

UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Supplemental Notice of Proposed Rulemaking
Demand Response Compensation in
Organized Wholesale Energy Markets

Docket No. RM10-17-000

Comments of Audrey Zibelman

My name is Audrey Zibelman. My business address is 100 West Elm Street, Conshohocken, Pennsylvania 19428. I am the President and Chief Executive Officer of Viridity Energy Inc., a provider of active load management services in several RTOs. I am providing these comments on behalf of Viridity in response to the Commission's request for Comments in the Supplemental Notice.

I have worked in the electricity industry for over twenty five years. Prior to forming Viridity, I was the Executive Vice President and Chief Operating Officer of PJM, a Regional Transmission Organization that operates the world's largest wholesale power market and serves 14 states throughout the eastern United States. While there I was responsible for all aspects of PJM's transmission planning, market grid operations and corporate administration. Previously I was an executive at Xcel Energy, Inc., where at various times I oversaw transmission operations and planning, energy market trading, risk management, fuel procurement and renewable energy development. I am a former General Counsel of the New Hampshire Public Utilities Commission, and have participated as both counsel and expert in numerous electric utility proceedings before state and federal regulatory and legislative bodies. I have testified before

Congress and federal and state agencies on the benefits of power markets and Smart Grids to consumers. I have also served on the Boards of numerous entities responsible for assuring the security and reliability of the nation's power system, including, Reliability First and the GridWise Alliance.

The first set of questions posed by the Commission concern the appropriateness of establishing a 'net benefits test' for determining demand response compensation, and if so, the nature of the benefits to be used in determining when to compensate. I will provide answers to the specific questions asked by the Commission. However, I first offer general observations on the guiding principles that I recommend should be used in formulating the Commission's decision.

1. LMP is the Commission Determined Standard Payment for all Resources.

The payment of the Locational Marginal Price (LMP) to all participants that clear the market is the standard for payment in the organized markets that use bid based security constrained economic dispatch. As the Commission has found on numerous occasions, LMP market design represents the most effective mechanism for pricing power. Thus, payment of less than the cleared LMP is the exception and generally is only authorized in circumstances where there is evidence of market power.

I am unaware of any other circumstance where the Commission has required a resource to demonstrate a "net benefit" as a basis for receiving compensation if it clears the market. Thus, in order to avoid an unintended consequence of unduly restricting the growth of the markets to support the use of demand as a resource in the real time markets, the Commission should restrict the application of a "net benefits" test to those circumstances where it is clear that eliminating the ability of demand to participate in the market will not result in a higher clearing price in the

relevant pricing zone or in any other manner adversely impact the competitiveness of the markets or the ability to accept innovative solutions to meeting demand for reliable power.

2. DR Participation can only improve societal well being.

The benefits that accrue when controllable and measureable demand can participate in the market are legion. First, and foremost, demand resources that clear the competitive market cannot increase the total cost to society of satisfying fixed, inelastic load. This is so because in order to clear, demand resources must displace a more costly resource. Therefore, a demand resource that clears in the competitive auction, for whatever hour it clears, is less costly than some alternative resource offered for that same hour, other than on the perfectly flat part of the cost curve. Total societal welfare (as measured by the total cost of satisfying load) is never harmed by paying the competitively chosen demand resource the clearing price in any hour in which it clears. As long as LMP clears in a competitive auction, the revenue requirement associated with satisfying load will always be the same as or lower than the revenue requirement absent demand response. Paying LMP to demand resources in all hours can only make society better off, never worse off.

Application of this straightforward rule will further the Commission's efforts to establish just and reasonable rates, the Commission's principle statutory obligation. The fact that paying competitively cleared demand resources LMP cannot increase the costs of serving load is the single most important fact in the case.

Given this reality, which no party seriously contests, it is clear that the only reason for the Commission to concern itself with this issue is because of the effect of demand response on *particular* market participants in particular circumstances, as opposed to the broader issue of

developing an open, competitive and fair market for all competitors. Thus any net benefit test that operates to restrict demand from full market participation should be limited to those circumstances where it is clear that none of the benefits associated with increased demand participation can exist. In addition to the price benefits, the Commission should make certain that any net benefit test does not reduce the following identified benefits of having demand participate in markets as a co-equal of traditional generation resources. These benefits include:

- ▶ increased competitiveness of the markets;
- ▶ reduced market concentration and market power;
- ▶ reduced congestion;
- ▶ improved reliability of the grid;
- ▶ reduced need for difficult and expensive transmission and generation construction, as noted in the Staff's June 2009 report;
- ▶ improved opportunities for the deployment of environmentally sustainable but intermittent resources, via the 'firming up' of clean intermittent resources such as wind power, provided by demand participation;
- ▶ improved ISO load factors and load shapes, which indicate a more efficient grid;
- ▶ enhanced opportunities for distributed resources to participate as part of the integrated grid;
- ▶ reduced line losses and reduced fossil fuel consumption; and
- ▶ mitigation of price volatility.

