THE ECONOMIC SIGNIFICANCE OF THE KAYENTA MINE AND NAVAJO GENERATING STATION

EXPERT REPORT OF

CHARLES J. CICCHETTI, PHD AND SCOTT STERNBERG, MPP

Berkeley Research Group

March 7, 2019

Table of Contents

Table of Contents i

1 Introduction 1

2 Background Information for the Navajo 7

3 Arizona State University's Assessment of Closing NGS and Kayenta 11

4 Navajo Nation Economic Impact, Royalties, Taxes, and Fees 14

4.1 Components and Concepts 14
4.2 Economic Impact on the Navajo Nation 15
4.3 Quantifying Lost Navajo Nation Tax Revenues Under Current Ownership 19

5 NTEC's Plan to Keep Kayenta and NGS in Operation 21

6 Summary and Conclusion 25

1 Introduction

1. This report reviews the current operations of the Kayenta Mine ("Kayenta") and Navajo Generating Station ("NGS"). There are four sections for this report.

    - Background
    - Effect on the Navajo Nation's Economy and People
    - Effect on Navajo Nation's Budget
    - NTEC's Plans for Acquiring and Operating Kayenta and NGS as an Integrated Navajo Business

2. The Navajo Nation and its people own land, sub-surface natural resources, and water rights. Its people provide their labor to various businesses and government agencies. The Navajo Nation is located in the desert southwest in parts of Colorado, Utah, New Mexico, and Arizona. After World War II and the Korean War, much of the southwest, including Nevada and California, experienced rapid population and economic growth. The growth was mostly in urban metropolitan places including Phoenix, Las Vegas, Albuquerque, and Los Angeles.[1]

3. The period of high growth and urban sprawl began when Americans were being marketed with the idea of "living better electrically."[2] Much of the energy that fueled the increase came from electricity produced using coal and nuclear energy. The Navajo Nation and resources within provided the coal, land, and water resources to make much

[1] For this and the following, see: Needham, Andrew. *Power Lines: Phoenix and the making of the Modern Southwest.* Princeton and Oxford: Princeton University Press, 2014. Reisner, Marc. *Cadillac Desert: The American West and Its Disappearing Water.* New York: Penguin Books, 1987. Nies, Judith. *Unreal City: Las Vegas, Black Mesa and the Fate of the West.* New York: Nation Books, 2014.

[2] General Electric Theatre in 1956 launched LBE or Live Better Electrically. Ronald Reagan was the spokesperson. This led to the marketing the following year of Medallion Homes, which were all-electric. Live Better Electrically: The Gold Medallion Electric Home Campaign, https://dahp.wa.gov/historic-preservation/historic-buildings/historic-building-survey-and-inventory/live-better-electrically-the-gold-medallion-electric-home-campaign

of this possible. In 1961, there was one power plant and a small mine that combined to provide 175 megawatts ("MWs") of capacity.

4. A decade later, the Navajo Nation provided coal, land, rights of way, and water to supply 8,690 MWs of power to the region.[3] The Navajo supply a major portion of the region's electricity. The two states where most of the Navajo Nation is located are New Mexico and Arizona. The electric utilities in New Mexico have installed summertime capacity of 5,346 MWs. The comparable total in Arizona is 21,592 MWs.[4] EIA reports that Arizona has much more capacity than it uses and supplies neighboring states like California.[5]

5. During the rapid expansion of Navajo coal and directly supplied power stations, the Navajo wanted to partner with the utilities and mining companies. They were sometimes listened to, but always rejected. Perhaps even worse, the Navajo were paid coal royalties and land leases that were many times less than the prevailing amounts paid to other private resource owners and the federal government for coal deposits on federal lands.

6. Starting in the early 1970s until the leases were reopened in the late 1980s, the Navajo were paid an effective royalty of less than 2% in 1983 under Lease 8580[6] for the Black Mesa coal delivered to the Mohave Generating Station (MGS). Other Navajo leases such as Lease 9910 had effective royalties of between 3% and 4%. The Navajo should have received a minimum of a 12.5% royalty. The losses from the underpayment of coal royalty for the MGS were obscene. They were also well-below-market payments for rights of way ("ROW") and land leases, which further added to the unmitigated economic abuse visited on the Navajo during the first two decades of the MGS and Black Mesa mine.

---

[3] Energy Information Administration, US EIA State Energy Profiles.
[4] Energy Information Administration, US EIA State Energy Profiles for summertime capacity.
[5] Arizona is the home of nuclear and hydroelectric generation, which are used to supply much of the southwest. The percentage of Arizona's retail customers' demand compared to the Navajo coal facilities is more like New Mexico. US EIA, Arizona State Energy profile, 2018.
[6] See Affidavit/Expert Report of Charles Cicchetti, Ph.D., filed on behalf of the Attorney General of the Navajo Nation in litigation related to US Federal Claims Court.

