



FERC's December 2019 Order on State Subsidies

The Expanded Minimum Offer Price Rule and its Impact on Manufacturers, Markets, Ohio Energy Policy, and Electricity Generation Technology

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The Federal Energy Regulatory Commission (FERC) issued an order on December 19, 2019 stating that

“... out-of-market payments provided, or required to be provided, by states to support the entry or continued operation of preferred generation resources threaten the competitiveness of the capacity market administered by PJM ...”.

FERC's order is a direct response to a trend of state subsidization of uneconomical power plants, including those benefitting from the recently passed Ohio House Bill 6 (HB6). The FERC order is a giant stick against state subsidies, and tips HB6 on its head: Rather than improve the economic position of select Ohio (and Indiana) power plants, the HB6 subsidies now jeopardizes these same power plants from competitively earned revenue in the wholesale electric capacity market. In fact, by charging Ohio's ratepayers hundreds of millions of dollars in annual subsidies for select power plants, about \$190 million in annual capacity revenue for these same generators is now at risk. Unfortunately, by favoring select power plants through subsidies, HB6 has created a financial liability for them.

To be clear, the select subsidized power plants can request, and may receive, a “Unit Specific Exemption” to earn capacity revenue. Or, these same power plants may request additional subsidies or financial support from the state.

The eventual effect of FERC's order on wholesale electricity prices is being debated, as is which type of generating technologies win or lose. But FERC's order is clear – if states like their subsidy plan, they can keep it – but the state and its ratepayers will bear the direct cost and consequences.

Impact to Manufacturers

A significant concern to Ohio manufacturers is how the FERC order, in conjunction with HB6, impacts electricity costs. The FERC order does not stop Ohio from subsidizing select power plants. And thus, HB6's above-market charges for select nuclear, coal, and renewable energy projects will persist on manufacturers' electric bills.

However, the FERC order does create major changes to how electricity markets work and estimating the financial impact will take careful study. At this date, there is no agreement on the financial impact. Some parties warn that the FERC order could create significant

additional electricity costs, while other parties suggest there may be no additional cost at all. Still others may argue that preservation of market forces is the ultimate cost protection, an assertion supported by market studies and academic literature. PJM and its Independent Market Monitor often conduct detailed simulations of the near-term effect of major policy changes and likely will do so for this FERC order.

Manufacturers should also be concerned about potential state responses to the FERC order, namely, a drive to create fixed resource requirement (FRR) entities. By creating an FRR, a state may attempt to create yet more out-of-market revenue streams for power plants. Not only would this increase charges even more on customers' electric bills, but it would further erode market protections.

While cost is a primary concern for all manufacturers, also of note in the FERC order is a problematic issue for manufacturers with regard to greenhouse gas (GHG) emissions reductions goals. The FERC order will apply to new renewable energy projects receiving state subsidies, including renewable energy credits (RECs) from a renewable portfolio standard (RPS). While the FERC order recognizes that renewable energy projects subscribed with corporate REC purchases should not be subject to the MOPR, it then states that "it is not possible" to distinguish a voluntary REC from a state-mandated REC. As such, without clarification, new corporately funded renewable energy projects could be deprived of capacity revenue unfairly.

Impact to Electricity Markets

The FERC order is intended to protect functioning, competitive electricity markets. In general, competitive markets are desirable because they have been shown to produce lower electricity prices for consumers than cost-of-service regulation. Markets also tend to produce better resource efficiency, and thus lower emissions from power plants. This is all to say that an order to protect markets has inherent features that protect consumers and manufacturers.

However, FERC's order is complex, and it is not fully known how it will impact electricity prices in the short and long term. The order modifies and expands a mechanism called the Minimum Offer Price Rule (MOPR).

The MOPR was originally designed to prevent state subsidization of new natural gas generators entering the market. In contrast, the expanded MOPR will apply to new and existing power plants of any technological types that "receive, or are entitled to receive, certain out-of-market payments, with certain exemptions." This means that nuclear, coal, and renewable power plants that receive state subsidies or other non-bypassable rider support will be required to offer into PJM's capacity auction at a set minimum price or apply for a Unit Specific Exemption. New power plants will have one set of resource-specific prices, called Net CONE (Cost of New Entry). Existing power plants will have another set of resource-specific prices, called Net ACR (Avoidable Cost Rate). The application of these minimum price thresholds is meant to prevent a power plant from using a state subsidy to outbid its unsubsidized competition by offering an artificially low bid into PJM's capacity auction.