3. Demand Response should be encouraged to participate in the Day –Ahead Markets and should be paid the day ahead LMP in all hours.

Transparent pricing is one of the undisputed benefits of the organized markets.

Heretofore this transparency has been limited to the price of the next increment of supply. When controllable demand participates in the day -ahead market, generators and Load Serving Entities (LSEs) will benefit from the increased transparency and the markets will necessarily become more efficient.

The ISOs clear an amount of day ahead supply by summing the buy bids of load serving entities, other market participants such as purely financial players, and an added quantity that can be characterized as reserves. The issue which has been raised in some comments – and noted in the Supplemental Notice – is that these day ahead bids will deviate(will be higher), than real time purchases when controllable demand is reduced and cleared in the real time market. This deviation causes the so-called ‘missing money problem’. That is, an LSE bids to buy 1,000 Mw day ahead, for example, but due to the clearance of 10 MW of curtailment in the real time market, the particular LSE’s real time load is only 990 Mw.

This deviation, the issue which gives rise to the questions posed by the Commission, will be made transparent by day ahead bidding and compensation of demand response. LSEs and financial bidders will see the results of day ahead auctions and adjust their market behavior accordingly. That is, the transparent nature of the ISOs market results will allow all participants to see, in each hour of each day, how much demand response has cleared. Market buyers such as LSEs and financial buyers will see this data and be able to adjust their day ahead bids accordingly. An LSE whose territory contains customers engaging in day ahead demand response bidding will quickly see the results of such bidding reflected in the day ahead price.

Such LSE will have the opportunity to incorporate this knowledge into its future day ahead buy offers. It can reduce its day ahead buy offers by the quantity of cleared demand response it sees in the market based upon various price points. Over time it should be expected that LSE's and Virtual Bidders will be adjust their bid schedules to reflect this more transparent information.

Moreover, in order for controllable demand to participate in the day ahead markets, it must be willing to incur weather and operational risks associated with meetings its curtailment commitment. In order to take on this additional risk, day ahead demand providers must be assured of being paid LMP for the hours they schedule to participate and clear the market.

4. Demand Participation will Yield Net Benefits to the Wholesale Markets in any Hour where the LMP in a Pricing Zone is Higher than the Clearing Price of Base Load Units.

The evidence in this and other proceedings have revealed that the participation of demand in the wholesale markets is a nascent industry which when fully developed will yield substantial price, system efficiency, service reliability and environmental benefits. Thus, if it elects to establish a benefits threshold for demand to be able to participate in the markets, the Commission needs to be confident that the threshold does not have the unintended consequence of reducing the potential of what are recognized as the universal benefits of the use of controllable demand as a resource on the grid.

In other words, during these base load periods, price volatility is low and a reduction in demand should have no measureable impact on price. However, in these same hours it is possible that a demand reduction could result in a "missing money" problem because the price numerator is not decreasing while the demand denominator is being reduced. Consequently, in

these limited circumstances it is possible the residual load will have a higher unit price than would have been achieved if load had not participated.

As a practical matter, it is unlikely that an end-use customer will find it economical or practical to reduce demand when the clearing price in a pricing zone is based upon base load generation. Consequently, it is unlikely that demand participation will ever have anything but a positive impact on market prices and efficiency.

However, to guard against such an eventuality, the Commission could adopt a rule that requires ISOs to establish a threshold price that represents the average marginal cost of the base load units serving load. The threshold can then be published by the RTO and used by all participants to determine if demand can be bid into the real time markets. The Commission should, however, make exceptions for even a threshold bid, if the demand response participant is in a pricing zone that is considered a load pocket in terms of transmission congestion pricing, exhibits market power, or relies on a “must run” unit. In these situations, increased demand participation can have a positive impact on market efficiency even in low price periods.