7. Things were improved, but not sufficiently, for the second-term leases. The following timeline for negotiating new leases shows how the Navajo were harmed and disrespected to such an extent that the idea of a negotiated "partnership" was preposterous from the perspective of the poker-faced utility and mining executives negotiating new leases and coal purchases agreements.[7]

    - In March 1984, the Navajo Nation asked Interior Secretary William Clark to adjust the royalty provision.
    - Secretary Clark delegated the matter to the Bureau of Indian Affairs ("BIA") Navajo Area Director.
    - Responding to the Navajo Area Director's requests, the US Bureau of Mines issued a report on June 6, 1984 concluding that Peabody's profitability would support a 20 percent royalty rate.
    - On June 6, 1984, the BIA Division of Energy and Mineral Resources issued a report recommending a royalty rate of not less than 25 percent renewable every five years.
    - On June 8, 1984, the **BIA Navajo Area Director** notified Peabody the royalty rate would increase to **20 percent effective August 12, 1984**. Peabody appealed the decision.
    - In June 1985, **Deputy Assistant Secretary John Fritz** issued a **written decision on BIA letterhead upholding the 20 percent royalty**, but he did not sign it.
    - Upon learning of the impending decision, Southern California Edison ("SCE") wired Peabody and instructed them to hire Stanley Hulett, who was a close friend of the Secretary of the Interior Don Hodel's, and a former Interior official, and later Hodel's business associate. Hulett's job was to communicate directly with Fritz and Hodel on behalf of Peabody (and, by extension, SCE).

[7] *Op. cit.*

- After Hulett and Hodel met, Hodel, in July 1985, signed a memo prepared by Peabody that instructed Fritz not to issue his June 1985 decision. At that point Secretary Hodel assumed jurisdiction over the appeal from the Interior Department.
- The Navajo Nation was told that no decision was imminent and that the 20 percent royalty rate was being viewed as vulnerable on the merits.
- **In August 1987, a new lease at 12.5 percent was signed** and the Navajo agreed not to seek past due interest on Lease 8580, but not Lease 9910.

8. In very straightforward terms, after the Bureau of Mines of the Department of Interior found a 20 percent royalty to be a just and reasonable compensation for the second 20 years, the Secretary of the Interior, after highly questionable intervention and with little or no fiduciary or trust concerns for the Navajo, withheld the already drafted decision and in effect caused the royalty rate to become 12.5 percent for the second 20 years, not the 20 percent the BIA recommended.[8]

9. Over the latter decades, the Navajo were paid hundreds of millions of dollars less than the BIA found to be reasonable. The Navajo litigated these facts and treatments against the BIA in a series of legal battles that involved the Supreme Court of the United States twice. The findings support the above history. Ultimately, the Navajo were paid a settlement as compensation for the underpayment of coal royalties.

10. In more recent years, the Navajo coal was mined at Black Mesa, Kayenta, and the Navajo Mine. This coal fueled the Mohave Generating Station, Navajo Generating Station, and Four Corners Power Plant. Despite the underpayments, the coal and power generation operations paid the Navajo royalties, taxes, and lease fees. Many Navajo and other indigenous people were employed. As explained below, the economic effects related to the generation of electricity and coal production were very substantial and significant for the Navajo.

[8] These facts were reviewed and accepted in greater detail in U.S. Court of Federal Claims, No. 93-763L (February 4, 2000). After a series of legal battles, the matter was resolved and settled in favor of the Navajo.

11. In the last ten years, things have changed and not necessarily for the good of the Navajo. In fact, mining and power generation closure decisions were made that definitely ignored the effects these decisions would have on the Navajo. The most immediate cause of the decision to shutter coal-fired electric generation is the combination of inexpensive and relatively plentiful natural gas and the emergence of cost-effective and environmentally preferred solar- and wind-based renewable energy resources.

12. After decades of sometimes obscenely low payments to the Navajo that made economic and population growth possible in much of the southwest, the direct beneficiaries, coal mining firms and electric utilities, are shutting their operations. These decisions are made without consideration for the effect they have on the Navajo. Environmentalists applaud the demise of Navajo coal with little concern for the losses to the Navajo Nation or its people. There are no signs of even a 'thank you' as these businesses exit. The following list reviews some of the decisions that show how the Navajo are being treated on the back-end. The details suggest that the Navajo are being abandoned and effectively told to partner with themselves.

    - In 2009, SCE shuttered the Mohave Generating Station in Nevada, effectively ending Navajo royalties and taxes for the Black Mesa Mine, and other fees.
    - In 2015, after announcing a cessation of operations, BHP Billiton New Mexico Coal, Inc. sold the BHP Navajo Coal Company ("BNCC") to the Navajo Nation through its tribally-owned company the Navajo Transitional Energy Company (NTEC). This transaction kept the new more efficient Units 4 and 5 of the Four Corners Power Plant in New Mexico from closing, but at about the same time Units 1, 2, and 3 were closed.
    - In 2017, the owners of the Navajo Generating Station voted to close the plant after operating it through 2019.

