**Prepared Remarks of**

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***The Market and Financial Position of Nuclear Resources in Ohio, An Update and Further Information from Public Data***

**Presentation before the Ohio Senate Energy and Public Utilities Committee**

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Good morning Chairman Wilson, Vice Chairman McColley, Ranking Member Williams, and distinguished Members of the Senate Energy and Public Utilities Committee. As you may recall from my appearance 15 days ago, I am Paul Sotkiewicz, and I am the President and Founder of E-Cubed Policy Associates, LLC (“E-Cubed”), and formerly the Chief Economist at the PJM Interconnection and I hold a Ph.D. in Economics from the University of Minnesota. As I have testified before the Committee just recently, I will spare you my biography and directly address several issues that I wish to clarify and bring some additional information to the Committee’s attention on the matter of the Perry and Davis-Besse nuclear facilities.

I am here today to recap my findings from my report on *The Market and Financial Position of Nuclear Resources on Ohio*. While that work was funded by API, my appearance before the Committee today to provide an update is on behalf of the Alliance for Energy Choice whose members include Calpine, Vistra, NRG, and Eastern Generation. As always, the views and opinions expressed are my own.

Just to recap, the main conclusions of the analysis are as follows:

1. Historically Ohio nuclear resources have been able to over their going forward costs and have significant operating margins that contribute toward the recovery of sunk costs plus a return on investment;
2. Over the next ten years, Ohio nuclear resources are projected to remain profitable on an operating basis, covering going forward costs and earning margins that contribute toward returns.

The bottom line is that according to publicly available data, Ohio nuclear resources are in no danger of retiring anytime soon and to do so would not only be economically irrational but would financially harm the equity shareholders of these nuclear assets.

# Updates that Complement My Previous Analysis

Recall, that as FES that emerges from bankruptcy it will no longer have the debt service that it once had. It is worth repeating for you the statement from FES from April 21 that their revised bankruptcy plan *“will significantly strengthen our financial position and allow FES to emerge as a fully integrated independent power producer.”* This statement is at odds with the fact that all FES generation resources have filed deactivation notices with PJM, but for West Lorain. Some are already retired, while the majority are slated to retire soon as shown in Table 1. West Lorain is a plant with seven combustion turbine units that has a capacity of 488 MW and in 2018 only operated at a 1% capacity factor. One plant with nearly non-existent performance does not really qualify as a “fully integrated independent power producer” as FES has stated.

Secondly, other resources that are not yet retired, but are in commercial operation are not operating all the frequently. As shown in Table 1, the last remaining unit at Bruce Mansfield only operated at a 46% capacity factor in 2018. Sammis Units 1-4 operated at a 4.5% capacity factor in 2018, Sammis units 5,6, and 7 combined only operated at a 39% capacity factor in 2018. In contrast, Perry and Davis-Besse operated at robust capacity factors of 95% and 91% respectively.[[1]](#footnote-1) Based on recent performance, it would only seem reasonable to keep the nuclear units around as part of a “fully integrated independent power producer”.

Table 1: Status of FES Generation Resources in Ohio and PA

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Plant Name | Unit ID | ICAP [[2]](#footnote-2)MW  (Installed Capacity) | UCAP MW (Unforced Capacity) | Retirement  Status | Retirement Date | 2018 Capacity Factor |
| West Lorain | 1A, 1B, 2-6 | 488 | 361 | N/A | N/A | 1% |
| WH Sammis | 1-4 | 640 | 536 | Pending | 5/31/2020 | 4.5% |
| WH Sammis | 5-7 | 1490 | 1231 | Pending | 6/1/2022 | 39% |
| Bruce Mansfield | 1-2 | 1660 | 1460 | Retired | 2/5/2019 | N/A |
| Bruce Mansfield | 3 | 830 | 730 | Pending | 6/1/2021 | 41% |
| Beaver Valley | 1-2 | 1811 | 1778 | Pending | 5/31/2021  10/31/2021 | 91% |
| Perry | 1 | 1240 | 1212 | Pending | 5/31/2021 | 95% |
| Davis-Besse | 1 | 894 | 875 | Pending | 5/31/2020 | 91% |

Third, publicly available data from PJM through their resource model for the capacity market, the interconnection queue, and generation retirement dates along with publicly available announcements of market clearing would indicate that at Sammis units 5-7 and the West Lorain units cleared in the 2021/2022 PJM capacity auction given the amount of cleared capacity in the ATSI LDA and the pending retirement dates. The combined estimated UCAP for the West Lorain and Sammis 5-7 units is 1592 MW as reported by FES after the 2021/2022 auction.[[3]](#footnote-3) The combined estimated UCAP of the Perry and Davis-Besse units is 2087 MW. It would seem to make sense to transfer commitments obtained by poorer performing units (West Lorain and Sammis 5-7) could be transferred to the Perry and Davis-Besse nuclear units with much benefit to the FES portfolio emerging from bankruptcy.

