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Briefing Note: Economic Picture Worsens for Navajo Generating Station

By David Schlissel, IEEFA Director of Resource Planning Analysis

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The electric utilities that own the coal-fired Navajo Generating Station (NGS) in Arizona announced in February 2017 that they are closing the plant because it is no longer economic to operate. Those owners— Arizona Public Service Company, Salt River Project, Nevada Power and Tucson Electric, along with the federal Bureau of Reclamation, have since signed an agreement with the Navajo Nation to close the plant by the end of 2019.

The Central Arizona Project (CAP), which distributes Colorado River water into central and southern Arizona and is the largest customer for NGS power, also announced last year that it could no longer afford to do business with the plant. CAP managers estimated in 2017 that the agency could have saved $38.5 million in 2016 by purchasing power from the market rather than from NGS.

The Institute for Energy Economics and Financial Analysis conducted an independent review in May 2017 of the energy markets and the costs of power from NGS. IEEFA's report, "End of an Era: Navajo Generating Station Is No Longer Economic" affirmed that the plant is uneconomic to run and that its owners would lose approximately $2 billion if they were to continue to operate NGS from 2020 to 2030 unless subsidies were provided.

Despite the stark market realities, supporters of the plant have continued to push for ways to keep it open. In particular, Peabody Energy, which owns the Kayenta Mine that feeds the plant, has engaged consultants to entertain proposals from new owners. A Peabody-led campaign known as "Yes to NGS" is targeting the board of the Central Arizona Project, urging it to sign a long-term contract for power from NGS. The campaign engaged a consultant, Energy Ventures Analysis, who concluded that "NGS would deliver a $370 million savings in power costs for the Central Arizona Project through 2030 versus purchasing power from the open market, and municipal and industrial customers would avoid a 30 percent increase in water charges over 10 years."

The campaign appears to be seeking a long-term commitment from CAP as a cornerstone to keeping the plant open. And in a letter to CAP from Lazard, the investment-advisory firm that has been engaged by Peabody to work on the campaign, it has vaguely suggested there may be legal consequences if CAP does not buy power from NGS under new ownership post 2019. This strategy is questionable, since CAP only purchases 25 percent of the plant's electricity output.

In light of these recent developments, IEEFA has updated its May 2017 analysis with the goal of assessing the impact of changing energy market prices on the potential future

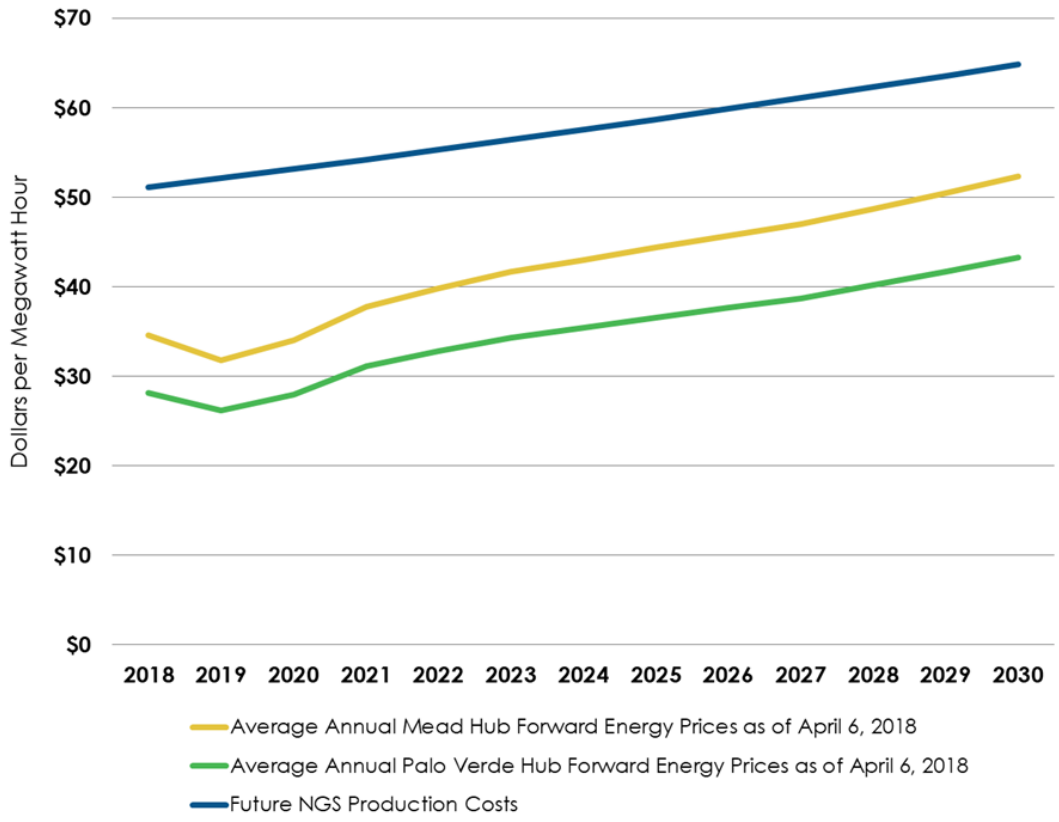
operations of NGS, and of determining whether it would be economical for the Central Arizona Project to purchase power from the plant from 2010-2030.