- In 2018, NTEC purchased 7% of Units 4 and 5 from an Arizona Public Service affiliate. This ownership was previously held by El Paso Electric Company that was sold to APS in 2016.
- In 2018, the former utility owners of the NGS reported that an investment firm would not purchase NGS and it would close by the end of 2019. This would also lead to the closure of the Kayenta Mine that Peabody Coal owns and operates.
- In 2018, the utility owners announced plans to close San Juan Generating Station Unit 1 and Unit 4 in 2022 after closing Unit 2 and Unit 3 in 2017. This would likely lead to the closure of the San Juan (underground) Mine. Both are in New Mexico and would further increase downward pressure on the Navajo Nation and region's economy.
- In early 2019, NTEC reported it was continuing operations to keep open NGS and the Kayenta Mine.

2 Background Information for the Navajo

1. The Navajo Nation is the largest Native American nation, both in terms of population and land area in the United States. The Navajo Nation has more than 300,000 members, which, according to the United States Census Bureau's American Community Survey for 2010 ("ACS"),[9] makes the Nation the largest American Indian nation within the United States. A majority of its members live in the Navajo Nation, which is where the Navajo Generating Station and Kayenta Mine are located. The Navajo Nation spans 27,000 square miles and is slightly larger than the State of West Virginia and shares territory with Arizona, New Mexico, and Utah.[10] Both the NGS and Kayenta Mine are respectively in Arizona in Coconino County and Navajo County.

2. The Navajo Nation's underlying economy is extremely poor in terms of income and material things. The federal government found that Navajo Nation was, in economic terms, one of the two poorest areas in the United States, with an unemployment rate of 50.52% in 2007.[11] The Navajo Nation's economy has been economically depressed for many generations before the last national recession in 2008. Since then, the Navajo Nation's economy and surrounding counties in Arizona and New Mexico failed to recover like most other parts of the two states and the nation as a whole.[12]

3. Since late 2008, the Navajo Nation has suffered even more unemployment, particularly for younger Navajo people, who are often forced to move elsewhere. This out-migration imposes social and economic hardship on many of the Navajo who remain living on the Navajo Nation. The surrounding counties include land and people that are not limited to

---

[9] See, e.g., American Community Survey of the United States Census Bureau, which is available at: http://quickfacts.census.gov/qfd/index.html; see also United States Census Bureau, FILES: 2010 American Community Survey American Indian and Alaska Native Alone for Selected Tribal Groupings (2011).

[10] 2009-2010 Comprehensive Economic Development Strategy, The Navajo Nation, page 10.

[11] 2009-2010 Comprehensive Economic Development Strategy, The Navajo Nation, page 20.

[12] The Navajo Nation and not so distant San Juan County, New Mexico, suffered further significant losses in economic activity after the August 2015 Gold King environmental disaster that released toxic materials into the San Juan River that flows through the Navajo Nation and San Juan County, New Mexico.

the Navajo Nation. According to the ACS, 36.76% of the population of the Navajo Nation lives below the poverty level.[13]

4. In 2015, the last year with detailed county information from the Department of Commerce[14] tells the tale of economic stagnation or worse. Coconino County, where NGS is located, had real economic growth of 0.1% per year with a 0.9% per year decline (i.e., a growth rate of -0.9%) in private sector production and a 0.7% per year decline (i.e., a growth rate of -0.7%) in government sector growth. Navajo County, where Kayenta is located, did better overall with 1.8% real economic growth. However, private sector production was negative 17.9% and government sector growth was negative 2.0%.

5. Wages were also less in these two counties. The average weekly earnings that the Bureau of Labor Statistics (BLS) reports for the second quarter of 2018[15] was $753 and $808 for Navajo and Coconino Counties, respectively. These were 20% less than all of Arizona, 23% less than Maricopa County, and 26% less than the national averages in the same time period.

6. The Navajo earn royalty income and lease/right of way payments from energy companies. Southern California Edison permanently closed the Mohave Generating Station (MGS) in Laughlin, Nevada in 2009. The Navajo lost annual revenue and employment because coal production at the Black Mesa Mine adjacent to Kayenta and the 273 coal-slurry line that shipped Navajo coal to MGS were shuttered. This caused significant reductions in coal mining in Black Mesa, Arizona. The MGS closure resulted in

---

[13] American Community Survey of the United States Census Bureau, which is available at: http://quickfacts.census.gov/qfd/index.html; also *see* **United States Census Bureau, FILES: 2010 American Community Survey American Indian and Alaska Native Alone for Selected Tribal Groupings** (2011).
[14] U.S. Department of Commerce / Bureau of Economic Analysis / Regional Product Division, www.BEA.gov/regional/index.htm.
[15] County Employment and Wages in Arizona – Second Quarter 2018 https://www.bls.gov/regions/west/news-release/countyemploymentandwages_arizona.htm

the loss of about 300 jobs at the power plant alone,[16] and resulted in reduced tribal economic activity.

