Subcommittee on Energy and Mineral Resources

Paul Gosar, Chairman

Hearing Memorandum

April 10, 2018

To: All Subcommittee on Energy and Mineral Resources Members

From: Majority Committee Staff, Rebecca Konolige (x61879)
Subcommittee on Energy and Mineral Resources

Hearing: Oversight Hearing entitled *"The Benefits of the Navajo Generating Station to Local Economies"*
April 12, 2018, at 10:00 A.M. in 1324 Longworth House Office Building

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The Subcommittee will hold a hearing on **April 12, 2018, at 10:00 A.M. in 1324 Longworth House Office Building,** focusing on the Navajo Generating Station and its ongoing importance to local communities and regional power capacity.

Policy Overview

- The Navajo Generating Station (NGS) is a Congressionally-commissioned power plant providing 2,250 MW of power to Arizona and surrounding States.

- Both NGS and its associated coal resource, the Kayenta Mine, provide long-term, high-paying jobs for members of the Navajo Nation and Hopi Tribe.

- NGS is currently scheduled to be closed prematurely in December 2019, risking job loss and economic damage to the Navajo Nation, the Hopi Tribe, localities, and the entire State of Arizona through projected increases in water rates and a destabilized electric grid.

- The hearing will review factors contributing to NGS's potential closure and economic, power and quality of life impacts for tribes and the region as a result of this development and discuss options for keeping this important plant open.

Invited Witnesses

Speaker LoRenzo C. Bates
Navajo Nation Council
Window Rock, Arizona

Mr. George Bilicic
Vice Chairman of Investment Banking
Global Head of Power, Energy, and Infrastructure
Lazard
Chicago, IL

Dr. Andrew Curley
University of North Carolina Chapel Hill
Department of Geography
Chapel Hill, NC

The Honorable Mark Finchem
Arizona Legislature
District 11
Phoenix, AZ

Ms. Nicole Horseherder
To'Nizhoni Ani
Navajo Nation
Kykotsmovi, AZ

Ms. Marie Justice
President
United Mine Workers of America Local 1924
Kayenta, Arizona

Chairman Tim Nuvangyaoma
Hopi Tribe
Kykotsmovi, AZ

Mr. Seth Schwartz
President
Energy Ventures Analysis
Arlington, VA

Background

Congress authorized the Central Arizona Project (CAP) in the Colorado River Basin Project Act of 1968 to bring needed water supply across Arizona.[1] The Navajo Generating Station (NGS) was built in response to the need to power CAP, a water distribution system which now runs 336 miles across the State.[2] While ownership of the NGS is split among multiple parties, the Bureau of Reclamation holds an interest of 24.3 percent, and the electricity from this portion is used to run the pumps that power the CAP.[3] Power from the Bureau of Reclamation's portion that is not needed for CAP operations is sold as surplus, and those revenues are yielded to the Lower Colorado River Basin Development Fund, which assists in repaying costs of

[1] Public Law 90-537.
[2] U.S. Bureau of Reclamation official website, "Navajo Generating Station," accessed March 28, 2018. https://www.usbr.gov/ngs/
[3] *Id.*

construction for the CAP, as well as costs associated with Indian water rights settlements in central Arizona as identified in the Arizona Water Settlements Act.[4]

The benefits of having such a powerful source of electricity are felt locally and throughout the region. NGS is the largest coal plant in the West. It supplies 2,250 megawatts of power (for reference, one megawatt is enough energy to power up to 900 homes).[5] Besides this plant, there are few viable alternative energy sources in the State, with two natural gas pipelines supplying nearly 90 percent of gas flows into Arizona.[6] The closure of NGS and an increased dependence on the few other energy sources available could put a strain on the electric grid, risking possible power shortages, failing transmission lines and equipment damage, and even blackouts or brownouts.[7]

