau is caused almost exclusively by three types of air pollutants in roughly equal proportions: dust particles, sulfates, and elemental and organic carbon. On average, nitrate particles are only minor contributors to visibility impairment on the Colorado Plateau. Sulfate and nitrate particles are formed in the atmosphere from emissions of SO_2 and NO_x resulting from fossil fuel combustion, including coal-fired power plants. Dust and carbon particles originate from both natural and man-made sources such as forest fires, soil erosion, mobile sources, and emissions from various small and large industrial sources.

EPA promulgated its regional haze rules in 1999, incorporating many of the recommendations of the GCVTC. EPA issued revised rules in 2005 (the "BART Rules"). The BART Rules establish a starting point for States to develop their own "reasonable progress" state implementation plans (SIPs) to achieve the national visibility goal in Class I areas by 2064. 40 C.F.R. § 51.308(d)(1). Under the BART Rules, each state is given the flexibility to determine emission limitations that represent BART for certain stationary sources within the State. Under the Tribal Authority Rule ("TAR"), EPA asserts the authority to promulgate a federal implementation plan (FIP) for sources like NGS that are located on an Indian reservation, if EPA determines such regulations are "necessary or appropriate to protect air quality" and the tribe has not submitted a Tribal Implementation Plan ("TIP"). 40 C.F.R. § 49.11(a). The Navajo Nation has not submitted a regional haze TIP applicable to NGS.[2] In its Advanced Notice of Proposed Rulemaking, EPA determined that it has the authority to promulgate a FIP to establish BART requirements for NGS. 74 Fed. Reg. 44313, 44315 (Aug. 28, 2009). EPA thus has undertaken a task that typically would be performed by a State or a tribe. By stepping into this role, EPA is obligated to comply with the criteria and process established in the Clean Air Act and its own regulations for determining BART.

NGS is one of only two "BART-eligible" sources on the Navajo Reservation.[3] BART-eligible sources, generally, are the class of large stationary sources that were put in operation between August 7, 1962 and August 7, 1977, and that fall within one of several listed source categories. 42 U.S.C. § 7491(b)(2)(A); 40 C.F.R. § 51.301. BART applies to such sources whose emissions, as determined by the State, "may reasonably be anticipated to cause or contribute to any impairment of visibility in any mandatory Class I Federal area." 42 U.S.C. § 7491(b)(2)(A); 40 C.F.R. § 51.308(e)(1)(ii).

[2] Under the lease agreement between the Navajo Nation and the participants in NGS, the Navajo Nation agreed that it "will not directly or indirectly regulate or attempt to regulate the Lessees in the construction, maintenance or operation of the Navajo Generating Station and transmission systems of the Lessees, the construction, maintenance or operation of the fuel transportation system of the Lessees or the Fuel Transporter."

[3] The other is the Four Corners Power Plant. Salt River Project also has an ownership interest in that plant.

The BART determination now being considered by EPA for NGS is being done pursuant to the regional haze program, which is intended to address *visibility*. While Congress granted EPA broad authority under the Clean Air Act to address visibility in Class I areas, Section 169A of the Clean Air Act also made clear that decisions by states – or in this case EPA – regarding "reasonable progress" and what constitutes BART must take into consideration "the costs of compliance, the energy and nonair quality environmental impacts 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." 42 U.S.C. § 7491(g)(2); 40 C.F.R. § 51.301.. Thus, just as EPA designed the BART Rules to give the states maximum flexibility in meeting the visibility goal, EPA also should exercise that flexibility. Such an approach would be consistent with President Obama's January 18, 2011 Executive Order on Improving Regulation and Regulatory Review, which is premised on the principle that:

> Our regulatory system must protect public health, welfare, safety, and our environment while promoting economic growth, innovation, competitiveness, and job creation. It must be based on the best available science. It must allow for public participation and an open exchange of ideas. It must promote predictability and reduce uncertainty. It must identify and use the best, most innovative, and least burdensome tools for achieving regulatory ends. It must take into account benefits and costs, both quantitative and qualitative. It must ensure that regulations are accessible, consistent, written in plain language, and easy to understand. It must measure, and seek to improve, the actual results of regulatory requirements.

For NO_X emissions from coal-fired electric generating units (EGUs), the BART Rules specifically established presumptive BART limits through notice-and-comment rulemaking. The presumptive NO_x emissions limits for coal-fired EGUs vary according to individual source characteristics and type of fuel burned (bituminous, sub-bituminous, lignite, etc.). The presumptive BART limit applicable to the EGUs present at NGS is based intentionally and expressly on combustion controls such as low-NO_X burners with separated over-fire air (LNB/SOFA) only; the presumptive BART limit is not based on post-combustion controls such as selective catalytic reduction (SCR). 70 Fed. Reg. 39104, 39172 (July 6, 2005). *With the installation of LNB/SOFA, NGS meets or exceeds the presumptive BART limits established by EPA.*

BART for NGS

Pursuant to the BART Rules, Salt River Project completed a BART analysis and submitted it to EPA in December 2008. That analysis concluded that BART for NGS could be satisfied by installing LNB/SOFA, and the NGS participants decided to proceed proactively with that installation ahead of a final determination by EPA. Even after Salt River Project completed additional analyses at EPA's request, the conclusion remained

that BART for NGS is LNB/SOFA. Salt River Project's analyses took into account all five factors set out in EPA's BART Rules and Salt River Project continues to believe that BART for NGS can be satisfied by LNB/SOFA, especially in light of the unique role that the plant plays in the southwest.