7. A similar mine/power station closure was partially avoided in 2013 when the Navajo Nation through NTEC acquired the BNCC mine and operations from BHP Billiton in New Mexico. This transaction was made in conjunction with a new Coal Supply Agreement ("CSA") between the Navajo and the utilities that owned the Four Corners Power Plant, which Arizona Public Service ("APS") operates. As part of this new arrangement, the utilities shuttered 560 MWs of generating capacity for Units 1, 2, and 3 in 2013. These were the oldest, least efficient and most polluting units and were built in 1963. The utilities agreed to spend millions of dollars to reduce pollution and otherwise improve the larger, newer (built in 1970), and more efficient Units 4 and 5. In July 2018, NTEC purchased a 7% stake in the Four Corners Power Plant.[17]

8. In the summer of 2018, the possibility of closing the San Juan Generating station in 2022 emerged.[18] Like the other closures, this would hurt the Navajo Nation.[19]

9. Some of the history of Navajo coal and other natural resources was discussed above. The firms that benefited the most are deserting the Navajo after the Navajo facilitated the region's electricity and economic development. This has resulted in many parts of the Navajo Nation and nearby communities lacking electricity service, high

---

[16] Contributions of the Mohave Generating Station to Local Economies" University Center for Economic Development in the Department of Applied Economics at the University of Nevada Reno, Technical Report UCED 2002/03-07. Table 1 (May 2002) (UCED 2002 Technical Report), https://www.unr.edu/Documents/business/uced/technical-reports/clark/2002-03-07.pdf.

[17] Navajo Transitional Energy Company buys Four Corners Power Plant https://www.azcentral.com/story/money/business/energy/2018/07/10/navajo-transitional-energy-company-buys-four-corners-power-plant/770121002/

[18] San Juan Generating Station: Closure looms for coal-powered plant https://www.daily-times.com/story/news/local/2018/09/25/san-juan-generating-station-power-history-future-pnm-southwest-utility/1072851002/

[19] Closing San Juan Generating Station could have huge economic impacts http://www.santafenewmexican.com/news/local_news/closing-san-juan-generating-station-could-have-huge-economic-impacts/article_f8fab4c2-6bad-509d-b462-ac92959fc3b5.html

unemployment, and economic depression. It is important as the Navajo reel from these series of utility generation and mining closures to keep two things in mind.

10. First, the Navajo have never been reasonably compensated for the exploitation of their natural resources over many decades. In the early decades the underpayments to the Navajo could be easily described as criminal in nature.

11. Second, over this entire period of mostly ill-gotten gain, the Navajo were coerced into accepting what they could get because economic conditions in the Navajo Nation were and remain desperate. When changes were negotiated over time, the Navajo would seek to partner with the mining and utility companies. The Navajo were routinely rebuffed and treated as unworthy partners.

12. The Navajo are working to change things today. The mining and utility companies are being politically forced to close their coal mining and related power generation. The Navajo through NTEC are finally doing what the Navajo wanted from the outset. They are taking important steps to control their own resources and the generating stations on their land.

3 Arizona State University's Assessment of Closing NGS and Kayenta

1. There are a number of ways for determining the effects that shuttering NGS and Kayenta would have on the Navajo. This section reviews the economic consequence for the Navajo people and surrounding communities; Section 4 discusses the effect on Navajo Nation taxes and revenues based on current utility and mining ownership and operations; and Section 5 reviews the economics for operating Kayenta and the NGS under Navajo ownership using NTEC's plan to integrate the mine and generating station and operate them as a single unit.

2. At a macroeconomic or aggregate level, Mr. Anthony Peterman told the Navajo Nation that NGS and Kayenta would contribute about $518 million to the Gross State Product ("GSP") of northeastern Arizona in 2020.[20] This estimate is based on a 2013 Arizona State University ("ASU") study that estimated the combined contributions made to the Gross Navajo National Product ("GNNP").[21] The specific contributions ASU reported were: $308.5 million for NGS and $209.2 million for Kayenta for a total of $517.7 million.

3. The same press release about Mr. Peterman's remarks[22] reported a combined contribution to the Navajo General Fund of about $40 million and 700 Navajo **direct** jobs at NGS and Kayenta. The basis for the jobs data was the same ASU study in 2013 for the Navajo Nation's economy.[23] The 2013 ASU study included non-Navajo jobs as well as

---

[20] NTEC Press Release, January 23, 2019. Navajo Council Energy Advisor Outlines Economic Impacts of NGS and Kayenta Mine.

[21] Evans, Anthony, Tim James, Melissa Gamez and Eva Madly. *Navajo Generating Station & Kayenta Mine: An Economic Impact Analysis for the Navajo Nation.* Arizona State University (ASU): W.P. Carey Business School, April 9, 2013.

[22] NTEC Press Release, January 23, 2019. Navajo Council Energy Advisor Outlines Economic Impacts of NGS and Kayenta Mine.