While NGS provides electricity for water and power customers in Arizona, California, and Nevada, it is also critical to the local economies of the Navajo Nation, the Hopi Tribe, and the city of Page, Arizona. There are approximately 825 skilled jobs available between NGS plant and the nearby mine, Kayenta, which supplies the coal.[8] The plant has about 500 employees, more than 85% of whom are Native American. Kayenta Mine employs over 300 workers, 99% of whom are Native American,[9] with average wages and benefits more than 10 times higher than the Navajo Nation per capita income.[10] The Mine also provides nearly $440 million in direct and indirect economic benefits on an annual basis.[11] Additional benefits to the tribes come from coal royalties, taxes, permits, lease fees, and scholarships from NGS and the Kayenta Mine. Mining activities account for over 85% of the Hopi general fund operating budget and 22% of the Navajo Nation's general fund operating budget.[12]

The current lease agreement with the Navajo Nation is set to expire in December 2019, despite original plans for the plant to operate through 2044.[13] A closure of the plant would result in significant job loss in nearby tribal communities, could increase water rates in the region, and may potentially disrupt the electric grid.[14]

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[4] Public Law 108-451.

[5] U.S. Nuclear Regulatory Commission, "What is a Megawatt?" February 24, 2012. https://www.nrc.gov/docs/ML1209/ML120960701.pdf

[6] U.S. Energy Information Administration, "Natural Gas," accessed April 9, 2018. https://www.eia.gov/naturalgas/data.php#pipelines

[7] *Id.*

[8] Yes to NGS official webpage, accessed April 3, 2018. http://yestongs.org/

[9] Peabody Energy, Inc., Kayenta Mine Factsheet, accessed April 3, 2018. https://www.peabodyenergy.com/Operations/U-S-Mining/Western-Mining/Kayenta-Mine

[10] Yes to NGS.

[11] Peabody Energy, Inc.

[12] Yes to NGS.

[13] Arizona State University, "Navajo Generating Station & Kayenta Mine, An Economic Impact Analysis for the Navajo Nation," ASU W.P. Carey School of Business, April 2013. http://yestongs.org/docs/NGS%20Navajo%20ASU%20Economic%20Study%202013.pdf

[14] Quanta Technology, 2017.

The Navajo Generating Station and the Central Arizona Project

NGS is near the town of Page, Arizona, (Figure 1) and located on the Navajo Nation's Reservation. Construction of NGS began in 1969 as part of the Colorado River Basin Project Act. The plant, which became operational in 1976, provides the power necessary to move Arizona's allocation of Colorado River water to central and southern Arizona. There are multiple participants that hold an interest in NGS: Salt River Project (42.9%), Arizona Public Service Co. (14.0%); Nevada Energy (11.3%); Tucson Electric Power (7.5%), and the Bureau of Reclamation (24.3%).[15]

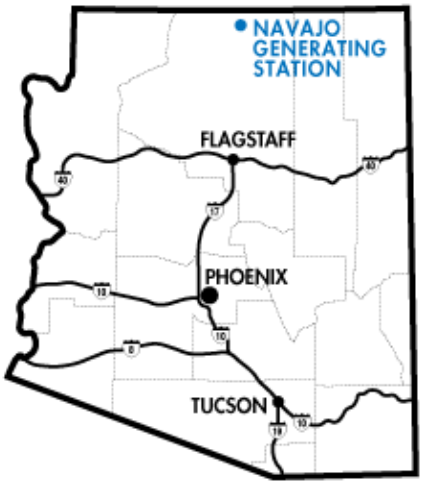

Figure 1: Navajo Generation Station Proximity

NGS plays an integral role in providing the electricity to pump Colorado River water to central and southern Arizona via CAP, a water canal and tunnel system constructed by the Bureau of Reclamation between 1973 and 1993, and managed by the Central Arizona Water Conservation District. The largest supplier of water in Arizona, the CAP system brings water over 336 miles and lifts the water more than 2,900 vertical feet (Figure 2).[16] Each year, CAP transports an average of 1.5 million of the State's 2.8 million acre-foot entitlement from the Colorado River (an acre-foot is 326,000 gallons, enough water for one to two families per year).[17]

More than 80% of the State's population, over 5 million people, lives in counties within the CAP service area.[18] Furthermore, nearly 90% of Arizona's economic activity occurs in the CAP service area, with the primary beneficiaries being agricultural producers, Indian

[15] U.S. Bureau of Reclamation official webpage.

