

Huntley Generating Station:

Coal Plant's Weak Financial Outlook Calls For Corporate And Community Leadership

By Cathy Kunkel, David Schlissel, and Tom Sanzillo
Institute for Energy Economics and Financial Analysis
January 28, 2014



Table of contents

Authors	i
Executive Summary	1
Introduction	1
Trends in coal-fired power generation	1
Financial performance of the Huntley plant	3
Future outlook	7
Implications of Huntley retirement	13
Conclusion	15
Endnotes	16
Appendices	19
Appendix A:	19
Memorandum: Huntley Plant Worker Security and Opportunity Plan	
Appendix B:	22
Memorandum: Huntley Plant Closure and Fiscal Stability Plan	

Authors

Cathy Kunkel is an independent consultant focusing on energy efficiency and utility regulation. She has testified on multiple occasions before the West Virginia Public Service Commission, as part of her consulting work for the non-profit coalition Energy Efficient West Virginia. Prior to moving to West Virginia in 2010, she was a graduate student in the Energy and Resources Group at the University of California-Berkeley and a senior research associate at Lawrence Berkeley National Laboratory. She has undergraduate and graduate degrees in physics from Princeton University and Cambridge University. She is a part-time fellow with the Institute for Energy Economics and Financial Analysis.

David Schlissel has been a regulatory attorney and a consultant on electric utility rate and resource planning issues since 1974. He has testified as an expert witness before regulatory commissions in more than 35 states and before the U.S. Federal Energy Regulatory Commission and Nuclear Regulatory Commission. He also has testified as an expert witness in state and federal court proceedings concerning electric utilities. His clients have included state regulatory commissions in Arkansas, Kansas, Arizona and California, publicly owned utilities, state governments and attorneys general, state consumer advocates, city governments, and national and local environmental organizations.

Mr. Schlissel has undergraduate and graduate engineering degrees from the Massachusetts Institute of Technology and Stanford University. He also has a Juris Doctor degree from Stanford University School of Law.

Tom Sanzillo is the Director of Finance for the Institute for Energy Economic and Financial Analysis (IEEFA). Since 2007 he has worked for TR Rose Associates, a public policy and financial consulting firm in New York City in 2007. In his work with TR Rose and IEEFA Tom has served several clients working to create alternatives to fossil fuel use in the United States. Tom is involved with several other coalition efforts in different states and provides policy advice to national organizers seeking to change private sector and federal financing policy for coal plants. This work has entailed providing research and analysis on coal production, price and industry trends, energy and coal industry public and private financing. He has published several studies alone and jointly on individual plants, federal subsidies and coal-to liquids. He is as a financial advisor to the innovative Green Jobs/ Green New York large scale residential retrofit program in New York. Tom has served on the Advisory Board on the future management of the Long Island Power Authority in New York State. His clients also include business, labor and community organizations covering a host of public and private finance and policy issues.

From 1990 to 2007, Tom served in senior management positions to the publicly elected Chief Financial Officers of New York City and New York State. The period 2003 to 2007, he served as the First Deputy Comptroller for the State of New York. During that time Tom was instrumental in the design of fiscal reform programs for the City of Buffalo and Erie County. He also performed extensive oversight work on Buffalo's multiyear effort to rehabilitate Buffalo's schools.

Tom's work in the field of government oversight was recently acknowledged with the publication of: Thomas Sanzillo, *The New York State Comptroller's Office*, The Oxford Handbook of New York State Government and Politics, New York: Oxford University Press, 2012.

Executive Summary

This report analyzes the recent and projected future financial viability of NRG's Huntley coal-fired power plant in Western New York. We find that the pre-tax earnings generated by the plant have dropped precipitously in recent years, from a range of \$56 million to \$110 million in the years 2005-2008, to an average of -\$1 million for 2009-2012. This has been driven by a "perfect storm" of conditions that have impacted deregulated coal plants around the country: low natural gas prices; stagnating power demand due to recession and increased energy efficiency; and uncompetitive coal prices. Projections of future New York electricity market prices and coal prices do not indicate any relief from these trends, and the Huntley plant is not expected to approach its level of 2005-2008 earnings through at least 2020. Thus, the Huntley plant does not appear to be financially viable and is at risk for retirement.

The report is divided into the following sections: (i) Introduction; (ii) Trends in coal-fired power generation; (iii) Financial performance of the Huntley plant; (iv) Future outlook; (v) Implications of Huntley retirement; and (vi) Conclusion.

Introduction

The Huntley Generating Station, located in Tonawanda, is one of the few remaining coal-fired power plants in New York State. Huntley originally consisted of 6 units, placed into service between 1942 and 1958. Units 1 and 2 (totaling 180 MW) were retired in 2005; Units 3 and 4 (totaling 200 MW) were retired in 2007. The remaining two units, each 218 MW, were placed into service in 1957 and 1958. All of the coal burned at Huntley is sourced from the Powder River Basin in Wyoming.

Huntley is owned and operated by New Jersey-based NRG Energy, the largest competitive power generation company in the United States. NRG's portfolio currently includes 28% coal-fired generation, but the company sees environmental sustainability as an "irreversible" trend and is moving increasingly toward natural gas and renewables, particularly utility-scale solar.¹

Huntley operates in New York's deregulated electricity market, selling its power into the markets operated by the New York Independent System Operator (NYISO). NYISO is responsible for coordinating the dispatch of power plants and operating New York's electrical grid to make sure that power supply meets demand and to ensure grid reliability. Because New York is deregulated, power plants bid their generation into NYISO's energy market and plants are dispatched based on their cost of generation.

This report examines the recent financial performance of the Huntley plant, expected future performance, and the feasibility of retiring the remaining two units.

Trends in coal-fired power generation

The Huntley plant has seen a dramatic decline in profitability since 2008, consistent with broader trends impacting coal plants in deregulated markets. Nationally, the decline in the financial viability of coal plants is driven by: lack of growth in electricity demand due to economic recession; increasing energy efficiency and demand response; low natural gas prices; uncompetitive coal prices; and increased generation from renewable resources. In

the NYISO region, for example, summer peak demand has increased only 0.75% per year from 2003-2012.²

Natural gas prices have fallen 60% from 2008 to 2013; in 2012, Henry Hub natural gas prices reached \$2.75/MMBTU,³ their lowest since 1999.⁴ This has driven down wholesale electricity prices in competitive markets. Wholesale market prices are set by the variable generating cost at the most expensive unit that clears the market; low natural gas prices have allowed natural gas units to reduce their operating costs and displace coal units as the marginal unit at certain times.

Nationally, the price of coal delivered to the electric power sector increased nearly 7% per year from 2002-2012 and is projected to continue rising.⁵ Increases in coal exports have made domestic coal prices more subject to international market forces and hence more volatile.

Increased generation from renewable resources is also putting pressure on coal-fired units. Because renewable sources like wind and solar have no fuel costs, they are dispatched ahead of other units and therefore contribute to declining operation of coal-fired units.

These fundamentals have driven the retirement of more than 13,000 MW of the country's aging coal fleet from 2009-2012.⁶ They have also driven coal-fired power generation to record lows in 2012: 37% of total generation, down from 48% in 2008.⁷ Natural gas prices rebounded slightly in 2013, meaning that coal will enjoy a higher share of power generation in 2013 over 2012. However, flat or modestly rising power prices will be insufficient to drive new investment in coal plants. Additionally, the price for coal is projected to continue increasing.

The national trends of lower natural gas prices, lower wholesale market prices, and declining coal generation are also playing out in New York. Wholesale electricity market prices in NYISO's western zone, for example, fell 36% from 2008 to 2013.⁸ According to the NYISO market monitor's 2012 "State of the Market" report:⁹

"Average electricity prices fell 16 to 25 percent from 2011 to 2012, which was primarily due to lower natural gas prices. Natural gas prices fell 28 to 35 percent over the same period. Low natural gas prices increased the share of electricity production from natural gas from 38 percent in 2011 to 45 percent in 2012. The correlation between energy and natural gas prices is expected in a well-functioning, competitive market because natural gas-fired resources were the marginal source of supply in 80 percent of the intervals in New York in 2012."

From 2010 to 2012, the fraction of the time that coal was the marginal generator in NYISO dropped from 26% to 10%, while natural gas increased from 71% to 83%.¹⁰ The 2012 "State of the Market" report further notes that:

"The share of total electricity production [in New York] from gas-fired generators rose from 37 percent in 2010 to 45 percent in 2012, while the share from coal-fired resources fell from 10 percent in 2010 to 3 percent in 2012. These changes reflect the narrowing spread between coal prices and natural gas prices, the lower delivery costs of natural gas, and the better fuel efficiency of most gas-fired units."¹¹

Financial performance of the Huntley plant

Since 2009, the two remaining units at the Huntley plant have been running less frequently and have become far less profitable than they were in the period from 2005 through 2008. Figure 1 shows the annual capacity factor of the Huntley units from 2005-2012. The "capacity factor" reflects the fraction of time that a plant is running at full capacity; it compares the plant's actual generation during a year with the generation that the plant would produce if it operated at 100 percent power for all hours of the year. The Huntley plant has gone from running at a 60-65% capacity factor in 2005-2008 to only a 19% capacity factor in 2012. The capacity factor rebounded to 28% in the first 10 months of 2013. Because NYISO controls the dispatch of power plants (and therefore how often plants are running) based on their bids into the NYISO's energy market, the decline in Huntley's capacity factor reflects increased costs to operate Huntley and/or reduced costs to operate competing generating units.