[23] Evans, Anthony, Tim James, Melissa Gamez and Eva Madly. *Navajo Generating Station & Kayenta Mine: An Economic Impact Analysis for the Navajo Nation.* Arizona State University (ASU): W.P. Carey Business School, April 9, 2013.

indirect and induced jobs. ASU found 446 people were employed directly at NGS and 411 people were employed directly at Kayenta for a combined total of 857 people.[24]

4. Direct jobs generate income that is spent. The mining and power station purchase goods and services from other vendors, which causes additional **indirect** employment. Using a model that limits the effects of indirect jobs to the Navajo Nation, ASU estimates 234 additional jobs with 25 coming from NGS and 209 coming from Kayenta.
5. There are also **induced** jobs that people directly and indirectly employed at NGS and Kayenta stimulate when they spend money that multiplies throughout the Navajo Nation. The additional induced jobs on the Navajo Nation total 1,872 with 1,037 from NGS and 835 from Kayenta.[25] The total of direct, indirect, and induced jobs that ASU estimates for the Navajo Nation is 2,963 with 1,508 from NGS and 1,455 from Kayenta.
6. There was an earlier ASU analysis in 2012.[26] Unlike the 2013 ASU Study, the 2012 ASU study was focused on the state of Arizona and its counties. The host counties of Coconino and Navajo were emphasized. The two reports are not comparable because the initial analysis included parts of Arizona that are not Navajo lands and people, while omitting parts of other states (particularly New Mexico) that are part of the Navajo Nation and its people. Nevertheless, the 2012 findings are important because they provide insight into the region where Navajo people live and often seek employment and business opportunities. The 2012 ASU Report also discusses effects over a 35-year time period.
7. For 2019, the 2012 ASU Study estimates 1,726 statewide jobs for the three categories from NGS and 1,382 jobs for Kayenta. The combined total is 3,108 jobs in Arizona. The two host counties have nearly 75% of the state's total jobs. The differences between the

[24] NTEC estimates that about 750 of these jobs are Navajo jobs at the two locations. See: Navajo Transitional Energy Company, NTEC Confidential Power Point.
[25] Evans, Anthony, Tim James, Melissa Gamez and Eva Madly. *Navajo Generating Station & Kayenta Mine: An Economic Impact Analysis for the Navajo Nation.* Arizona State University (ASU): W.P. Carey Business School, April 9, 2013.
[26] Croucher, Matt, Anthony Evans and Tim James. *Navajo Generating Station and Kayenta Mine: An Economic Impact Study.* Arizona State University (ASU): W.P. Carey Business School, February 2, 2012.

Navajo-only and the just-Arizona study are not great – adding New Mexico to the 2013 Study to determine the Navajo Nation effects just about offsets including all of Arizona in the 2012 Study. In the 2012 Study, similar results and comparisons were reported in the overall personal income and Gross State Product analyses.

8. There was a tax revenue category in the ASU 2012 analysis that does not have a counterpart in the 2013 study exclusively performed for the Navajo Nation. For 2019, ASU estimates total tax revenue generated across all of Arizona from the NGS of $9.26 million with 71% of this in Coconino County and $6.22 million in statewide taxes for Kayenta with 79% in Navajo County.

4 Navajo Nation Economic Impact, Royalties, Taxes, and Fees

4.1 Components and Concepts

1. Coal mines pay royalties that are determined as a percent of coal revenue. Coal mines also pay taxes. Some of these taxes are paid directly to the Navajo, and some are paid to the state and federal governments. There are two things to consider with respect to NTEC's proposal to change the operations and ownership of Kayenta and NGS.

2. First, all the assets and transactions between the mine and generating station will occur within the Navajo Nation. There will be no privately-owned businesses involved. The Navajo sovereign immunity will also come into play. The Navajo owned and operated combined single operating business – Kayenta plus NGS – can claim that it is not required to charge all the current state and federal fees within its joint business. To the extent state and local taxes are avoided,[27] this will reduce the cost of electricity that is sold, which will improve combined profits.

3. The Navajo Nation will be paid annual amounts as dividends from the Kayenta-NGS business. This could replace royalties, lease payments, tribal taxes, and fees. This is something the Navajo Tribal Council will determine. Regardless, the Navajo General Fund will collect the margins generated over time. The amount paid out will only depend on the costs for operating and investing in the businesses that NTEC operates for the Navajo Nation, the owner of NTEC.

4. The payroll paid to direct employees of the mine and generating station plus payments to vendors and others will also increase income and spending on the Navajo Nation. These economic activities include direct, indirect, and induced components. The Navajo Nation will collect taxes related to the income that is generated.

[27] This is a legal matter beyond my expertise. However, I considered such matters in the work I presented to the Tribal Council and NTEC related to the Navajo (BNCC) Mine and Four Corners Generating Station.

5. The two ASU studies estimated the economic effect of the mine and generating station rather conservatively given the widespread and severe levels of unemployment within and close to the Navajo Nation. The ASU models reflect local geography. However, the aggregation still fails to isolate the economic conditions in the Navajo Nation, which are more depressed economically than the Zip Code and County data that ASU's researchers used. The worsening of conditions in the Navajo Nation with the closures and reduced scale of operations related to both coal and electricity generation are also not reflected in the ASU models because they use data before things became more depressed.
6. Navajo unemployment data tell only a partial story. Unemployment is measured relative to the people looking for work. People who give up looking are not included. Navajo labor participation is much lower than the rates for the country, for Arizona, and for surrounding counties. An unemployment rate reflective of an employment gap would better measure the dire economic opportunities in the Navajo Nation.[28] Another aspect of the spate of mine and power generation closures is that these were high-paying jobs and a number of families depended on the paychecks for support. The number of people that lose income when one Navajo with high pay loses a job is many times greater than elsewhere in the nation.

