

The Evolution of Demand Response in the PJM Wholesale Market

PJM Interconnection
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Introduction

In any market, the participation of consumer response to price is essential to healthy and competitive market outcomes. This axiom holds true for wholesale electric markets as with any other market. The more that demand actively participates in our wholesale electricity markets, the more competitive and robust the market. Additionally, demand response, if visible and dependable, can and has proven to be an operational tool that assists in maintaining reliability, both in regards to real-time security and long-term resource adequacy. For these reasons, PJM Interconnection remains committed to finding ways to preserve the value that demand response provides to both our system and market operations. PJM also notes our market experience has demonstrated the value of competition among service providers, which has fostered demand response innovations. The market would benefit by preserving this competitive dynamic.

Since the May 2014 decision by the D.C. Circuit Court of Appeals (the “*EPSA*” decision), PJM has considered alternative approaches that would permit demand response to continue to participate in our markets in a manner consistent with the division of jurisdictional responsibility between the states and the Federal Energy Regulatory Commission described in the panel decision. This paper presents PJM’s thoughts and rationale to support an approach that would meet these objectives and do so without exposing PJM and its members to unacceptable litigation risk and uncertainty as to settled market outcomes.

Different approaches, other than the approach PJM advances in this paper, are conceptually possible under the *EPSA* decision. Moreover, stakeholders hold differing views generally as to (1) the value of demand response to PJM’s markets and operations and (2) its lawful participation in wholesale electricity markets. Indeed, at least one group of PJM stakeholders, and perhaps the FERC itself, will request appeal of the *EPSA* decision to the U.S. Supreme Court, leaving open the possibility of a return to the status quo before the *EPSA* decision. PJM offers this paper to illustrate a viable path forward to evolve demand response in light of the *EPSA* decision, should the FERC decide, after considering its options under the *EPSA* decision (including possible further appeal), that such a path is needed. Ultimately, any path forward will be subject to stakeholder comment and critique and acceptance by the FERC and state regulators. PJM is committed to working with state regulators to develop strategies to monetize the benefits of consumer demand response in the wholesale markets.

Where We Have Come from – a Thumbnail Sketch

Demand response has come to mean many things. Therefore, offering some precise definitional terms helps to promote a shared understanding of options. Currently, curtailment participates most commonly in PJM as a “demand resource.” By this (and despite what may appear to be a contradiction in terms) we mean demand resources offer into the PJM markets and are paid as “supply-side” resources. As such, demand resources are expected to perform (more or less) comparably to traditional supply-side resources (generation). In this paper, the term “demand *resource*” describes the supply-side participation of demand, and the term “demand *response*” describes demand (as load) making a curtailment commitment and, in so doing, avoiding costs and charges it otherwise would incur. Peak shaving, active load management and PJM’s “price responsive demand” rules are examples of “demand response.”

While PJM market rules offer both “demand resource” and “demand response” opportunities, most activity in recent years has taken the form of “demand resource” (i.e. supply-side) participation. There are logical and policy arguments on both sides of the “demand resource” paradigm.¹ The path forward advanced in this paper does not reflect a preference on the part of PJM between these competing economic and policy arguments. Rather, the proposal is informed by the law and analysis represented by *EPSA* and by practicalities which favor an approach that would reduce lengthy litigation risk and the potential for disrupting settled transactions – particularly in the context of the three-year “forward” capacity market administered by PJM.

The Law Following the *EPSA* Decision and Practicalities

The reach of the *EPSA* decision is subject to debate. Technically, the decision vacated FERC Order No. 745, which was confined only to the payment of demand resources in the wholesale energy market. However, the jurisdictional analysis applied by the majority to reach the *vacatur* suggests a precedent that could apply, when litigated, to PJM’s Reliability Pricing Model capacity market. The FERC will need to confront this question; indeed, it has been put in play by FirstEnergy’s May 23, 2014, filing of a complaint with the FERC seeking to remove demand resources from the 2014 RPM Base Residual Auction. PJM will answer this complaint on or about October 22, 2014. Suffice to note here, PJM’s answer will oppose FirstEnergy’s complaint and its requested relief.