Figure 1. Capacity factors at Huntley's remaining unretired units have declined dramatically since 2008.¹²

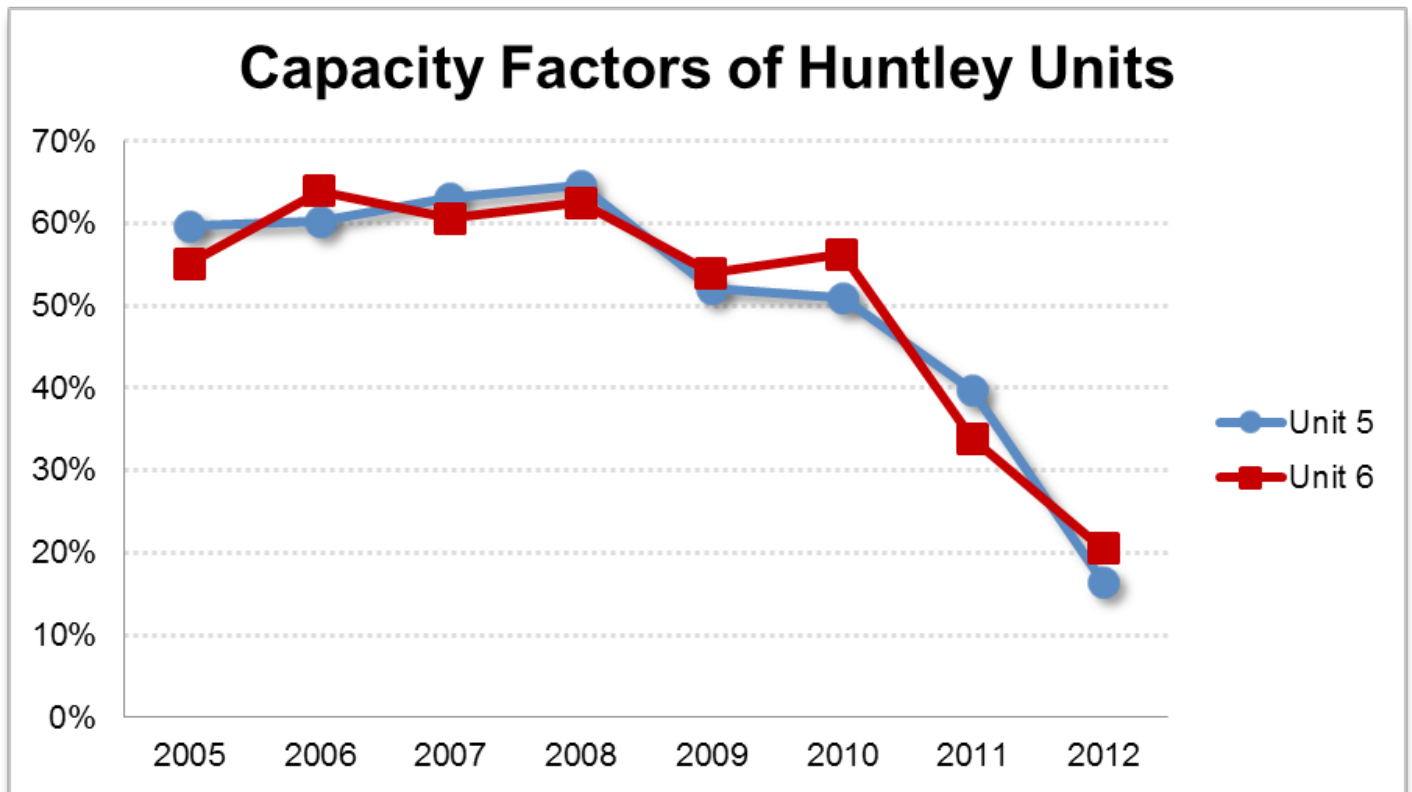


Figure 2 shows the increased cost of coal to the Huntley plant, per MWh generated, from 2005 to 2013. Huntley's coal is sourced almost entirely from the Powder River Basin in Wyoming. Coal costs per MWh in 2013 were 30% higher than in 2005.

Figure 2. Cost (\$/MWh) of coal burned at Huntley.¹³

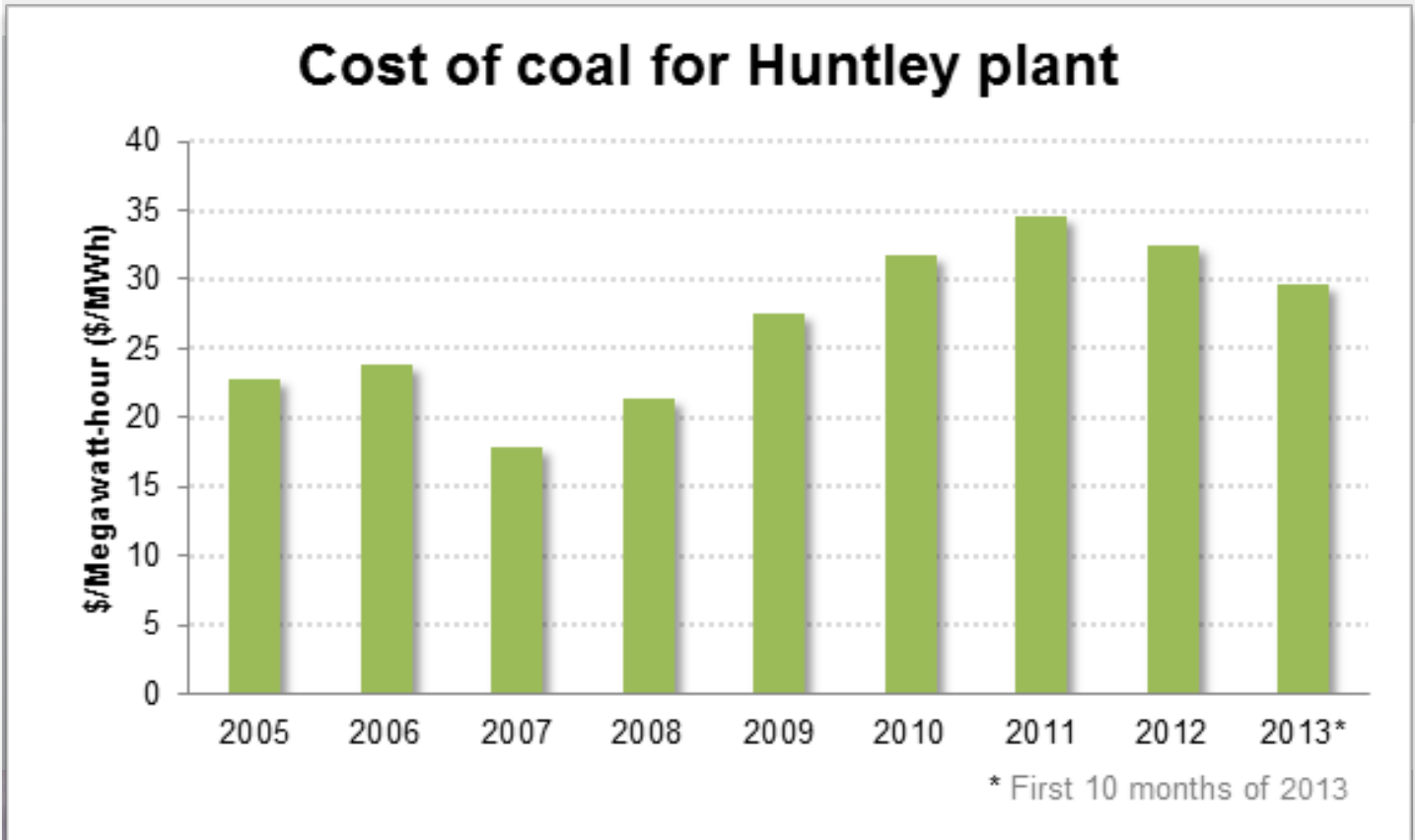
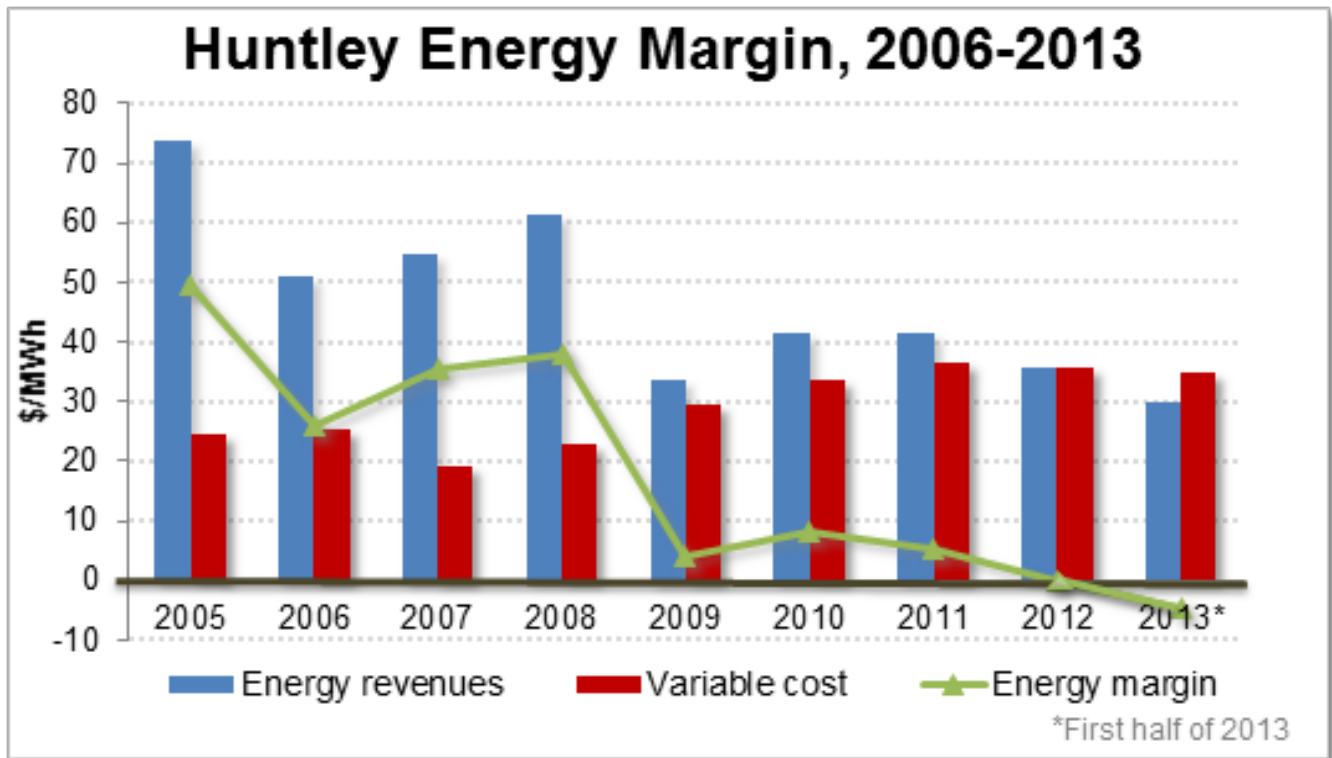


Figure 3 shows Huntley’s “energy margin,” the difference between the revenues earned from the sale of electricity (energy) and the variable costs of generating that electricity. In this case, the energy margin is the difference between the revenues the plant receives from NYISO’s energy market and the cost of fuel and variable, non-fuel operations and maintenance expenses. The energy margin suffered a precipitous decline from 2008 to 2009, from which it has never recovered.

Figure 3. Huntley’s energy market revenues, variable costs, and energy margin.¹⁴



The combination of lower revenues, due to reduced operation and lower wholesale power prices in NYISO, and increased operating costs has led to a sharp decline in Huntley’s earnings. Figures 4 and 5 show the plant’s earnings before income taxes, depreciation and amortization (EBITDA). These figures were derived by subtracting Huntley’s total production costs (fuel expenses and total non-fuel operations and maintenance expenses) from all of its revenues from NYISO’s markets, including energy, capacity and ancillary services. We used SNL Financial’s estimates of non-fuel operation and maintenance expenses, which are based on the operation and maintenance expenses of regulated units with similar operating characteristics. The Huntley plant went from earning \$110 million in 2005 to -\$3 million in 2012. The plant has operated at a loss in three of the past five years, even before considering the additional costs that NRG must pay in taxes, amortization, depreciation and interest on invested funds.