[16] Central Arizona Project official webpage, accessed April 5, 2018. https://www.cap-az.com/about-us

[17] Statement of David Modeer, General Manager, the Central Arizona Project re. Oversight Hearing 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 before the Water and Power Subcommittee and the Indian and Alaska Native Affairs Subcommittee at the Committee on Natural Resources – May 24, 2011

[18] Central Arizona Project official webpage.

communities, and municipalities.[19] Almost half of the water is delivered to agricultural water users, with 45% of Phoenix's total water demand and over 50% of Tucson's water demand met by CAP.[20]

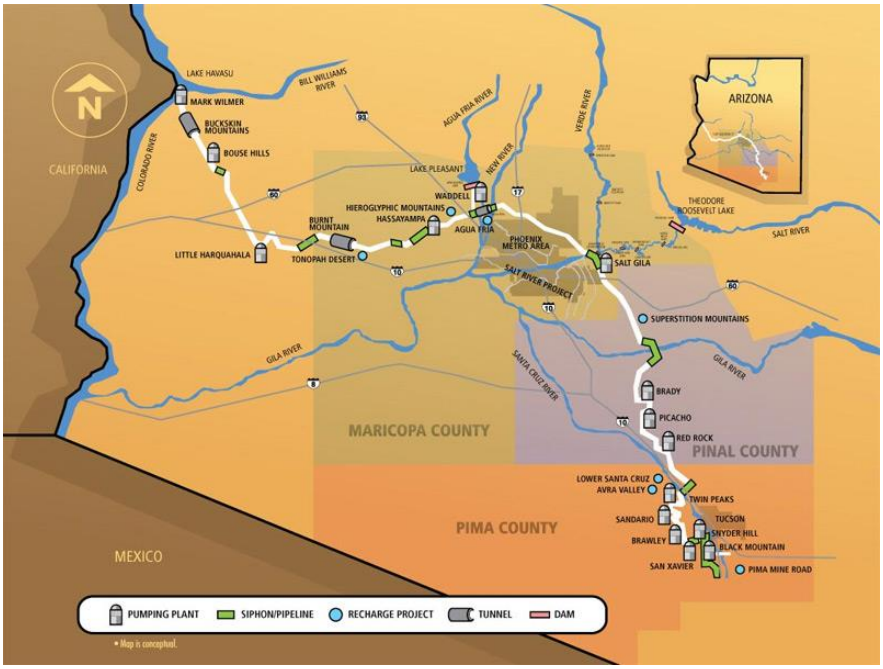

Figure 2: Central Arizona Project (CAP) Infrastructure

Transporting a massive volume of water requires substantial amounts of power. In addition to the largest water supplier in Arizona, CAP is also one of the largest electricity users. As stated, the Bureau of Reclamation's share of NGS powers the CAP pumps. The Western Area Power Administration, within the Department of Energy, then markets any power left over from that Bureau of Reclamation share. Part of the revenue from these excess power sales funds current and future Indian water rights settlements. Other surplus revenue helps repay the federal government for CAP's original construction costs.

As the threat of NGS' closure looms, a major consideration for CAP is its repayment obligation to the federal government. The $1.1 billion debt is owed over the next 28 years, amounting to annual payments between $50 and $60 million.[21] While surplus power sales from NGS don't cover the annual repayment payments, they do contribute a significant portion. Should NGS shut down at the end of 2019, CAP must find a way to account for that difference. This may translate into substantial increases in water rates for CAP's customer base, perhaps as much as 30 percent over the next 10 years.[22]

[19] Statement of David Modeer, 2011.

