UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

Demand Response Compensation In Organized Wholesale Energy Markets
Docket No. RM10-17-000

TECHNICAL CONFERENCE ON DEMAND RESPONSE COMPENSATION
Panel 1 - Benefits Test

Opening Remarks of

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On behalf of Public Interest Organizations

My name is Paul Peterson and I would like to thank the Commission for this opportunity to present the views of Public Interest Organizations[1] on the questions raised by the Commission in the Supplemental Notice of Proposed Rulemaking. This panel is focused on the need for a "benefits test" for demand response. I have three observations that apply to the topic of this panel as it relates to a day-ahead energy market. First, there needs to be a benefits test for the acceptance of demand response offers; second, the benefits test should utilize a dynamic, not static, threshold; and third, the incorporation of demand resource offers into wholesale markets is a critical development stage for the overall effectiveness of market mechanisms for selling and purchasing electricity.

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[1] As indicated in the July 27, 2010, filing in this proceeding, PIOs are: Clean Wisconsin, Conservation Law Foundation, Environmental Law & Policy Center, Fresh Energy, Illinois Citizens Utility Board, Natural Resources Defense Council, Ohio Office of Consumers' Counsel, Pace Energy & Climate Center, Project for Sustainable FERC Energy Policy, Sierra Club, Wisconsin Citizens Utility Board, and Western Grid Group

PIOs are in agreement with many of the other participants here today that demand response resources must be allowed to offer in the day-ahead energy market, and be paid the locational marginal price (LMP) when those offers clear. The issue directly before this panel is whether there should be any limitation to the adoption of such a rule, as the Commission has proposed in its Order initiating this rule making. Consistent with the overall objective of competitive markets (mechanisms to help ensure that rates are just and reasonable as required by the Federal Power Act) and with the existing operational procedures that are used to select resource offers for a day-ahead commitment, there is a limitation, or benefits test, that should be applied to demand response resource offers prior to their acceptance.

This can be best understood by reviewing the current day-ahead commitment mechanism used in wholesale markets. In simple terms, the current practice is to place all the day-ahead offers into a bid-stack and the market administrator moves up the bid-stack until enough resources have been selected to meet the anticipated day-ahead load. The price of the last resource selected sets the day-ahead LMP.

In the day-ahead commitment process, however, the market administrator considers each resource's offer parameters such as start-up time, no load costs, minimum run times, and minimum down times that are linked to each resource's offer. The market administrator will select the combination of lowest priced offers that produce the lowest overall daily commitment cost. During that selection process, a higher priced offer with greater flexibility (such as a 2-hour minimum run time) may be chosen over a lower priced offer with less flexibility (such as a 24- hour minimum run time) to satisfy an operational need such as a 4-hour peak load.. This process produces a day-ahead

resource commitment schedule that represents the least-cost combination of resources over the 24-hour commitment period while meeting system reliability standards.

Demand response resource offers need to be evaluated in a similar fashion to generation resource offers. In addition to their start-up costs, minimum run times, and other parameters, demand response (DR) resources should also be evaluated as to their impact on overall daily commitment costs. When a DR resource is accepted, the total quantity of load that is paying for all the resources in the day-ahead market (generation and DR) is slightly reduced. If a generation offer and a DR offer are the same price (and all their offer parameters are roughly equivalent), the choice of the DR offer instead of the generation offer will raise costs (the LMP) to all load. The DR offer must be less than the generation offer by a sufficient amount to off-set the price increase caused by the reduced quantity of load in the day-ahead market. Because the MW size of most DR offers is small compared to the overall load, the price difference between DR and generation can be small (often just pennies apart) and the DR offer will still provide a net benefit to all day-ahead market participants.

The Consumer Demand Response Initiative (CDRI) has proposed an algorithm that can evaluate each demand response offer as it is reached in the stack of offers and calculate the total cost to load with or without the demand response offer. If the DR offer lowers overall costs for the day-ahead commitment, then it can be accepted. If it does not lower overall costs, the next slightly higher generation offer should be accepted. [The CDRI algorithm can also do the cost allocation for all of load, although that is the subject of the next panel.] Something similar to the CDRI algorithm could be incorporated into

the commitment mechanisms that are currently used to clear the day-ahead wholesale markets.

