UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

State Policies and Wholesale Markets Operated by ISO New England Inc., New York Independent System Operator, Inc., and PJM Interconnection, L.L.C.	)	Docket No. AD17-11-000

COMMENTS OF THE INDEPENDENT MARKET MONITOR FOR PJM

Pursuant to the notice issued in this proceeding May 23, 2017, inviting post-technical conference comments, Monitoring Analytics, LLC, acting in its capacity as the Independent Market Monitor ("Market Monitor") for PJM Interconnection, L.L.C. ("PJM"), submits these comments.

I. INTRODUCTION

The Market Monitor believes that there is a constructive way forward to recognize and accommodate state public policy issues in competitive wholesale power markets. But rather than directly accommodate specific approaches that attempt to reverse market outcomes and undercut markets, it would be more productive to take a forward looking collaborative approach to systematically and consistently address, using market principles, the concerns of state and federal regulators, ISO/RTOs and market participants. The combined wisdom and abilities of all these stakeholders can address these concerns in a forward looking way that recognizes the benefits of markets for all market participants. It is urgent that the identified issues be addressed. But it is not so urgent as to prevent a rational, forward looking and collaborative approach to addressing the issues that are faced by all.

II. COMMENTS

PJM markets are working. The price of energy in 2016 was the lowest since the beginning of PJM competitive markets on April 1, 1999.[1] Fuel diversity has increased.[2] Gas is very cheap and energy from highly efficient gas-fired combined cycle generating plants is correspondingly cheap and generally less expensive than energy from coal-fired plants.[3]

Wholesale power markets are successful and sustainable when the revenues from the combination of markets provide the incentives necessary for entry and exit consistent with ongoing reliability. PJM markets meet this test.

The PJM design relies on a combination of energy and capacity markets that has worked well to provide incentives to provide energy and capacity at the lowest possible cost. There is no reason to change the fundamental PJM market design. Suggestions that a bilateral substitute for the PJM Capacity Market would provide more choices for customers and be more effective at ensuring reliability are misguided. The PJM capacity market is a must buy and must sell construct by design. If load did not have to purchase capacity and generators did not have to sell capacity, the market could not function to ensure a market price signal for the defined level of reliability. Bilateral markets expose all participants to market power exercised by those with superior market information. Competitive markets are transparent while bilateral markets are opaque. Load is especially exposed to the exercise of market power by generators, especially given that market power is endemic in the PJM Capacity Market given the ownership structure. But sophisticated loads could also exercise market power against generators. The PJM Capacity Market provides competitive,

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1 See the *2016 State of the Market Report for PJM*, Vol. 2, Section 3: Energy Market

2 *Id*. at Section 3: Energy Market pp 106 – 107 and Section 5: Capacity pp 223 – 224.

3 *Id*. at Section 7: Net Revenue, Figure 7-5.

transparent outcomes that benefit both generation and load and are demonstrably superior to a bilateral approach.

One of the factual questions underlying the subsidies discussion is whether some units are uneconomic. If a plant does not cover its going forward costs and expects to continue to not cover its going forward costs, the market is sending a retirement signal; the owner of the plant is better off if the unit retires than if it remains in service. Gas-fired combined cycle plants have covered going forward costs in PJM markets. Most nuclear plants also cover going forward costs in PJM markets. In 2016, approximately three quarters of nuclear plants covered 100 percent or more of going forward costs. The net revenues of nuclear plants are very sensitive to energy prices. If energy prices in all of 2016 had been equal to energy prices in the first quarter of 2017, all but one nuclear plant would have covered its going forward costs. In 2016, less than half of all coal plants covered more than 90 percent of going forward costs. [4]

Some owners of nuclear power plants define economic as achieving a target rate of return on assets. These owners confuse markets with cost of service ratemaking. There are no guaranteed rates of return in markets. Even if the goal were to subsidize plants to ensure they remained in service, the effective subsidy level would cover going forward costs and no more. It is not clear how the level of proposed subsidies for specific plants in PJM was reached.