[20] *Id.*

[21] Energy Ventures Analysis, "Economic Benefit Analysis of the Navajo Generating Station to the Central Arizona Water Conservation District and Its Customers," January 2018. https://www.evainc.com/wp-content/uploads/2018/01/EVA.-Economic-Benefit-Analysis-of-NGS-to-CAWCD-Report.-01.2018.pdf

[22] *Id.*

Moreover, EVA Analysis estimates that CAP has saved over $1 billion since 2001 by buying power from NGS.[23] Should the plant stay open, the firm estimates CAP will save an average of $26 million annually between 2023 and 2030 (Figure 3). This would mean a total of $370 million saved in electricity costs through 2030.[24]

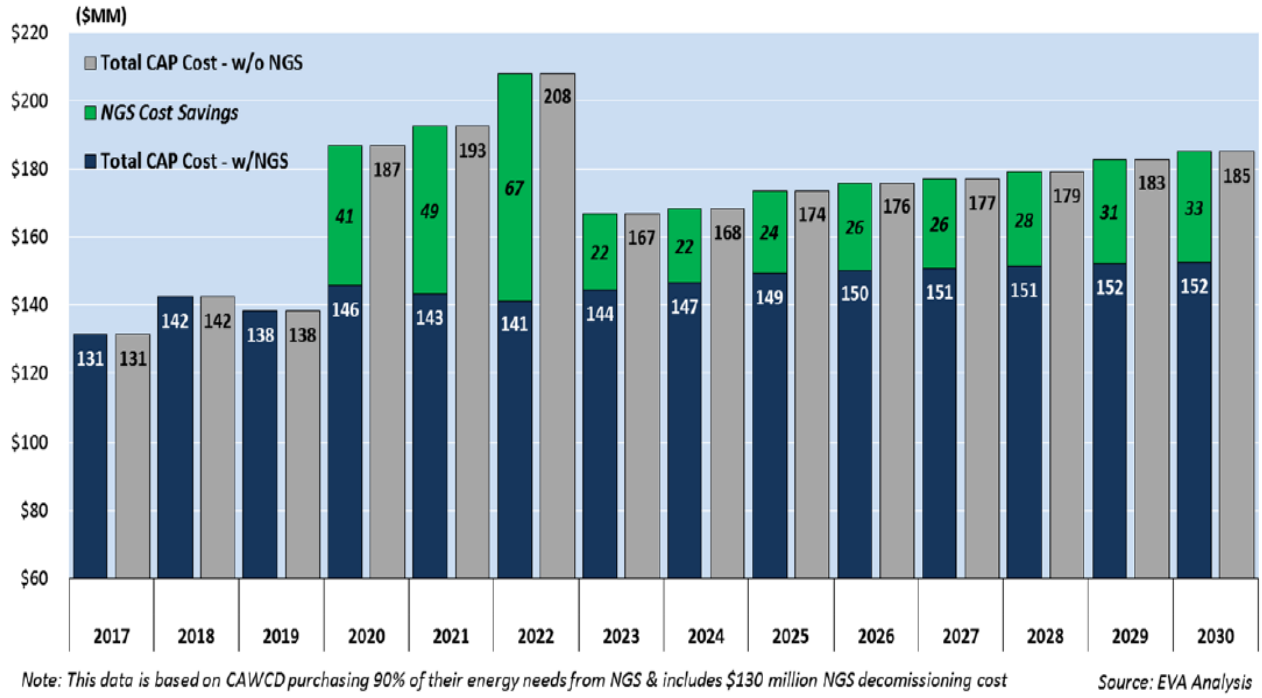

Figure 3: Future Costs Predictions of CAP

Should NGS close, the future of how CAP will find its power, under what terms, and at what costs, is undetermined. Water is extremely valuable in the desert region served by CAP, and CAP-transported water has had a combined economic impact of $2 trillion since water deliveries began.[25] Considering the size of the CAP, the number of consumers served, and the value of the product it transports, energy costs are one of the greatest factors in its continued operational success. The fate of the CAP is just one of many elements to consider when evaluating the future of NGS.

