



June 20, 2017

BRIEFING NOTE:

It is Time to Retire, not Bail Out, OVEC's Two Coal Plants

Executive Summary

The Ohio General Assembly is currently considering legislation that would force Ohio electricity customers to pay for power produced by two coal-fired power plants in Southeast Ohio and Indiana. The two plants, Kyger Creek and Clifty Creek, are owned by the Ohio Valley Electric Corporation (OVEC). They were built sixty years ago to provide power to the now-closed Piketon Uranium Enrichment Facility.

The bill is the latest in a series of proposals that Ohio's electric utilities have made over the past several years to bail out coal and nuclear plants which are no longer competitive with natural gas and renewable energy. The new twist in this legislation is to designate these two plants as "national security generation resources."

The Institute for Energy Economics and Financial Analysis (IEEFA) has analyzed the financial impact of the proposed OVEC bailout legislation (Sub HB 239), and has found:

- Ohio electricity customers would pay at least \$1.4 billion above the cost of market power to keep the two plants in service until 2030. A longer bailout would be even more expensive.
- OVEC's cost of power increased by 70 percent from 2007 to 2016, in large part due to ill-advised capital expenditures for pollution control equipment made after the markets were rendering the plants uncompetitive.
- Market conditions will continue to undermine the viability of the plants for decades to come, potentially increasing the costs of the bailouts.
- The plants are not needed for grid reliability.
- A more prudent financial use of state resources would be to retire the two plants and to provide fiscal support to the local governments during a multi-year transition period, as well as supporting workers who may be laid off. New York State has enacted economic transition legislation which could be used as a model for Ohio.

Calling the Plants “National Security Generation Resources” Is a Red Herring

The proposed legislation, Sub House Bill 239¹, would allow automatic recovery of costs, including any deferred costs, from a newly-created category of electric generation facilities defined as “national security generation resources.” The category appears only to apply to the two plants owned by the Ohio Valley Electric Corporation (OVEC): Kyger Creek in Cheshire, Ohio and Clifty Creek in Madison, Indiana. The two plants, which were originally built sixty-one years ago to provide power for the Piketon Uranium Enrichment Facility, have not done so for many years because the facility is closed. The contract between OVEC and the U.S. Department of Energy to supply electricity to the Piketon facility was cancelled in 2003. The “national security resource” definition thus seems to be nothing more than a way to keep the two plants operating for the benefit of their owners.

Five investor-owned utilities or holding companies in Ohio – Duke Energy Ohio, Columbus Southern Power Company, Dayton Power & Light, FirstEnergy Corporation, and Ohio Power Company – own 38.68 percent of OVEC (collectively “OVEC’s Ohio IOU owners”). The remaining 61.32 percent is owned by companies in the remainder of the PJM and MISO transmission regions.

These owners voluntarily decided to extend the Inter-Company Power Agreement after the Piketon contract was cancelled. And they have continued to operate them even after 2011, when natural gas and energy market prices had declined precipitously. These declines eliminated any competitive economic advantage to continuing to operate the plants.

OVEC’s owners purchase power from OVEC according to the terms of the Inter-Company Power Agreement, which is in force until a June 30, 2040 termination date. The proceeds from the purchase of power are designed to be sufficient to meet OVEC’s operating expenses and fixed costs, including a return on equity before federal income taxes.

Sub House Bill 239 would require the Ohio customers of OVEC’s Ohio IOU owners to pay the difference between the cost of buying power from OVEC and the revenue these owners would receive from selling their shares of the power generated at Clifty Creek and Kyger Creek at market-based prices. This will transfer all of the financial risk of continuing to operate the two coal plants from OVEC’s owners to their customers.

Under the bill, PUCO would have to determine whether the actions of OVEC Ohio IOU owners with regard to Clifty Creek and Kyger Creek were prudent and reasonable, it is unclear if the utility seeking recovery of its OVEC costs would have burden of proof.

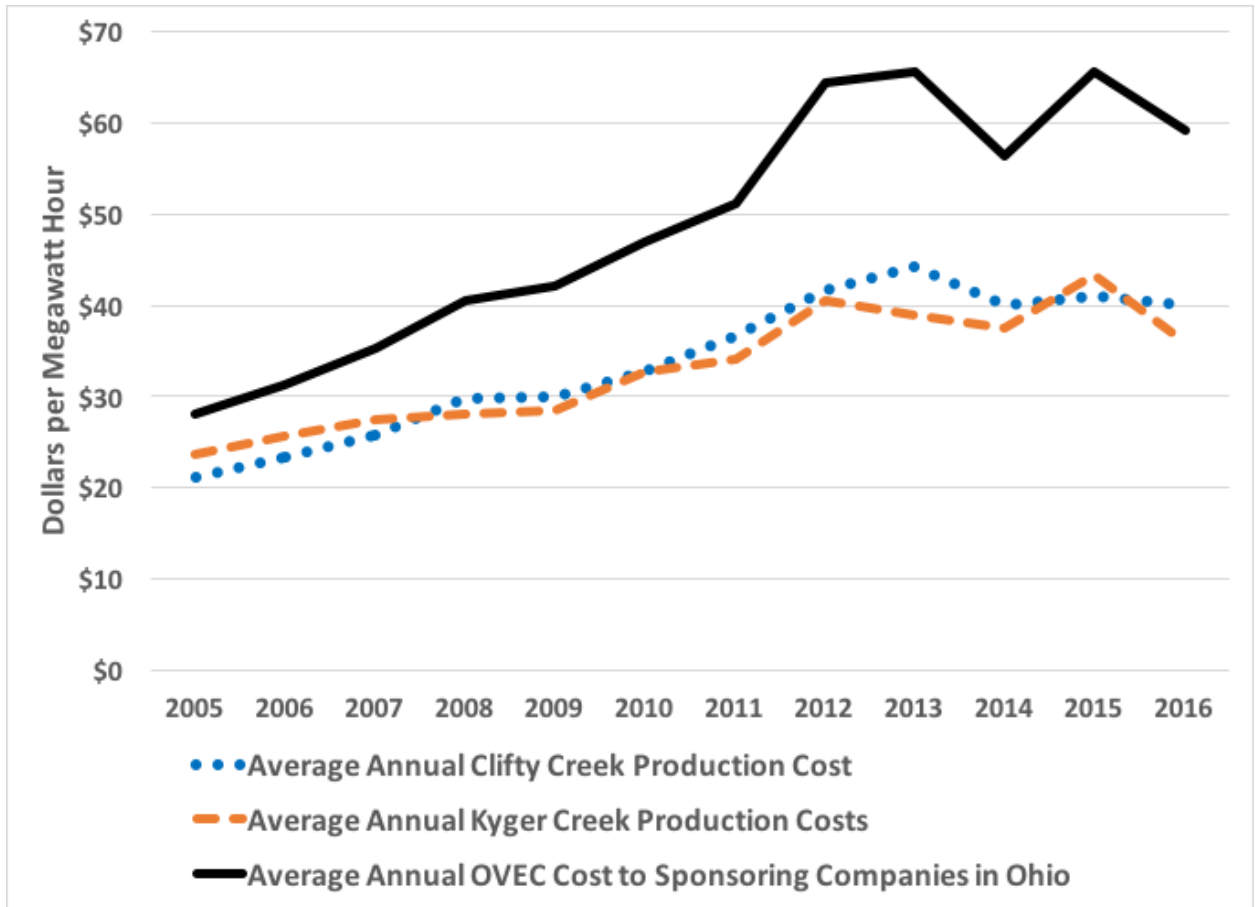
OVEC Power is Already Very Expensive, In Large Part due to the Owners’ Poorly Timed Capital Expenditure Decisions