It continues to be profitable to invest in new combined cycle plants in PJM, especially in the eastern zones. A new combined cycle unit in the eastern zones of PJM would have covered 100 percent of its levelized annual cost in 2016, including a return on and of capital.[5] A new combined cycle that entered the PJM market in 2012 in an eastern

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[4] See the *2017 Quarterly State of the Market Report for PJM: January through March*, Section 7: Net Revenue

[5] See the *2016 State of the Market Report for PJM*, Vol. 2, Section 7: Net Revenue, Figure 7-7.

zone would have covered more than 100 percent of its levelized annual cost through 2016.[6] It is not profitable and has not been profitable to invest in either new coal or nuclear power plants in PJM, and it is not likely to become profitable.[7] More than 20,000 MW of uneconomic coal-fired generation has retired and been replaced by a combination of gas-fired units, renewable resources and demand side resources. PJM has retained a robust reserve margin based on market signals.

What is the problem that subsidies are intended to solve? The problem appears to be that competitive markets are working as intended. Low gas prices result in low power prices which result in low net revenues for coal and nuclear power plants. The result is that the profits of some units are lower as a result of these competitive pressures. The impact of competition on coal units has been much greater than the impact of competition on nuclear units. Nuclear units have not been made generally uneconomic as a result of competition.

The owners of units under competitive pressure propose a short term solution for their issues. The owners of nuclear plants have attempted to make a more general case for subsidies than the owners of coal plants.

The owners of some nuclear and coal units have proposed to require customers to subsidize these units. The owners of these units have, in some cases, sought to require customers to pay subsidies to offset the impact of competition on specific units. The owners of some coal plants demonstrated that the units were uneconomic in litigated cases. The owners of nuclear plants requesting subsidies have not convincingly demonstrated that they are uneconomic. The subsidies solution appears to be gaining ground among some owners of units in PJM and elsewhere. Subsidies for nuclear plants seem to have more traction than subsidies for coal plants.

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6 *Id*. p. 295.

7 *Id.* at Figure 7-8 and Figure 7-9.

The longer term solution, consistent with and a logical extension of the short term subsidies solution, is to reregulate power generation. That is the logical outcome if the starting place is the assertion that market outcomes are not acceptable, that unit owners and state regulators know the right mix of generation and that unit owners and state regulators are prepared to override market outcomes to implement their approach. Once these steps are taken, it is difficult to argue that it is reasonable to have subsidies for only one technology and in only one state. The logic of subsidies leads to subsidies for all units and ultimately to reregulation. This is not hyperbole. It is a foreseeable outcome of the subsidies solution.

Competition in wholesale power markets, initially in the limited form of PURPA in 1978, was a response to cost overruns at nuclear power plants which were a preferred technology of utility managements and state regulators at the time. The irony would be to end competition in wholesale power markets because the same nuclear power plants are not cost effective in competitive markets and because the owners of those plants successfully seek subsidies to override market outcomes.

There is another option, both short term and longer term. The alternative to subsidies and reregulation is to let markets work. There is no defined market design problem that requires subsidies.

Most nuclear plants did not receive a retirement signal from PJM markets in 2016, even with the lowest energy prices in the history of PJM. Some units were uneconomic in 2016, for example, as a result of their location on the system but that outcome was a result of uniquely low 2016 energy prices. If uneconomic units continue to produce low cost energy as a result of subsidies, that will reduce energy prices and therefore make other units less profitable and more likely to be uneconomic in the future. The result is that if uneconomic units are subsidized that will lead to additional requests for subsidies.

The arguments for subsidies include the assertion that nuclear power plants are a cost effective way to reduce carbon output. If society agrees that carbon is a pollutant, it has not been demonstrated that subsidizing nuclear power plants is the most cost effective way

to reduce carbon emissions; that conclusion is highly unlikely to be correct. It is widely agreed by economists that a carbon price would be a preferable, market-based solution that provides incentives to the most cost effective approaches to carbon reduction. It is not clear why the market-based solution of a carbon price is rejected as impractical while subsidies that undermine markets are deemed a practical solution.

Even in the absence of a carbon price, an auction for the most cost effective sources of carbon reduction would be preferable to the unexamined assumption that subsidies are a cost effective way to reduce carbon.

The arguments for subsidies include the assertion that coal and nuclear power plants are needed for fuel diversity. If the underlying fuel diversity issue is actually the reliability of supply rather than simply having multiple fuels, it is rational to take steps to ensure that the power supply is reliable. It has not been demonstrated, or even explicitly asserted, that subsidies to uneconomic units are a cost effective way to ensure reliability through fuel diversity.