Also, since I last appeared before this committee, PJM has released a report on the cost impacts of nuclear capacity retirements in both Ohio and Pennsylvania. If Perry and Davis-Besse retire as scheduled (along with Beaver Valley 1 and 2) in Pennsylvania, total PJM energy expenditures to load will be $1.6 billion less in 2023 with those retirements in 2023 compared to 2019 when those units are in service. Ohio load energy expenditures would be lower by $305 million. This decrease in energy expenditures is due to over 10,000 MW of new, efficient combined cycle gas generation. Load prices in the ATSI-FE zone would fall by $1.72/MWh from 2019 to 2023.

If Davis-Besse and Perry stayed in service, load energy expenditures in Ohio would decline even more by $95 million, but at a subsidy cost of $150 million if they were to receive such payments as estimated under House Bill 6. Meanwhile the rest of PJM would see prices decline by an additional $379 million. In other words, Ohio would see their net costs go up with House Bill 6 while subsidizing consumption in the rest of PJM. This would disadvantage Ohio industry to the benefit of industry in the rest of PJM.

On the other hand, absent the subsidy, average annual energy prices for Davis-Besse and Perry in 2023 would be about $32.91/MWh, higher than the estimated 2023 forward prices of $28.83/MWh and $31.59/MWh at which Davis-Besse and Perry are considered profitable in my analysis. The punchline is that PJM’s simulations show energy prices that are higher than the forward energy prices in my analysis where Davis-Besse and Perry are profitable. This means that there is no need for subsidies for the Ohio Nuclear resources to remain in service and Ohio load would benefit even more with a total of $400 million in reduced energy expenditures by 2023 all without the unnecessary cost of having to pay for any subsidy to nuclear resources that are already profitable.

Clearly there is no rush to make any rash decisions. If the Ohio nuclear resources are profitable, as all signs indicate, then they will remain in service without any subsidy. If for some reason, there are costs that are known to nobody by FES, then Ohio is still better off letting those resources retire and letting the market work by bringing in new, low cost, efficient combined cycle gas generation. In either case, Ohio consumers win relative to where they are today. The only way in which Ohio consumers lose, is FES is needlessly awarded subsidies for the Perry and Davis-Besse nuclear resources.

Further, do not be fooled by the cries to decide before the next refueling outage. FES has already contracted for some or all their fuel needs well in advance according to their last SEC 10-K filing for the 2017 calendar year. From page 22 and 23 of the 2017 10-K filing just prior to filing for Chapter 11.[[4]](#footnote-4)

“FENOC has contracts for all uranium requirements through 2018 and a portion of uranium material requirements through 2024. Conversion services contracts fully cover requirements through 2018 and partially fill requirements through 2024. Enrichment services are contracted for essentially all the enrichment requirements for nuclear fuel through 2020. A portion of enrichment requirements is also contracted for through 2030. Fabrication services for fuel assemblies are contracted for both Beaver Valley units through 2028 and Davis-Besse through 2024 and through the current operating license period for Perry”

The conclusion is that, despite taking a pre-tax, non-cash impairment charge on $2 billion of nuclear assets, including $369 million related to nuclear fuel, FES still has contracted for a large portion of their nuclear fuel needs into the foreseeable future.

Finally, FES knows their nuclear fleet is likely to remain profitable. In taking their non-cash, pre-tax impairment charge, FES assessed the value of Davis-Besse at $420 million and Perry at $124 million based on the following logic as explained the 2017 10-K:

“The fair value analysis for the generating assets was based on the income approach, a discounted cash flow method, to determine the amount of the impairment. Key assumptions used in determining the pre-tax non-cash charge included forward power and capacity price projections, the expected economic useful life of the plants (including the likelihood that the facilities will be deactivated before the end of their estimated useful lives), the timing of decommissioning activities, and operating and capital costs, all of which are subject to a high degree of judgment and complexity.