The cost of OVEC power has increased dramatically, rising more than 70 percent between 2007 and 2016. This increase has been driven in large extent by major increases in the costs of producing power at Kyger Creek and Clifty Creek, which increased 56 percent and 31 percent, respectively, between 2007 and 2016. The rising cost of OVEC power also has been driven by the annual capital expenditures (capex) invested by the owners, including over \$1.6 billion spent since the DOE contract was cancelled in 2003. The most significant capex was an

¹ The original legislation, House Bill 239 has recently been revised. The new bill is Sub House Bill 239.

ill-timed investment of over \$1 billion for flue gas desulfurization (FGD) scrubbers which was added to the cost of the plant in the years 2011-2013.²

Figure 1: Rising OVEC Power Costs³



OVEC power costs in the years 2014-2016 would have been even higher than shown in Figure 1 if the owners had not decided that beginning in 2014 they would defer recovery of the equity returns on their investments in OVEC.⁴ It is unclear whether the proposed bailout legislation would permit OVEC’s Ohio IOU owners to recover these deferred costs from their customers in coming years.

Changing Market Conditions Have Undermined the Financial Viability of OVEC’s Clifty Creek and Kyger Creek Plants

At the same time that OVEC’s cost of power has been climbing, the underlying market conditions that once favored coal have changed dramatically. As a result, OVEC power is now significantly more expensive than the cost of buying electricity and capacity in the competitive PJM markets.

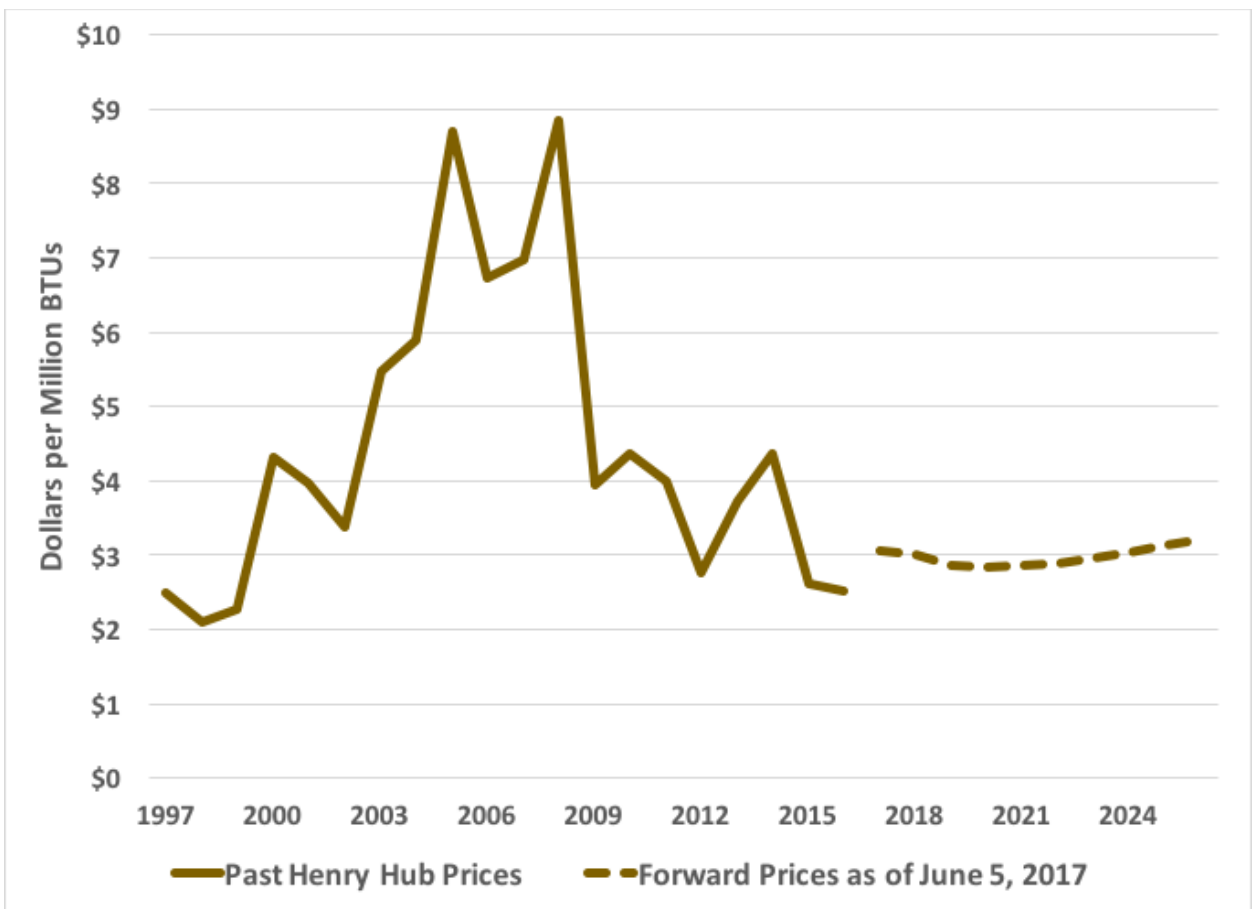
² OVEC and Indiana-Kentucky Electric Corporation (IKEC) Annual FERC Form 1 Filings