It should go without saying that, in a competitive market, subsidies to economic units are inappropriate for any reason, carbon related, diversity related or any other reason.

If the grid were built from scratch today, the generation mix would likely consist of gas fired combined cycle units with oil or other backup, gas fired combustion turbine units with oil or other back up, wind units, solar units and hydro units. The risks of reliance on gas need to be addressed directly and systematically using many of the same techniques used by electric transmission planners.[8] The incentives of gas pipelines and merchant power generators need to be examined carefully and harmonized to help ensure that merchant power plants can purchase firm no notice gas service. The planning process for gas pipeline construction and operation should recognize the efficiencies that have resulted

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[8] PJM Interconnection, L.L.C., "PJM's Evolving Resource Mix and System Reliability," Grid 20/20, Philadelphia, PA (March 30, 2017).

from ISO/RTOs in power markets. These steps would be a sensible strategy even without increased reliance on gas-fired generation. The incremental costs are likely to be low.

It would make sense, as a matter of policy, to recognize that the markets are forward looking and that it is shortsighted to attempt to retain uneconomic resources that were built more than 30 years ago simply because the transition to the future is difficult and, for some resources, wrenching. As tempting as it may be, it would not make sense to subsidize old, uneconomic resources rather than to plan for the future in which the generation mix will look very different. Each decision has consequences for the future path of market development. Every subsidy has an opportunity cost; the opportunity cost is the foregone alternate path to reliable supply. The optimal transmission grid will look very different under a future with gas and renewables. Investment in a transmission grid linked to uneconomic resources has an opportunity cost; the opportunity cost is the foregone transmission investments required to serve load under the generation resources of the future.

The concept of baseload resources is backward rather than forward looking. Baseload units are units that run for most hours of the year. But the term baseload is now frequently used to mean units that used to run a lot of hours based on old economics, that no longer run a lot of hours based on current economics, and that are seeking subsidies to make up the difference in revenues. Coal units are now frequently more expensive to run than gas units on the basis of economic dispatch, operate fewer hours than in prior years and earn lower net revenues as a result. Nuclear units are inflexible, run all hours of the year, have dispatch costs near zero but cannot cover going forward costs based on the net revenues from market prices that are low as a result of low gas prices.

It would be a mistake for ISO/RTOs to have a limited MOPR of the type defined in the Commission's Path 1 or to continue with the status quo as defined in the Commission's Path 3. Both paths would permit state subsidies to have a substantial impact on markets and Path 3 would rely on litigation rather than rational market design decisions to define the appropriate scope of any MOPR approach.

It would be a mistake for ISO/RTOs to explicitly accommodate state level subsidies in the market design and specifically in the capacity market design. (Commission Path 2.) Despite the fact that some very complex and creative approaches (e.g. ISONE) have been developed to accommodate subsidized units in capacity markets, these approaches all share the attribute that they facilitate the forcing out of nonsubsidized economic units by subsidized uneconomic units. That outcome is inconsistent with a market outcome and will either be ineffective in accommodating all subsidized units or will lead to reregulation.

The accommodate approach accepts the assertion that states can take back authority over generation on a selective basis. But that is not logically possible. The state regulation approach is fundamentally inconsistent with the Commission's market-based approach. State regulation in the form of specific subsidies will suppress capacity prices and undermine the incentive to invest of private investors and lead ultimately to reregulation.

States are at a disadvantage in negotiating with unit owners who demand subsidies because the public utility commissions are not currently responsible for the regulation of generation and do not have current information on actual costs and revenues. This asymmetric bargaining power has resulted in the overstatement of economic difficulties at specific units and a corresponding overstatement of required subsidies.

The premise appears to be that, although individual states have ceded authority over decisions related to generation to the Commission regulated markets, individual states can take back that authority on a piecemeal basis. It appears to be clear that states can take back authority over generation and reimpose state cost of service regulation on generation. But absent that decision, the status quo is continued reliance on markets and on Commission approved market designs that use competition in place of cost of service regulation to ensure that customers receive wholesale power at the lowest possible cost.