IEEFA finds that the Navajo Generating Station's economic prospects are even more bleak than they were in May 2017, and the claim that CAP would save money by signing with NGS cannot be substantiated. In fact, NGS owners would lose $2.2 to $3.4 billion by continuing to operate the plant just through 2030. And CAP would lose between $454 and $693 million, or an average of $41 to $63 million per year, if it were to continue to purchase power from NGS as compared to purchasing power from the market from 2020 to 2030.

The results of our updated analysis are as follows:

1. **Any owner of NGS is likely to suffer large losses during from 2020 to 2030, as the cost of generating power at the plant is likely to be significantly higher than the prices of power at the Mead and Palo Verde Hubs in Arizona.**

Figure 1: Cost of Generating Power at NGS vs. Market Prices at Mead & Palo Verde Hubs[1]

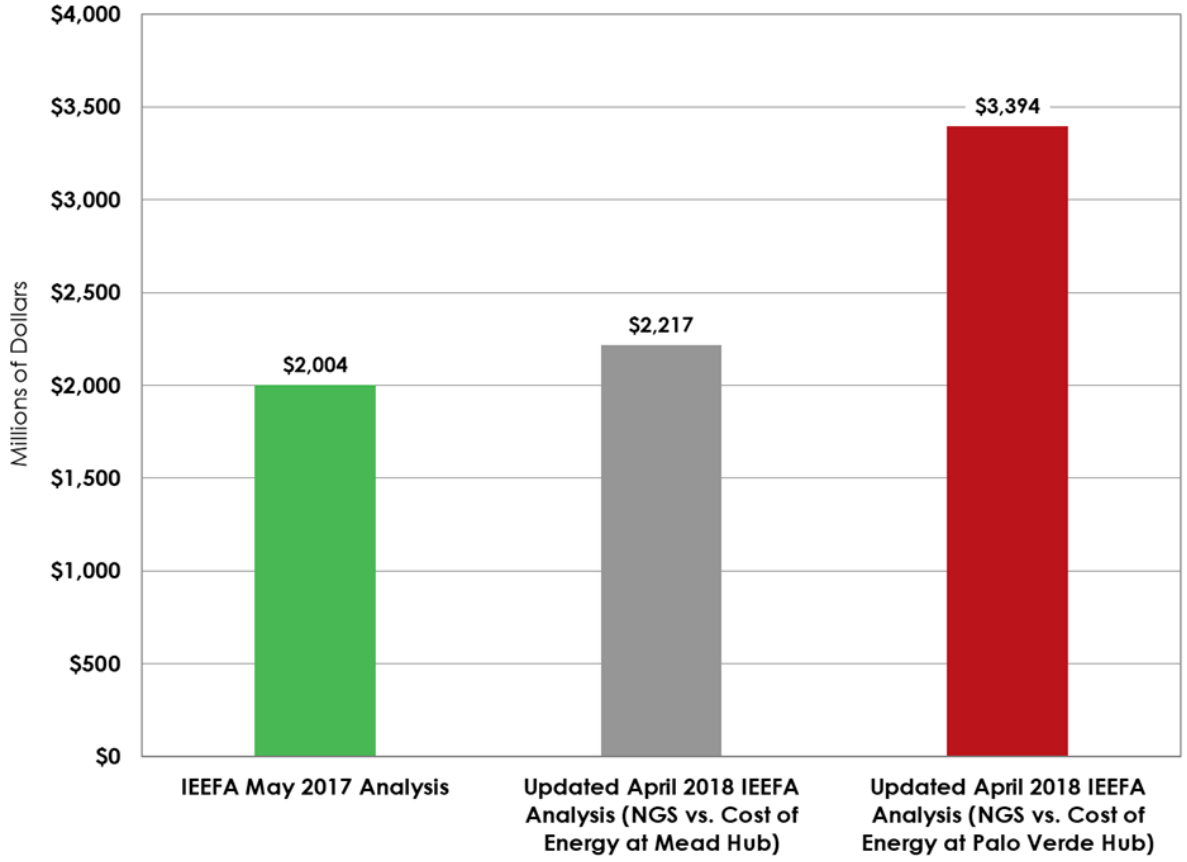


As a result, selling the power from NGS into the energy markets would not be profitable for any future owner(s) and, in fact, could be expected to produce total losses of between

[1] The Forward Prices shown in Figure 1 represent the market's expectations for energy prices at the Mead and Palo Verde Hubs for each year through 2027. For the years 2028-2030, IEEFA has simply escalated the 2027 costs at the average rate of increase between 2020 and 2027.

$2.2 billion and $3.4 billion from 2020 to 2030. These losses are even steeper than what IEEFA predicted in May 2017.

Figure 2: Projected Operating Loss at NGS 2020-2030



It is important to note that Figures 1 and 2 include only annual NGS fuel and non-fuel operating and maintenance (O&M) costs and do not include any capital expenditures (capex), depreciation or interest costs that any NGS owner could expect to incur. These costs would make the all-in cost of power at NGS significantly higher than shown in Figure 1 and the losses that any owner could expect to suffer substantially greater than shown in Figure 2.

For example, data filed by Arizona Public Service Company (APS) annually at the Federal Energy Regulatory Commission (FERC) suggests that from 2006 to 2016, NGS's owners invested approximately $19 million per year in environmental and non-environmental upgrades. APS also has said that its 14 percent share of future upgrades at NGS could cost up to $200 million.[2] These annual capex expenditures would add considerably to the cost of continuing to operate NGS beyond 2019.

2. A commitment by the Central Arizona Project (CAP) to continue to buy power from NGS from 2020 to 2030 would not make continued operation of NGS viable, and would cause CAP to lose between $312 million and $693 million from 2020 to 2030,