The NGS participants recently completed the installation of LNB/SOFA on all three units at a combined cost of approximately $45 million. Those advanced combustion controls change the way fuel and air combust in the furnace, reducing NO_X emissions by about 40 percent, or 13,000 tons per year.

The primary alternative to reducing NO_X emissions would be the installation of SCR. Utilizing a catalyst, this technology promotes a chemical reaction between the NO_X and ammonia, resulting in the elimination of NO_X and ammonia and the formation of nitrogen and water. While SCRs could offer some additional reduction of NO_X emissions over LNB/SOFA, factoring in all related equipment associated with SCRs, including the possible added requirement of new particulate matter controls due to likely increases in sulfuric acid mist emissions, the cost to retrofit NGS beyond LNB/SOFA could reach over $1 billion and the incremental improvement in Class I areas would be imperceptible to the human eye. This results because, as discussed above, NO_X emissions are responsible for only a small fraction of the regional haze sometimes observed in Class I areas within the Colorado Plateau, and because power plant emissions only account for a fraction of the NO_X emissions in the region.

An order to install SCR during the current rulemaking process, especially before the lease and rights-of-way are renewed, could leave the viability of NGS in jeopardy. At a minimum, economic studies done by CAP indicate that costs for water delivery to its customers would increase significantly.

Current Challenges Faced by NGS Participants

As indicated above, the participants in NGS face a number of uncertainties in addition to the ongoing BART process at this time. The initial term of the plant site lease with the Navajo Nation and the existing right-of-way for the plant site expire in 2019. Additional rights-of-way for the associated transmission lines, and for the railroad, which brings the coal to the plant from the Kayenta mine, expire over the following few years. Other agreements for the coal and water supplies for the plant also will need to be extended or negotiated.

Salt River Project is engaged on behalf of the participants in discussions with the Navajo Nation over the terms of the lease extension. After those discussions are completed, the Navajo Nation will submit the lease to the U.S. Department of Interior Bureau of Indian Affairs for review and approval, and Salt River Project will submit applications to renew the rights-of-way. Both of those actions are anticipated to trigger the need for NEPA compliance, which will take several years to complete and the outcome of that process is difficult to predict at this time.

Although the NGS participants are committed to negotiating a lease extension with the Navajo Nation and successfully completing the NEPA process to secure the necessary renewals for the continued operation of NGS, it would be difficult for the participants to justify an investment of potentially more than $1 billion at NGS for emission controls with the uncertainties that the plant currently faces. When combined with the other costs the plant participants could expect to incur for other environmental regulations (such as EPA's proposed rules on hazardous air pollutants (the EGU MACT rule), coal combustion residuals and cooling water intake structures), the uncertainty only increases. For this reason, the NGS participants initiated a stakeholder process to look at options and encourage the development of creative alternatives. That process has been important to get all of the issues on to the table and discuss points of agreement, but final principles of agreement have not yet been reached.

Summary

In summary I would like to emphasize the following points:

- NGS is a crucial electric generating facility that provides round-the-clock service to millions of people throughout Arizona, California and Nevada.

- NGS is the primary energy source for the CAP, a vital provider of water for millions of people in Arizona and 10 Native American communities.

- As the plant's largest participant, the United States has an important stake in the ongoing operation and future of NGS.

- The economic welfare of the Navajo Nation and the Hopi Tribe are dependent upon the continued operation of NGS.

- The continued operation of NGS is central to the ability of the United States to meet various Indian water rights settlement obligations.

- The BART determination now being considered by EPA for NGS is being done pursuant to the regional haze program, which is intended to address visibility.

- According to the GCVTC's final report, nitrate particles are only minor contributors to visibility impairment on the Colorado Plateau.

- Based upon the results from a BART analysis performed by Salt River Project in 2008 in accordance with the BART Rules, BART for NGS should be the installation of LNB/SOFA.

- In advance of an EPA determination, the NGS participants voluntarily invested $45 million in LNB/SOFA technology. Installation was completed on all three units in April 2011.

- The estimated cost of an SCR installation at NGS would exceed $1 billion. Given prevailing uncertainties related to continued NGS operation beyond 2019, if the EPA renders a determination that SCR is required at NGS, then the participants may be unable to justify continued operation.

- Scientific studies have demonstrated that the human eye cannot detect visibility distinctions between a $45 million LNB/SOFA technology investment and a $1+ billion SCR technology investment.

- SRP believes that the LNB/SOFA technology choice is the appropriate BART determination for NGS.

Chairmen McClintock and Young and Members of the subcommittees, thank you again for the opportunity to testify before you today on this important issue. I would be happy to answer any questions.