³ OVEC and IKEC Annual FERC Form 1 Filings.

⁴ OVEC Notes to Consolidated Financial Statements as of and for the Years Ended December 31, 2016 and 2015, at page 7.

Most importantly, natural gas prices collapsed in late 2008/early 2009 and have remained very low since then. Gas prices also are expected to continue to remain low for the foreseeable future.

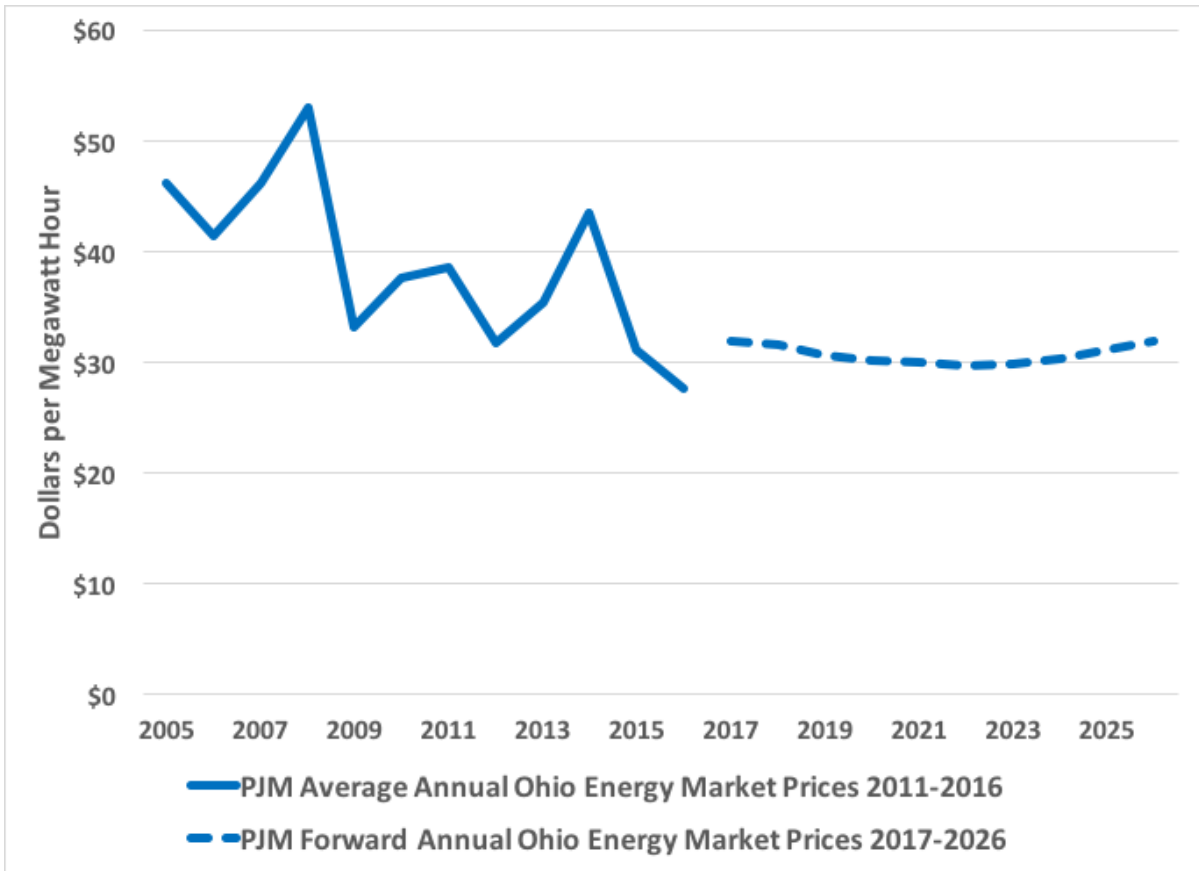
Figure 2: Henry Hub Natural Gas Prices⁵



These low natural gas prices have had a number of disastrous impacts on the financial viability of coal plants like Clifty Creek and Kyger Creek. First, low gas prices reduced the cost of generating electricity at gas-fired power plants. This, in turn, has led to lower energy market prices, as gas-fired units have increasingly set those prices during many hours of the year. This has meant that the owners of coal plants in competitive markets like Clifty Creek and Kyger Creek are getting less revenue for each megawatt hour (MWh) of power that they sell.

⁵ U.S. EIA Data for Historical Henry Hub Prices and Natural Gas Forwards Prices from SNL Financial and OYC Global Holdings.

