UNITED STATES OF AMERICA
BEFORE THE
FEDERAL ENERGY REGULATORY COMMISSION

) ) Docket Nos. ER11-4336-000
) ) ER11-4336-001

NOTICE OF INTERVENTION OF
THE MAINE PUBLIC UTILITIES COMMISSION
AND PROTEST OF THE MAINE
PUBLIC UTILITIES COMMISSION AND
THE MAINE OFFICE OF PUBLIC ADVOCATE


In one important respect, the August 19 Filing conflicts with both the letter and the spirit of the Commission’s Final Rule on Demand Response Compensation in Organized Wholesale Energy Markets1 (“Order No. 745”).2 The August 19 Filing would constrict,

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2 The Maine Public Parties do not object to, or protest, the elements of the August 19 Filing not specifically addressed herein.
rather than expand, the opportunities for one currently active category of demand response, namely demand response where the relevant load is coupled “behind the retail meter” with generation. In particular, the August 19 Filing would limit Locational Marginal Price (“LMP”) payment to these demand responders to the “net flow over the retail meter” rather than, as is currently the case in the ISO-NE Day Ahead Load Response Program (“DALRP”), paying compensation for both the load reduction and the electric generation made available to the system. In this respect, the August 19 Filing is discriminatory, unjust and unreasonable.

In essence, the August 19 Filing would, for these resources, have precisely the same effect as paying “LMP-G” for their demand response, rather than full LMP as required by Order No. 745. In order to achieve this result, the August 19 Filing adopts a myopic view of the New England electricity system and load by insisting that, for the purposes of compensating these resources, it will refuse to “look behind” the retail meter. The consequences of that refusal are that the August 19 Filing would, if adopted, discriminate against these resources – because they would be paid less than their counterparts “outside the meter” – and inevitably lead to higher prices for consumers. Neither result is permissible under Order No. 745, and the Commission should require ISO-NE to reform its compliance filing to provide full LMP compensation for both the load reduction and
the generation that occur “behind the meter” in the same manner as is provided to resources “outside the meter.”

I. COMMUNICATIONS

The persons to whom correspondence, pleadings, and other papers in relation to this proceeding should be addressed and the persons whose names are to be placed on the Commission’s official service list are designated as follows pursuant to Rule 203, 18 C.F.R. § 385.203 (2008):

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II. NOTICE OF INTERVENTION

Under Maine law, the MPUC is the state commission designated by statute with jurisdiction over rates and service of electric utilities in the state. See 35-A M.R.S.A. § 101 et seq. It is, therefore, a “state commission” under the Commission’s regulations.

3 During the stakeholder process leading to the August 19 Filing, the Consumer Demand Response Initiative (“CDRI”) put forward a proposal that would, if adopted, address the concerns raised here with respect to the treatment of behind-the-meter generation and demand response. The protest to the August 19 Filing submitted by CDRI includes an extensive discussion and explanation of how demand responders with “behind-the-meter” generation operate, and repeats its proposal for how the ISO-NE filing should be reformed. The Maine Public Parties believe that the information submitted by CDRI concerning these demand responders is accurate, and has not repeated it in this submission. The Maine Public Parties also believe, for the reasons set forth in this Protest, that the CDRI proposal, insofar as it describes a method for compensating such resources under Order No. 745, would if adopted remove the discriminatory and unjust and unreasonable elements of the August 19 Filing that are the subject of this Protest.
C.F.R. § 1.101(k) (2008). Accordingly, the MPUC hereby gives notice of its intervention pursuant to Rules 212 and 214 of the Commission’s rules of practice and procedure.\(^4\)

III. BACKGROUND

A. The Current ISO-NE Programs Correctly Allow Compensation to Demand Response with Behind-the-Meter Generation for Both the Load Reduction and the Energy Supplied to the System.

ISO-NE currently has price-responsive demand response programs that will expire on May 31, 2012. The programs currently available include the DALRP and the Real Time Price Response Program.\(^5\) As described by ISO-NE, “these programs provide an opportunity for demand response providers to participate in the regional wholesale market.” August 19 Filing at 3.

The DALRP includes participants with behind-the-meter generation. Significantly, where a demand resource with behind-the-meter generation reduces its load, and simultaneously continues to generate (with the effect of injecting generation through the retail meter into the ISO-NE grid), the current regime provides for payment of both the demand response under DALRP and payment for the generation at


\(^5\) This discussion focuses, as does Order No. 745, only on demand response participation in the energy market and does not include a discussion of demand response participation in the Forward Capacity Market (“FCM”).
Locational Marginal Price ("LMP"). The August 19 Filing would, however, limit the payment to the resource to the amount of net increase (or reduction) in flows as measured at the retail meter. In other words, where a resource today would receive compensation for both the MW of generation injected into the system, and the opportunity cost of reducing load (i.e. the lost profit due to the reduction in its industrial or commercial process), under the August 19 Filing, the resource would have to bid at a level no less than the sum of those costs in order to avoid losing money in the event its bid is accepted, thus limiting its opportunities for participation and reducing the beneficial price-discipline effects sought by Order No. 745.7

B. The Commission’s Order No. 745 Rulemaking Was Designed to Expand, not Contract, the Opportunities for Demand Response.

In its March 18, 2010 Notice of Proposed Rulemaking (NOPR),8 the Commission observed that:

Demand response acting as a resource in organized wholesale energy markets helps to improve the functioning and competitiveness of such markets in several

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6 As described by ISO-NE,

the DALRP encourages price-responsive demand by giving a participant in RTPRP [Real Time Price Response Program] or one of the demand response programs the opportunity to offer a day-ahead price (in $/MW) for a firm amount (in MW per hour) of load reduction to be delivered in real-time should day-ahead LMPs clear at levels that equal or exceed the participant’s offer. The minimum offer price in the DALRP (expressed in $/MWh) is calculated and published by the ISO on a monthly basis. The DALRP minimum offer price is the Forward reserve Fuel Index (expressed in $/MMBtu) multiplied by an effective heat rate of 11.37 MMBtu/MWh with product rounded to the nearest dollar.