Figure 4. Huntley's earnings before income taxes, depreciation, and amortization.¹⁵

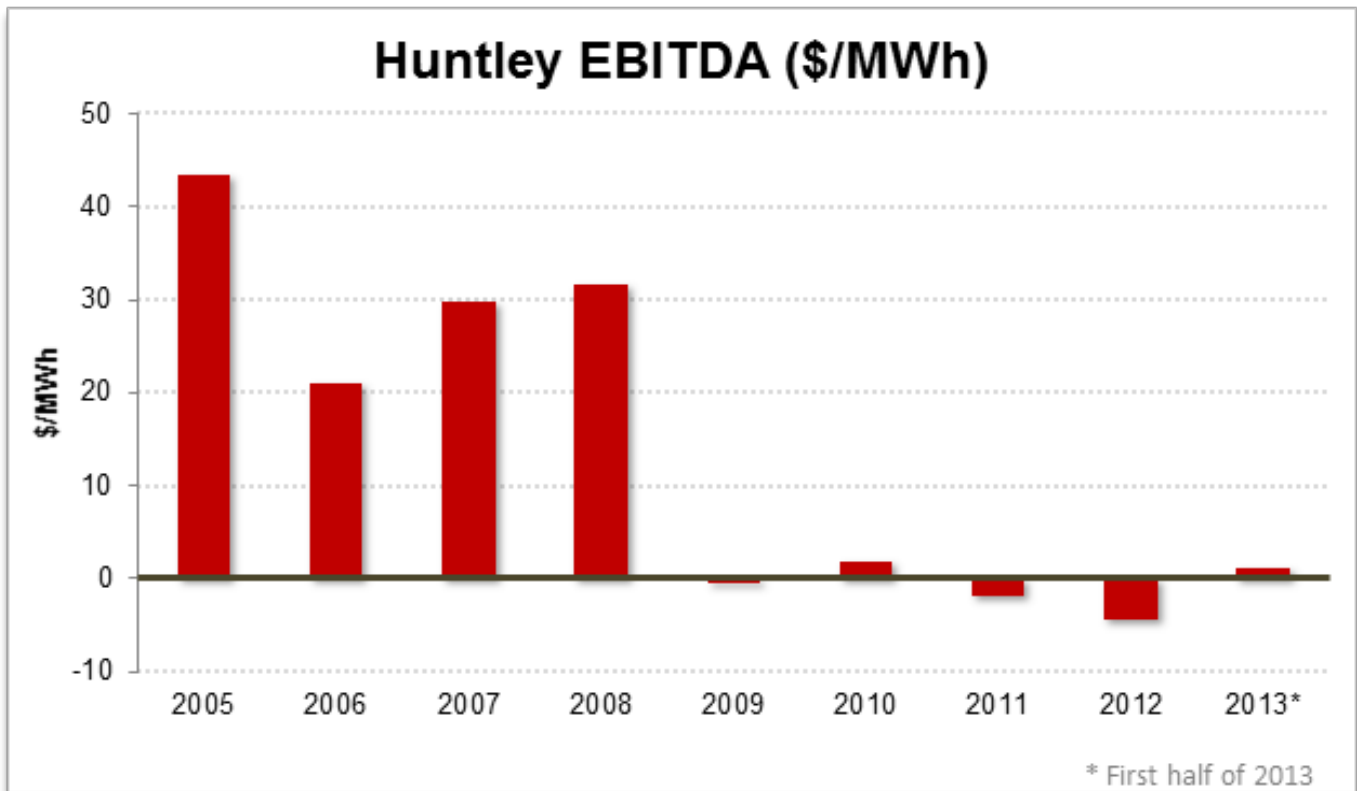
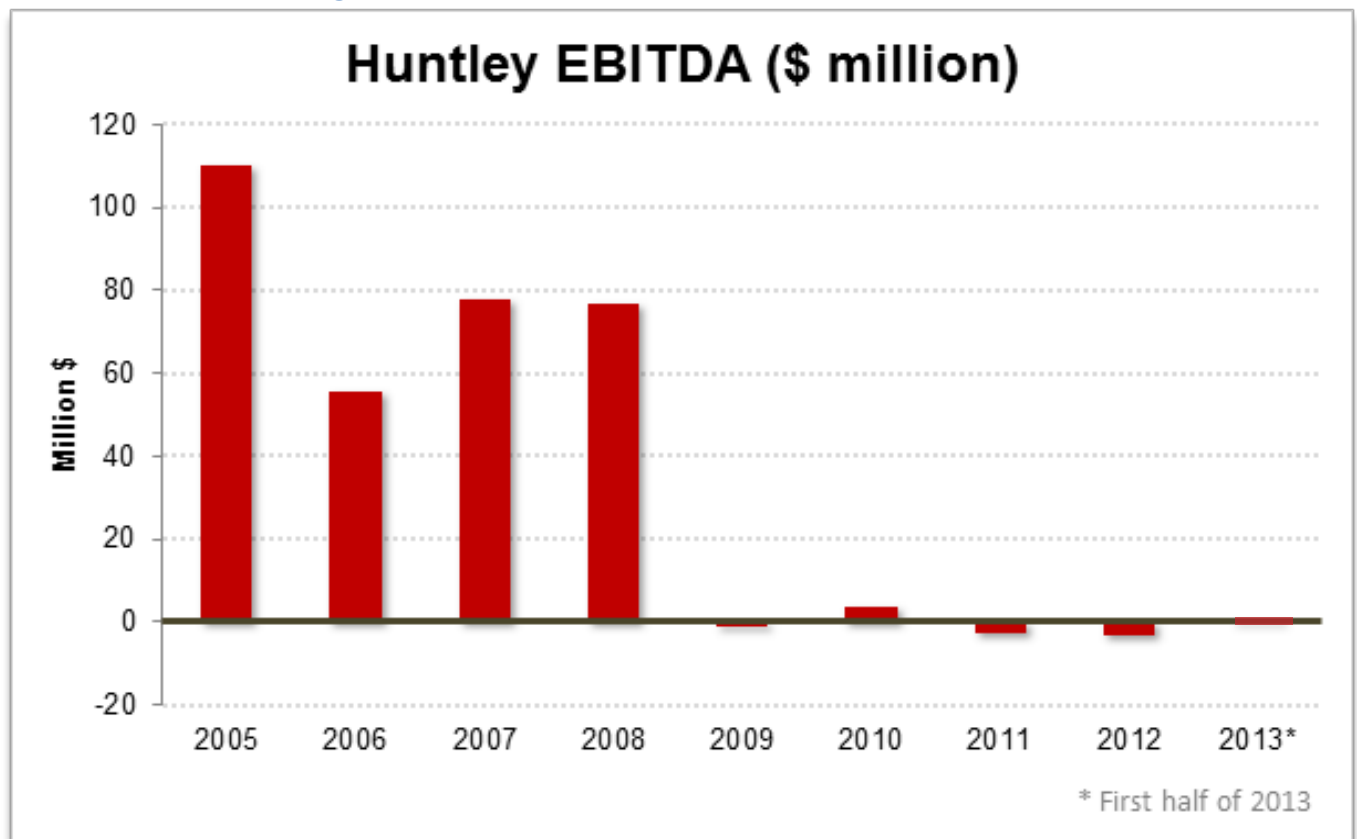


Figure 5. Huntley's earnings before income taxes, depreciation, and amortization. Same as Figure 4, above, but expressed in millions of dollars.

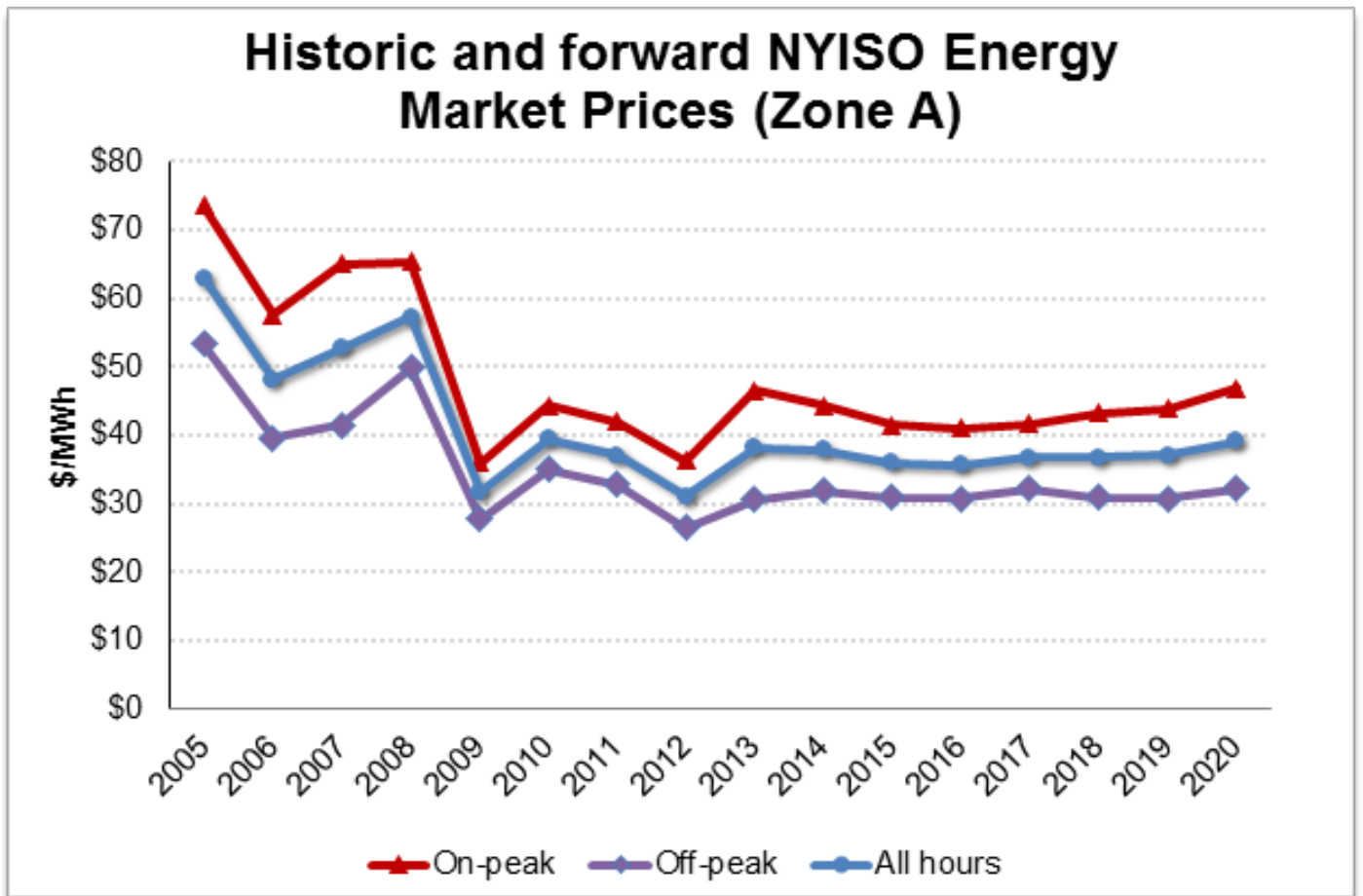


Future outlook

The future for the Huntley plant does not indicate any near-term relief from the economic forces that have made the plant unprofitable in recent years. Figure 6 shows historic and currently forecast futures prices for energy in NYISO's western zone, where Huntley is located.¹⁶ Wholesale electricity prices in this zone are generally expected to remain at current levels and not expected to regain 2005-2008 levels at any time through 2020. As discussed previously, this decline in wholesale market prices is largely due to low natural gas prices.