Lack of Viable Alternatives

Should NGS close, Arizona would risk possible power shortages, with potential blackouts and brownouts. While natural gas is an efficient and cost-effective energy source, there are only two gas pipelines in the State.[26] An over-reliance on these pipelines to supply energy for

[23] *Id.*

[24] *Id.*

[25] Central Arizona Project, "Know Your Water," accessed April 2, 2018. http://www.cap-az.com/knowyourwater

[26] Quanta Technology, 2017.

the entire State could represent a major vulnerability to Arizona's electric grid, especially if the Palo Verde nuclear power plant were to shut down unexpectedly.[27]

Any disruptions to the national gas supply would negatively impact power availability to Phoenix, Tucson, Scottsdale, Flagstaff, Vail, and Raso, all highly populated areas.[28] California also would feel effects in Lugo, in Los Angeles County, and Shandon, in San Luis Obispo County.[29]

State and federal entities have also made their position clear on the importance of NGS as a continuing energy resource. The Department of the Interior (DOI or the Department) has noted the significant role NGS plays in providing power to the region. In a 2017 letter, DOI cited not only the loss of nearly 1,000 jobs that would result from a closure, but also "a large block of reliable, baseload power in the region" that has been "cost effective, well operated and maintained." [30] The Department requested that NGS continued to be considered a primary source of power for CAP.[31] On a similar note, Arizona Corporation Commissioner Andy Tobin stated, "Power plants like NGS are critical to national security, given the need for energy sources that can withstand major fuel disruptions caused by unforeseen disasters, and continue to provide reliable energy services."[32]

Besides natural gas, renewable energy sources such as solar have been suggested as replacements to NGS power. Some proponents suggest covering the 134 million square feet of the 336-mile CAP with solar panels, or relying on wind power. This solution is unlikely to be a sufficient alternative energy source. Even if renewable energy sources like wind farms were constructed in the area, they would offer very few long-term jobs compared to coal, and may therefore have a devastating impact on employment opportunities in local communities. For instance, a proposed wind farm with a planned completion date in 2013 would have employed 300 people to build, but only offer 10 or fewer jobs for permanent operations.[33] Ultimately, the project was not developed – it wasn't price competitive.[34]

Considerations about environmental impact have also been taken into account at NGS. Desulfurization scrubbers installed in 2000 reduced SO_2 (sulfur dioxide) emissions by more than

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[27] *Id.*

[28] *Id.*

[29] *Id.*

[30] Letter from Acting Assistant Secretary for Water and Science Andrea Travnicek, Ph.D., U.S. Department of the Interior to Mr. Ted Cooke, General Manager of the Central Arizona Water Conservation District, November 6, 2017.

[31] *Id.*

[32] Letter from Arizona Corporations Commission member Andy Tobin to NGS Owners, October 12, 2017.

[33] Ryan Randazzo, "When coal-fired power plant closes, this mine will die," AZ Central, February 23, 2017. https://www.azcentral.com/story/money/business/energy/2017/02/23/arizona-kayenta-coal-mine-hopi-navajo-tribes-power-plant/98144914/

[34] *Id.*

95 percent.[35] The plant has also been retrofitted with low-NOx burners and overfire air systems, which have reduced NOx (nitrogen oxide) emissions by 40 percent at a cost of almost $45 million.[36] NGS now has one of the lowest NOx emission profiles of any coal-fueled plant in the region.[37]

As the potential 2019 closure of the NGS draws closer, an in-depth consideration of the impacts of that closure needs to occur. Perhaps first and foremost, the Navajo Nation and the Hopi Tribe significantly depend on NGS and the associated mine. Between the hundreds of jobs supplied by mining activities and the income from coal royalties, the closure of NGS would be devastating to the local and tribal communities. Further, the stability of the electric grid of the region could be in jeopardy if one of the biggest power suppliers goes offline. Water rates of CAP customers, numbering in the millions, are also at stake. Responses to these considerations require careful attention as we consider the future of NGS.

[35] David J. Hurlbut et. al, "Navajo Generating Station and Air Visibility Regulations: Alternatives and Impacts," National Renewable Energy Laboratory, report: NREL/TP-6A20-53024, 2012. https://www.nrel.gov/docs/fy12osti/53024.pdf

[36] Salt River Project News Release, "Future of Important Arizona Power Plant Uncertain," January 18, 2013. https://www.scribd.com/document/121050212/Salt-River-Project-SRP-s-Press-Release-Navajo-Generating-Station-NGS-EPA-BART-Decision

[37] U.S. Energy Information Administration, 923 data, 2017. https://www.eia.gov/electricity/data/eia923/