7 See Section IV.D. below.

ways. First, demand response can lower prices. When bid directly into the wholesale market, demand response – which results in lower demand – can result in lower clearing prices. For example, a study conducted by PJM, which simulated the effect of demand response on prices, demonstrated that a modest three percent load reduction in the 100 highest peak hours corresponds to a price decline of six to 12 percent. Demand response can also lower prices in the organized wholesale energy markets by reducing the need to dispatch higher-priced generation, or construct new generation, in an effort to satisfy load. Second, demand response can mitigate generator market power. This is because the more demand response is able to reduce demand, the more downward pressure it places on generator bidding strategies by increasing the risk to a supplier that it will not be dispatched if it bids a price that is too high. Third, demand response has the potential to support system reliability and address resource adequacy and resource management challenges surrounding the unexpected loss of generation.

NOPR at P 4.

The Commission noted that in spite of the benefits of demand response, “demand response providers collectively play a small role in wholesale markets.” The Commission further stated that it was “concerned that some existing, inadequate compensation structures have hindered the development and use of demand response.” Id. at P 9.

One of the major issues in the NOPR was whether demand response should be compensated at full LMP rather than LMP less the cost of energy avoided by the load reduction (“LMP-G”). The Commission expressed its concern about the significant decrease in demand response participation that occurred after PJM reduced compensation levels to pay only LMP-G:

Based upon our own review, the Commission is now concerned that evidence of demand reductions in PJM, and inadequate demand response participation, now and in the future, may be the result of compensation that is no longer just and reasonable, because, as detailed below, the existing and varying levels of compensation generally fail to reflect the marginal value of demand response resources to ISO and RTO energy markets.

Id. at P 10.
Significantly, in its rulemaking comments, ISO-NE promoted the concept of reduced compensation for demand response, urging that demand response should be paid LMP-G rather than full LMP. ISO-NE asserted that paying demand response the LMP without subtracting the “G” would result both in double recovery for the demand response provider and inefficient dispatch of demand response when lower priced generation might be available. For example, the ISO-NE internal market monitor (IMM) opined:

It is economically inefficient to pay full LMP for demand reductions based on an administratively determined customer baseline, because it can cause consumers to forego consumption even when the value of their consumption exceeds the cost of producing the energy. This happens because consumers receive both retail bill savings (net of the value of consumption) and a demand reduction payment for the same demand reduction (referred to herein as the ‘double payment’ problem).

Comments of the ISO-NE Internal Market Monitor, filed in Docket RM10-17 at 7 (“IMM Comments”) (May 13, 2010) (emphasis added).

The IMM specifically targeted demand response with behind-the-meter generation in its example to demonstrate the “inefficiency” of the “double payment.” He asserted that payment of full LMP would “result in the customer operating the backup generator when the cost of producing the energy in the market is lower.” He further opined that “[t]he full-LMP approach makes it profitable for generators to relocate from in front of the meter on the wholesale side to behind a customer’s meter to take advantage of the demand response incentives” and that “[t]he full-LMP approach also encourages the installation of backup generation for the same reason, which is an inefficient investment since energy can often be produced more efficiently in the
wholesale market.” *Id.* at 9.\(^9\)

The Commission rejected the ISO-NE position concerning LMP-G in Order No. 745. The Commission required the payment of compensation at full LMP to customers providing cost-effective demand response as a resource in the energy market. It expressly rejected the arguments of those promoting payment of LMP-G, stating that payment of less than LMP for cost-effective demand response is unjust and unreasonable. The Commission reasoned that “paying demand response resources the LMP will compensate those resources in a manner that reflects the *marginal value* of the resource to each RTO and ISO.” Order No. 745 at P 47 (emphasis added). In rejecting the arguments for LMP-G, the Commission found that arguments about economic efficiency failed to acknowledge the market imperfections caused by existing barriers to demand response and that allowing demand response to bid into organized wholesale energy markets “expands the amount of resources available to the market, increases competition, helps reduce prices to consumers and enhances reliability.” *Id* at P 61 (emphasis added). It also found that the LMP-G approach failed to treat demand response in a manner comparable to generation:

> In the absence of market power concerns, the Commission does not inquire into the costs or benefits of production for the individual resources participating as supply resources in the organized wholesale electricity markets and will not here, as requested by some commenters, single out demand response resources for adjustments to compensation. The Commission has long held that payment of

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\(^9\) While the August 19 Filing does not appear to rely on arguments concerning the economic efficiency of dispatch, the MPUC understands that ISO-NE has, in communications prior to the August 19 Filing, asserted that accepting the CDRI proposal would result in “less economic” resources dispatched ahead of “more economic” resources. In fact, however, as shown in Appendix A, the extent of “uneconomic” dispatch under the August 19 Filing is actually greater than under the CDRI proposal and, moreover, while the CDRI proposal sometimes results in the dispatch of “uneconomically cheaper” resources, thus lowering costs to consumers, the “uneconomic” dispatch allowed by the August 19 Filing will always result in higher consumer costs.
LMP to supply resources clearing in the day-ahead and real-time energy markets encourages “more efficient supply and demand decisions in both the short run and long run,” notwithstanding the particular costs of production of individual resources. Commenters have not justified why it would be appropriate for the Commission to continue to apply this approach to generation resources yet depart from this approach for demand response resources.