Table 1 shows PJM’s proposed Net CONE and Net ACR values¹. Consider, in comparison, that PJM’s capacity auction clearing price over the past 15 years has been a minimum of \$16 to a maximum of \$174/MW-day, a median of \$110/MW-day. Thus, new and existing resources would need to have minimum offer prices of, at most, around \$110/MW-day to clear the capacity market at least half of the time. Given this low price, it is unlikely that new generating plants that receive or are entitled to receive state subsidies will be able to clear the PJM capacity auction on a regular basis, unless they apply for and receive a Unit Specific Exemption.

For existing resources, it is also unlikely that subsidized nuclear units will be able to clear the auction in most cases, and subsidized coal plants will likely only be able to clear the auction occasionally. New and existing demand response and energy-efficiency should be able to clear most auctions. As for renewable energy, new renewable energy would likely not be able to clear the auction, but existing renewable energy would.

Note that PJM is preparing updated Net CONE and Net ACR values which will be subject to FERC approval. These updated values will have meaningful bearing on how the FERC order plays out. Additionally, any resource may apply for a “Unit Specific Exemption,” in order to bid at a different price than Net CONE and Net ACR. Many resources that appear uneconomical based on Net CONE or Net ACR may in fact be economical based on their specific financial situation.

Table 1: PJM Proposed Minimum Prices

	New Resources - Net CONE (\$/MW-day)		Existing Resources - Net ACR (\$/MW-day)	
Nuclear - Single Unit	\$	1,451	\$	265
Nuclear - Double Unit	\$	1,451	\$	227
Coal	\$	1,023	\$	126
Combined Cycle - NG	\$	438	\$	1
Combustion Turbine - NG	\$	355	\$	31
Hydro	\$	1,066	\$	-
Solar PV	\$	387	\$	-
Onshore Wind	\$	2,489	\$	-
Offshore Wind	\$	4,327	\$	-
Demand (DR or EE)		\$29 - \$67	\$	-

The impact on electricity prices then depends on several things:

- How many MWs of power plants will be subject to the expanded MOPR, and effectively forced out of the capacity auction? The answer is not simple. Some power plants receiving or entitled to receive subsidies have already not cleared the auction. For example, Ohio’s nuclear power plants have not cleared the auction recently. Other power plants may choose to forgo their subsidy so they are

¹ PJM Communication, Table 2. <https://pjm.com/-/media/committees-groups/committees/mic/20190306/20190306-item-10-communication-regarding-mopr-related-requirements.ashx>

Net-ACR from: INITIAL SUBMISSION OF PJM INTERCONNECTION, L.L.C. Docket No. EL16-49-000, pages 118 & 120 of pdf. <https://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=15059002>

permitted to bid into the auction without the minimum offer price if the subsidy is lower in value than PJM's capacity payments. Or, perhaps some states will find their subsidization policies ineffective, and will eliminate them in the law so that their power plants may compete for capacity revenue. Finally, there exists a "Unit Specific Exemption" process with the MOPR. If a power plant can show that it does not need its subsidy to offer competitive capacity bids, then it may receive this exemption, and continue to receive capacity revenue. Ironically, if a power plant receives this exemption, it will be proof to state policymakers that the subsidy is not needed. For this reason, it should be considered requiring subsidized resources to apply for a Unit Specific Exemption.

- How many new power plants will enter the market due to the expanded MOPR? Again, this is not simply answered, but it is probable that increased amounts of new natural gas fired power plants will enter the market. Some parties' fear of increasing capacity prices come largely from the observation that by excluding subsidized power plants from PJM's capacity auction, the supply of power plants will decrease, while demand for power remains relatively the same. However, PJM has seen large amounts of power plant retirements in the last 15 years, with little impact on capacity prices. This is because as uneconomic power plants close, other power plants that are economic open. It is reasonable to expect that over some period of time, new economic generation will fill the gap and keep prices in check.

All told then, the goal of the FERC order appears to be to reinstate a functioning electric market and the order is designed to seriously discourage state subsidies' manipulation of the electric market. Power plants receiving unit-specific exemptions will have shown that their subsidy is unnecessary, and that they can compete without state subsidy support. Power plants that are subject to MOPR and do not clear the auction will have shown that they are uncompetitive and may need to return to the state for additional subsidies or cease operating. The resulting supply and demand in the market then will more closely match that of a competitive market absent state subsidies. And thus, the resulting price of wholesale electricity should match that of a competitive market.