NYISO capacity market prices for upstate New York are also not expected to increase significantly, due to the large amount of excess capacity in upstate New York (see Section V, below). In addition, the NYISO is in the process of creating an additional capacity zone in southeastern New York in recognition of transmission constraints in that part of the state and to encourage new generation in that area; the creation of this new capacity zone will likely suppress capacity prices in western New York.¹⁷

Figure 6. Historic and projected wholesale energy market prices in NYISO's western zone. The "all-hours" price is the weighted average of on-peak and off-peak forward prices. Prices in nominal dollars.¹⁸



Meanwhile, Powder River Basin coal prices are expected to keep trending upwards. According to SNL Financial, Powder River Basin coal prices are projected to increase about

7% per year from 2013 through 2020.¹⁹ The cost of transporting coal by rail from the Powder River Basin has also been increasing. Indeed, from 2007 through 2013, the transportation cost for coal at Huntley increased more than 50%.²⁰

The upward pressure on Powder River Basin prices is driven by: increasing domestic demand as Central Appalachian coal production declines, increasing exports, and increasing production costs as the seams of coal nearest to the surface are progressively mined out.

Recent analyses indicate that coal production in the Powder River Basin is increasingly running up against geological limits to the amount of economically recoverable coal. The United States Geological Survey (USGS) has significantly reduced its estimates of the amount of economically recoverable coal in the Gillette field (the major coal field in the region). In 2002, the USGS estimated 23 billion tons of economically recoverable coal but decreased that to only 10 billion tons in 2008, despite the fact that coal prices had increased over that time period. The top five largest mines in the Powder River Basin, which collectively provide 30% of U.S. coal, have remaining lives of less than 14 years. Expanding into new areas will require going after coal deposits that are more difficult to access. Indeed, some have argued that Wyoming will never regain its peak level of coal production, achieved in 2008.²¹

Figure 7 shows the historic and projected future costs of Powder River Basin coal (not including transportation costs) for Huntley. The historic prices represent actual, negotiated contract prices for Powder River Basin coal at Huntley. These prices show the 2010/11 spike in Powder River Basin coal prices. Costs of Powder River Basin coal for Huntley have historically been higher than market prices for Wyoming coal. In order to estimate future prices, we took the 2007-2009 average mark-up in Huntley's coal price (before the 2010/11 price spike) and applied it to futures prices for Powder River Basin coal.²² This may still be conservative given that some industry analysts are projecting price spikes in Powder River Basin coal for 2014-15 due to an uptick in demand.^{23 24}

Figure 7. Historic coal prices at Huntley and estimated prices based on PRB futures.²⁵

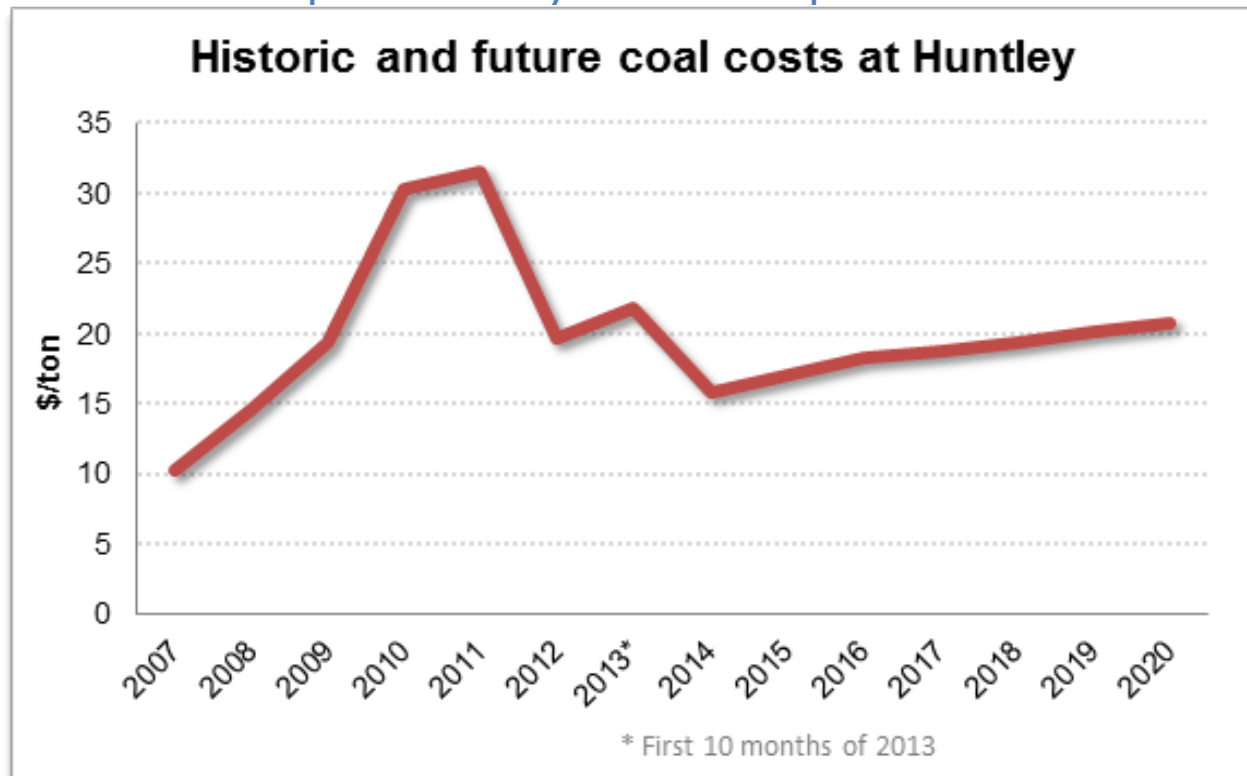


Figure 8 shows the NYISO historic and forward energy prices, by month, alongside the projected variable costs of the Huntley units. The variable costs are dominated by coal costs. This graph shows the seasonal variation in energy prices, which peak in winter months. It also indicates that Huntley's variable operating costs are (a) generally expected to be higher than off-peak power prices and increasingly higher than on-peak power prices in some months; and (b) increasing faster than power prices. Because a plant's variable costs determine how often it is dispatched, Huntley is generally not expected to be dispatched during off-peak hours.

We assume that Huntley maintains the same monthly capacity factors as the previous twelve months (November 2012 through October 2013) for the years 2014 to 2020.²⁶ Based on Figure 8, this is likely a conservative assumption because Huntley's variable costs are projected to increase faster than wholesale power prices, meaning that Huntley will likely be less economic to dispatch in the future.

Figure 8. Historic and projected variable operating costs and NYISO forward energy prices.

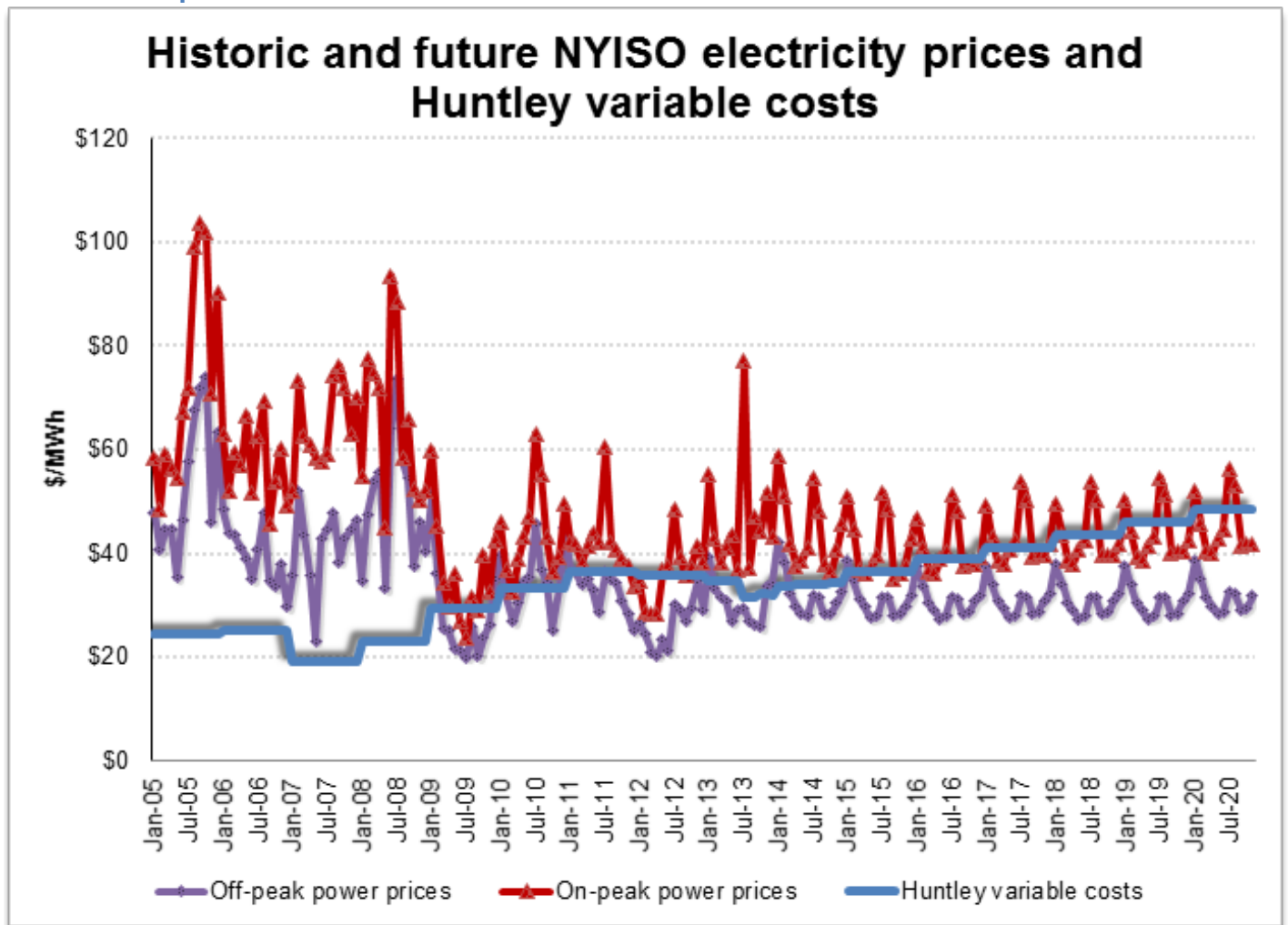
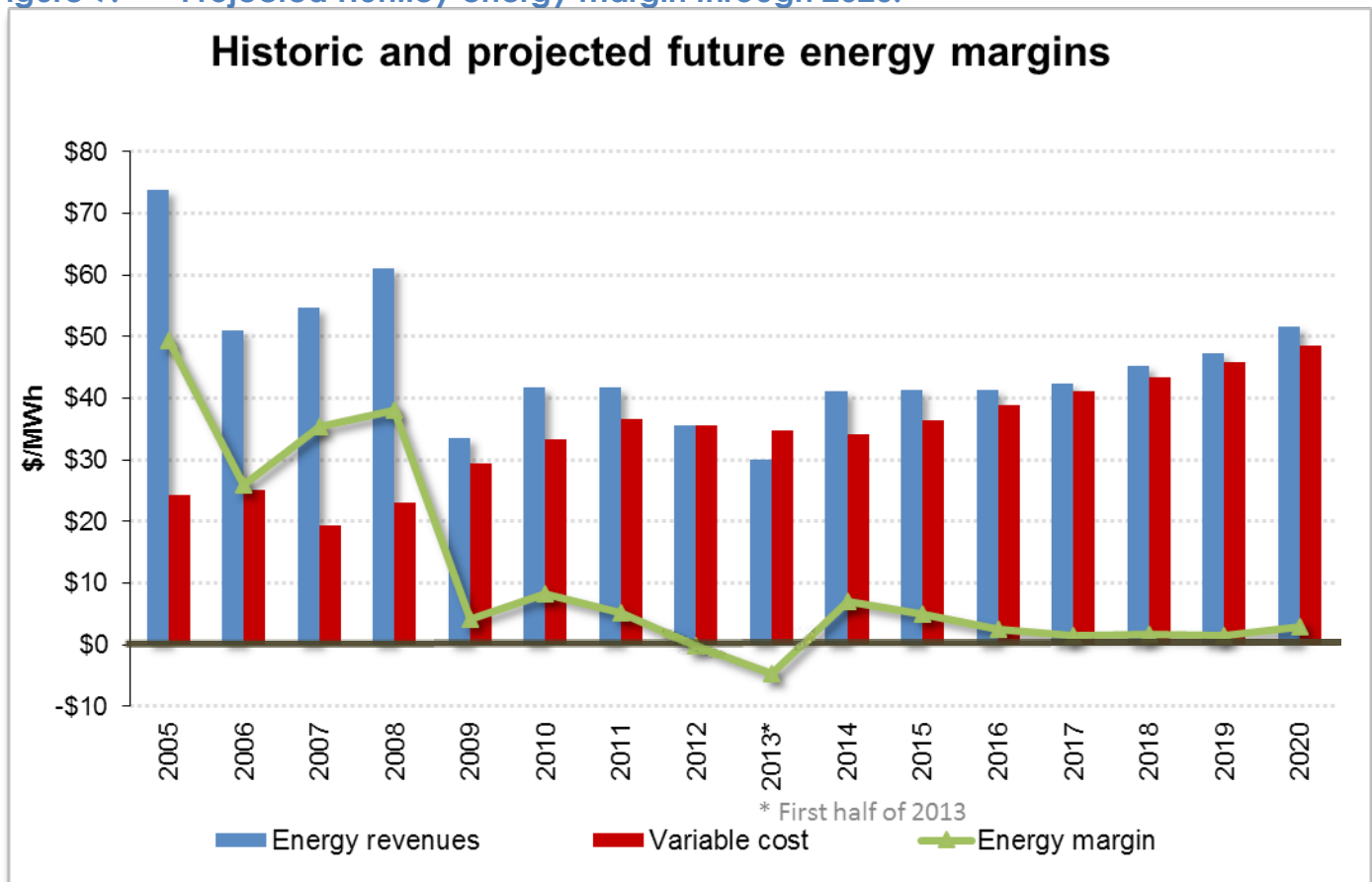