Id. at P 62 (citations omitted).10 While ISO-NE decided not to request rehearing of the Commission’s determination to pay demand response the full LMP rather than LMP-G as ISO-NE had proposed, it nevertheless decided that a significant portion of existing demand response should no longer receive demand response payments. In May of 2011, the ISO-NE IMM asserted that “behind-the-meter generators do not face barriers to participate in organized wholesale energy markets and are outside the scope of Order No. 745. Therefore, apparent demand reductions created by the operation of behind-the-meter generation should not be treated as demand response.”11 The IMM conceded that “it may appear that the behind-the-meter generation has met the Commission’s net benefits test and therefore increases market competitiveness,” but nevertheless concluded that this view of “market competitiveness” is too narrow because, in his view, “larger and more efficient

10 The Commission also rejected arguments that it should not impose a single pricing rule. It found that commenters had not shown why differences in market structures, state regulatory environments and resource mix “warrant a different compensation level among the ISOs and RTOs.” It concluded, “regardless of the resource mix or the state regulatory environment, demand response which satisfied the net benefits test described herein and can balance the system, is a cost-effective alternative to generation in the organized wholesale energy markets, and payment of LMP represents the marginal value of a decrease in demand. Id. at P 67.

generators have similar incentives to move behind the meter”\textsuperscript{12} and this would in turn distort the wholesale price. To ensure that behind-the-meter generation would not be treated as a demand response resource, the IMM recommended that behind-the-meter generation be excluded from the calculation of demand reduction in the rules implementing Order No. 745.\textsuperscript{13}

The August 19 Filing generally incorporated the views of the IMM, and has proposed a rule that would eliminate or severely limit the participation in demand response compensation of existing demand response providers with behind-the-meter generation. Specifically ISO-NE proposes to compensate demand response providers based on changes to load measured at the retail meter regardless of how those changes are derived. As shown below, there is no justification for this departure from the requirements of Order No. 745.

IV. ARGUMENT

A. Contrary to the Goal of Order No. 745, the August 19 Filing Reduces Rather than Increases Demand Response Participation in New England’s Wholesale Electric Markets.

In Order No. 745, the Commission outlines the ways in which demand response can help improve the functioning and competitiveness of wholesale energy markets:

\textsuperscript{12} Id.

\textsuperscript{13} The IMM indicated that continuing the current practice of paying demand response for behind-the-meter load reductions would create gaming opportunities. Specifically, the IMM was concerned with proper measurement of baselines to avoid baseline “inflation.” While the IMM recommended excluding distributed generation as a demand resource, it did set forth some recommendations to prevent gaming, if ISO-NE continued to provide demand response payments to behind-the-meter demand response. These recommendations are discussed in Section IV.E., below.
First, when bid directly into the wholesale market, demand response can facilitate RTOs and ISOs in balancing supply and demand, and thereby, help produce just and reasonable energy prices. This is because customers who choose to respond will signal to the RTO or ISO and energy market their willingness to reduce demand on the grid which may result in reduced dispatch of higher-priced resources to satisfy load. Second, demand response can mitigate generator market power. This is because the more demand response that sees and responds to higher market prices, the greater the competition, and the more downward pressure it places on generator bidding strategies by increasing the risk to a supplier that it will not be dispatched if it bids a price that is too high. Third, demand response has the potential to support system reliability and address resource adequacy and resource management challenges surrounding the unexpected loss of generation. This is because demand response resources can provide quick balancing of the electricity grid.

Order No. 745 at P 10 (citations ommitted). These conclusions address the concerns expressed in the NOPR that, in spite of currently existing demand response programs in RTO regions, “demand response providers collectively play a small role in wholesale markets,” and that “some existing, inadequate compensation structures have hindered the development and use of demand response,” NOPR at P 9, particularly that reduced compensation using an LMP-G formula had resulted in a reduced level of demand response participation. Id. at P 10.

The August 19 Filing’s proposal to discontinue payments to demand response providers with behind-the-meter generation that reduce load and simultaneously maintain and export generation formerly used to serve that load would introduce into the New England market precisely the type of inadequate compensation structure that Order No. 745 sought to remedy. The proposal will have the effect of reducing demand response participation because a significant segment of the current day ahead program will no longer be fully compensated as a demand response provider. While ISO-NE posits that the generation portion of the combined demand response and behind-the-meter generator can bid in as a generator, it ignores that without demand response
compensation, the behind-the-meter generator would have to bid a far higher price and thus will not provide the extent of price-discipline sought by the Commission.\textsuperscript{14}

The August 19 Filing defends this reduction in the opportunities for demand response participation by asserting that where demand response is behind the meter, it has no impact on balancing the system, even though it is the very reduction in load that allows the behind-the-meter generation to export to the grid. Mr. Yoshimura, whose testimony was submitted in support of the August 19 Filing, opines that demand response should be measured \textit{only} at the customer’s retail delivery point. ISO-NE suggests that if the customer is not taking energy from the grid in the first place, but rather from its own behind-the-meter generation, then that consumer’s decision to curtail load cannot affect the grid. Thus, ISO-NE will recognize only the generation export and pay the generator for the MW produced (if the generator’s bid is low enough to clear).

Mr. Yoshimura’s testimony reflects ISO-NE’s failure to see that the generation normally used by the end use consumer can be exported \textit{only} if the consumer curtails its load. The refusal to acknowledge the link between the curtailment action of the load and its behind-the-meter generation’s export to the grid results in the claim that the demand responder cannot provide the value identified by the Commission in Order No. 745. However, once the link between the demand response and the ability to export generation from a behind-the-meter generator is acknowledged, it is clear that it is the \textit{action} of the behind-the-meter load response \textit{coupled with} the \textit{action} of the behind-the-meter generator that provides the following benefits: the reduction of higher-priced

\textsuperscript{14} See Sections IV.C.2 and Appendix A, below, for a discussion of the effects of the August 19 Filing on demand response bids.
resources to satisfy load, mitigation of generation market power, and support of system reliability contemplated by Order No. 745.15

B. ISO-NE’s Focus on the Retail Meter as the Demarcation for Recognizing Demand Response Demonstrates an Overly Narrow View of Grid Interactions.