This is the threshold, or net benefits test, that demand response resource offers should satisfy to be accepted. This will produce the lowest-cost combination of resources (both generation and demand response) to meet the needs of wholesale market consumers over a daily commitment period. This threshold will produce day-ahead prices that will help achieve rates that are just and reasonable under the Federal Power Act.

Some commentators have suggested that a static threshold for demand response resource offers be established based on the cost of electricity from a benchmark unit (usually a moderately efficient gas unit). Under this approach, if a DR resource offers at a price less than the threshold, it is not accepted. If it offers at a price higher than the threshold, it can be accepted based on its place in the overall stack of offers. The problem with a static threshold, even one that is updated monthly, is that it is a less-precise mechanism to do what a dynamic threshold mechanism can do automatically. The actual supply stack is not the smooth curve on a graph that we often use in presentations. Instead it is a lumpy set of offer blocks at increasing prices or steps.

A static threshold will cause errors in both directions. Sometimes DR resource offers will clear even though they will increase overall daily commitment costs. On other occasions, a DR resource offer will not clear even though it would have lowered overall commitment costs. A static threshold will also discriminate against legitimate DR resource offers simply because they are below an arbitrary threshold without consideration of whether the DR offer accurately reflects the DR provider's costs. Static thresholds can also disallow DR resources with minimum run times if any hour of the run

time falls below the threshold, without consideration of the overall impact of the DR offer over all the hours of run time.

A dynamic threshold mechanism, such as the CDRI algorithm, evaluates each DR resource offer using consistent criteria that applies to generation offers, too. PIOs urge the Commission to include some form of a dynamic threshold test as part of the rule in this proceeding.

The significance of a compensation rule for demand response resources cannot be over-stated. The evolution of the bulk power system has focused on how to expand generation and transmission resources to meet the (historically) fixed demand of electricity consumers. Throughout the 20th century, certain rules of thumb applied. Load would increase every year (except for temporary dips during economic recessions); load was largely inflexible, it varied based on weather and the time of the day, but those variations were very predictable; and electricity could be stored neither efficiently nor in large quantities.

Technological change has turned those 20th century rules of thumb into myths. Greater efficiency in the use of electricity means that total electricity consumption can decrease while economic output can increase. Many loads are becoming more flexible and some loads are willing to forgo consumption for brief periods if they can be compensated for their choice to reduce their consumption or not use electricity at all. Storage technologies are improving and may experience quantum gains in the near future with the deployment of vehicle to grid electric cars.

Starting with the initial implementation of Day1 and Day 2 markets over a decade ago, the absence of demand participation in the wholesale markets has been a

fundamental flaw addressed with various mitigation measures. These mitigations include extensive market monitoring rules regarding bidding, reference prices, review of outage requests and actual outages, and a $1,000 offer-cap in the energy markets. Robust participation by demand response resources in the day-ahead market may reduce the need for many of the existing limitations on and reviews of supply offers.

The 21st century will see the full integration of demand with generation and transmission resources to produce unprecedented flexibility in the ability of system operators to maintain system balance. Operators will have the choice to ramp supply and demand up and down based on offers to supply and offers to consume. The first steps in this evolutionary process need to occur in the day-ahead wholesale markets where all offer to supply (whether generation or non-consumption) must be treated comparably, and then aggregated to meet the day-ahead load in the most cost-effective manner. For some consumers, electricity consumption is necessary in fixed quantities at particular times. For other consumers, electricity can be consumed much more flexibly over a range of hours. Most consumers will not figure out demand flexibility all on their own; they will need the assistance of innovative service companies to make these demand reductions easy, timely, and profitable. The 21st century electric system will develop to accommodate these different preferences and, in that accommodation process, will deliver all the electricity services needed at a lower cost than with the over-investment driven by today's fixed load paradigm.

Again, I thank the Commission and Staff for this opportunity and I look forward to your questions.