In considering the implications of *EPSA* to PJM’s capacity market, we once again face the question of what is capacity? Arguments can be offered that, unlike energy, capacity is a product (albeit abstract in nature) that can be sold for resale. Whether a product or service, capacity is a uniquely wholesale market concept – one not subject to state regulation and one over which the FERC exercises expansive jurisdictional authority as evidenced by recent decisions out of the Third and Fourth Circuit Courts of Appeal. While PJM acknowledges arguments of this nature, they are uncertain and untested.

Moreover, the linkage between the capacity and energy markets is undeniably strong. After all, the theory underlying the purpose of capacity markets is the recognition that energy markets alone are impeded in providing sufficient compensation to supply – due in part to the suppressing effect of offer caps, reserve margins and other features giving rise to a “missing money” problem that capacity markets are designed to solve. PJM’s unfolding capacity performance initiative more explicitly defines capacity in reference to a resource’s performance in the energy markets, further suggesting that capacity is simply a form of inchoate energy or a call on energy. The derivative and interdependent nature of the capacity market vis-a-vis the energy market raises the question under *EPSA* whether a commitment to curtail in the capacity market (a demand resource) is functionally any different than a commitment to curtail in the energy market.

The *EPSA* decision is more explicit in focusing on curtailment as the action defining a demand resource and further regarding this action as within the jurisdiction of the states and not the FERC. Yet, PJM does not believe the *EPSA* court squarely addressed the notion of “wholesale curtailment.” PJM recognizes this notion. Load serving entities, in partnership with their customers (often under state programs), can manage their wholesale consumption, lower their forecast demand

¹ A thorough treatment of these positions can be found in the comments and the FERC decision finalizing Order No. 719.

requirements and actively manage their consumption of energy at the peaks to lower their capacity obligations. PJM can and does account for these actions in making planning and procurement decisions in the wholesale market. Nothing in the *EPSA* decision prevents PJM from taking such actions to recognize wholesale curtailment actions. In PJM's view, the jurisdictional divide between wholesale and retail under the *EPSA* reasoning allows PJM to account for curtailment only to the extent it reflects the action of a wholesale entity, such as a load-serving entity or competitive retail service provider, and only to the extent such curtailment reflects that entity's own wholesale load.

Finally, PJM will be the first to agree that the *EPSA* decision, both in regards to its scope and its division of state and federal responsibilities, raises numerous unanswered questions and is open to various differing, reasonable interpretations. Accordingly, as noted earlier, one could propose different paths forward and argue such approaches are consistent with or distinguishable from *EPSA*. In arriving at its proposed path forward, PJM sought first to maximize the continuing value of demand in its markets and operations and, second, to do so in a manner compatible with a reasonable interpretation of *EPSA*.

But a third consideration deserves equal weight: risk. Litigation risk can upset market and settlement outcomes as evident from appellate court decisions in recent years remanding transmission cost allocation methodologies and marginal loss surplus allocations. These disruptions, often many years into the future, would upset what were thought to be settled market and billing outcomes and could lead to default and default allocations to members. PJM is particularly mindful of this risk when considering its capacity market. The three-year-forward commitment feature in PJM's capacity market raises a host of complications when it comes to resettling auction outcomes. The amount of money subject to disgorgement can be considerable, and the change in clearing prices given the sensitivity of the supply and demand curves in the auction can be dramatic.

Demand resources participate today in PJM's energy markets under pre-*EPSA* rules. PJM will be clearing capacity auctions in 2015, including the Base Residual Auction in May 2015. The form by which demand is eligible to participate in these auctions ideally would be known before conducting such auctions. Pursuing creative but untested notions of demand as a demand resource in upcoming capacity market auctions and thus facing the prospect of several years of uncertain administrative and judicial litigation serves to undermine completely the very purpose of the capacity market – namely, to provide a certain stream of forward revenues to assist capital formation for resource investment.

In considering PJM's market and operational objectives in maximizing demand participation along with the law and practicalities (including risks) associated with the *EPSA* ruling, PJM proposes an approach to have demand participate in PJM's energy and capacity markets under the following broad terms:

1. As demand response (i.e. demand side). PJM's markets would not separately compensate demand as a supply-side resource. The economics and incentives in having demand participate would result from avoided costs and obligations. State programs, of course, could offer added incentives to both wholesale and retail market participants.