Mr. Yoshimura presents a series of examples purporting to demonstrate that, because the impact on “the grid” as measured at the “retail delivery point” is the same whether 50 MW is “injected” through an increase in behind-the-meter generation of 50 MW (from 50 to 100 MW) or instead by a reduction in behind-the-meter load of 50 MW coupled with continued generation of 50 MW, the total LMP payment should be limited to the net flow across the retail meter.16 These examples, however, all suffer from a common defect, which masks and distorts the underlying economic and electricity production activity taking place in New England. Specifically, the examples treat as irrelevant the facts that 1) load, even when behind the meter and served in whole or in part by an associated behind-the-meter generator, is still load creating economic value in New England with an opportunity cost if it is interrupted; and 2) generation behind the meter, when it runs, has a cost and is also displacing generation that would otherwise be needed to serve the load.

The economic effects and costs of the load and generation sitting in combination “behind the meter” are just as “real” for New England as the economic effects and costs of the load and generation “outside the meter.” As explained below, had ISO-NE recognized these facts (which are implicit in the current inclusion in Appendix

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15 Order No. 745 P 10.

16 Yoshimura Testimony at 17-27.
of demand response with behind-the-meter generation), Mr. Yoshimura’s drawings would reveal that the August 19 Filing is discriminatory and contrary to Order No. 745 in its effects.

For Mr. Yoshimura’s Figures 1, 2 and 3 (Yoshimura Testimony at 19-20), the existence of a generator “behind the meter” has no significance: these are simply illustrations of how load can balance the overall supply of generation and demand. There is no magic to the notion of moving the system “in and out” of “balance.” To the extent the load is producing (and drawing electric energy), it increases the total amount of generation needed; to the extent it reduces consumption, the total amount of generation needed is reduced.

Illustration 1

![Diagram](image)

17 See, e.g., ISO-NE Tariff, Section III.E.1.2 (Appendix E, Load Response Program).
Beginning with Mr. Yoshimura’s Figure 4 (reproduced again in Figure 5), Mr. Yoshimura’s “retail delivery meter” demarcation begins to distort the picture of what is happening in New England. Viewed properly, the situation in Figure 4 is that there is a system with 20,050 MW of generation running, and 20,050 MW of load to be served – producing 20,050 MW of economic activity. The fact that 50 MW of generation and load have combined (essentially netted each other) behind the meter for their own business purposes does not alter what is actually going on in the system as a whole. See Illustration 2, below:
In his Figure 6, Mr. Yoshimura introduces a needlessly confusing element: there is no reason at all to create an “imbalance” in the system “outside the meter” in order to demonstrate the impacts both for the customer and the system as a whole of “behind-the-meter” generation and demand response. ISO-NE has not suggested that demand response can participate only when other load increases, as Figure 6 might be read to imply. In any case, the magnitude of the impact of the customer’s actions does not vary with the size of the “other” load, so, continuing with Figure 6 as presented by Mr. Yoshimura: the “real” system load is 20,100 MW (because the “behind-the-meter” load is really there), and the “real” system generation is 20,050 MW (before the system is brought back into balance). Once again, there are genuine costs to running that 50 MW of generation behind the meter, and genuine economic activity being supported by the 50 MW of load. The fact that, in Figure 6, some additional generation will have to be turned on, for a total of 20,100 MW, simply means that the clearing price to serve all load will be higher than it would be without the addition of the 50 MW of “other” load. See Illustration 3, below:

**Illustration 3**

-20,050 MW Load

Retail Delivery Point: Meter = 0 MW

+ 20,000 MW Gen

-Yoshimura Figure 6

0 MW flow into the grid

+ 50 MW Gen

-50 MW Load

**Total System**

System out of balance due to an increase in load.
- 20,050 MW of generation
- 20,100 MW of load
- Need to dispatch additional resource, clearing price to load will increase.
It is with Figures 7a, 7b and 8 that the full significance, and error, of Mr. Yoshimura’s diagrams becomes apparent when the entire system is viewed. Figure 7a, properly restated, would show a total generation in New England of 20,050 MW, with 20,050 MW of consumption and accompanying economic activity. Note that, by contrast to Figure 6 (properly restated), the generation bid stack in Figure 7a will be smaller (because the total generation on the system is now 20,050 rather than 20,100) and also cheaper (because the 50 MW of generation introduced will be cheaper than the displaced resource – by definition, because otherwise it would not clear). Further, from the customer’s perspective, the customer will incur both the cost for running the generation at 50 MW and the opportunity cost of not running its manufacturing processes. Put another way, in Figure 7a, the entire New England electricity and economic system is smaller than it would be in Figures 6 or 7b, where the respective totals for generation and load are 20,100. In this way, the customer has created 100 MW of impact – i.e., 50 MW of reduced production and 50 MW of displaced more costly generation – on the overall system.

Mr. Yoshimura’s Figure 7b, which he presents as identical in its effects to Figure 7a, is thus not identical at all. In Figure 7b, there is additional fuel being consumed for the additional 50 MW of generation, and 50 MW worth of additional economic activity taking place, compared to what is happening in Figure 7a. In Figure 7b, the customer has added only 50 MW of value to the system. Only by refusing to recognize the genuine generation and load activities on the “other” side of the retail delivery point, can ISO-NE “see” no difference between the two cases. See Illustration 4, below:
Finally, Figure 8 merely states Mr. Yoshimura’s conclusion that, because he cannot “see” the two separate activities (with their separate costs) on the other side of the retail delivery point, paying LMP to both the generation and load response behind-the-meter results in “double counting.” Mr. Yoshimura complains that a payment for 100 MW of LMP is being paid for “only 50 MW produced and delivered to the grid” (Yoshimura Testimony at 25) when, in fact, there is exactly 100 MW of activity with economic cost (50 MW of electricity production and 50 MW worth of lost economic
production) that is in fact “produced” and “delivered” into the New England electricity system viewed as a whole.  