The current debates are in part a reflection of the absence of a single voice on markets and how to address fundamental market design issues in the Commission regulated markets. That voice should be the Commission. The solution is not to accommodate the confusion associated with multiple potential decision makers but to

attempt to resolve the confusion. The Commission is uniquely equipped and has the unique authority to make the final call on market design decisions, including those about internalizing the costs of environmental issues.

If the real interest is in environmental impacts, it is clear that markets can accommodate the environmental impacts of power generation. But power markets can accommodate environmental impacts only if they are designed consistent with market principles. Markets can accommodate a carbon price whether it is defined as a tax, a price or based on cap and trade. Markets cannot accommodate approaches that ignore and are inconsistent with market principles. Markets cannot accommodate unit specific subsidies designed to reverse the results of competitive markets. Markets cannot accommodate nonsynchronized approaches by multiple states to renewable power sources that provide conflicting signals and incomplete and inefficient market outcomes. For example, it does not make sense to have an implied price of carbon in one state of $200 per tonne and an implied price of carbon of $50 per tonne in another state and inconsistent rules for trading between states, despite the fact that all participants belong to the same wholesale power market.

But there is a way to recognize and accommodate state public policy issues in competitive wholesale power markets. Rather than directly accommodate approaches that attempt to reverse market outcomes and undercut markets, it would be more productive to take a forward looking collaborative approach to systematically and consistently address, using market principles, the concerns of state and federal regulators, ISO/RTOs and market participants. If carbon is a core issue, PJM could model a carbon price regime and estimate the impacts on the dispatch of individual units, estimate the impact on carbon output, and estimate the financial impacts on customers in individual states and provide other information relevant to state decision makers. PJM could convene stakeholders who could arrive at a consensus on an efficient and least cost approach to carbon pricing based on the information about impacts, including an explicit agreement about the assignment of funds to states, and the Commission could make a decision. The Commission could revisit its

decision about jurisdiction over renewable power standards and convene a discussion with the states, the ISO/RTOs and market participants to develop an efficient market wide approach to meet specific renewable energy goals at least cost and to calculate the impacts on customers. That solution should be fully coordinated and consistent with the approach to carbon and could also rely on a carbon price. If fuel reliability is a core issue, approaches to ensuring fuel reliability could be reviewed, costs and benefits of implementation could be reviewed and a least cost, market-based approach to reliability could be agreed upon in a stakeholder process organized by PJM.

The fundamental issue is not about the definition of specific problems like carbon emissions or fuel diversity. The fundamental issue is about whether all stakeholders, collectively, choose to continue with the development of market solutions for wholesale power to address current and future challenges or choose to return to a more directly regulated approach to wholesale power. The evidence points strongly to the benefits of markets. The Commission has the authority to ensure that markets remain competitive and effective. But the states have the authority to decide whether to withdraw from markets.

From the five potential paths forward, a combination of Path 4 and Path 5 are consistent with continued reliance on market solutions. Path 4 would permit state policies to be "readily integrated into the wholesale markets in a resource-neutral way." When that is not possible, Path 5 would be consistent with continue reliance on markets. Path 4 and Path 5 could be designed and implemented based on the described collaborative approach. The goal would not be to accept any and all state policy initiatives nor would it be to reject most or all state policy initiatives. The collaborative approach would ultimately be subject to Commission decisions.

If state policies, like unit specific subsidies for uneconomic units, cannot be readily integrated into the wholesale markets in a resource neutral way, an expanded MOPR is required. An expanded MOPR "would minimize the impact of state-supported resources on wholesale market prices by expanding the existing scope of the minimum offer price rule to apply to both new and existing capacity resources that participate in the capacity

market and receive state support." But the goal would be that the expanded MOPR would be a preventative measure that served as a disincentive to engage in actions not consistent with Path 4. If a collaborative approach based on Commission authority over wholesale power markets can be implemented, Path 5 would be implemented only an exceptional basis.

III. CONCLUSION

The Market Monitor respectfully requests that the Commission afford due consideration to these comments as it resolves the issues raised in this proceeding.

Respectfully submitted,

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Dated: June 22, 2017

CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Eagleville, Pennsylvania,
this 22nd day of June, 2017.

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