A threshold established at this level will incent demand resources to offer into the market as prices begin to rise. It is sensible to have demand resources participate to help flatten the demand curve and, consequently prices, before demand and price rise, rather than waiting until after the prices have risen to a level where decreases in demand are needed to moderate market prices.¹

Some parties have suggested adoption of a threshold that ties the LMP to that associated with a peaking unit with a heat rate of over 11,000 Btu/kwh. This is equivalent to closing the

¹ In its 2005 Report to FERC “Assessment of PJM Load Response Programs” the RTO noted: “Thus, in 2005, even using an average \$.50 per MWh of overall price reduction multiplied by the average hourly load during the load reductions of 87,811 MW equals \$43,906 per hour, or about \$182,122,088 for the 4,148 hours of load reductions.”

barn door after the horse has escaped. By the time these units are dispatched, prices have risen and from the customer's perspective, the harm has already occurred, i.e. they have paid more for power than they would have if demand had been allowed to participate in the market. This type of outcome is contrary to the concept of a market that allows consumers to take effective action to choose alternatives that yield effective price management for the individual market participants and the market as a whole.

Answers to the Commission's Questions.

A. 'Net Benefits Test Questions

Question (1): Some commentators address the need for a net benefits test. Address why the Commission should adopt a net benefits test for determining demand response compensation, and what the objectives of any such test would be.

Response: The application of a "net benefits" test is a barrier to full participation by any resource in the market and is antithetical to the concept of robust competitive markets. Consequently, the Commission should refrain from applying any test at this time. If, however the Commission elects to apply such a test, I recommend the following a priori objectives:

1. No test or threshold restriction should be applied in the day-ahead markets. Rather, the ISO should ensure that the rules are in place to encourage demand to participate in the day -ahead market as a mechanism to increase price transparency and efficiency.
2. On a real time basis, the test should be calibrated to ensure that demand is only restricted from participating in the markets when it is clear that increased demand participation will yield no benefit to price, reliability, or market efficiency. As discussed above, this should be based on the average price of base load units.

However, even in those instances where the clearing price in a load zone is based on a

base load unit, demand should be permitted to participate when the load or pricing zone experiences system congestion, is subject to generation market power or there is a must-run generator in the zone.

Question (2): How to define benefits, including whether the benefits associated with demand response should account only for lower market-clearing prices in the day-ahead and real-time markets or should also include consideration of operational benefits (e.g., lower reserve requirements), societal benefits or another measure.

Response: The Commission should factor all of the benefits of robust demand response into its choice of a threshold above which to pay LMP to demand resources. These benefits have all been noted by the Commission before and include:

- ▶ increased competitiveness and transparency of the markets;
- ▶ Increased innovation and customer engagement
- ▶ reduced market concentration and market power;
- ▶ reduced congestion;
- ▶ improved reliability of the grid;
- ▶ reduced need for difficult and expensive transmission and generation construction, as noted in the Staff's June 2009 report;
- ▶ improved opportunities for the deployment of environmentally sustainable but intermittent resources, via the 'firming up' of clean intermittent resources such as wind power, provided by demand participation;
- ▶ improved ISO load factors and load shapes, which indicate a more efficient grid;

- ▶ enhanced opportunities for distributed resources to participate as part of the integrated grid;
- ▶ reduced line losses and reduced fossil fuel consumption; and
- ▶ mitigation of price volatility.

Some of these benefits may not be easily quantified but they do counsel in favor of choosing a threshold that does not unduly restrict the number of hours in which demand resources are paid LMP.

Question (3): In addition to the payments received from the wholesale market, what are the costs demand response providers and load serving entities incur and should these be included for purposes of a net benefits test.

Answer: As noted in the Commission's question, the customers who provide demand response service to the grid, and their curtailment services providers, do incur costs in providing the service. These costs should inform the Commission's choice of the threshold above which they are compensated. The costs will vary from customer to customer, depending upon their particular requirements and objectives. Customer investments range from control systems that allow effective cooling and heating management to investments in distributed generation, storage and load shifting technologies. Customers also incur operating costs, including fuel costs in certain instances, maintenance expense, and labor. And of course customers have the expense of reimbursing the CSPs who facilitate the customer's demand response interaction with the grid.

These investments can be significant, running into tens of thousands of dollars for individual customers. Customers will undertake these investments if they believe that they are being treated fairly and if they can expect to earn a reasonable return on their investments.

Question (4): How to identify the beneficiaries of demand response, and how the allocation of costs related to demand response compensation affects the beneficiaries, if at all.

Answer: The participation of demand in the market yields all of the benefits associated with the Smart Grid and the development of distributed resources and self-balancing distributed networks. The customers in a zone where LMPs have been reduced by demand response participation are obvious beneficiaries of demand response. However, increased load control in a region through the use of distributed supply, storage and control resources will also contribute to increased reliability of the system, provide efficient ancillary support, create markets for clean distributed resources, and eliminate or delay the need for new transmission and generation investment.