See Illustration 5 below:

**Illustration 5**

C. ISO-NE’s “Double Payment” Argument is Simply Another Flavor of its LMP-G Rationale, Which has been Rejected by the Commission.

As described above, ISO-NE was a strong supporter of limiting compensation to demand response to LMP-G. The effect of its August 19 Filing is to

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18 The sub-meter introduced by Mr. Yoshimura in Figure 8 actually does allow ISO to “see” the separate activities. Whether the meter is located in front of the load as shown in the diagram, or in front of the generation as proposed in Mr. Yoshimura’s testimony, makes no difference. Either location coupled with measurement at the retail delivery point enables the ISO to “see” precisely any changes to load and generation.
reintroduce LMP-G for a set of demand response resources. This invidious
discrimination should not be countenanced.\textsuperscript{19}

ISO-NE claims that:

[I]f demand response were measured at a point other than the retail delivery point, the
danger of double-counting the amount used to balance supply and demand in real time is greatly enhanced. For example, if a sub-meter was placed on the
demand behind the retail delivery point and was used to measure and compensate the
customer for demand response, and the meter at the retail delivery point was
separately used to measure and compensate the customer for generation flowing
into the grid, a single 50 MW payment for generation that normally serves the
customer’s demand but is injected into the grid when demand is reduced, and a
50 MW payment for demand response, which created the injection of generation
into the grid. The placement of meters in this way could result in a total payment
of 100 MW multiplied by the LMP even though only 50 MW were produced and
delivered to the grid to balance supply and demand in real time.

Yoshimura Testimony at 25 (emphasis added).

A careful parsing of the ISO-NE’s own assertion, however, shows its
error. In fact: (1) there are two linked services being provided in the example set forth
above; and (2) the so-called “double payment” identified by Mr. Yoshimura in the
August 19 Filing is essentially the same compensation identified by ISO-NE as a
“double payment” in trying to make a case for LMP-G.

1. \textbf{There Are Two Linked Services Involved, Not Just a Single Action}

Based on ISO-NE’s decision to use the retail meter as the
demarcation for recognizing demand response, it recognizes only one action of the two

\textsuperscript{19} ISO-NE has, at various times, expressed concern about the particular opportunities for
“gaming” demand response payments that may be unique to demand response acting in
concert with behind the meter generation. The Maine Public Parties agree that accurate
and verifiable baseline information for load participating in the demand response markets
is essential. The metering proposed by ISO-NE, however, will provide ISO-NE with
exactly the same tools for examining the actions of load whether that load is coupled with
generation “behind” the retail meter or not. Thus those gaming opportunities, to the
extent they might have existed in the past, provide no justification at all for the
discrimination inherent in the August 19 Filing. \textit{See} Section IV.E., below.
linked services provided by behind-the-meter generation and demand response. Specifically, the August 19 Filing would recognize only the export of generation to the grid. There are, however, actually two actions, both of which have costs that allow for the export of behind-the-meter generation to the grid. The August 19 Filing requires that all of these costs be rolled into one bid. As demonstrated below, the August 19 Filing will eliminate or severely limit the participation of the combination of behind-the-meter demand response and generation.

Consider the case of a customer currently participating in the DALRP with behind-the-meter generation who wants to continue to offer demand response into the market under the August 19 Filing. This demand response provider must decide whether to shed load and forego production – losing revenues in the process. Then, to produce the net flows over the meter which ISO has defined to be its point of measurement, the customer must also burn fuel for generation. Both costs will need to be recovered through a single LMP payment so the minimum bid price must be the sum of the marginal cost of generation and the revenues foregone from lost production. Since the bid price will be higher than either the marginal cost of generation or the lost revenues alone, there are bound to be generation only and demand response only bids which will clear before it that are higher than the individual components of the combined bid forced by ISO New England’s proposed rule. Accordingly, the generation that is part of the combination will be less likely to be dispatched.\textsuperscript{20} Thus while ISO-NE would pay only for the generation export, \textit{the export would not likely occur, or will occur only in more limited circumstances, absent the demand response payment}.

\textsuperscript{20} See Appendix A.
2. ISO-NE’s Pricing Regime Has the Same Effect as LMP-G.

The failure to pay for both the generation “left on” and the load response at full LMP produces the same effect as restricting the payment to a demand response resource to LMP-G. The Commission rejected that limitation in Order No. 745, and it should do so here as well.

The following example demonstrates this point. Illustration 5 establishes the assumptions for the example:

Illustration 5

Assumptions:

- “Load” is an industrial plant producing widgets.
- “Gen” is a power plant. Gen’s cost is $60 MWh.
- Load sells its widgets at a price of $200 each, and it takes 1 MWh of electric energy to produce 1 widget.
- Load has costs other than electric energy of $100/widget

Illustration 6 shows the effects, for a “stand-alone” demand resource, of the application of full LMP and LMP-G:
Case 1A: Load is “stand-alone”

