SPEER

The South-central Partnership for Energy Efficiency as a Resource

A Simplified Approach for Third-Party Management of Loads in the Real-Time Market

This paper describes a simplified, and therefore potentially practical, proposal for third-party Demand Response Providers (DRPs) to participate directly and constructively in the ERCOT Real-Time Market (RTM). It also provides a brief overview of the advantages and disadvantages of actively participating (being dispatchable by the ISO) in the RTM as a Load Resource. Stakeholders have already approved protocols by which load resources can participate in the RTM if facilitated by their retail electric provider (REP) or a non-competitive load serving entity (LSE), that is, a municipal utility or cooperative. Under this reform, referred to as "Loads in SCED version 1" (LIS v1), settlement occurs by virtue of a bid to buy energy, and the LSE is compensated at the RTM price of energy if its bid is accepted and the customer (single site or aggregation) reduces its load level, in accordance with its bid.

Why Would Loads Participate in the Real-Time Market?

In the competitive retail market, customers have many price plans to choose from. One of the options that some large customers choose is a plan in which retail rates are indexed to the prices in the ERCOT wholesale RTM. These customers can manage the risks associated with the RTM by monitoring prices and reducing consumption when prices are high or are expected to be high. This approach is sometimes referred to as passive load response. Under such a strategy, customers' expectations about prices may not always be realized because a customer may expect a high price at a particular time and reduce consumption based on this expectation, while the actual price for the time period is significantly lower than expected.

Advantages

Alternatively, the chief advantage of *actively* participating in the RTM is that the customer's price expectations can be realized. If the customer, through its LSE, makes a bid to buy at a particular price, ERCOT will dispatch the customer (direct the customer to reduce its load in accordance with the bid) only if the RTM settlement price reaches or exceeds the customer's bid. Thus, the customer avoids the risk associated with trying to predict market prices and the inefficiencies of curtailing when he predicts wrongly. If the customer's bid is struck and he is dispatched by ERCOT, he will be certain of getting his expected RTM price for his load response.

Disadvantages

There are also disadvantages of actively participating in the RTM. Rules for the RTM require resources to register with ERCOT, submit daily bids and operating plans, telemeter their status to ERCOT, and closely follow ERCOT's dispatch instructions, if they are dispatched. These requirements were, for the most part, designed with large power plants in mind, and complying with these rules can be challenging for load resources. While some large commercial customers participate as Load Resources in the ERCOT Responsive Reserve ancillary service market , it does not appear that any Load Resources actively participate in the RTM today.

Participation Through a LSE Under LIS v1

As mentioned above, under LIS v1, ERCOT has adopted rules for LSE's to aggregate small customers into a Load Resource that could participate in the RTM, but the complexity of the process, coupled with low RTM prices, has discouraged any participation. The existing ERCOT rules and settlement system allow a LSE to submit a "bid to buy" but not an "offer to sell" into the RTM.[1] Effectively, if a LSE's bid to buy is struck by ERCOT and the load performs in accordance with the bid, the LSE's settlement from ERCOT reflects a negative charge (payment) related to the successful

[1] ERCOT systems must treat a "Negawatt Offer" or a customers agreement to reduce consumption as a "Bid to Buy" back the electricity it would have consumed, versus an "Offer to Sell" electricity by a generator. So a bid to buy is effectively an offer to sell reduction in demand.

bid. The customer would receive no payment unless it enters into a shared savings or other compensation agreement with its own REP. Third parties that manage customers' load in demand-response services (DRPs) are not able to directly participate in this RTM opportunity because, by definition, they are not a registered LSE. Independent DRPs would, therefore, be unable to receive compensation, unless the customer has a sharing agreement with the REP, and agrees to share their savings with their DRP, a complex and inefficient series of contractual relationships. Independent DRP aggregators find this too complex to attract customer participation.

Participation Through a Third Party Under LIS v2

Some ERCOT stakeholders have been pursuing an alternative mechanism for direct participation of DRPs in the RTM for years. The attraction is that DRPs can offer to manage the entire demand response process for a customer or aggregation of customers, including the settlement process, and provide payments directly to customers. This type of product is simply easier to sell. In 2015, stakeholders identified a theoretically possible pathway for loads to participate in the RTM through a third-party DRP, known as "Loads in SCED version 2" (LIS v2). Under this approach, the DRP would represent the customer's load in the RTM through an offer to sell, in the same way that generation resources sell energy through offers. Part of this approach includes the necessity of creating a settlement mechanism for the DRP and affected REPs.

Aspects of this solution, however, would be overly complex and impractical[2]. In 2011, the ERCOT Technical Advisory Committee (TAC) approved a settlement concept based on paying third-party DRPs, at LMP – G[3] for participating in the RTM. However, knowing, and being able to use the actual "G" value (the retail energy rate) for every customer in every aggregation would be prohibitively complex. For this reason, TAC

[2] http://www.ercot.com/calendar/2015/10/29/31861-TAC. Click on "06. WMS Report" and see report titled "LOADS_IN_SCED…"

[3] Although the FERC approved DR compensation at Full LMP in 2011 (later upheld by the Supreme Court in 2015), TAC viewed this as a double payment (i.e. customer gets a lower energy bill due to DR curtailment and the REP (or DRP) is also compensated for the same curtailment). In endorsing "LMP-G", TAC was effectively removing the curtailment (G) from the customer's energy bill by administratively adding the load to the customer's LSE's load obligation.

later approved a modified approach, that would award Loads an amount equal to LMP – Proxy $G[4] per unit of load response (2015).

