

## Background on Navajo Generating Station Impacts to Arizona in Anticipation of Proposed EPA Coal Plant Emissions Guidelines

### ***The Essentials:***

- The Navajo Generating Station (NGS) is a 2,250 megawatt coal-fired power plant located a few miles from the beginning of the Grand Canyon, within the Navajo Nation, near Page, Arizona
- About 25% of the electricity generated at NGS is dedicated to pumping Central Arizona Project (CAP) water from the Colorado River from behind Parker Dam over 300 miles to metropolitan Phoenix and Tucson.
- The NGS draws its cooling water from nearby Lake Powell.
- The Environmental Protection Agency is in the process of issuing new guidelines restricting air pollutants from industrial facilities that restrict visibility, including fine particulate matter (PM<sub>2.5</sub>), nitrogen oxide (NO<sub>x</sub>) and sulfur dioxide (SO<sub>2</sub>).
- The regional haze reduction guidelines will impact NGS operations, which in turn could impact community health and water quality locally, as well as water quality, water availability, and water rates in those areas served by the CAP.
- It is feasible that these new guidelines may influence a decision to close NGS.

### ***Overview of the Navajo Generation Station and its effects on AZ***

The Navajo Generating Station (NGS) is a 2,250 megawatt coal-fired power plant located within the Navajo Nation, near the city of Page, Arizona.<sup>1</sup> Coal for NGS comes from the Kayenta mine on Black Mesa, about 80 miles to the southeast.<sup>2</sup> NGS became fully operational in 1976. NGS is owned by six entities, including Salt River Project Agricultural Improvement and Power District (SRP) and the Bureau of Reclamation (BuRec).<sup>3</sup> BuRec, a division within the Department of the Interior (DOI), owns a 24.3% share of NGS, the largest share of the plant.



*Navajo Generating Station is located near Page, Arizona.*

Source: NGSpower.com

<sup>1</sup> Source: Navajo Generation Station NREL Study, page 1. Retrieved from <http://www.nrel.gov/docs/fy12osti/53024.pdf>

<sup>2</sup> For information on the Black Mesa Coal Mine, please see: [http://www.sourcewatch.org/index.php?title=Black\\_Mesa\\_coal\\_mine](http://www.sourcewatch.org/index.php?title=Black_Mesa_coal_mine) and for information on the Kayenta Coal mine, please see: [http://www.sourcewatch.org/index.php?title=Kayenta\\_Mine](http://www.sourcewatch.org/index.php?title=Kayenta_Mine)

<sup>3</sup> The Los Angeles Department of Water and Power; Arizona Public Service; Tucson Electric Power; Nevada Power Company; U.S. Bureau of Reclamation; and SRP

### ***Power from the NGS provides water for major metropolitan regions in AZ***

The Central Arizona Project<sup>4</sup> relies almost exclusively on NGS to provide it with the 2.8 million megawatt hours needed to pump about 1.6 million acre-feet of water each year from the Colorado River primarily to metropolitan Phoenix and Tucson.<sup>5</sup>

### ***NGS relies on water from the Hopi and Navajo Tribes***

The Kayenta mine supplies coal to NGS and draws approximately 1,200 acre-feet of water per year from the Navajo Aquifer (N-Aquifer) for its coal mining operations, most dust suppression.<sup>6</sup> With mining operations withdrawing the largest amount of water per year, the Hopi Tribe and a significant segment of the Navajo Nation are concerned such withdrawals affect the supplies they rely on for their own domestic, agricultural, and ritual purposes. The water rights are held in trust for the tribes by the federal government and monitored by the Office of Surface Mining Reclamation and Enforcement (OSMRE). It is contested whether the industrial mining activities are causing harm to the N-Aquifer.<sup>7,8</sup>

### ***Studies on health and economic impacts of NGS***

The health impacts of NGS operations on the people who live in the surrounding area, including the Hopi Tribe and Navajo Nation members, are unclear. No epidemiological study has been conducted to date to determine if there are impacts from emissions or groundwater contamination on local communities.<sup>9</sup>