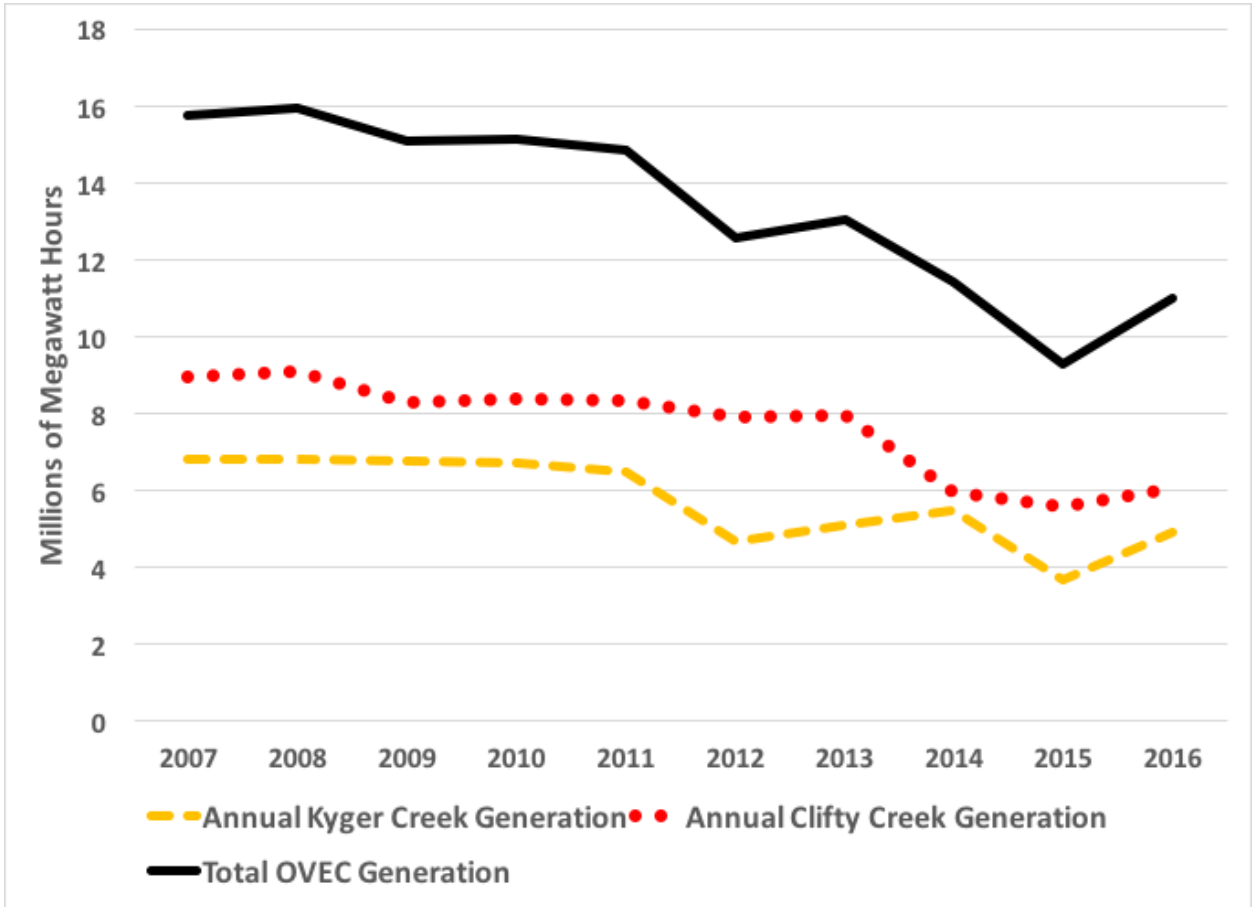
Figure 3: PJM Energy Market Prices⁶



At the same time, low gas prices have meant that generation from newer, more efficient gas-burning plants has displaced power that otherwise would have been produced at coal-fired plants like Clifty Creek and Kyger. This has meant that the annual generation at OVEC's plants has been in a steady decline since 2008, except for a minor, and probably temporary, uptick in 2016. As a result, total OVEC generation declined by 30 percent between 2007 and 2016.

⁶ Historical and Forward Energy Market Prices from SNL Financial and OYC Global Holdings.