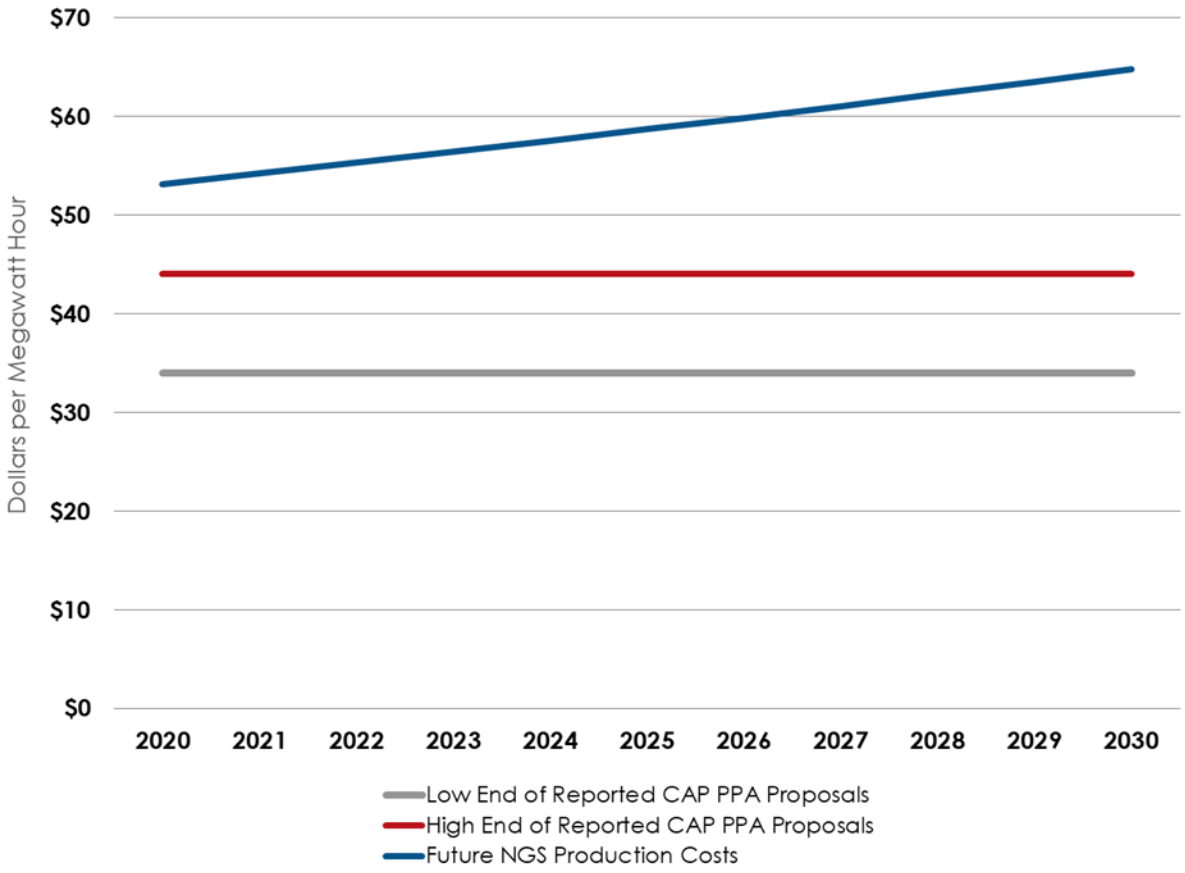
[2] Arizona Public Service Commission FERC Form 1 Filing for the Year 2017, at page 109.6.

as compared to the cost of buying power from the energy markets or entering into power purchase agreements (PPA) with generators.

CAP uses approximately 2.8 million megawatt-hours of electricity each year. Buying this power from the wholesale markets at Mead or Palo Verde Hubs at the prices shown above in Figure 1 would save CAP between $454 and $693 million, or $41 to $63 million per year.

Alternately, CAP could enter into a long-term PPA with one or more generators. For example, the Yes to NGS Coalition has said that CAP has received power purchase agreement (PPA) proposals ranging from $34 to $44 per megawatt hour.[3] As shown in Figure 3 below, these PPA prices would be significantly lower than the cost of producing power at NGS from 2020 to 2030.