Figure 9 shows the projected future energy margins of the Huntley plant. Coal prices escalate at approximately 7% per year, as discussed above, and the cost of coal transportation by rail was assumed to continue increasing at its 2009-2012 rate. The combination of stagnant power prices and increasing coal prices is projected to result in an average energy margin of \$2.40/MWh through 2020, lower than the 2009-2012 average energy margin. Figure 9 clearly shows that the energy margin does not regain 2005-2008 levels through 2020.

Figure 9. Projected Huntley energy margin through 2020.



Even though Huntley's energy margin is projected to be (barely) positive through 2020, the plant relies on its energy margins to cover some of its fixed operating and maintenance costs. Figures 10 and 11 show Huntley's projected earnings before income taxes, depreciation and amortization. This is all of the plants projected earnings from NYISO's markets for energy, capacity and ancillary services, less the plant's total projected production expenses (variable and fixed costs).

Figure 10. Projected future EBITDA (earnings before interest taxes, depreciation and amortization) for Huntley.

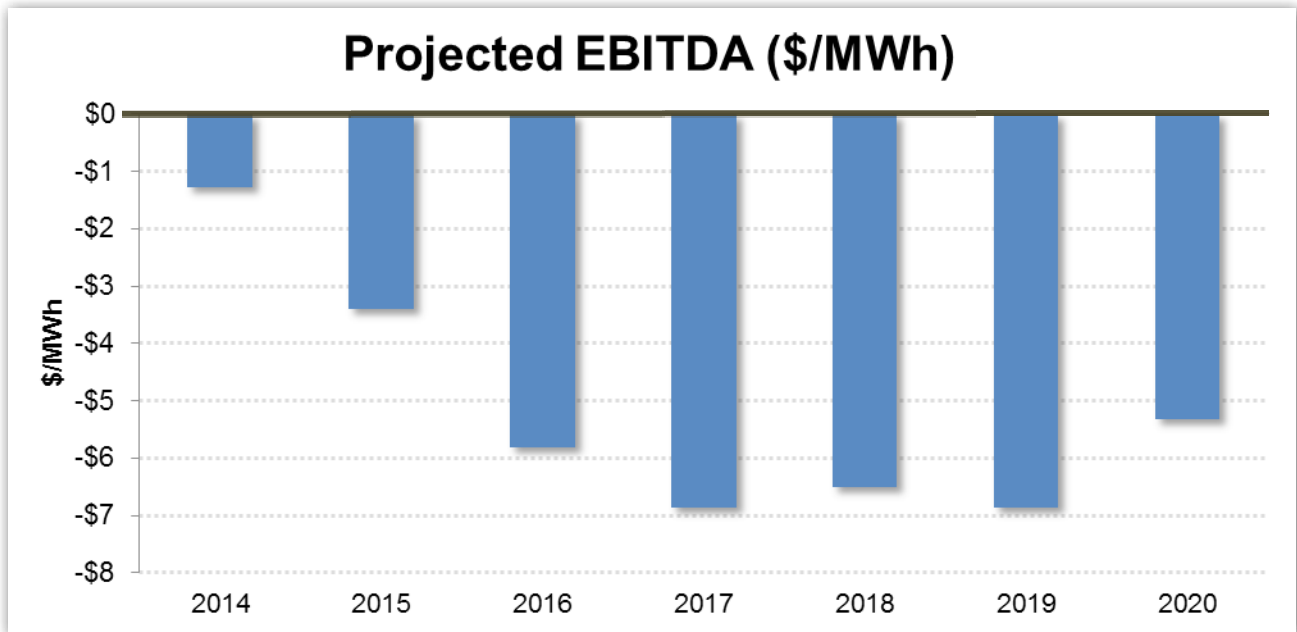
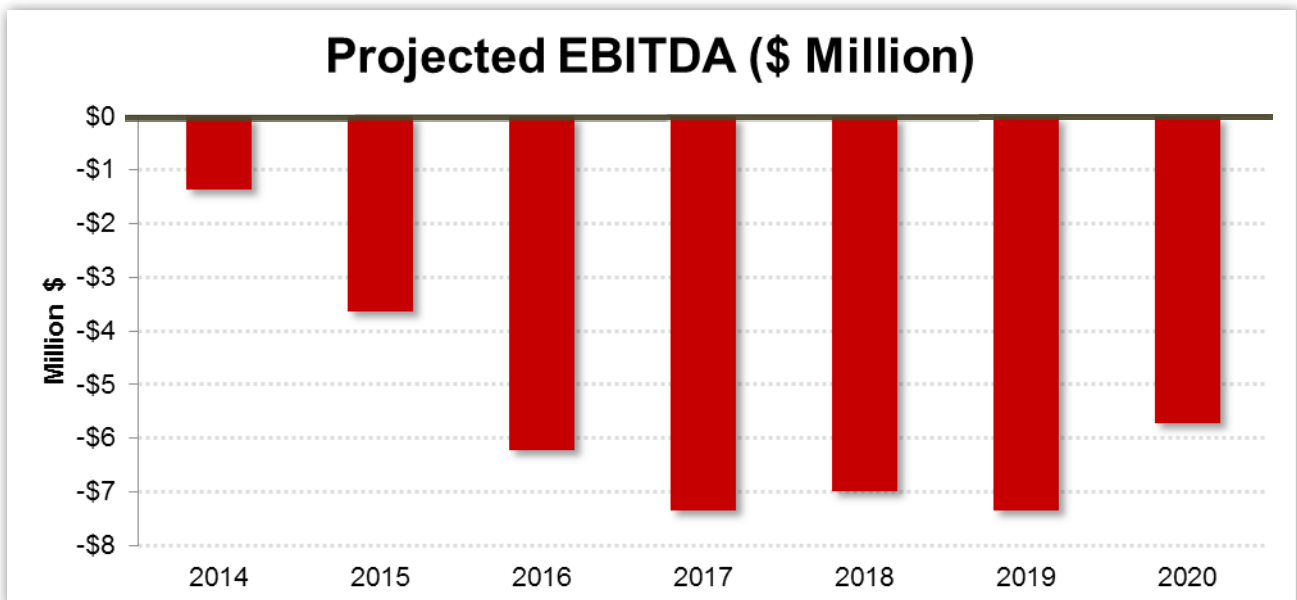


Figure 11. Projected Huntley earnings before income taxes, depreciation, and amortization. Same as Figure 10, above, but expressed in millions of dollars.



The following assumptions were used in generating Figures 8-11:

- Coal price escalation: We applied the 2007-2009 average mark-up in Huntley's coal price to futures prices for Powder River Basin coal. These prices increase at an average of 7% per year.
- Coal transportation price escalation: Transportation of coal by rail was assumed to

increase at the same rate as it did for 2008-2013, i.e. 7.3% per year.

- Huntley's capacity factor: Huntley is assumed to operate with an annual average 28% capacity factor through 2020. Monthly capacity factors were taken from the plant's monthly capacity factors for the twelve-month period November 2012 through October 2013.
- Huntley's fixed operations & maintenance costs: Fixed operations & maintenance costs were assumed to remain constant at their estimated 2009-2012 average of \$12.2 million per year, or \$11.4/MWh assuming a capacity factor of 28%.²⁷
- Huntley's non-fuel, variable production costs: Non-fuel, variable production costs were assumed to remain constant at their estimated 2009-2012 average of \$2.18/MWh.
- Energy market revenues: We used NYISO off-peak and on-peak energy futures prices, with the assumption that the plant will generate at on-peak periods as much as possible.
- Non-energy revenues²⁸: Assumed to be constant at their 2009-2012 average, or \$3.4 million (\$3.2/MWh with a 28% capacity factor).