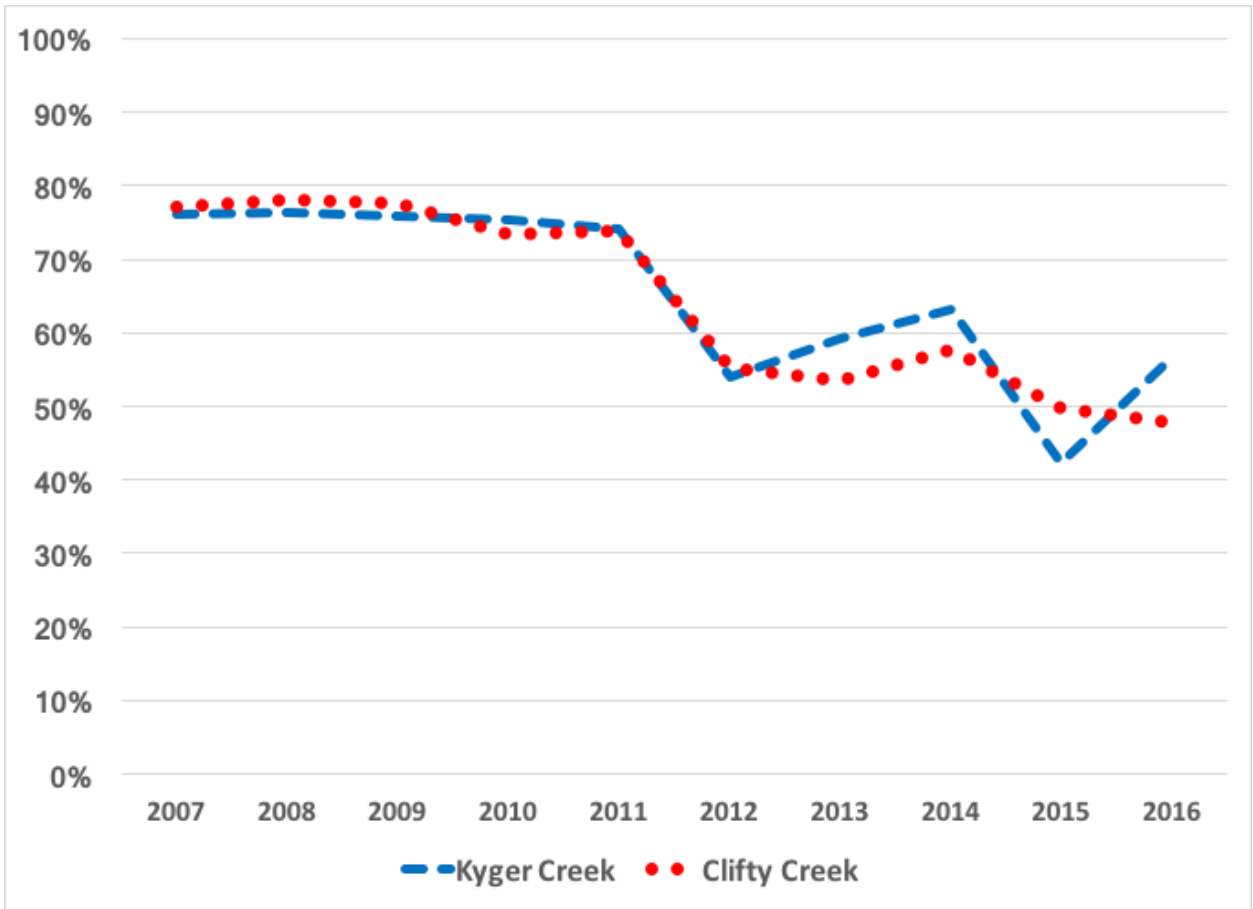
Figure 4: Declining OVEC Generation⁷



These declines in generation have led to significantly lower annual capacity factors at both Clifty Creek and Kyger Creek, with the plants operating less as base load units in recent years.

⁷ OVEC and IKEC Annual FERC Form 1 Filings.

Figure 5: Declining Clifty Creek & Kyger Creek Annual Capacity Factors⁸

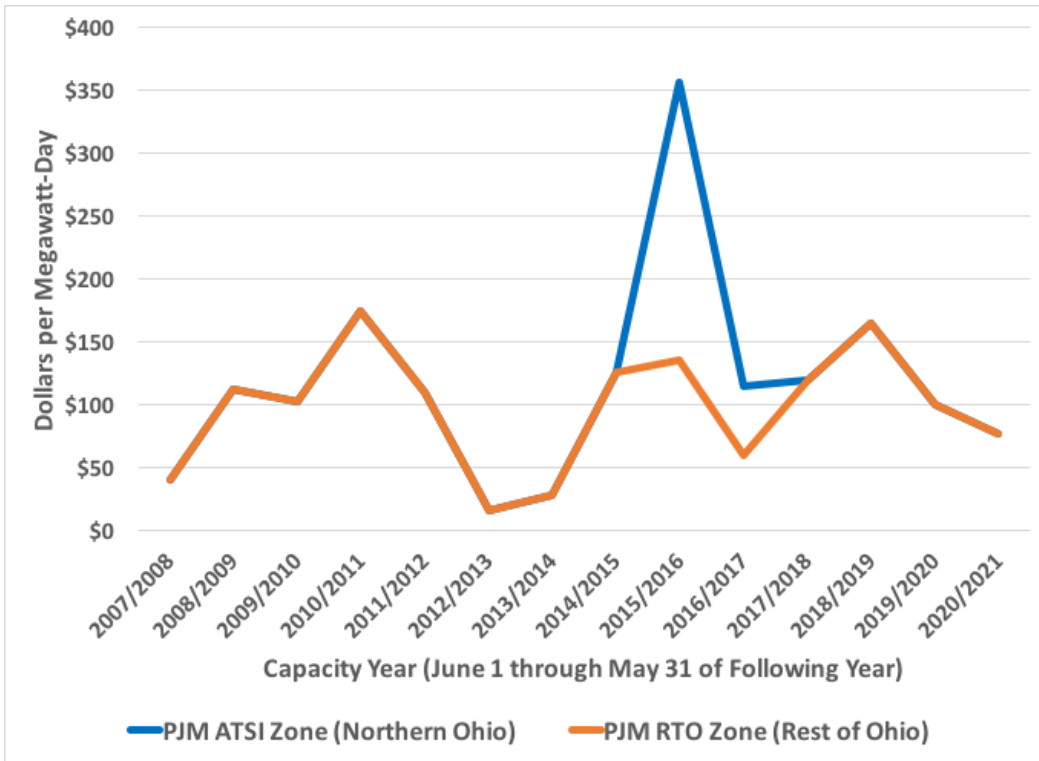


Thus, low natural gas prices have had a doubly negative impact on the viability of coal plants in competitive markets like those in PJM and MISO. The owners have not only been getting lower revenues for each MWh of power they sell from Clifty Creek and Kyger Creek. They also are selling many fewer MWh from the plants.

New gas-fired combined cycle plants also have meant increasing competition for coal-fired generators in the capacity markets/auctions in PJM and MISO. Consequently, capacity market prices have been both volatile and also fairly low, far below what PJM has set as the target Cost of New Entry Prices (CONE) prices for the auctions.

⁸ Capacity Factors from SNL Financial based on EIA Form 923 and FERC Form 1 data.