Question (5): Whether any net benefits methodology adopted should be the same for all ISOs and RTOs or whether the individual circumstances or configuration of each ISO and RTO would support a different net benefits methodology.

Answer: The methodology should be the same for all ISOs. Whatever the differences in ISO circumstances may be, they are not such that would justify a different methodology. The similarities between the ISOs – use of security constrained economic dispatch, marginal pricing, locational pricing --- are significant and favor a uniform method. Moreover, a uniform method will be less burdensome to comply with for multi-jurisdictional CSPs and should further efforts to enhance demand resource participation in the markets.

Question (6): Proposed methodologies for implementing a net benefits test. Comments also should consider whether a net benefits threshold should be established up front based on static measures, such as a specific price or number of peak hours, or established on a dynamic

basis, such as a price threshold based on a pre-set heat rate and daily updated fuel price; and similarly, whether the net benefits should be an explicit test run by the ISO or RTO either after bids have been received or each hour prior to accepting demand response bids. Comments should also describe the advantages and limitations of any proposed net benefits methodologies.

Answer: Please see pages 2-7 above.

B. Cost Allocation Questions:

Question (1): Whether standardizing demand response compensation among ISOs and RTOs requires simultaneous standardization of a method for allocating the costs associated with such compensation. In addition, whether standardizing demand response compensation among ISOs and RTOs requires consideration of corresponding settlements and other impacts associated with the compensation mechanism.

Answer: Standardization of allocation methods would be a positive development although it is not technically required to implement a standard compensation mechanism. Standardization would be positive in that it may limit the amount of time spent in stakeholder processes and potential subsequent litigation. Also, standardization will minimize the difficulty that multi-jurisdictional CSPs would face with a plethora of different allocation schemes.

Question (2): If the Commission standardizes an approach for allocating the costs associated with requiring payment for demand response, what type of approach is appropriate. Comments should address the specific approaches delineated above, and may address other broad principles the Commission could use to determine the cost allocation method.

Answer: A broad-based allocation of demand response costs is appropriate. As indicated in response to Question 2 above, there are diverse benefits associated with demand response, and the benefits accrue over wide geographic areas. For example, demand response will decrease the need to construct long transmission lines which generally originate in areas that are not experiencing congestion and then pass through further areas which do not experience congestion. These areas will benefit from the reduced need to construct these lines through their neighborhoods.

Similarly, the reliability-enhancing benefits of demand response accrue broadly. The general deliverability of power throughout the ISO under most operating conditions means that these benefits are not localized. The benefits of increased market competitiveness associated with robust demand response are also broadly dispersed. The ISOs are tightly integrated pools and the benefits associated with market improvements tend to be felt throughout the territory. Finally, to the extent that demand response facilitates deployment of intermittent resources, demand response facilitates a national public policy objective. The beneficiaries thereof are the Nation.

These examples illustrate the broader point: There are many benefits associated with demand response beyond the fact that demand response reduces clearing prices. Therefore, the beneficiaries of demand response include many parties in addition to those who directly benefit from the reduced clearing prices. The allocation approaches which limit the allocation to the LSE or the zone where reduced prices are experienced are not appropriate because they fail to account for the wide range of benefits associated with demand response.

Question (3): How the use of a net benefits test would affect the need for and methodologies for determining cost allocation.

Answer: The costs associated with demand resources clearing in the market must be allocated whether or not the Commission adopts a net benefits test. So, an allocation approach must eventually be adopted. The relationship between the use of a net benefits test and the method used for cost allocation is this: The broad range of benefits associated with demand response indicates that a broad based allocation of the costs is appropriate. Moreover, the broad range of benefits indicates that a net benefits test that simply compares the direct costs of demand response to the reduction in LMP would not be appropriate because such a test fails to account for many of the benefits.

Conclusion

The Commission has the opportunity in this proceeding to begin the process of making the Smart Grid a reality. Robust demand participation in the market is of course a key component of the Smart Grid. Demand participation in the day ahead market should not be constrained by a net benefits test because such participation carries with it no negative consequences. Demand participation in the real time market should be encouraged so as to prevent or moderate the price rise which occurs as the generation which serves load transitions from base load to mid merit plant.

Respectfully submitted,

Audrey Zibelman

Document Content(s)

Technical Conference.DOC.....1-14