The above analysis does not take into account the draft State Pollution Discharge Elimination System Discharge permit issued by the New York State Department of Environmental Conservation.²⁹ This draft permit recommends limiting Huntley to generating less than 15% of the time over the 5-year permit duration. Clearly, curtailing Huntley's generation to 15% (rather than the 28% assumed in the above analysis) will make Huntley even more financially unviable.

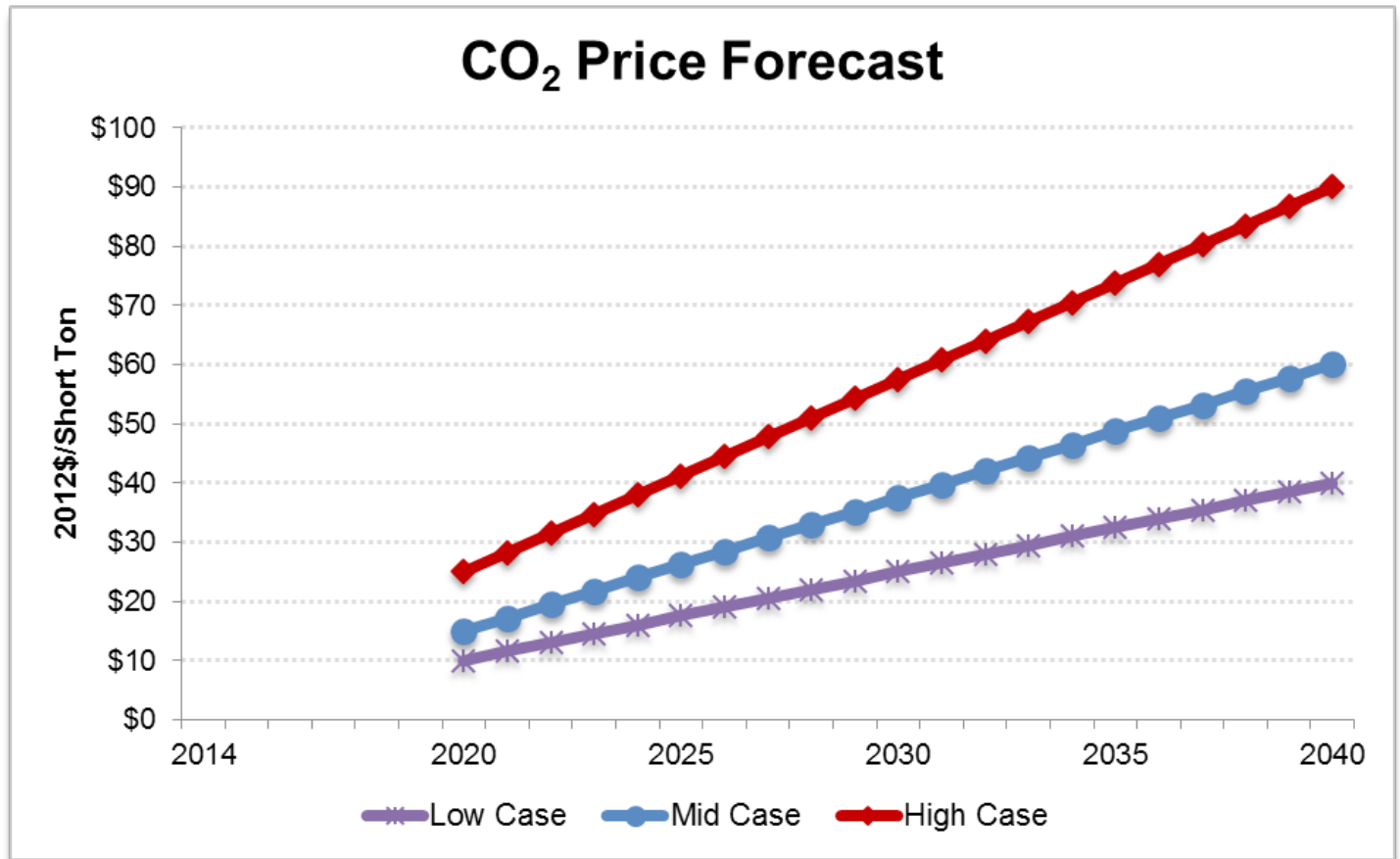
Additionally, our assumptions about Huntley's production costs were conservative in that they did not take into account the risks of increased operating costs and declining operating performance as the Huntley units age. As of 2014, the two remaining Huntley units are 56 and 57 years old. The more than 200 coal units that had been retired through the end of 2012 had an average age of 51 years when they retired (and median age of 53 years). The 105 coal units with announced retirement dates of 2013 or later will have an average age at retirement of 57 years, with a median age of 60 years. Therefore, there is significant uncertainty about the operating life, operating performance and costs of operating coal plants as they age beyond 55-60 years.

Our assumptions also do not take into account the risk of future carbon dioxide pricing. The U.S. Environmental Protection Agency is working on a New Source Performance Standard (NSPS) for existing sources of carbon dioxide, including coal-fired power plants like Huntley. Although the design of this existing source standard is still under consideration, it is possible that it would be efficiency-based like the NSPS for new sources. It is anticipated that the proposed NSPS for existing sources could be issued for comment in 2014 with widespread implementation in 2019 or 2020.³⁰

Given the increasing public recognition and concern over climate change, it is reasonable to expect that there will be a legislative program at some point in the not-too-distant future that will place a significant price on greenhouse gas emissions from fossil-fired power plants. Although the timing, design and stringency of such a comprehensive federal regulatory regime are unknown, we believe that the following CO₂ price forecasts from Synapse Energy Economics, shown in Figure 12, offer a reasonable set of prices that

should be considered in resource planning and related economic evaluations.³¹ This is especially true where, as here, the power plant burns coal, the most carbon intensive fuel.

Figure 12. Synapse Energy Economic's 2013 carbon dioxide price forecast. This range reflects the great uncertainty in the timing, design and stringency of any comprehensive federal greenhouse gas regulatory regime.



Assuming a conversion ratio of approximately 1 ton of CO₂ per MWh, Synapse's mid-range CO₂ pricing scenario would add \$15/MWh to Huntley's costs, beginning in 2020. Given the extremely narrow energy margins and earnings shown in Figures 9-11, such a carbon price would obviously be disastrous for Huntley's financial viability.

Implications of Huntley retirement

From a financial standpoint, the Huntley units appear ripe for retirement. However, in some instances, older coal-fired power plants have continued to run for grid reliability reasons even when it may have made more economic sense to retire the units. Such units have been subsidized to continue generating through "reliability must run" contracts and other mechanisms.

Retiring the Huntley units would not create a capacity deficit in upstate New York. New York in general, and upstate New York in particular, has significant excess capacity. The summer peak demand in New York in 2013 was 33,279 MW, projected to increase to 36,613 MW by 2023. The total generating capacity in the state is 37,920 MW.³²



The capacity surplus in western New York is even more pronounced. Zone A, where Huntley is located, had a summer peak demand of 2,657 MW in 2013, projected to grow to 2,783 MW in 2023. There is 4,464 MW of capacity in Zone A.³³

Photo date: October 28, 2012

Nevertheless, removing a generating unit may still necessitate upgrades to the transmission infrastructure. For example, the retirement of NRG's Dunkirk facility, also in Zone A, was delayed for this reason. NRG proposed to retire the 635-MW, coal-fired Dunkirk plant in September 2012. Instead, NRG is currently being subsidized through a short-term "Reliability Support Services Agreement"³⁴ to keep running two of the four units through May 2013 and one unit (80 MW) through May 2015 in order to provide transmission system reliability.³⁵ In December 2013, New York Governor Cuomo announced that an agreement had been reached to repower Dunkirk as a 435 MW natural gas plant, rather than invest in the transmission upgrades that would be necessary to fully retire the units.³⁶

As discussed in the previous two sections of this report, the economics of Huntley suggest that it can be expected to be retired in the not-too-distant future. When it does, transmission upgrades will likely be required.³⁷ The NYISO should be planning for retirement of Huntley so as to minimize the cost and duration of any reliability-must-run arrangement that may be needed. The local communities and the labor unions representing the plant workers also should begin to plan for this retirement.



Conclusion

Since 2008, weak demand for electricity, coupled with low natural gas prices, have pushed down wholesale electricity market prices. Coal costs are projected to continue rising, driven by productivity declines as the most accessible coal seams are mined out. These economic factors have led to serious financial troubles for deregulated coal-fired power plants, including:



- Hatfield's Ferry Power Station: FirstEnergy recently announced the retirement of its supercritical Hatfield's Ferry coal plant in Pennsylvania. Placed into service from 1969-1971, the plant is significantly younger than the average age at which coal plants have been retired in recent years.
- Harrison Power Station: FirstEnergy received approval from the West Virginia Public Service Commission in October 2013 to transfer 80% of the Harrison power plant from its deregulated subsidiary, Allegheny Energy Supply, to its West Virginia regulated subsidiary, Monongahela Power. In a quarterly call to investors in November 2013, FirstEnergy CEO Anthony Alexander explained that the transfer was part of FirstEnergy's efforts to "reposition" its deregulated merchant generation business in expectation of continued low power prices.³⁸
- AEP's Ohio coal units: By order of the Public Utilities Commission of Ohio, AEP is spinning off its Ohio-based generating assets into a separate, deregulated subsidiary. Analysts from UBS Investment Research predict that these plants will see their earnings decline by more than 30% once the plants are forced to compete on the regional electricity market managed by PJM.³⁹
- Brayton Point Station: After investing \$1 billion in scrubbers and a new cooling tower for this plant, Dominion sold it for just \$55 million (\$35/kW) in the second quarter of 2013.⁴⁰ In October 2013, the new owners of the plant announced that it will be retired in 2017.⁴¹
- In March 2012, NRG filed to retire its Dunkirk coal plant in Western New York because "[d]ue to the current and forecasted wholesale electric prices in Western New York and the underlying cost of operation, the Dunkirk facility is, and would continue to be, operating at a net loss."

Huntley is no exception to this trend. The Huntley plant has seen negative earnings in three out of the past five years. NYISO energy market prices are not expected to regain their 2005-2008 levels at least through 2020. Yet the costs of Powder River Basin coal delivered to Huntley are expected to continue increasing.

In short, the Huntley plant, like many aging coal-fired power plants in deregulated markets, has taken a substantial financial hit in recent years, with little likelihood of a recovery in the near future. Given that the plant is located in a region with substantial excess capacity for at least the next decade, the Huntley units appear ripe for retirement.