4.2 Economic Impact on the Navajo Nation

7. Table A summarizes some current macroeconomic impact of the Kayenta Mine and NGS. The current jobs and income would be lost if the Kayenta Mine and NGS were both shuttered. The combined direct, indirect, and induced jobs lost would be 2,963 per year. The combined effect on the Gross Navajo Nation Product, or overall economic activity, that would be lost is about $517.7 million. This includes parts of all four states that the Navajo Nation occupies. Table A also shows that the loss to the host state for Kayenta and NGS, Arizona, would be $489 million. (These amounts are not additive. They simply reflect the macroeconomic losses from two significantly overlapping perspectives.)

---

[28] Austin, Algernon. *Native Americans and Jobs.* Economic Policy Institute, December 17, 2013.

Finally, the lost taxes both direct and downstream for the state would be about $15.5 million. This is important because the Navajo Nation points to state tax revenue when negotiating government assistance and investments for the Navajo.

TABLE A

Current Operations
GNNP, Employment, Income

Annual Jobs	
Navajo Nation[29]	
Direct	857
Indirect	234
Induced[30]	1,872
Subtotal	2,963
Economic Impact (millions of $)	
Gross Navajo Nation Product (GNNP)[31]	
Kayenta Mine	$ 209.20
Navajo Generating Station	308.50
Subtotal	$ 517.70
Arizona Gross State Product (GSP)[32]	
Kayenta Mine	$ 185.00
Navajo Generating Station	304.00
Subtotal	$ 489.00
Arizona Taxes[33]	
Kayenta Mine	$ 6.22
Navajo Generating Station	9.26
Subtotal	$ 15.48

[29] Table 5, ASU 2013.
[30] Includes 261 from Kayenta and NGS plus 38 from vendors and 1,573 from Navajo Nation tax revenue spending.
[31] ASU 2013, based on Tables 3 and 4 for NGS and Kayenta, estimates 2020.
[32] Table 1 and Table 7 for NGS and Kayenta, ASU 2012, estimates for 2019.
[33] Tables 5 and 6 for NGS and Tables 11 and 12 for Kayenta, ASU 2012, estimates for 2019.

8. The lost employment, GNNP, and Arizona GSP are understated because they do not fully reflect the starting point for measuring macroeconomic losses. The Navajo Nation is a very seriously economically depressed part of the U.S. with very high unemployment, which the prior discussion places as exceeding 50%. Economic effects are greater when changes in underlying conditions occur in areas of the country with very high unemployment. Two distinguished economists quantified the additional employment and income gains from investments at times and places with unemployed and underutilized workers and resources. The seminal work of Professor Robert Haveman and Dr. John Krutilla[34] ("H&K") can also be applied to determine how much more would be lost if there are economic closures in places with already severe unemployment.
9. The estimated unemployment rate of more than 50% for the Navajo Nation that is widely used was from 2007.[35] This estimate pre-dates the U.S. recession. The nation has recovered, but parts of New Mexico and Arizona near Kayenta and NGS have not recovered as much. The Gold King spill is partly responsible because the spill led to a decrease in tourism and related economic activity. Many moved away because jobs were scarce. Using the standard that includes people that have given up searching for employment when jobs are not there, the 2007 estimated Navajo unemployment of 50.5% would likely be too low.
10. The employment effects that ASU researchers use does not include people who are not actively seeking employment. There is no straightforward way to break out the high Navajo unemployment rate to make it comparable to what the team from ASU uses. Without knowing the exact number, a conservative estimate of the comparable Navajo unemployment rate of 25% is used in this analysis. The formula that H&K developed would increase the economic losses for closing Kayenta and NGS in a region with 25% unemployment compared to the values generated using the models that ASU used by

[34] Haveman, Robert and John V. Krutilla. *Unemployment, Idle Capacity, and the Evaluation of Public Expenditures: National and Regional Analyses,* Baltimore, Maryland: Johns Hopkins Press for Resources for the Future, 1968.
[35] 2009-2010 Comprehensive Economic Development Strategy of the Navajo Nation, page 20.

about 80%. Revised Table A shows what the severely depressed effects for the Navajo would be from plant and mine closures using the H&K estimate of an additional 80% in losses.

REVISED TABLE A

Current Operations Lost with H&K Effect
GNNP, Employment, Income

Annual Jobs	
Navajo Nation	
Direct	857
Indirect	422
Induced	3,370
Subtotal	4,649
Economic Impact (millions of $)	
Gross Navajo Nation Product (GNNP)	
Kayenta Mine	$ 376.56
Navajo Generating Station	555.30
Subtotal	$ 931.86

11. The ASU macroeconomic estimates for the Navajo Nation and Arizona rely on models formulated with data before the last U. S. recession. This makes the ASU estimates of losses in employment and GNNP less than they would be taking into account the extreme levels of unemployment and overall economic activity. The Revised Table A adjusts the ASU estimates to reflect the H&K adjustment for extremely depressed regions. The total employment loss adding 80% to the indirect and induced effects would be 4,649 jobs lost. The Navajo GNNP would be nearly one billion less, or $931.9 million per year, if Kayenta and NGS close after the other mine closures and reductions planned.