SRP and Navajo Nation leadership recently commissioned an economic impact study of NGS on the economy of Arizona as a whole from the W.P. Carey School of Business at Arizona State University. The authors concluded the Real Gross State Product from NGS will total \$12.161 billion in the 33 years between 2011-2044. Combined with the economic impact from the Kayenta Mine over this same time period, the authors calculated a \$20 billion impact, or about \$700 million per year.<sup>10,11</sup>

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<sup>4</sup> The CAP was authorized by the Colorado River Basin Project Act, diverts Colorado River water from Lake Havasu and transports the water along a 336 mile-long conveyance through pumping plants, canals and other water moving mechanisms. CAP waters are the largest source of renewable water supply in the state of Arizona. Source: *The Navajo Generating Station White Paper*. July 23, 2009.

<sup>5</sup> *Id.*

<sup>6</sup> To' Nizhoni Ani, et al. Request for Review of Kayenta Coal Permit. February 2102. Retrieved from <http://db.tt/6xtEdXIH>

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

<sup>8</sup> The Office of Surface Mining Reclamation and Enforcements disputes material damage to the N-Aquifer from mining operations. See OSMRE, Report on its Review and Analysis of Peabody Western Coal Company's 2004 "Annual Hydrological Data Report" and the U.S. Geological Survey's "Ground-Water, Surface-Water, And Water-Chemistry Data, Black Mesa Area, Northeastern Arizona—2003-04."

<sup>9</sup> Hurlbut, David J., et al. NREL. January 2012. Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts.", page . Retrieved from <http://www.nrel.gov/docs/fy12osti/53024.pdf>

<sup>10</sup> Source: Navajo Generating Station and Kayenta Mine: An Economic Impact Study. Retrieved from <http://www.ngspower.com/pdfx/SRPASUNGS.pdf>

### ***Visibility standards at the Grand Canyon National Park***

NGS is located within 15 miles of Grand Canyon National Park (GCNP). National Parks like GCNP are protected by the Clean Air Act (CAA) as a Class 1 Prevention of Significant Deterioration (PSD) Attainment Area.<sup>12</sup> A PSD Class 1 protected area has strict guidelines for preventing atmospheric visibility impairments.<sup>13</sup> Visibility impairments can be caused by pollution emissions drifting from coal power plants. EPA calls the pollution drift problem “regional haze.”<sup>14</sup> EPA plans to reduce regional haze by creating new Best Available Retrofit Technology (BART) guidelines, which would require installing emission controlling technologies in coal plants “built between 1962 - 1977 that have the potential to emit more than 250 tons a year of visibility-impairing pollution” near neighboring national parks, including NGS.<sup>15</sup>

### ***Current emissions***

In 2000, NGS installed scrubber technology, reducing SO<sub>2</sub> emissions by 95%. From 2008-2011, NGS added NO<sub>x</sub> emission controls that reduced NO<sub>x</sub> emissions by 40% less than is currently allowed in its air permit.<sup>16</sup> With the recently added technology, NGS emits roughly 5,000 tons of SO<sub>2</sub> per year and 20,000 tons of NO<sub>x</sub> per year.<sup>17</sup>

### ***Current emissions regulations***

NGS's operations and emissions are regulated by the CAA under a Federal Implementation Plan (FIP), which became a final rule in 2010.<sup>18</sup> Compliance, enforcement, and the creation of new CAA emissions requirements are executed by the Environmental Protection Agency (EPA). In the FIP for NGS, the EPA created SO<sub>2</sub> emissions limitations. The SO<sub>2</sub> limitations required plant retrofitting and plant improvement projects. But, in the 2010 final rule EPA did not make a determination on requirements for BART to be applied to Nitrogen Dioxide (NO<sub>x</sub>) emissions at NGS.<sup>19</sup>

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<sup>11</sup> In comparison, total AZ GDP for the year 2009 was estimated at \$256 billion. Source: The Economist. Jan 2011. Retrieved from:

[http://www.economist.com/blogs/dailychart/2011/01/comparing\\_us\\_states\\_countries](http://www.economist.com/blogs/dailychart/2011/01/comparing_us_states_countries)

<sup>12</sup> The statutes for the PSD Program are 42 U.S.C. §§ 7470 thru 7492; the Class 1 National Parks statute is 42 U.S.C. § 7472; and GCNP Class 1 PSD regulation is 40 C.F.R. § 81.403

<sup>13</sup> 42 U.S.C. § 7472

<sup>14</sup> 42 U.S.C. § 7491 and 40 C.F.R. § 51

<sup>15</sup> EPA Regional Haze Rule Fact Sheet. Retrieved from <http://www.epa.gov/visibility/factsheet.html>.

<sup>16</sup> Hurlbut, David J., et.al. NREL. January 2012. Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts.” Page IV. Retrieved from <http://www.nrel.gov/docs/fy12osti/53024.pdf>

<sup>17</sup> *Id.*, p. 75.

<sup>18</sup> The FIP for NGS can be found at 40 C.F.R. 49.24. Prior to the finalization of the FIP, NGS was acting in compliance with Arizona’s State Implementation Plan.

<sup>19</sup> Source: EPA NGS Fact Sheet: <http://www.epa.gov/region9/air/navajo/navajo-gen-factsheet.html>

### ***Proposed New BART's at Navajo Generating Stations, and alternatives***

While EPA is creating the proposed rule for NGS, the DOI, as an interested stakeholder in BuRec operation of NGS, directed the National Renewable Energy Laboratory (NREL) to perform a study considering the impacts of new BART Visibility Regulations at the station.<sup>20</sup> Due to the NGS's SO<sub>2</sub> scrubber technology, the EPA rules will likely focus solely on limiting NGS NO<sub>x</sub> emissions. The report went on to find three options regarding BARTs at NGS. They include:

1. Maintaining and accepting the existing plant improvements and operations changes which resulted from the 2010 FIP SO<sub>2</sub> emissions reduction requirements;
2. Adopting the new NO<sub>x</sub> emissions reducing BARTs at NGS, and modifying operations to continue the station's operations and possible implementing new alternative energy policies; or
3. Shutting down NGS in 2019 because the cost of implementing the new NO<sub>x</sub> emissions reducing BARTs are too costly to continue NGS's operation. The 2019 closure date is when NGS's site lease is up for renewal with the Navajo Nation, and is also the 45<sup>th</sup> anniversary of NGS operations. The NREL report notes that 45 years is a typical life span for coal plants built in the 1970s.

NREL's Phase I report determined that "the body of research to date is inconclusive as to whether removing approximately two-thirds of the current NO<sub>x</sub> emissions from NGS would lead to any perceptible improvement in visibility at the Grand Canyon and other areas of concern."<sup>21</sup>

NREL plans to complete a Phase 2 report based on the findings in the Phase 1 report. In the Phase 2 report NREL will analyze the economic, technological, and environmental impacts of the three options regarding NO<sub>x</sub> emission reducing BARTs.

### ***Read more about Navajo Generating Station and the issues surrounding BARTs***

- The NREL's Report on Phase 1 of the Study may be found here:  
<http://www.nrel.gov/docs/fy12osti/53024.pdf>
  - Background information on the NREL study may be found here:  
<http://www.nrel.gov/extranet/ngs/about.html>
  - Information (and contact information) on the Executive Committee for the NREL Study may be found here:  
[http://www.nrel.gov/extranet/ngs/executive\\_committee.html](http://www.nrel.gov/extranet/ngs/executive_committee.html)

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<sup>20</sup> Hurlbut, David J., et.al. NREL. January 2012. Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts." Retrieved from  
<http://www.nrel.gov/docs/fy12osti/53024.pdf>