Endnotes:

1. "The Company [NRG] believes that the American energy industry is going to be increasingly impacted by the long-term societal trend towards sustainability which is both generational and irreversible. Moreover, the information technology-driven revolution which has enabled greater and easier personal choice in other sectors of the consumer economy will do the same in the American energy sector over the years to come. As a result, energy consumers will have increasing personal control over whom they buy their energy from, how that energy is generated and used and what environmental impact these individual choices will have. The Company's initiatives in this area of future growth are focused on: (i) renewables, with a concentration in solar development; (ii) electric vehicle ecosystems; (iii) customer-facing energy products and services, including smart energy services that give consumers individual energy insights, choices and convenience, a variety of renewable and energy efficiency products, and numerous loyalty and affinity options and tailored product and service bundles sold through unique retail sales channels; and (iv) construction of other forms of on-site clean power generation." NRG, 10-k Annual Report 2012, retrieved September 30, 2013, http://www.nrgenergy.com/pdf/NRG_10K_2012.pdf.
2. New York Independent System Operator, "Gold Book: 2013 Load & Capacity Data", April 2013.
3. The Henry Hub is a natural gas distribution hub in Louisiana that, because of its interconnectedness, serves as a benchmark for natural gas pricing across the North American market. Natural gas futures traded on the New York Mercantile Exchange are established using the Henry Hub pricing point.
4. U.S. Energy Information Administration, "Henry Hub Gulf Coast Natural Gas Spot Price," released January 15, 2014, accessed January 17, 2014 <http://www.eia.gov/dnav/ng/hist/rngwhhdA.htm>.
5. U.S. Energy Information Administration, "Receipts, Average Cost, and Quality of Fossil Fuels for the Electric Power Industry, 2002 through 2012," accessed January 17, 2014 http://www.eia.gov/electricity/annual/html/epa_07_01.html.
6. U.S. Energy Information Administration, "27 gigawatts of coal-fired capacity to retire over next five years," July 27, 2012 <http://www.eia.gov/todayinenergy/detail.cfm?id=7290>.
7. U.S. Energy Information Administration, "Electric Power Monthly: Net Generation by Energy Source : Total (All Sectors), 2003-July 2013," released September 20, 2013, accessed September 30, 2013. http://www.eia.gov/electricity/monthly/epm_table_grapher.cfm?t=epmt_1_01
8. SNL Financial.
9. D. B. Patton, P. L. VanSchaick, J. Chen, "2012 State of the Market Report for the New York ISO Markets," Potomac Economics, April 2013. Page (i).
10. Ibid. at 7.
11. Ibid. at 7.

12. New York Independent System Operator's annual "Gold Book: Load & Capacity Data" for 2006 through 2013.
13. SNL Financial.
14. Variable cost data from SNL Financial. Energy market revenues from: Federal Energy Regulatory Commission, "Electric Quarterly Reports", retrieved for Q1 2005 through Q2 2013 for NRG (Huntley). Updated September 13, 2013. Accessed September 30, 2013.
15. Expense data from SNL Financial. Plant revenues from: Federal Energy Regulatory Commission, "Electric Quarterly Reports", retrieved for Q1 2005 through Q2 2013 for NRG (Huntley). Updated September 13, 2013. Accessed September 30, 2013.
16. 80 hours per week are defined as on-peak and 88 hours as off-peak.
17. D. B. Patton, P. L. VanSchaick, J. Chen, "2012 State of the Market Report for the New York ISO Markets," Potomac Economics, April 2013. Page (vi).
18. SNL Financial, OTC Global Holdings Futures prices as of January 2, 2014.
19. The Energy Information Administration's 2013 Annual Energy Outlook estimates PRB coal prices to increase 3.6% per year, in real dollars, from 2012 through 2020. This is only slightly less than the SNL forecast (which is in nominal dollars). The EIA's estimates, however, assume mining productivity in the PRB region will decline only 1.7% per year, significantly less than the 2000-2011 rate of 2.8% per year. (<http://www.eia.gov/forecasts/aeo/assumptions/pdf/coal.pdf>). It should also be noted that past Annual Energy Outlooks have consistently underestimated the cost of coal delivered to electric power plants for the past several years (http://www.eia.gov/forecasts/aeo/retrospective/pdf/table_11b.pdf).
20. SNL Financial.
21. L. Glustrom, Warning: Faulty Reporting of US Coal Reserves, Clean Energy Action, October 2013.
22. The annual rate of increase in PRB coal prices to the Huntley plant are also typically higher than year over year costs nationally; our estimate of future coal costs to Huntley does not take this into account.
23. See: Hanou Energy, *Powder River Basin Price Spike Ahead*, Press Release, September 16, 2013 and Everett Wheeler, *OTC Market: PRB Markets tumble on pressure from slumping natural gas prices*, SNL, September 27, 2013.
24. In addition, ongoing investigations of the federal leasing program in the Powder River Basin, demonstrating that the federal government is not receiving fair market value for its coal leases, could result in higher prices for PRB coal in the future. (See, for example: U.S. Department of the Interior, Office of the Inspector General, "Coal Management Program, U.S. Department of the Interior, Report No.: CR-EV-BLM-0001-2012, June 2013.)
25. SNL Financial, Future projections from SNL's November 2013 Powder River Basin coal price forecast, retrieved January 2, 2014.
26. Note that this period excludes the anomalously warm winter of 2011/12 during which capacity factors were severely depressed.
27. As mentioned previously, SNL Financial estimates operations and maintenance costs of deregulated plants based on the costs of regulated units of similar characteristics.
28. Non-energy revenues include: capacity market payments, uplift payments, and payments for ancillary

- services (including supplemental reserve, spinning reserve, and reactive power supply).
29. New York State Department of Environmental Conservation, State Pollutant Discharge Elimination System DRAFT Discharge Permit, SPDES Number NY-00001023.
 30. “Carbon Coming...but a Long Way Out,” UBS Investment Research, February 1, 2013.
 31. P. Luckow, E. Stanton, B. Biewald, J. Fisher, F. Ackerman, and E. Hausman, “2013 Carbon Dioxide Price Forecast,” Synapse Energy Economics, November 1, 2013.
 32. New York Independent System Operator, “Gold Book: 2013 Load & Capacity Data”, April 2013.
 33. Ibid.
 34. The agreement, approved by the New York Public Service Commission, is between NRG and National Grid (the parent company of Niagara Mohawk).
 35. Public Service Commission of New York, Order in Case No. 12-E-0136, May 16, 2013.
 36. State of New York, Governor’s Press Office, “Governor Cuomo Announces Dunkirk Power Plant to be Repowered and Expanded to Cost Effectively Meet Reliability Needs, Restoring Payments to Local Government and Preserving Jobs,” [press release], December 15, 2013.
 37. NRG has noted that the Huntley and Dunkirk plants are both used to manage power flows on the 230kV transmission system in the region. (NRG, “Managing Western New York Congestion Issues,” Presentation filed in New York Department of Public Service Matter No. 12-E-0577, filed November 7, 2013).
 38. SeekingAlpha.com, “FirstEnergy Management Discusses Q3 2013 Results – Earnings Call Transcript,” November 5, 2013.
 39. “AEP: Cutting its way to growth,” UBS Investment Research, July 29, 2013.
 40. Staff of the New Hampshire Public Utilities Commission and The Liberty Consulting Group, “Report on Investigation into Market Conditions, Default Service Rate, Generation Ownership and Impacts on the Competitive Electricity Market,” IR 13-020, June 7, 2013.
 41. Bandyk, M., “Brayton Point coal plant in Massachusetts to close in 2017,” SNL, October 8, 2013.



APPENDIX A

MEMORANDUM

To: Erin Heaney, Director, Clean Air Coalition of Western New York

From: Tom Sanzillo, Director of Finance, Institute for Energy Economics and Financial Analysis

Date: January 23, 2014

Re: Huntley Plant Worker Security and Opportunity Plan

You have asked us to assess the immediate employment related impacts of a potential closure of the Huntley Plant in Tonawanda, New York and to advise on any potential plans to assist current employees and their families maintain economic security.

The loss of the Huntley Plant creates economic challenges for the State of New York, Tonawanda and surrounding communities and the individual men and women who work at the facility and their families. Plant closures usually involve a process. In this case how time and resources are used during the process are critical. The challenges are difficult but manageable if handled early and with a persistent effort. This challenge has one priority, ***the individual men and women who work at the facility and their families.***

Background

The Huntley Generating Station, located in Tonawanda, is one of the few remaining coal-fired power plants in New York State. Huntley consists of 6 units, placed into service between 1942 and 1958. Units 1 and 2 (totaling 180 MW) were retired in 2005; Units 3 and 4 (totaling 200 MW) were retired in 2007. The remaining two units, each 218 MW, were placed into service in 1957 and 1958. All of the coal burned at Huntley is sourced from the Powder River Basin in Wyoming.

Huntley is owned and operated by New Jersey-based NRG Energy, the largest competitive power generation company in the United States. It operates 100 power plants in eighteen states. NRG's portfolio currently includes 28% coal-fired generation, but the company sees environmental sustainability as an "irreversible" trend and is moving increasingly towards natural gas and renewables, particularly utility-scale solar.¹ Huntley operates in New York's deregulated electricity market, selling its power into the markets operated by the New York Independent System Operator (NYISO). Recent plant utilization strongly suggests the plant is a likely candidate for closure in the near future.

1. NRG, 10-k Annual Report 2012, retrieved September 30, 2013, http://www.nrgenergy.com/pdf/NRG_10K_2012.pdf. Specifically at p. 10: "The Company believes that the American energy industry is going to be increasingly impacted by the long-term societal trend towards sustainability which is both generational and irreversible. Moreover, the information technology-driven revolution which has enabled greater and easier personal choice in other sectors of the consumer economy will do the same in the American energy sector over the years to come. As a result, energy consumers will have increasing personal control over which they buy their energy from, how that energy is generated and used and what environmental impact these individual choices will have. The Company's initiatives in this area of future growth are focused on: (i) renewables, with a concentration in solar development; (ii) electric vehicle ecosystems; (iii) customer-facing energy products and services, including smart energy services that give consumers individual energy insights, choices and convenience, a variety of renewable and energy efficiency products, and numerous loyalty and affinity options and tailored product and service bundles sold through unique retail sales channels; and (iv) construction of other forms of on-site clean power generation."

Problem and Resources

Public information on employment levels at the plant is scarce. We estimate there are less than 70 employees who may be affected by the plant closing.² The goal of this plan is to provide every employee with opportunities for a stable, long term income. Some of the resources³ are already available and some need to be supplemented to address the specific conditions at the Huntley Plant.

Existing Resources

Available Resource # 1: NRG Human Resources

The Huntley plant employees are people who have been part of the company for varying periods of time. NRG has 8800 full time employees across the United States. Talented individuals at the Huntley plant may be reabsorbed over time into other NRG operations. The recent announcement of an upgrade at the Dunkirk facility is one such employment resources. NRG is also looking to expand its employment space through investments in solar technology. The company is estimating the creation of 8000 jobs in the future from solar and repowering projects.⁴

Available Resource #2: Retirement Plan

NRG has both a defined benefit and 401K plan for its employees.⁵ Those union and nonunion employees eligible for retirement can expect their benefit packages.

New Resources

There are also a series of resources in western New York that can be mobilized to support Huntley employees.