4.3 Quantifying Lost Navajo Nation Tax Revenues Under Current Ownership

12. Current sources of Navajo Nation revenue include:

- Royalty payments for the Kayenta Mine are 12.5% for Navajo coal and 6.25% for the Navajo share of joint-use coal with the Hopi also being paid 6.25%. (The Navajo receive about 75% of the royalties because about half the coal is joint-use coal. This fraction varied over time with changes in the mix of Black Mesa and joint-use coal.)
- Arizona taxes are about 6.1%.
- There are Federal Black Lung Fees and Reclamation Fees.
- The Black Mesa and BNCC coal supplies paid Business Activity Taxes ("BAT") and Possessory Interest Taxes ("PIT"). After litigation and settlements, it appears that in exchange for foregoing BAT and PIT, the Kayenta coal contract prices and quantities of coal sold were increased. Therefore, there are no BAT and PIT taxes for Kayenta coal.
- It appears that the Kayenta payments in lieu of taxes ("PILOT") were negotiated with Arizona and the Navajo receive half the state's property taxes.
- Lease payments for the NGS land and rights of way for the rail line and transmission.
- Water purchases that can increase Navajo prices and affect the Central Arizona Project and Colorado River Allocation.
- BAT (sales) taxes and fees from the salaries and vendor payments on money spent in the Navajo Nation from earnings at the mine and NGS.

13. Table B shows the estimated revenue the Navajo Nation collects with current ownership and all the NGS Units operating. The Navajo annually collect royalties of about $10.13 million for the coal, lease payments of $660,000 for NGS, and estimated BAT on the

income earned at Kayenta and NGS of $14.2 million. The annual revenue the Navajo Nation collects is about $25 million under current ownership and full operations.

14. Arizona collects taxes of $6.82 million and shares a portion with the Navajo Nation. There are two federal coal taxes collected under current ownership of about $4.1 million. If NTEC reorganizes and creates a single Navajo corporation, some of the non-Navajo taxes would not be collected.

15. Closing Kayenta and NGS would cause the Navajo and other governments to collect fewer annual taxes. NTEC has a proposal that is being negotiated to reduce the closures and restructure operations. These will reduce some of the Navajo Nation's lost revenues and add income.

TABLE B

Current Operations
Navajo Nation Revenue (millions of $)

Kayenta Mine	
Royalty[36]	$ 10.13
Navajo Generating Station[37]	
Lease	$ 0.66
Arizona Taxes[38]	$ 6.82
Federal Black Lung	2.51
Federal Reclamation	1.60
Navajo Business Activity Tax (BAT)	
(Navajo Income of $236.6 million)	
BAT at 6%[39]	$ 14.20

[36] Peabody/SRP spreadsheet based on NTEC annual production of 4,565,000 tons per year.
[37] NTEC Confidential Income Statement consistent with SRP.
[38] Peabody/SRP spreadsheet based on NTEC annual production of 4,565,000 tons per year.
[39] ASU 2013, Tables 3 and 4 for NGS and Kayenta, respectively, and BAT (sales tax) of 6% effective July 1, 2018.

5 NTEC's Plan to Keep Kayenta and NGS in Operation

1. The closure of Kayenta and NGS would cause the Navajo Nation to lose desperately needed revenue of about $25 million. This would come in the aftermath of closing MGS, the significant reduction in Black Mesa production, and reduced activity at the BNCC (the Navajo mine that NTEC operates for the Navajo Nation) and Four Corners. NTEC is working to keep part of NGS open by integrating the Kayenta mine and NGS into a single Navajo-owned business.

2. Table C summarizes NTEC's estimates of the revenue that the Navajo Nation could expect annually, if their plans succeed.

(This space intentionally left blank. Table C is on the next page.)

TABLE C

NTEC Integrated Operations (Base Case)
Annual Navajo Nation Revenue
(millions of $)

	Gross	Payout	Annual Revenue
Kayenta Mine			
Royalty[40]		$ 7.90	$ 7.90
NGS Leases[41]		0.66	0.66
BAT from Navajo Nation Personal Income Spending[42]		14.20	14.20
10-Year Average Annual Earnings (Integrated)[43]	65.60		
Decommissioning[44]			
Initial Escrow	150.00		
Interest per Year	2.00		
Average Annual Income After Provisions for Additional Decommissioning[45]		50.17	
Average Annual Dividend with 75% Payout to Navajo Nation During Operations[46]			37.63
Total Navajo Nation Payout		$ 72.93	
Total Navajo Nation Annual Receipts			$ 60.39

[40] NTEC pro forma Income Statement, year 2020.5, assumes 50% to Navajo based on $15.772 million annual. (NTEC Confidential PowerPoint)
[41] Op. Cat. Income Statement.
[42] ASU 2013, personal income for Navajo Nation and 6% BAT.
[43] NTEC PowerPoint, Economic Performance, 2019 to 2029 (Base Case).
[44] NTEC PowerPoint.
[45] Op. Cat., average net income after adjusting for decommissioning equals $501.675 divided by 10.
[46] Assumes 75% dividend payout of $50.17 million per year or an annual average of $37.63 with provisions for decommissioning.