2. Through load-serving entities. PJM would base planning and procurement decisions on commitments bid into PJM's markets by wholesale market entities. These entities, by definition, have control over, or an obligation to serve, specified retail load and can commit to reduce their wholesale load based on curtailment commitments or alternate supply (behind the meter) which they arrange with their end-use retail load. We envision that in many states third-party curtailment service providers will serve a continuing and important function by partnering with load-serving entities to provide their customer management expertise.

Demand Response in Specific Markets Going Forward

Capacity Market

Consistent with the foregoing, PJM describes below a modified approach to demand response participation in the capacity market and, in addition, proposes a transition mechanism to address the question of cleared demand resource bids from past base and incremental capacity auctions.

Wholesale demand response would bid into the capacity auction as a commitment to curtail by wholesale market entities (load serving entities, including competitive retail providers). This alternative would enable wholesale (load-serving entity-based) load to participate on the demand side of the capacity market as "demand response" and would be modeled as a reduction in capacity obligation. The demand would bid a curtailment commitment into the capacity auction at a price. This curtailment commitment bid would affect the demand curve, could set the capacity price and, if cleared, would avoid paying the capacity clearing price. This cleared curtailment would result in PJM procuring less capacity for that load-serving entity in the same amount as the cleared curtailment bid quantity. Under this approach, PJM would define the eligibility characteristics of a curtailment commitment and would establish measurement, verification, penalty and credit requirements as necessary to ensure performance and compliance. The curtailment commitment is essentially a commitment by the load-serving entity to reduce its wholesale demand at PJM's request during the established compliance period. If the demand response curtailment commitment is called to perform in the energy market, it may receive no additional energy market payment,² but would avoid an energy payment for the demand reduced.

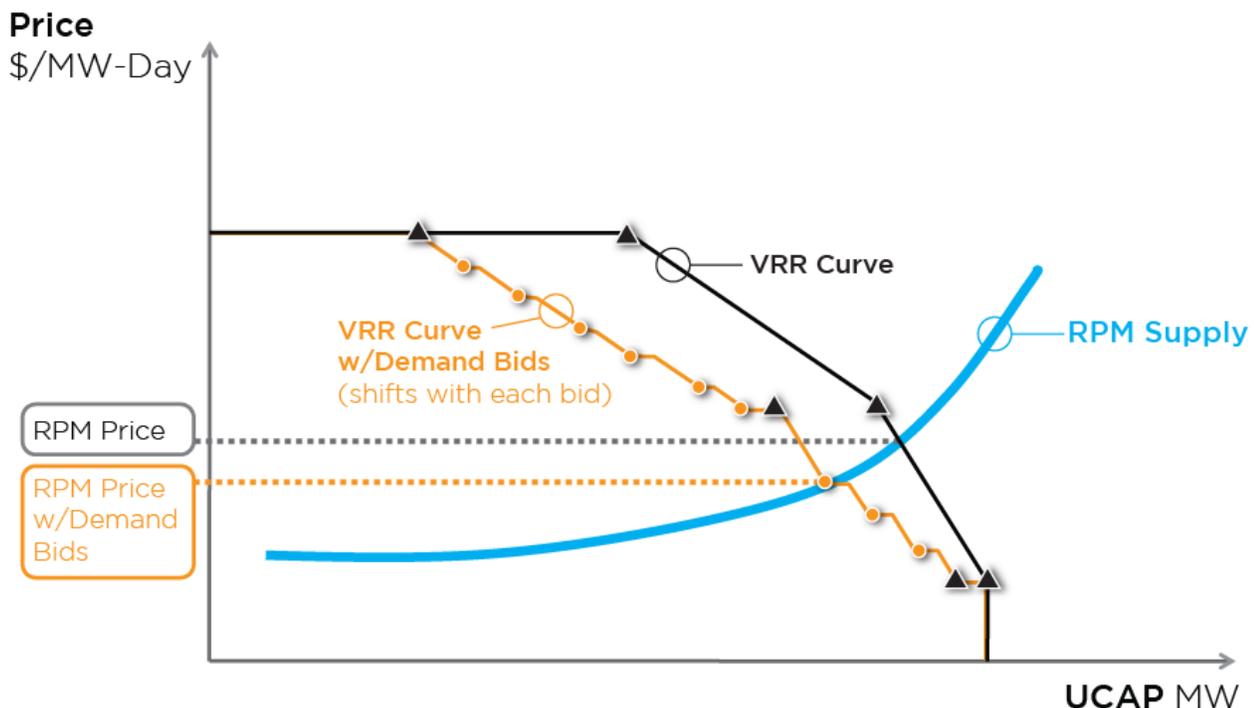
PJM believes a transition mechanism can be developed based on this alternate approach to minimize disruption to participation by wholesale demand response that is already committed through a capacity auction for delivery years 2015/16, 2016/17 and 2017/18. The proposed transition mechanism is as follows:

- PJM would review demand resource commitments to determine which are load-serving-entity-based and can be directly converted to demand response curtailment commitments.