In addition to these one-time non-cash impairment charges, there will be ongoing charges to earnings primarily related to ongoing capital and nuclear fuel spend, as well as additional ARO accretion expense”.[[5]](#footnote-5)

# The Value of Data, Analysis, and Experience

I would note that at no time during the legislative process in the House, nor in front of this Committee in the Senate, has there been any presentation of any data or hard financial evidence that contradicts my findings using publicly available data. I have been working in the energy industry for more than 20 years and there is a bounty of publicly available data that can be brought to the fore that can help us separate the wheat from the chaff. As an economist, I go where theory and the data take me. In this case the data are clear…on an operating basis Perry and Davis-Besse are profitable, and they are expected to remain so for the foreseeable future without any out of market subsidies that were contemplated in House Bill 6, or under consideration before the Senate. In the absence of any showing by FirstEnergy Solutions, you have had presented before you the only rigorous analysis on the operating economics of these nuclear facilities. This combined with the recent PJM study further confirms the profitability of the Davis-Besse and Perry.

We have already lived through a similar episode to what we are experiencing in Ohio today. On one side are those who are close to the data and who understand how the PJM market operates and are providing rigorous analysis. On the other side you have a company claiming its resources are not profitable but refusing to release any data. Then once, when regulatory staff and other parties can examine the data, it turns out the resources are indeed profitable. This “Groundhog Day” moment has already happened in New Jersey with the owners Salem and Hope Creek. At no point did the owners of Salem or Hope Creek take issue with the overall data in my testimony, or my conclusions. They simply asked to be compensated for things like “risk” or “other attributes” than could not be quantified or be assigned any value in financial reports. We can change the narrative here in Ohio.

You have heard from proponents of the subsidy package for Perry and Davis-Besse that these resources are needed for reliability, but PJM’s studies indicate they can retire as scheduled with no issues as transmission upgrades will be in place as needed. These resources are also not needed for resource adequacy, as the entirety of the PJM market is already operating at well over the target reserve margin as I showed the Committee when I was here 15 days ago. Ironically, one of the New Jersey nuclear units receiving subsidies had to shut down temporarily during the coldest part of winter when water intake screens froze over.

You have also heard that it is impossible that Davis-Besse could be profitable since, after all, it is the same type of reactor as Three Mile Island which has been economically challenged. And yes, both facilities have a bit of a “shared history”, though the boric acid corrosion on the reactor vessel head at Davis-Besse was nothing like the 1979 incident at Three Mile Island. Yet, from a cost perspective, Davis-Besse seems to have had much lower costs overall than has Three Mile Island. And just like in real estate, location matters. Davis-Besse is not sitting on top of the Marcellus or Utica shale gas plays that have led to a boom in combined cycle gas development nearby like Three Mile Island was. Consequently, it receives higher prices in the energy market, and has been in a constrained Locational Deliverability Area (LDA) for PJM’s Capacity Market. I have done analysis on both these units using publicly available data, and there is a good reason why Davis-Besse is slated to be profitable and Three Mile Island is not…lower costs and higher revenues.

You have also heard from other subsidy proponents that somehow my analysis is flawed from my choice of power trading hub (I used PJM Western Hub, others said I should use AEP-Dayton), or when I pulled my forward market data. It is unfortunate that those levying these criticisms have seemingly not even bothered to dive into the analysis. All historic and future power prices are traced back to the actual generator bus for Davis-Besse and Perry based on historic price differentials. I am open to seeing somebody perform the same analysis with use of a different trading hub for forward prices and price differential and pulling forward prices at a different time. Yet, despite those criticisms, nothing has been offered by the way of a competing analysis. As somebody who is data and evidence driven, I would be happy to see an updated analysis that would show something different in the results if it is well supported and can be replicated.

This concludes my prepared remarks, I thank you for your time, and I look forward to your questions on this paper and on any other issues related to the functioning of PJM’s markets as it relates to the Perry and Davis-Besse facilities.

1. Data for gross MWh output by unit comes for the EPA Air Markets Program Database. [↑](#footnote-ref-1)
2. There is also in the market clearing, no capacity in the queue that appears to be offering or coming into commercial operation and there is about 330 MW UCAP of capacity that cleared in the ATSI-Cleveland LDA that cannot be accounted for given the available information. [↑](#footnote-ref-2)
3. <https://www.prnewswire.com/news-releases/firstenergy-solutions-comments-on-results-of-pjm-capacity-auction-300654549.html>. [↑](#footnote-ref-3)
4. FORM 10-K, ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934

   For the FISCAL YEAR ended December 31, 2017 for FirstEnergy Corp. and FirstEnergy Solutions Corp. at 22-23. <https://www.sec.gov/Archives/edgar/data/1031296/000103129618000015/fe-12312017x10k.htm> [↑](#footnote-ref-4)
5. Id. at 138 [↑](#footnote-ref-5)