- Load takes electric energy at LMP (dynamic price)
  - If the price of electric energy to Load is $60/MWh, the net revenues from each widget sale = $40.
  - If Load reduces its consumption of electric energy, and thus reduces its widget production, it loses $40 for each MWh of reduction.
- As the cost of electric energy climbs, the net revenue goes down; at a price of $100/MWh, Load is financially indifferent to whether it manufactures widgets or shuts down.
- **Under Order No. 745 (full LMP payment), Load will bid $50 in this example:**
  - From an LMP of $0 to $50, Load’s net revenues will be between $100 and $50 if Load continues to make widgets.
  - For any LMP above $50, Load’s net revenues will be at least $50 (i.e. LMP); Load will have no revenues from selling widgets but will also have no costs.
  - Note that the bid is not a function of the cost of electricity to Load; it is a function of the net revenues available to Load with electricity costs assumed to be zero. A rational bidder would bid exactly ½ the per/MWh net revenues thus calculated (in this example ½ of $100).
- **Under LMP-G (rejected in Order No. 745):**
  - Load will not bid at all if LMP and G are equivalent, because the “G” offset will always capture the entire LMP payment. Load will simply stop producing at a price of $100. This is precisely the same effect as would be achieved through dynamic pricing. Order No. 745 recognizes, however, that there is a value to the system to having Load subject to dispatch instructions; this differentiates DR subject to dispatch from “uncontrolled” consumption behavior responding to dynamic pricing.
  - To the extent that G is “fixed,” for example by a contract between Load and Gen, Load will bid only where the LMP is high enough to cover the net revenues lost when production is stopped. If G is $60/MWh, Load will bid no less than $100: It will be paid LMP ($100) less G ($60), for revenues of $40, equivalent to what it would receive if it continued to use electric energy (at a cost of $60/MWh) and sell widgets (at a net revenue per widget of $100 comprising $200 in sales less $100 in non-electricity costs).
  - The effect of paying LMP-G instead of LMP to the DR resource is that there is a range of LMP prices (in this example between the DR bid of $50/MWh under Order No. 745 and the $100/MWh under LMP-G) where resources will be dispatched ahead of Load DR, thus reducing the LMP discipline brought by DR found to be important in Order No. 745.
For stand-alone generation, there is no difference between LMP and LMP-G. See Illustration 7, below:

**Illustration 7**

**Case 1B: Stand-alone Generator**

- Gen will bid $60/MWh and receive LMP if it clears.

Illustrations 6 and 7 show that under Order No. 745, Load bids $50/MWh and receives LMP if it clears. Under an LMP-G regime, on the other hand, Load will bid $100/MWh and receive LMP if it clears. In either case, generator would bid $60/MWh and receive LMP if it clears. If both Load and Generator clear, the total payment to both is 2 times LMP. Finally, the difference between Order No. 745 and LMP-G is that under LMP-G, there is a range of LMPs (between $50 and $100) where the demand response will not clear.

Illustration 8, below, shows the effects of the August 19 Filing on demand response with behind-the-meter generation:
Illustration 8

Case 2: Gen and Load combine “behind-the-meter” (“combo”)

- When producing widgets, the combo will have net revenues/MWh of $40 where the conditions outlined in Illustration 5 hold true: the combo will receive $200 in sales, offset by non-electricity costs of $100/MWh and electricity costs of $60/MWh.
- If the combo stops production and also stops generation, it will forego $40/MWh in net revenues ($160 in avoided costs but $200 in lost sales).
- If the combo stops production but continues to generate electricity, the combo foregoes $200 in sales, avoids $100 in “other” costs, but incurs $60 in costs to generate.
- The difference between continuing to consume as Load and generating to match that load behind the meter with generation, on the one hand, and reducing consumption and production by 1 MWh while continuing to run 1 MWh generation, on the other, is $100. This means that if the combo is paid only for the 1 MWh that shows up on the “retail meter,” as proposed in the August 19 Filing, the combo will bid no less than $100.
- Under the CDRI approach, where a DR bid of 1 MWh is made by a combo where there is a 1 MWh reduction in consumption by load and an accompanying (continued) 1MWh of electric energy production by the associated generator, the combo will bid $50/MWh, because the total compensation to the combo will be $100, sufficient to offset the foregone net revenues and the cost of generation.

This example shows that, under the CDRI approach, the resource that can export energy due to the load reduction can bid $50 and be paid a total of 2 times LMP if it clears. By contrast, under the August 19 Filing, the behind-the-meter generator has to recover the opportunity costs of the load reduction as well as the cost to generate in a single LMP payment, so it would have to bid $100 to cover its costs. Thus, the difference between paying full LMP to the demand response with behind-the-meter generation and the August 19 filing proposal is that in the latter case there is a range of LMPs ($50 to $100) where the combo demand response will not clear. In other words, the impact of the August 19 Filing on the provider of demand response with behind-the-meter generation
exactly replicates the effect on those providers of the LMP-G regime rejected by the Commission in Order No. 745.

D. The August 19 Filing Does Not Account for the Full LMP Benefits Provided by Demand Response with Behind-the-Meter Generation and is Therefore Discriminatory.

During the Stakeholder process leading to the August 19 Filing, both CDRI and the chairman of the MPUC presented calculations showing the beneficial (i.e. price discipline) effects of full LMP compensation for both the “left on” generation and the load reductions for demand resources with behind-the-meter generation. ISO-NE has not challenged these calculations, which are summarized below.

**Hypothetical system conditions:**

<table>
<thead>
<tr>
<th>ISO System Load</th>
<th>LMP</th>
<th>LMP w/ 50 MW new G</th>
</tr>
</thead>
<tbody>
<tr>
<td>2100</td>
<td>60</td>
<td>59</td>
</tr>
<tr>
<td>2050</td>
<td>59</td>
<td>58</td>
</tr>
<tr>
<td>2000</td>
<td>58</td>
<td>57</td>
</tr>
<tr>
<td>1950</td>
<td>57</td>
<td>56</td>
</tr>
<tr>
<td>1900</td>
<td>56</td>
<td>55</td>
</tr>
<tr>
<td>1850</td>
<td>55</td>
<td>54</td>
</tr>
</tbody>
</table>

**Day 1:**

No manufacturing plant, no new generator

Meter shows: (N/A: no meter)
ISO System Load: 2000
LMP: $58
Payments: N/A
Day 2:

Manufacturing plant added (“L”), constant production using 50 MW (i.e. “verifiable baseline”)

| Meter shows: | 50 load |
| ISO System load: | 2050 |
| LMP: | $59 (due to higher bid stack) |
| Payments: | L pays 50 x LMP |

If L bids 50 MW DR into the market and clears:

| Meter (L) shows: | 0 |
| ISO System load: | 2000 |
| LMP: | $58 (due to return to “original” bid stack) |
| Payments: | L pays 0 (avoided energy cost) |
| | Market pays L 50 x LMP (assuming net benefit test is met) |

Even though the change at the customer’s meter is only 50 MW, there are really two separate 50 MW payment impacts: One is a 50 x LMP payment that L does not make, and the other is a 50 x LMP payment to L. This is consistent with Order No. 745, which rejected the notion that it would be enough simply for L to benefit from avoiding the payment of the energy charges, or have the LMP payment offset by such savings.