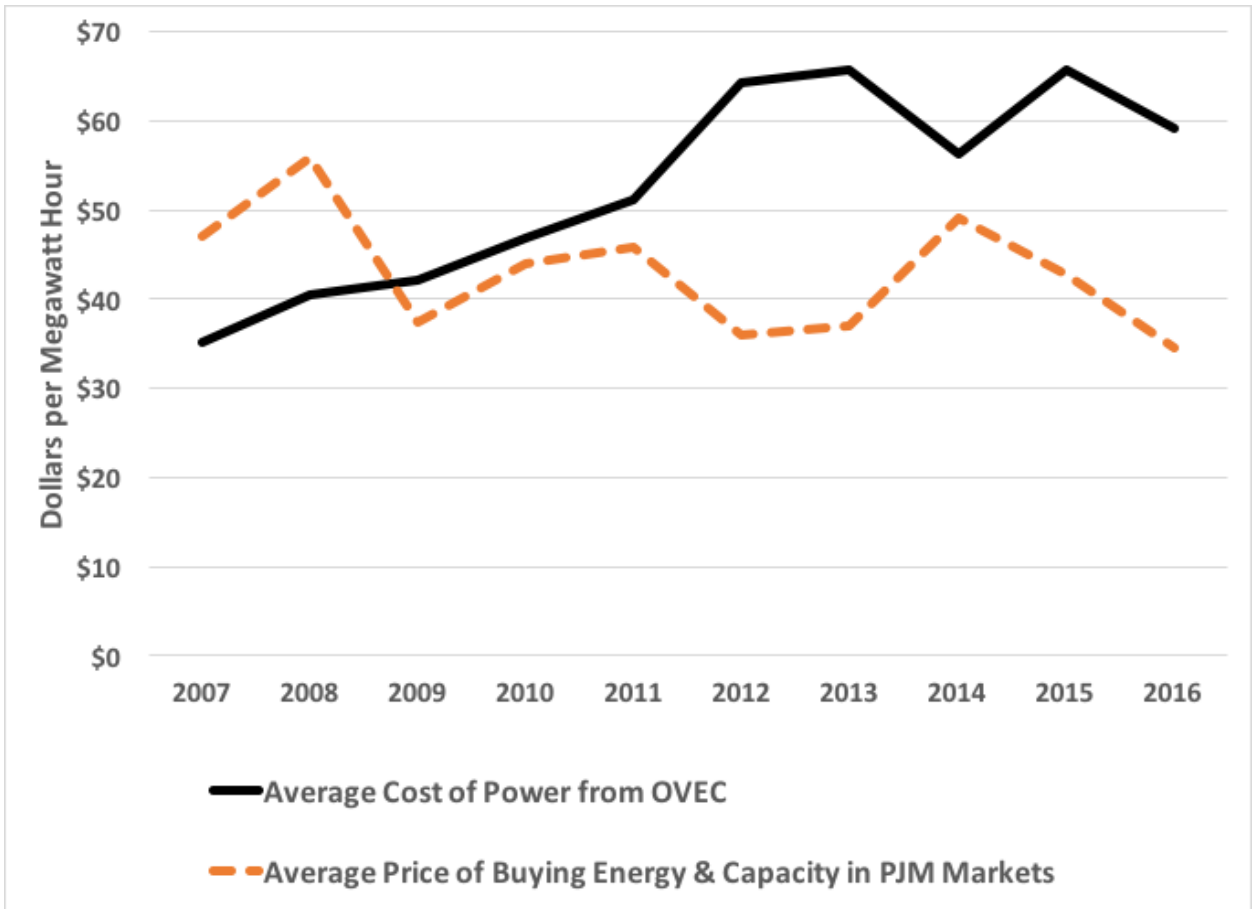
Figure 6: PJM Capacity Auction Prices⁹



Consequently, by as early as 2009, OVEC power was more expensive than the market price of buying energy and capacity in PJM's competitive wholesale markets. And this gap grew in subsequent years, making the continued operation of the Clifty Creek and Kyger Creek coal plants less financially viable for OVEC's owners and significantly more expensive for their customers.

⁹ Annual PJM BRA Auction Results published at PJM.com.

Figure 7: OVEC Annual Costs in the Years 2007-2016 compared to Average Cost of Purchasing Energy and Capacity in PJM Ohio Markets



As a result, the OVEC's owners have been increasingly unable to recover all of the costs of providing power from Clifty Creek and Kyger Creek by selling the power into the markets. Instead, they have increasingly sought to recover those costs from their customers. For example, just since 2010, the expensive prices of OVEC power has cost its Ohio IOU owners almost \$450 million more than it would have cost to buy the same amounts of energy and capacity in the PJM markets. And this does not include the equity returns that OVEC has deferred beginning in 2014 and that its owners might be permitted to collect from their customers in coming years under the proposed legislation.

Future Market Conditions Are Unlikely to Improve the Financial Viability of Clifty Creek and Kyger Creek

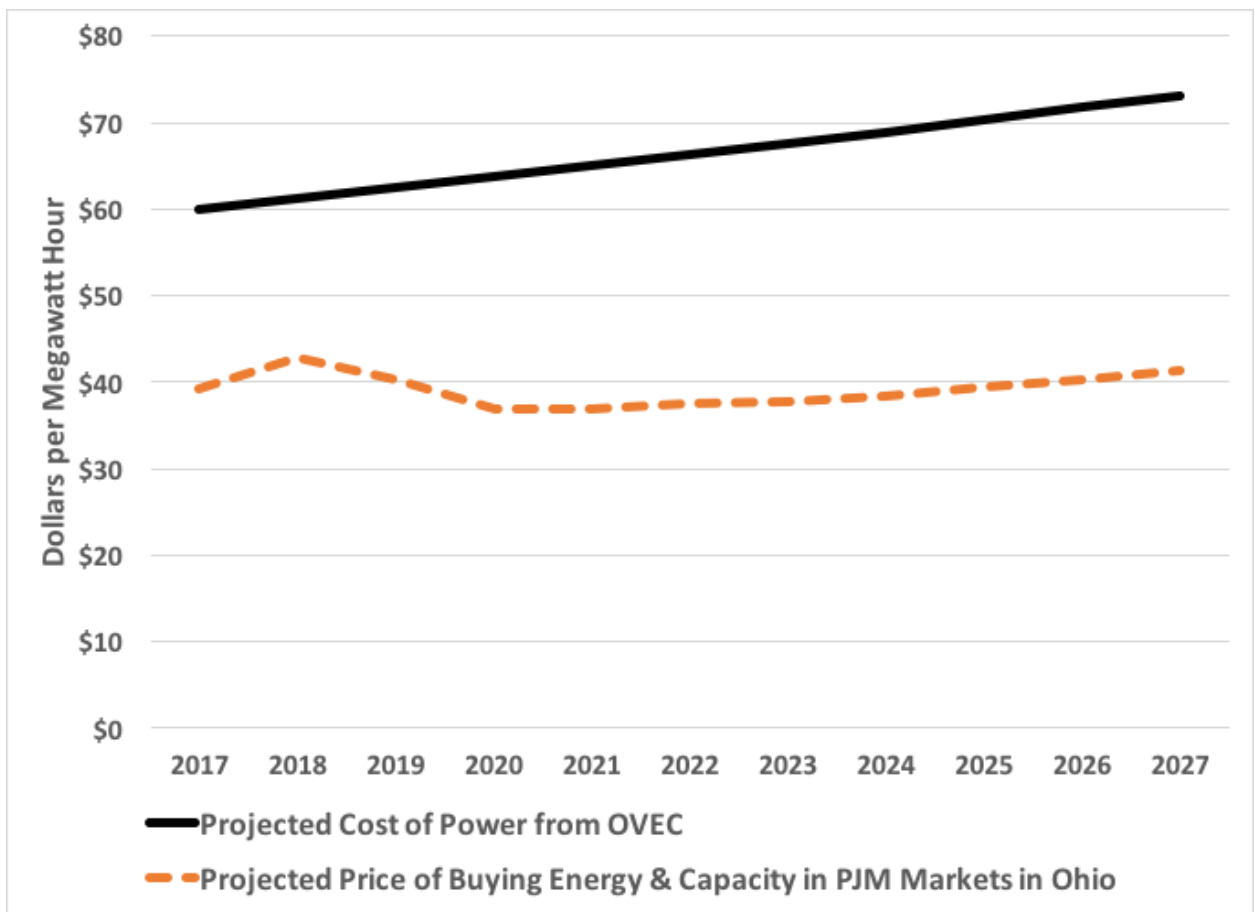
As shown in Figures 2 and 3, above, natural gas prices and energy market prices in PJM are expected to remain low for the foreseeable future.¹⁰ There also is little reason to expect that capacity prices in PJM will increase substantially coming years. PJM's 2017 Forecast Report projects almost no growth in peak demands or energy usage through 2027 (0.2 percent