New Resource Proposal # 1 – Union –Management Initiative

Resources, preferably provided to the International Brotherhood of Electrical Workers (IBEW) Local 97 in coordination with NRG Human Resources, could develop a model for finding and using existing and new resources to secure opportunities for any employees looking for work.

New Resource Proposal # 2: Existing Energy Employers in the Region

There are two major energy employers in the region – the New York Power Authority and National Grid. Each has sizable workforces in the state, and, in National Grid's case, an employment base throughout the northeast United States and United Kingdom. For example, if NYPA purchased the plant, some number of employees could remain at the plant as NYPA develops a new plan. Experienced employees with technical and administrative knowledge of the plant will be an asset as the plant and property go through their next economic cycle. Similarly, any new owner might look to retain talented employees. According to the New York State Comptroller, the New York Power Authority has 1600 employees with a payroll of \$142 million and 2000 active contracts

-
2. Recently Dynegy's Danskammer plant (which has now been sold to Helios Power Capital) filed a layoff notice for 68 employees at the Newburgh, NY coal plant. The plant had, like Huntley, been downsizing for several years.
 3. The New York State Worker Adjustment and Retraining Notification (WARN) Act provides notice to affected employees of impending plant closures and layoffs. It also has some resources that are deployed through the New York State Department of Labor. This memo envisions a more robust response to this plant closure based largely on a mobilization by NRG, labor and the residents of Tonawanda and Erie County.
 4. NRG Energy, *Inspiring Energy*, 2012 Year In Review, March 15, 2013, p. 17.
 5. NRG Energy, 2012 10K, Note 13: Benefit Plans and Other Postretirement Benefits, Date.

worth \$6.3 billion.⁶ Given time and a good network of information, numerous opportunities are likely to emerge in the current power generation sector in western New York.

New Resource Proposal # 3 Opportunities in Western New York and Beyond

As noted, NRG estimates a significant employment expansion from repowering and solar development. Similar expansions are taking place in the wind and energy efficiency arena. A union-led operation to identify employment in these sectors could concentrate on investment projects throughout NYS in the energy sector and to open up opportunities around the country and world. Similarly, the New York State Energy Research and Development Administration (NYSERDA) currently partners⁷ with companies involved with the production of solar, wind and energy efficiency products around the state with a significant impact in direct and indirect employment opportunities created.⁸ The New York State Department of Labor has identified key areas of the western economy that are improving at modest but steady pace.⁹ Most companies will train competent workers who demonstrate promise, but additional investment could also be made into local community colleges for retraining.

New Resource Proposal # 4: Business Development

Plant closures have an economic impact beyond the plant, its employees and the taxing jurisdiction. Plant closures have an impact on local small businesses that depend on both the plant and employees for customers. Some resources should be devoted to assist those businesses that are clearly effected by the plant closure. A small business transition team staffed by the Erie County Industrial Development Agency, business organizations, the Erie County Executive and relevant county legislators can design a support model for local businesses.

Conclusion

As the region's corporate, political and community leadership focus on this problem, additional ideas may supplant or supplement these suggestions.

6. http://www.osc.state.ny.us/reports/pubauth/NYPA_btn_2013.pdf .

7. NYSERDA lists on its website partnership with the following western New York based firms: GTEC, Niagara Blower Heat Transfer Station, Rain Mountain, Rochester District Heating Group, Ziphany, Conserval Systems, Energy Wise Partners, Solid Cell Inc., TAM Ceramics Corp of NY, LLC; Cerion Enterprises, ENrG Incorporated and RocCera Ltd.

8. See also the New York State Department of Labor mapping of Green Jobs potential in western New York: <http://www.labor.ny.gov/stats/green/western-fingerlakes.pdf>

9. <http://www.labor.ny.gov/stats/wny/index.shtm>



APPENDIX B

MEMORANDUM

To: Erin Heaney, Executive Director, Clean Air Coalition of Western New York

From: Tom Sanzillo, Director of Finance, Institute for Energy Economics and Financial Analysis

Date: January 23, 2014

Re: Huntley Plant Closure and Fiscal Stability Plan

You have asked that we provide a review of the fiscal impacts of the closure of the Huntley plant and a basic plan for addressing anticipated revenue losses.

The loss of the Huntley plant creates a fiscal challenge to the State of New York, the local Kenmore Tonawanda ("Ken-Ton") school district, Erie County and the town of Tonawanda. The plant's weak economic condition makes it a likely candidate for retirement or substantial change in its operation. There will be a transition process that will prove useful if time and resources are used well. The fiscal challenge is best addressed now. This memo argues that any fiscal plan should have as its **priority the children of the school district.**

Background

The Huntley Generating Station, located in Tonawanda, is one of the few remaining coal-fired power plants in New York State. Huntley consists of 6 units, placed into service between 1942 and 1958. Units 1 and 2 (totaling 180 MW) were retired in 2005; Units 3 and 4 (totaling 200 MW) were retired in 2007. The remaining two units, each 218 MW, were placed into service in 1957 and 1958. All of the coal burned at Huntley is sourced from the Powder River Basin in Wyoming.

Huntley is owned and operated by New Jersey-based NRG Energy, the largest competitive power generation company in the United States. NRG's portfolio currently includes 28% coal-fired generation, but the company sees environmental sustainability as an "irreversible" trend and is moving increasingly towards natural gas and renewables, particularly utility-scale solar. Huntley operates in New York's deregulated electricity market, selling its power into the markets operated by the New York Independent System Operator (NYISO).

Current Facts –the Fiscal Bottom Line

NRG Huntley 2012 Tax Payments

Taxing Jurisdiction	2012 Payment (in \$ millions)
Town of Tonawanda	3.0
Town of Tonawanda Highway Department	1.0
Erie County	4.0
Ken-Ton School District	7.9
Total	15.9

The closure of the Huntley plant creates a revenue risk for the Town of Tonawanda, its Highway Department, Erie County and the Ken-Ton School District. By far the largest and most important NRG payment is to the Ken-Ton School District. As the plant's financing deteriorates, tax payments to the district will become smaller. The actual budget for 2012 for the district was \$135 million (against a planned expenditure program of \$147 million).¹⁰ Payments from the Huntley plant constitute 5.9% of actual district expenditures for 2012. We are now into the new budget cycle. We would anticipate that the full impact of plant closure would not be felt for a year or two, but the deteriorating finances of the plant places pressure on the tax rolls now.

The Ken-Ton district suffers from a combination of forces that have reduced its revenues and weakened budget balance: property tax caps, school aid limitations, federal uncertainty, and state priorities not aligned with local needs. Despite improving property values, these hits on the school district budget create a significant fiscal risk for the district. With adequate planning, the loss of the Huntley plant need not result in a sudden jolt to the school district budget.

Resources

Resource #1 - New York Power Authority¹¹

A recent study by the New York State Comptroller highlights the pivotal role that NYPA plays in western New York's fiscal and economic affairs beyond the provision of affordable electricity: "It is not unusual for the State to rely on NYPA to meet its energy and economic development goals." The report identifies significant recurring annual contributions by NYPA to the state General Fund (\$70 million per year over last three years and \$386 million in 2008-2009).¹² The Comptroller's report offers a brief outline of NYPA's financing of energy related projects including \$1-\$2 billion as yet unspent in the Governor's Energy blueprint dedicated to power plant retirements.¹³ Similarly, the report identifies a number of projects where NYPA has supported non-energy related economic development initiatives.¹⁴

One potential scenario is for the New York Power Authority to purchase the plant for a nominal amount. For example, it is reported that Dynegy purchased the Danskammer plant for \$900 million in 2000, and recently sold it for \$3 million.¹⁵ NYPA's ownership ensures better maintenance, confidence in any demolition activity, continued reliability on questions of community responsibility and a sound, publicly accountable planning process for the future. Additional resource outlays by NYPA as owner will act as an incentive to the authority for a prompt disposition of the property.

10 <http://www.kenton.k12.ny.us/cms/lib/NY19000262/Centricity/Domain/1791/06g2-THE%20Plan%2012.6.12-Bud-get%20Projections-BOE.pdf>

11. This discussion is taken largely from the New York State Comptroller's recently completed report on the financial activities of the New York Power Authority. http://www.osc.state.ny.us/reports/pubauth/NYPA_btn_2013.pdf. ("Comptroller Report"). See pages 13-15 for a discussion of the use of NYPA revenues for state fiscal relief, energy related investments and non-energy related investments.

12. An earlier Comptroller audit of 2005 and 2006 financial performance of the authority's Niagara power plant performance showed a cumulative 2 year surplus of \$200 million.

13. Comptroller Report, p. 13.

14. Under NYPA's governing statute the authority must use its Expansion Power resources within thirty miles of the plants. See: Public Authorities Law, Article 5, Public Utility Authority, Title I Power Authority of State of New York, Section 1005(h) 13. <http://www.nypa.gov/about/documents/PowerAuthorityAct.pdf>

15. <http://www.recordonline.com/apps/pbcs.dll/article?AID=/20130404/BIZ/130409881/-1/NEWSF>. Further discussions on the declining valuation of merchant coal plants see: Brayton Point Plant, Massachusetts, Harrison Power Station, West Virginia, Homer City Power Plant, Pennsylvania and Energy Futures Holding, Texas, IEEFA.org.

Resource #2 - State School Aid

The Basic Aid Formula (state education aid) guides the distribution of state dollars to school districts and creates a baseline revenue level for Ken-Ton. Statewide considerations may preclude the formula from being used to provide the revenue support needed in this case. However, the loss of property tax revenue can be offset by a solid plan that combines any remaining property tax revenue from the plant with current and future state aid to education and other education related appropriations.

Resource #3 - Existing ISO Payments

The assessment of fiscal possibilities must start with fiscal reality. The Huntley plant is part of an outmoded system of electricity generation and distribution. It has been running less and less for several years and this reduces its importance to the electricity grid and its revenue generating capacity. The Huntley plant received a \$5 million uplift payment to NRG from the New York Independent System Operators (ISO) in 2012.

How the plant is phased out and how NRG and the ISO work through the continuation of the application of this subsidy need to be part of a balanced plan that supports the electricity grid and NRG's financial obligations.

Resource # 4 - Legislative Allocations

Every year the legislature sets aside revenues that are directed by individual legislators to needs in their districts. These needs are either unaddressed by existing state programs run by executive agencies or are underfunded through the normal budgetary process. The total amount of these legislative allocations usually is in the hundreds of millions. Each specific allocation to a member or members is based on legislative priorities. Short and medium term funding is possible for school districts through this mechanism.

Resources Taken as Whole

As with any financial plan that is designed to solve a clear, discrete problem, the sooner it is acted upon the easier it is to manage. A working group composed of the state's elected legislators from the area, school officials and union leaders should map out a fiscal stability plan. The plan should be submitted to legislative leaders¹⁶, and if necessary the Governor. The revenue losses to the towns and county should be considered as part of any fiscal stability plan. A variety of smart government, expenditure actions and new revenue can support the transition for these entities as well.

16 http://www.nytimes.com/2007/01/23/nyregion/23district.html?pagewanted=print&_r=0