3. NTEC proposes to retire one of the three 750 MW units at NGS in 2020. NTEC's proposal would help the Navajo Nation to keep about $7.9 million in royalties from joint-use Kayenta coal and lease payments of $660,000 per year. The Navajo Nation would also retain the BAT taxes collected that were estimated to be about $14.2 million based on all the direct, indirect, and induced employment incomes. Some of the BAT taxes could be lost because fewer employees were required for a scaled back NGS operation.[47] However, with the H&K adjustment for exceptionally high unemployment, there would be an increase in BAT revenues for the much greater induced employment and wages that would be avoided.
4. NTEC will pay coal royalties and make lease payments to the Navajo Nation. These will be about $7.9 million annually. This is about $2.23 million less than current royalties of about $10.13 million because less coal will be used with only two units operating at NGS. Lease payments will not change at $660,000 per year.
5. The Navajo Nation will own the new NTEC business that combines Kayenta and NGS. There will be a significant increase in Navajo Nation dividends from the joint operation of the integrated business. This increase in Navajo Nation income is the result of the elimination of corporate profits and at least some taxes paid to others.
6. NTEC projects a base case increase in average annual ten-year Net Operating Income of $65.6 million. After deducting cash for future decommissioning related to operating Kayenta and NGS under Navajo ownership, the average Annual Cash Flow is about $50.2 million. Some cash flow is needed for future contingencies and reserves. NTEC proposes to payout 75% in annual dividends. This would equal an annual ten-year dividend payment to the Navajo Nation of about $37.6 million.
7. The annual amount projected for the ten-year average annual payments of royalties, leases, BAT taxes from all incomes including induced, would be about $60 million.

[47] NTEC estimates 650 saved direct jobs and 975 saved direct and indirect jobs. The current estimates at full operations are respectively 857 and 1,081 jobs.

Depending on contingency expenses, the average annual amount could be 20% higher. This average annual amount would more than offset the estimated lost Navajo Nation revenue of $25 million that the Navajo Nation collects from current ownership and operations.

8. There are some important caveats. NTEC needs to secure permits. The current owners need to accept the terms being negotiated. The revenue estimates depend on long term coal prices. The Base Case estimated coal prices, however, are very reasonable assuming no significant carbon taxes in the next ten years. There will be negative cash flows in the early years. This will be offset with gains starting in 2022. There is also a likelihood that some of the cash set aside for contingencies will be recovered increasing the value of the NTEC plan for the Navajo Nation. Table C shows these could exceed $12 million.

6 Summary and Conclusion

1. The Navajo Nation and its people have many unmet needs. For more than five decades, electric utility and mining companies exploited Navajo Nation resources. They rejected working as partners and paid as little as they could get away with for Navajo coal, lands, and water. These same interests are ready to move on to less expensive natural gas and renewable energy. History repeats. They are leaving behind shuttered mines and soon to be decommissioned generating stations that were the leading private sector employers. These private interests are exiting with the same “how little do we need to pay” departure terms. The Navajo Nation and people will lose much needed income, jobs, taxes, and royalties.

2. Closing the Kayenta Mine and NGS comes after closing Black Mesa and Mohave Generating Station, scaling back the BNCC mine and Four Corners Power Plant, and absorbing the blow from the Gold King Mining Spill and loss of tourism. The Navajo Nation and surrounding counties have also not fully recovered from the most recent economic recession when compared to other parts of Arizona, New Mexico, and the country as a whole.

3. The full economic effect on the Navajo Nation will be a loss of 4,649 jobs, of which 857 are direct mining and power station high-paying Navajo jobs. The annual losses in the overall Navajo economy will be $932 million.

4. The Navajo Nation’s annual receipts from taxes, royalties and leases will exceed $25 million with full closure of Kayenta and NGS and loss of income that generates BAT tax revenue.

5. NTEC, representing the Navajo Nation, is negotiating a plan with the utility owners of NGS and Peabody Coal that would extend operations for at least ten years. The NTEC proposal would include a reorganization that will increase efficiency and taxes. The economic result for the Navajo Nation would be an increase in the ten-year average annual payments to the Navajo Nation of about $60 million after reserving money for

decommissioning and other contingencies. If these do not occur, the payments to the Navajo Nation would be about 20% greater.

6. Nothing has been fully resolved. There are signs that some private interests seek a less costly exit. Regardless, the Navajo Nation is being forced to fight for the rights to use their coal and other resources to generate electricity from generating stations located on Navajo land.