² In implementing *EPISA*, the FERC will decide whether the court decision leaves open any room for the FERC to direct PJM to offer affirmative payments for wholesale curtailment. PJM would have concern with any theory upon which such FERC authority is based, should such a theory be "creative" and subject to the uncertainty of credible and protracted litigation.

- PJM would develop a mechanism to work with curtailment service providers, states and load-serving entities to explore how demand resource commitments may be transitioned to load-serving entity-based curtailment commitments through assignment arrangements and the like.
- PJM would establish procedures for demand resources that cannot be converted to release them from their capacity commitment. Such resources would receive no capacity credit for their released commitment and retain no curtailment obligation in the delivery year.
- Similar to the pending rules transitioning demand resources affected by the new 30-minute notification requirement, PJM would account for the quantity of released demand resources in the remaining incremental auctions for the three transition delivery years and, if necessary, purchase additional capacity to replace the released demand resources. Additionally, load-serving-entity-based demand response would be eligible to bid into the incremental auctions as demand-side participants.
- The terms of the curtailment commitment in the energy market for each type of demand resource (limited, extended summer and annual) would be preserved during the transition.

Figure 1: Integration of Demand Response Bids with RPM Demand Curve



*Shown based on existing PJM Variable Resource Requirement Curve.
PJM has proposed an alternative demand curve as part of the triennial review process.*

Energy Market

Depending on the FERC's decisions for demand response compensation, demand reduction in the PJM energy markets may not receive direct compensation from the wholesale market. The PJM Day-Ahead Energy Market permits price responsive demand bids in which load-serving entities can specify a price at which they choose not to consume energy rather than pay energy market clearing prices. The PJM Tariff also includes provisions for Price-Responsive Demand in the Real-Time Energy Market. Under these provisions, a load-serving entity can provide a forecast of aggregated price responsive demand which PJM will model in the regional dispatch to avoid dispatch of generating resources in anticipation of price responsive demand reduction.

Ancillary Service Markets

The participation of demand in PJM's ancillary service markets in light of *EPSA* strikes PJM as presenting a different legal argument than participation by demand in capacity and energy markets. While we would regard any legal basis allowing demand to continue to participate in energy and capacity markets as a demand resource as an intolerably uncertain, PJM believes ancillary service markets might be different. Ancillary services are well-defined wholesale products and services closely tied to the FERC's federal authority over interstate transmission service. They were defined as required elements of open access transmission service in FERC Orders Nos. 888 and 889. Ancillary services are not directly bought or sold at retail by, or from, end users. As such, they are not matters historically under state purview. While ancillary services support the consumption and delivery of electric energy, they are discretely recognized and not, by PJM's way of thinking, so closely linked as capacity might be to energy.

At this time, PJM would propose to pay demand that is eligible to provide frequency regulation and synchronized reserve, as a resource in the markets that PJM operates for those services. Under PJM's construct, demand resource offers in the frequency regulation and synchronized reserve markets could continue to be submitted by both load-serving and non-load-serving entities.

Conclusion

PJM sets forth this approach for consideration by regulators and stakeholders and will address these ideas further in responding to the FirstEnergy complaint. PJM believes it appropriate at this critical time to lay out this "road map" for continued participation by demand in wholesale markets – one that fits within reasonable interpretation of *EPSA*. We do so with the hope that it advances our stakeholder and regulator's consideration of options to restore confidence and certainty in the PJM markets. PJM respects and seeks to understand other views and suggested options. Given the day-to-day continuing operation of our markets and our reliance on these markets to fulfill important aspects of PJM's larger mission (notably, ensuring adequate resources in the face of a changing fuel mix of generation resources), we admittedly will place a premium on policy approaches that can be quickly implemented and that bring certainty, with a minimum risk of protracted litigation or threat of judicial disruption.