The Commission’s view is justified by, among other things, the difference between simply reducing load (entirely at the discretion of the customer) and submitting to a dispatch regime as a Demand Resource.

If L bids 20 MW into the market and clears:

| Meter (L) shows: | 30 MW load |
| ISO System load: | 2030 |
| LMP: | Between $58 and $59 |
| Payments: | L pays 30 x LMP (avoids 20) |
| | Market pays L 20 x LMP (assuming net benefit test is met) |
Day 3

A new generator comes on line, with costs sufficiently low that it clears.

- Meter (G) shows: 50 MW Gen
- ISO System Load: 2050
- LMP: $58 (due to displacement of higher priced gen)
- Payments: 50 x LMP (whether or not L clears as DR)

The 50 x LMP payment to G is not “new money” from the market; if G were not running (in order to run it has to bid at or below the clearing price), there would be a 50 x LMP (and a higher LMP) payment to another generator.

Thus on Day 3, if L runs full production:

- L pays 50 x LMP for energy
- G is paid 50 x LMP for energy
- LMP is $58

On Day 3, if L clears 50 MW as DR:

- L pays nothing for energy (saves 50 x LMP)
- L is paid 50 x LMP for DR
- G is paid 50 x LMP for energy
- LMP is $57

On Day 3, if L clears 20 MW as DR:

- L pays 30 x LMP for energy (saves 20 x LMP)
- L is paid 20 x LMP for DR
- G is paid 50 x LMP for energy
- LMP is between $57 and $58

The net combined payments to L and G total 40 x LMP (of the 50 x LMP paid to G, 30 is offset by payments by L). Note also that, again, the payment to G is not “new” money required from the market; if G were not paid, another unit would be.
Day 4: L and G combine behind a single meter (as “C”). As part of the combination, they agree that, to the extent that L’s needs and G’s production match, neither will draw energy from, nor introduce energy into, the rest of the system. In effect, to the extent production in one matches load in the other, there is a “wash.”

On Day 4, if no DR bid is made, and both L and G are running at full production:

- Meter shows: 0
- ISO System Load: 2000
- LMP: $58
- Payments: 0 to or from C

On Day 4, if C bids 50 MW DR and clears:

- Meter shows: 50 MW Gen
- ISO System Load: 2000
- LMP: $57
- Payments: 50 x LMP to C for DR
- 50 x LMP to C for G

This is precisely the same result as Day 3, above, where G clears as price taker and L’s 50 MW DR bid clears. The August 19 Filing would pay only the 50 MW Gen, because that is all that shows up on the retail meter at its combined location.

On Day 4, if C bids 20 MW DR and clears (with generation running at 50):

- Meter shows: 20 MW Gen
- ISO System Load: 2000
- LMP: Between $57 and $58
- Payments: 20 x LMP to C for DR
- 20 x LMP to C for Gen (the other 30 is consumed by C)

This is precisely the same result as Day 3, above, where G clears as price taker and L’s 20 MW DR bid clears. The ISO theory would pay only the 20 MW Gen, because that is all that shows up on the retail meter at its combined location.

The example above shows that by limiting any payment to the demand response provider to LMP times the meter difference, actions behind-the-meter that have exactly
the same effect on LMP as actions outside the meter are compensated less. From the standpoint of benefits to other customers on the system, and from providing incentives to loads and generation to behave in a way that promotes market efficiency (i.e. running generation or providing demand response where it is economically rational to do so), there is absolutely no difference based on where the “retail meter” is placed. Therefore, failure to pay demand responders with behind-the-meter generation is not only inconsistent with the requirements of Order No. 745 but is discriminatory.


While ISO-NE did not submit testimony related to concerns about measurement and verification in trying to justify its treatment of behind-the-meter generation paired with demand response, its IMM had, in his comments to stakeholders opposing the payment of LMP to demand response with behind-the-meter generation, suggested that it is more difficult to establish a customer baseline from which to measure the demand reduction for customers with behind-the-meter generation:

Permitting behind-the-meter generation to qualify as demand reduction creates gaming opportunities. For example, behind-the-meter generation has been used by demand resources to artificially inflate customer baselines to obtain payments while not taking any action to reduce load. This is accomplished by turning off a distributed generator that normally operates when the baseline is being calculated and then turning the distributed generator back on and resuming normal operation of the distributed generator when demand reduction is being measured. The result is that the demand resource is paid for operating normally.

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21 IMM May 26 Memo at 2.
However, the IMM suggested a means to address such behavior:

If distributed generation is permitted to participate as a demand resource, the IMM has the following recommendations to minimize the likelihood of paying for non-genuine demand reductions and removing the inappropriate incentive to take advantage of Order No. 745 by moving generation behind the meter.

1. The baseline of demand resources that have distributed generators must reflect normal operation of the distributed generator. If a distributed generator is normally on, its baseline must reflect this. This statement should be made explicitly in the rules and be used in the formulation of the baseline methodology.

2. No generation currently in the wholesale market should be permitted to move behind the meter and participate as a demand resource.22

The Maine Public Parties support these two proposals. If adopted, they will address the “baseline” concerns regardless of where the “retail meter” is located.