¹⁰ "Forward prices" represent the prices at which natural gas or electric power can be purchased today for delivery months or years in the future. As such, they represent the market's outlook for future natural gas or power.

average annual growth rates) and approximately 165,000 MW of unforced capacity cleared in PJM's recent auction for the 2020/2021 capacity year.¹¹ This represented an overall 23.5 percent reserve margin for the PJM RTO, with another 16,000 MW of capacity that failed to clear in the auction.

Therefore, it is extremely likely that energy and capacity prices will remain low in coming years. At the same time, it is reasonable to expect that the price of OVEC power will continue to rise given the historic increases in the costs of operating and maintaining Clifty Creek and Kyger Creek in recent years (shown in Figure 1) and the expected need for additional capex investments. Moreover, it is very likely that the cost of operating the plants will increase as they continue to age and/or that their operating performance will deteriorate. As a result, there is absolutely no reason to expect that OVEC's price of power will fall below market prices at any time in the future.

Figure 8: Projected Annual Costs of Power from OVEC Compared to the Future Average Cost of Purchasing Energy and Capacity in PJM Markets in Ohio

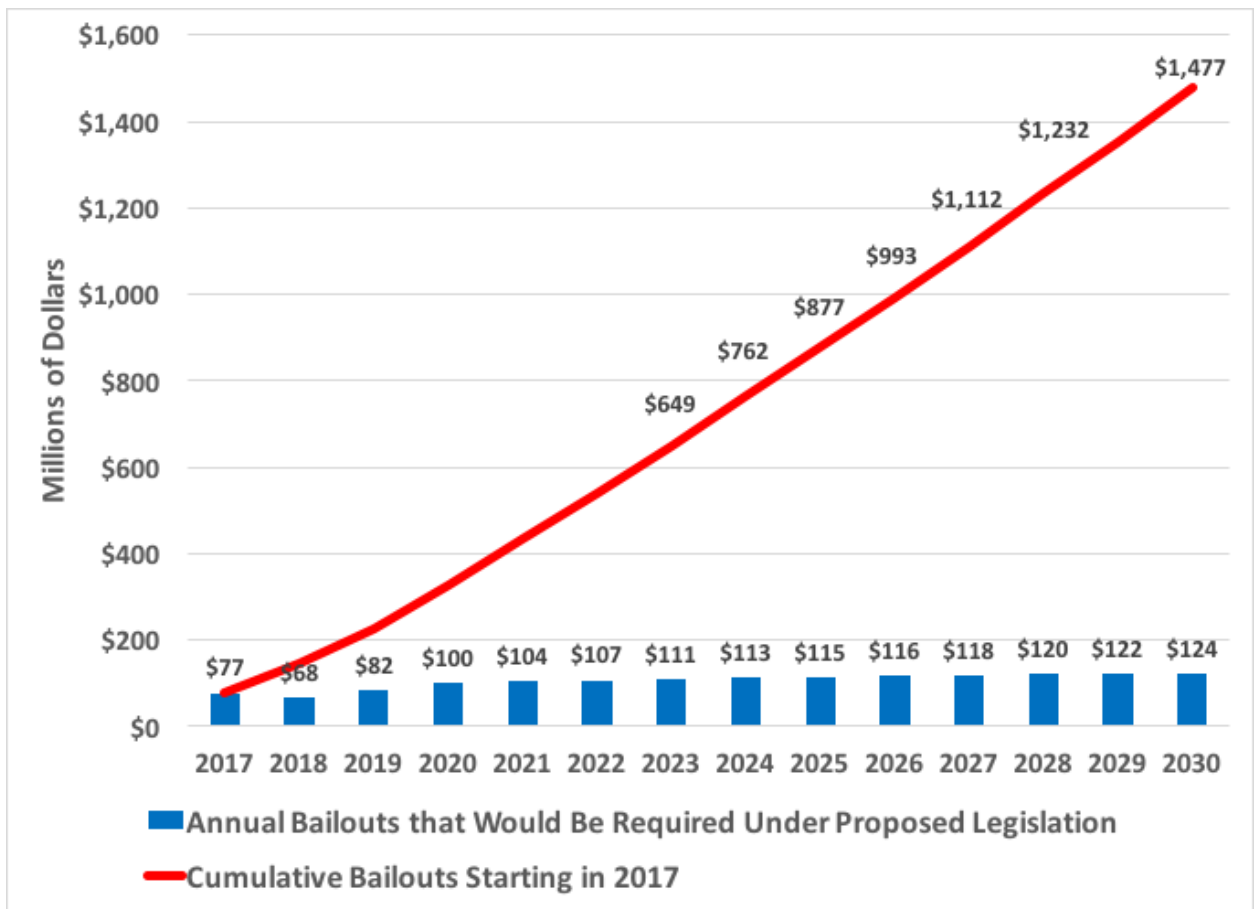


¹¹ PJM conducts capacity auctions each year to ensure that there will be adequate resources three years down the line to meet projected demands while providing a reasonable reserve margin. Thus, the May 2017 PJM auction was to acquire capacity for the capacity-year that will begin on June 1, 2020 and run through May 31, 2021.