<sup>21</sup> Source: Navajo Generation Station NREL Study, page 113. Retrieved from:  
<http://www.nrel.gov/docs/fy12osti/53024.pdf>

- Current EPA Air Regulation Actions in the Navajo Nation may be viewed here: <http://www.epa.gov/region9/air/navajo/#proposedx>
- For information regarding the Navajo Nation's complicated history with coal mining in their nations, follow this link: <http://www.kstrom.net/isk/maps/az/navhopi.html>
  - Information regarding the Black Mesa Coal Mine may be found here: [http://www.sourcewatch.org/index.php?title=Black\\_Mesa\\_coal\\_mine](http://www.sourcewatch.org/index.php?title=Black_Mesa_coal_mine)
- The DOI's website may be found here: <http://www.doi.gov/>
- For an overview of the CAP water project, visit these two links:
  - [http://www.usbr.gov/projects/Project.jsp?proj\\_Name=Central+Arizona+Project](http://www.usbr.gov/projects/Project.jsp?proj_Name=Central+Arizona+Project)
  - <http://www.cap-az.com/>

***Contact Information:***

- DOI and DOE contacts:
  - DOI Contact: Adam Fetcher, (202) 208-6416
  - DOE Public Affairs, (202) 568-4940
- EPA Contacts:
  - Colleen McKaughan ([mckaughan.colleen@epa.gov](mailto:mckaughan.colleen@epa.gov)), (520) 498-0118;
  - Sarvy Mahdavi ([mahdavi.sarvy@epa.gov](mailto:mahdavi.sarvy@epa.gov)), (415) 972-3173
- NREL contacts
  - Questions regarding the NREL report may be submitted to: [NGS\\_Report\\_Comment@ios.doi.gov](mailto:NGS_Report_Comment@ios.doi.gov).
  - NREL Public Affairs, (303) 275-4090.
- NGS contacts
  - The Facility Contact for NGS is Paul Ostapuk, Operations and Maintenance Manager, (928) 645-6577.
- Western Office OSMRE contact
  - Program Support Division contact is Bob Postle, (303) 293-5041

***Latest Developments:***

- The EPA has announced that it anticipates releasing a proposed rule regarding NGS in late spring or early summer 2012. The proposed rule will then be open for public comment. The EPA has promised it will consider the findings of the NREL Phase 1 report while creating the proposed rule.
- President Ben Shelly of the Navajo Nation met with Gina McCarthy, Assistant Administrator for the Office of Air and Radiation, in January of 2012 at NGS to explain the Navajo people's economic concerns regarding the proposed BART rule.
- On February 14, Sen. Jon Kyl, R-Ariz., introduced a settlement, co-sponsored by Sen. John McCain, R-Ariz., which would authorize spending more than \$300 million on three groundwater-delivery projects on the Navajo and Hopi reservations. But, the settlement comes with the condition that the Navajo tribe must ensure the long-term operation of NGS. As of June 20<sup>th</sup>, the Hopi and Navajo Councils are deliberating on their votes regarding the settlement.

See <http://indiancountrytodaymedianetwork.com/2012/06/20/navajo-and-hopi-water-rights-support-split-as-decision-time-nears-119536>.

- On February 17, five organizations (To Nizhoni Ani, Black Mesa Water Coalition, Dine C.A.R.E, Sierra Club and the Center for Biological Diversity), filed an administrative appeal challenging the U.S. Office of Surface Mining Reclamation and Enforcement's decision to renew a permit for the Kayenta mine. The mine supplies approximately 7.8 million tons of coal annually to NGS.
- On June 4<sup>th</sup>, a Congressional Subcommittee on Water and Power held a hearing called "Evaporating Prosperity: How Federal Actions Are Driving Up Water and Power Costs, Threatening Jobs and Leaving Arizonans High and Dry." At the hearing, Subcommittee Chairman Tom McClintock, R-Calif., and Reps. Paul Gosar, R-Ariz., and David Schweikert, R-Ariz., heard from witnesses about the impacts of federal regulations on electricity and water pricing rates.