V. CONCLUSION

A customer offering demand response into the market will only do so if the revenue gained is equal to or greater than what it would achieve by continuing to consume electricity and sell its product. The Commission correctly decided that to pay less than full LMP, and to deduct the electricity “savings” from the payment, does not award the customer the full economic value for its load reduction. In this regard, customers whose costs include electricity they produce are precisely the same as customers who choose to purchase their electricity from the grid. The August 19 Filing would deny those customers the benefit of full LMP – by, in effect, subtracting the compensation provided to the customer generation from the demand response payment, i.e., LMP-G – and thus is squarely at odds with Order No. 745.

22 Id. The IMM also proposed that only behind-the-meter generation in existence as of the date of the order should be permitted to receive compensation associated with demand reductions, on the theory that the prohibition is needed to prevent the displacement of efficient wholesale investment by less efficient behind-the-meter generation. As shown in Appendix A, this reasoning is flawed and the prohibition is unnecessary.
As shown in the examples above, paying LMP for both the load reduction and the
generation “left on” to customers bidding demand response that includes behind-the-
meter generation is exactly comparable – with respect to impact on LMP, bidding
behavior, and full LMP (rather than LMP-G) compensation – to demand response and
generation acting independently “outside the meter.” By contrast, the August 19 Filing
would create a class of demand response, namely demand response coupled with behind-
the-meter generation, where the treatment of that demand response is different from all
other demand response and is exactly the same as that proposed for demand response by
the proponents of LMP-G. In this respect, therefore, the August 19 Filing is
discriminatory and would frustrate rather than advance the objectives of Order No. 745.

For all of these reasons, the Commission should grant the MPUC protest and
direct ISO-NE to revise it compliance filing to provide full compensation to the demand
response resources with behind-the-meter generation as described herein.

Dated: September 9, 2011

Respectfully submitted,

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Public Advocate

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Utilities Commission
Appendix A

Demonstration that the CDRI proposal is not likely to result in a greater degree of “less economic resource clearing” in the energy market than the August 19 Filing approach to demand response with behind-the-meter generation.

The discussion below addresses the hypothetical concerns expressed by ISO-NE that the CDRI proposal might somehow permit less efficient generation resources to displace more efficient ones (because of the so-called “double payment”). As shown below, it is more likely that implementation of the approach in the August 19 filing will leave economic resources behind than it is that the CDRI proposal will somehow displace more efficient ones from the bid stack.

- Assume rational behavior by all bidders.
- Stand-alone generators will bid their marginal costs (MC).
- Stand-alone DR will bid their opportunity costs (OC), which, rationally, will factor in their avoided energy costs if they bid as DR.
- Under either the ISO or CDRI approaches, the minimum rational amount of compensation that a “combo” or package deal (i.e. DR comprising behind-the-meter load and generation) will require to act as DR while continuing to generate is the sum of its own generation MC plus its load OC times the MW of each resource.

Minimum Compensation Required = (MC_g * MW_g) + (OC_l * MW_l)

- Under the August 19 Filing the only way for a combo to participate is to recover its costs through payment of only a single MW quantity, the bid needs to be at least the sum of the combo gen MC and load OC. Otherwise, the combo loses money.

Minimum Bid Under August 19 Filing = (MC_g + OC_l)

- Under the August 19 Filing, the combo bid clears only when it displaces a DR or G resource in the bid stack whose cost is greater than the sum of the combo gen MC and load OC. Suppose the combo gen MC is 60 and the combo OC is 40. The bid would clear only when LMP exceeds 100. This means there will be some non-combo G or some non-combo DR running even though they are less economic than either the combo gen (60) or the combo DR (40). As a result, requiring the combo to bid this way will always create the likelihood of
a “less efficient” resource clearing the market. Here that means any resource priced between 60 and 100.

- Under the CDRI proposal, by contrast, since the combo does not bid the gen and load separately but receives payment for both, the rational combo will bid no less than \( \frac{1}{2} \) the sum of combo gen MC and combo load OC. If it clears, and receives payment for both the gen and the DR, it receives sufficient revenues to cover the combined cost.

\[
\text{Minimum Bid Under CDRI} = \frac{1}{2}(MC_g + OC_l)
\]

- It is theoretically possible here that the hypothetical concern of a “more efficient” generator or “more efficient DR” being displaced could occur. This could happen, for example, if combo gen MC and combo load OC are 60 and 40 respectively, as set out above. Under the CDRI proposal the combo bid would be 50; that bid would displace the bid of generator bidding at 55, even though the cost of that generator would be lower than the cost of the combo generator.

- If the above analysis holds true, the only “uneconomic” effect likely to follow from adopting the CDRI proposal is that in some instances bids from combo DR will clear and displace bids from stand-alone DR or G where the stand-alone DR opportunity costs or G costs are less than one (but not both) of the combo load OC or gen MC.

- On the other hand, if the August 19 Filing approach is adopted, it is certain that at least some generation or DR will clear that has higher MC or OC than the corresponding resources comprising the combo, also an economically inefficient result. In addition, if the August 19 Filing approach is adopted, there will be a range of LMPs where customers will pay more than they would if the CDRI proposal were adopted.

- If you assume (as is reasonable) that there are economically sound reasons for the combo arrangement (i.e. it may produce efficiencies, support economic activity, etc.), then it is reasonable to prefer to suffer the “uneconomic dispatch” effects of the CDRI proposal and gain the LMP benefits (lower consumer costs) than to suffer the “uneconomic dispatch” effects of the ISO proposal and lose the LMP benefits (resulting in higher consumer costs).
CERTIFICATE OF SERVICE

I hereby certify that I have this day served the foregoing document upon each person designated on the service list compiled by the Secretary in this proceeding either by U.S. Mail or electronic service, as appropriate. Dated at Hallowell, Maine, this 9th day of September, 2011.

/s/
Benjamin J. Smith
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   Public Utilities Commission
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