Bailing Out the Two Plants Would Cost Ohio Customers At Least \$1.4 Billion through 2030

As shown in Figure 9, below, it will be extremely expensive for Ohio electricity customers to bail out OVEC's owners for the continued operation of the Clifty Creek and Kyger Creek plants through 2030. This would still be true even if only a shorter-term bailout were adopted. For example, subsidizing continued operation of OVEC's coal plants just through the end of 2024 would cost the customers of OVEC's Ohio IOU owners over \$760 million above what they would otherwise pay for power.¹² Subsidizing continued operation of Clifty Creek and Kyger Creek through 2027 would cost ratepayers an additional \$1.1 billion or more.

Figure 9: Estimated Ratepayer Bailouts that Would Be Necessary Under the Proposed House Bill 239



It is important to emphasize that the annual OVEC costs shown in Figure 8 and the bailouts presented in Figure 9 are conservative in that:

- They assume that OVEC's future cost of power only increases at an average of 2 percent per year.

¹²

This figure does not include the costs of subsidizing Clifty Creek and Kyger Creek that are being paid, and will continue being paid, by the customers of the Ohio electric co-operatives that buy power from Buckeye Power, and 18 percent owner of OVEC. The proposed legislation would not affect these customers.

- They assume that there are no further declines in generation at Clifty Creek or Kyger Creek or any significant increases in Operating & Maintenance costs, perhaps as the result of aging-related problems or costs.
- They do not include any future annual capital expenditures such as \$300 million of capex that OVEC has estimated may be necessary between 2018-2020.¹³
- They do not reflect the recovery of any returns on equity, including, but not limited to, any deferred recovery of the equity returns that that the owners of Clifty Creek and Kyger Creek did not recover in the years 2014-2016.
- They do not assume any emissions costs for the over 11.3 million tons of carbon dioxide that Clifty Creek and Kyger Creek emitted in 2016. Even a modest \$10 per ton emissions cost would increase the annual bailout that would be required under Sub House Bill 239 by an additional \$44 million per year – assuming that the plants' future generation remains at the same levels as they produced in 2016.

Given the substantial gap between the cost of OVEC power and expected PJM energy and capacity prices, shown in Figure 8, above, there are unlikely to be any meaningful opportunities for customers to earn annual credits when the net revenues from selling the power from Clifty Creek and Kyger Creek into the markets exceed the prudently incurred costs associated with the plants.

Although Sub H.B. 239 requires the PUCO to establish monthly caps for residential and other customers for recovering OVEC-related costs. (R.C. 4928.147 (A)(2)), any costs that exceed those caps would merely be deferred until a future time when they could be recovered from customers. So this is merely a possible delay in the recovering of some OVEC costs and a higher ultimate price tag for the bailout.

Clifty Creek and Kyger Creek Are Not Needed for Grid Reliability

The claim made by some proponents of the legislation that continued operation of Clifty Creek and Kyger Creek is necessary to assure electric grid reliability is baseless:

- The reliability of the grid is a regional issue for PJM.
- PJM is projecting that it currently has far more capacity than the minimum that would be needed to ensure an adequate level of grid reliability. For example, PJM has a required 16.6 percent reserve margin. However, it currently expects to have some 42,000 MW of reserve capacity installed this summer, above and beyond that needed to meet the required 16.6 percent reserve margin. This represents a 29 percent reserve margin.
- The 165,000 MW of unforced capacity that cleared the result PJM auction for the 2020/2021 capacity year represented a 23.3 percent capacity factor, or 6.7 percent higher than the target reserve margin of 16.6 percent. And this did not

¹³

In the Matter of Application of Duke Energy Ohio, Inc. for Authority to Establish a Standard Service Offer Pursuant to R.C. 4928.143 in the Form of an Electric Security Plan, Accounting Modifications, and Tariffs for Generation Service, Public Utilities Commission of Ohio Case No. 14-841-EL-SSO, et al., Office of the Ohio Consumers' Counsel Hearing Exhibit 26 (Public Version), OVEC/IKEC Environmental Capital Projects - BOD Update, dated Oct. 22, 2014.

include the 16,000 MW of capacity that failed to clear the auction. Given PJM's expected low rate of demand growth (averaging 0.2 percent per year), it is unlikely that PJM would have any reliability problems in the next decade, or perhaps longer, even if Clifty Creek and/or Kyger Creek were retired in the near future.

- At least five efficient new natural gas-fired generators are under construction or being planned in Ohio. These efficient new units would more than displace any generation lost if Clifty Creek and Kyger Creek were retired.

A Better Economic Decision for Ohio Would be to Retire the Plants and Provide Fiscal Support to Local Governments and Employee Transition Assistance

Instead of approving a long-term (or even a shorter-term) bailout of OVEC's investment in Clifty Creek and Kyger Creek, the Ohio legislature should require OVEC's Ohio owners (a) to determine the least cost way to retire the plants in the near future and (b) to work with the affected states, communities, and employees to plan for the orderly and just transition to a profitable and sustainable energy.

A model can be found in New York State, which created the Electric Generation Facility Cessation Mitigation Fund in 2016 to help communities protect their tax bases when power plants close. The fund, originally set up with \$30 million in annual funding for five years, [recently was expanded to provide \\$42 million annually for seven years.](#)