A caveat is that in the short-term, there may be a mass exit of power plants that are subject to MOPR because of state subsidies. If there is an atypical quantity of exiting power plants, combined with a shorted development timeframe for new entrants, there is the possibility for short-term capacity price increase. Again, Ohio's manufacturers should wait for independent modeling of this financial impact.

The cost of state subsidies will still be borne by the residents of the state, until a state repeals its subsidy policy. And, creation and proliferation of FRR entities is an emerging risk.

Impact to Ohio's State Policy and Regulation of Power Plants

FERC's order has significant impacts to the objectives of the recently passed HB6 in Ohio, and to other Ohio policies and regulations that create subsidies for select electrical power generators. Below we cover possible impacts to specific power plants and technologies in Ohio.

- Davis-Besse and Perry Nuclear Power Plants – The Davis-Besse and Perry nuclear power plants are entitled to receive a subsidy of \$9 per MWh generated from Ohio’s Nuclear Generation Fund, newly created by HB6. This will result in \$150 million of payments annually from Ohio ratepayers to these two nuclear power plants. However, the two nuclear power plants will be subject to the expanded MOPR. The combined capacity of the power plants is about 2,150 MW. At a typical PJM capacity auction price of around \$120 /MW-day, this equates to \$94 million of forgone annual capacity revenue for the two nuclear plants.

It is not clear whether Energy Harbor’s nuclear power plants could receive a Unit Specific Exemption. It is distinctly possible that these nuclear power plants are economical without the HB6 subsidy. If so, they *could* apply for a Unit Specific Exemption, and receive it. However, applying for a Unit Specific Exemption is a choice for Energy Harbor.

In any case, Ohio policymakers face difficult choices. At a minimum, requiring HB6 subsidized units to apply for a Unit Specific Exemption is logical. If subsidized units receive an exemption, then policymakers will need to reconsider whether to continue subsidies that a power plant doesn’t need. If a unit fails to receive an exemption, policymakers will need to reconsider whether to subsidize an uneconomical power plant.

- OVEC Coal Plants – The coal plants of the Ohio Valley Electric Corporation, which include the Kyger Creek plant in Ohio and the Clifty Creek plant in Indiana, will also be subject to the MOPR. There is a chance that they will not clear the PJM capacity auction. OVEC’s capacity is about 2,175 MW, and thus it will forego about \$95 million annually in capacity revenue. However, OVEC’s subsidy is not in the form of a fixed credit, but instead in a rider that passes a pro-rated percentage of its financial losses onto Ohio utilities. As a result, Ohio’s ratepayers will share in 38.68%² of this loss, or about \$36.7 million annually.

Because OVEC’s Ohio utility owners are insulated from any and all financial losses, it is probable this additional cost will simply be passed on to Ohio’s manufacturers and other ratepayers.

- HB6-Favored Solar Energy Plants – HB6 creates a Renewable Generation Fund which will pay \$9 per MWh for renewable energy credits (RECs) for select solar projects. These solar projects have not yet been built and will thus almost certainly be subject to the MOPR and are unlikely to clear the PJM capacity auction. Moreover, given the choice, solar photovoltaic (PV) projects may prefer to receive capacity revenue over the renewable energy credit revenue. For example, a 1 MW solar PV project in central Ohio would receive about \$12,500 in capacity revenue³. That same 1 MW of solar PV would receive \$11,150⁴ from the Renewable Generation Fund. As such, renewable projects of any scale may choose to receive

² OVEC Annual Report, cumulative percentage of Ohio investor-owned sponsoring companies: The Dayton Power and Light Company, Duke Energy Ohio, FirstEnergy Solutions, and Ohio Power Company.

³ 1 MW nameplate x 0.2856 central Ohio capacity factor x \$120 /MW-day, typical x 365 days/year)

⁴ 1 MW of ground-mounted fixed solar in central generates about 1,239 MWh/year, according to PV Watts. \$9 /MWh x 1,239 MWh/year = \$11,150 /year

PJM capacity revenue over HB6 subsidies.