Figure 3: Cost of Energy from NGS vs. Reported CAP PPA Proposals

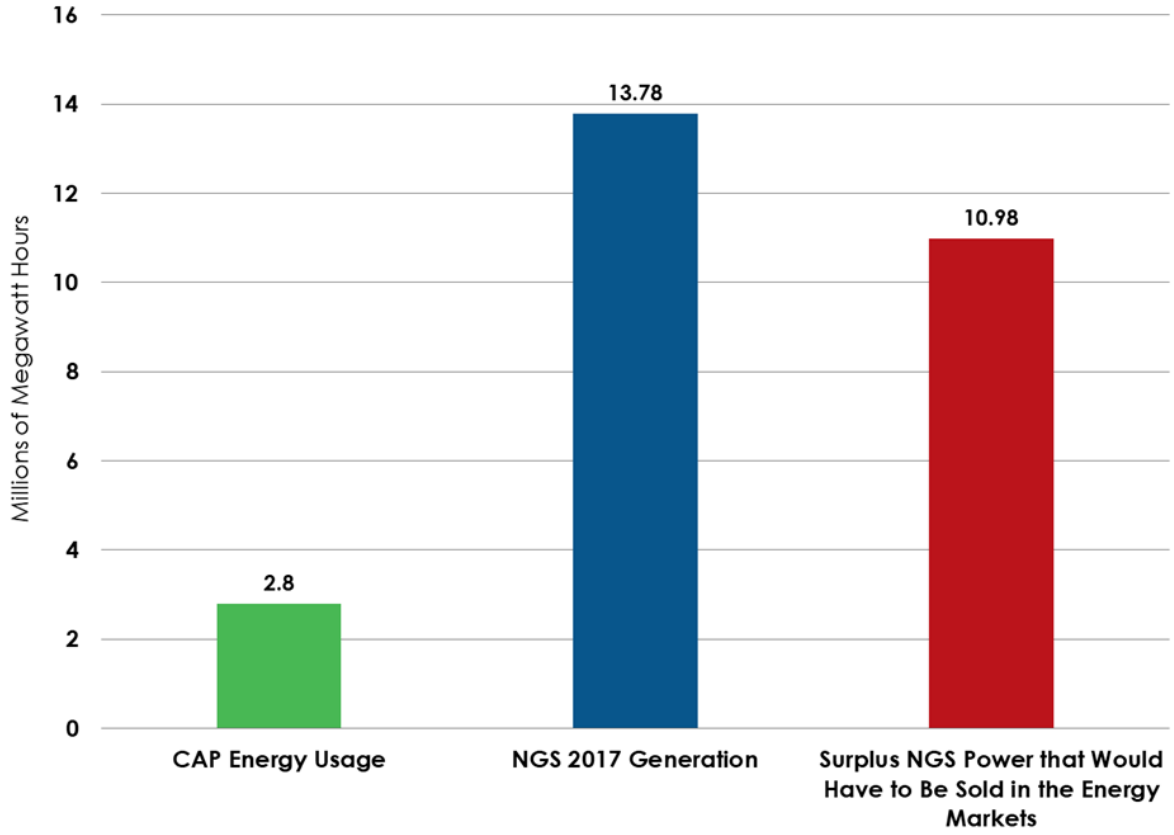


Depending on the precise terms of the proposed PPAs, buying power pursuant to these PPAs could save CAP from $312 to $515 million from 2020 to 2030, or an average of $28 to $47 million per year.

[3] http://yestongs.org/docs/YestoNGS%20CAP%20Board%20Meeting%20Release%20Final.pdf.

NGS generated more than 13.8 million MWh in 2017, so even if CAP were to continue to buy 2.8 million megawatt hours per year from NGS beyond 2019, any new potential owner(s) of NGS still would be faced with the necessity of selling the remaining 11 million MWh of power into the energy markets at a significant loss, as the market price comparisons shown in Figures 1 and 2, above.

Figure 4: CAP Power Needs vs. NGS Production



Conclusion

Trends in the energy markets show that if the Navajo Generating Station were to stay open past its planned retirement date of December 2019, its finance would be even bleaker than they were when the plant closing was announced last year.

Any new owner would be stuck with a failing investment.

The Central Arizona Project, which purchases 25 percent of the plant's electricity, would lose from $41 to $63 million per year if it acceded to requests to agree to purchase energy from the plant from 2020 to 2030.

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About IEEFA: The Cleveland-based Institute for Energy Economics and Financial Analysis (IEEFA) conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.