Thus, HB6 could result in reduced revenue for these select solar projects, making them less competitive. The forgone capacity revenue from HB6's select solar projects would be about \$22 million per year.

- Sammis Coal Plant – The Sammis coal-fired power plant owned by the former FirstEnergy Solutions may also be subject to the FERC expanded MOPR because of HB6. At first, this may be surprising, as there is no direct mention or direct subsidy of the Sammis plant within HB6. However, the FERC order appears to catch within its scope sleight-of-hand with state subsidies. FERC states:

“... we consider a State Subsidy to be: a direct *or indirect* payment, concession, rebate, subsidy, non-bypassable consumer charge, or other financial benefit that is (1) a result of any action, mandated process, or sponsored process of a state government, a political subdivision or agency of a state ...”

Importantly, FirstEnergy Solutions had publicly credited the HB6 subsidies it is receiving for its nuclear plants for *indirectly* allowing it to subsidize the Sammis coal plant⁵. According to FES comments, the Sammis coal plant cleared 1,233 MW in the most recent PJM capacity action⁶. Thus, HB6 has indirectly put \$54 million in annual capacity revenue at risk for the Sammis coal plant.

- Existing Renewable Energy – Existing renewable energy projects will be exempt from the MOPR and will continue to be able to participate in PJM's capacity auction.
- New “Behind-the-Meter” Renewable Energy – New renewable energy projects that are customer-sited, behind-the-meter, will not be subject to the MOPR. This is because behind-the-meter generation would not bid into PJM's capacity auction anyways. Instead, behind-the-meter generation reduces a customer's capacity obligation. As such, behind-the-meter projects would be able to monetize both capacity value and voluntary or state-mandated renewable energy credits.
- New “Front-of-the-Meter” Renewable Energy – New, front-of-the-meter renewable energy will be subject to the MOPR. As shown in Table 1, solar PV has the second lowest Net CONE value of new resources, after natural gas combustion turbines. That said, it is unlikely that PJM's capacity market price will clear high enough that a solar PV or wind project could enter the capacity market at the Net CONE price. This gives renewable energy developers two options. First, they could choose to enter the market competitively, favoring capacity revenue over REC revenue and subsidies. Second, if new renewable energy plants do not require REC payments to be competitive, they may apply for a “Unit Specific Exemption” and bid into the capacity market at a lower price than Net CONE. This is distinctly possible, as renewable energy projects receive comparatively less of their revenue from capacity payments due to their intermittency and REC prices have dropped to just

⁵ “House Bill Six is really designed to support our nuclear plants, and all the money from that would go to those nuclear plants. But at the same time, it would make our company economically healthy enough that we would be able to look at other investments like investing in the Sammis Plant”, FES CEO John Judge, <https://wtov9.com/news/local/sammis-plant-may-not-close>

⁶ <https://www.prnewswire.com/news-releases/firstenergy-solutions-comments-on-results-of-pjm-capacity-auction-300654549.html>

a few dollars per MWh. As renewable energy installation costs drop, their reliance on REC payments may be low enough that it does not affect the decision on whether to build the project or not, and thus competitive renewable energy projects may request and receive an exemption while preserving their REC payments.

- Energy Efficiency and Demand Response – Most new energy-efficiency and demand response capacity resources would have a Net CONE generally lower than a typical PJM capacity auction clearing price. That is to say, these new resources would have the MOPR applied to them but would still be able to clear the auction at their corresponding technology-specific Net CONE price. Moreover, existing efficiency and demand response resources would be able to continue to bid at any price. While there is some risk that new demand response and energy-efficiency resources may not clear the capacity auction in some years, this may be a manageable risk.

Impact to Technology Mix

Of interest is how FERC's order expanding MOPR will affect the generation technology mix in the PJM territory. While the expanded MOPR is complicated and has nuances, it appears to effectively disincentivize subsidization of older, uneconomical power plants. In recent years, these subsidies have been targeted at coal and nuclear power plants. Newer emerging technologies such as renewables and load management will not be entirely unaffected by the MOPR, but are positioned to be able to continue to grow for a number of reasons, be it behind-the-meter applications, the Unit Specific Exemption, or simply because they no longer require state subsidies. Thus, the expanded MOPR is likely to reinforce the recent trend in electric generation technology mix – considerably more natural gas fired generation with some meaningful expansion of renewable energy and customer-load management, and considerably less coal-fired generation with some reduction in nuclear power.

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