Under the LMP – Proxy $G approach, for an interval in which the load resource is dispatched, the amount of the average load response would be added back to the LSE's load obligation, but the LSE would be credited with a payment equal to Proxy $G times the amount of the load reduction. That is, the REP would see a load obligation as if the customer did not reduce its demand, but would be credited with an amount equal to Proxy $G times the amount of the load response, mimicking a retail payment for the usage by the customer. This would have to be done in order to keep the REP relatively neutral toward its customer's participation via a third-party, and avoid the REP being credited with the full LMP value of the load reduction stimulated by the customer's DRP. The participating load would, in the case of residential and small commercial customers, be settled at the QSE level, rather than the customer level, because, although it is possible to fairly estimate the behavior of large sets of customers, it is nearly impossible to accurately estimate load responses for individual small customers.

While these systems changes would themselves be somewhat complex, even given the simplifying compromises adopted, there proved to be additional challenges. Chief among them is that a registration system would have to be developed for ERCOT to track customer relationships with DRPs and a process would need to be created for DRPs and REPs to settle disputes about which party was authorized to represent the customer load for purposes of participation in SCED. This creates the need for a system for DRPs to notify ERCOT of the customers in a load aggregation, and for ERCOT to notify the REP of which of its customers was participating in a load resource represented by a third-party DRP. In fact, current market systems would have to be altered to allow a single customer to designate a separate REP and DRP for energy settlement purposes, so that the settlement process described above could be facilitated. Creating, testing, and operating such a system would be expensive for ERCOT, REPs, and DRPs, particularly if it was determined that changes to Texas SET (Standard Electronic Transactions) would be required to allow such designation of a

[4] Proxy $G was defined as equal to the energy portion of the Provider of Last Resort rate (which is approximately the average LMP in the past month, plus 20%).

DRP of Record for each customer. Adding the DRP-initiated load reduction back to a REP's load responsibility may also be problematic for REPs, if they sought to bill customers for energy they don't actually use. ERCOT and/or stakeholders might have to seek Commission approval of this feature of LMP – Proxy $G.[5]

LIS v2 - Simplified

Under our simplified proposal, a third-party DRP would be paid LMP – Proxy $G, in line with the direction of TAC. There would, however, be no load added back to the obligation of a REP whose customers participate as a load resource through a third-party DRP. Instead, to avoid the cost and complexity discussed above, the costs of the load deployment would be charged to all loads on a load-ratio basis. This approach makes sense based on the assumption that the incremental participation of dispatchable DR will lead to a net benefit for all customers because load participation in SCED would increase efficiency in the wholesale market, via load contribution to price formation, and also contribute to grid reliability by reducing load in high-load/high-price events. As a component of this proposal, it would be appropriate for ERCOT to track the actual net effect on RTM prices to assure this outcome is achieved, and provide transparency to the market of the impacts of price-sensitive load participating in the RTM.[6]

This approach has the following advantages:

- Registration system changes should be less costly to implement, because the communication of customers' membership in a load resource would be simply from DRP to ERCOT, rather than from DRP to ERCOT and from ERCOT to LSE. No new Texas SET or other DRP designation and dispute system would need to be created.

[5] One of the customer safeguards in PURA 39.101 is accuracy of metering and billing.
[6] It would be possible to follow FERC's lead and require that each participation of load be judged and accepted only based on a "net benefits" test, but this would again be very expensive to implement, whereas we recommend monitoring and adjusting more broadly going forward if cause for doing so arises.

- Settlement system changes would be less extensive, and presumably less costly.
- It would avoid the complexities of the REP potentially charging customers for energy they don't use and any associated PUCT rule impacts.

REPs and other LSEs already have the ability to participate in the RTM through Loads in SCED version 1, and receive appropriate compensation. Under the proposed model for implementing LMP - G, LSEs would not be able to aggregate their customers into a load resource and participate in the RTM because they would be generating double compensation.

Double Compensation

One issue that arises under this simplified approach is how to address the fact that the settlement of the load resource in the RTM could provide a benefit to a customer who is already being compensated to modify their consumption pattern. For example, a customer that has pricing incentives to reduce consumption at times of high prices, such as a retail rate that is indexed to real-time wholesale market rates or other rates that emulate an RTM rate, is already receiving some benefit for its load management. For large customers, this approach also creates the possibility of double compensation for the customer - once through the payment for the load response, and again through the reduced retail load expense. Possible approaches to address this issue include:

- Limiting the approach to customers that are not on a retail rate that is indexed to real-time wholesale market rates, or on another rate or LSE sponsored program that emulates a RTM rate, such as a peak-time rebate rate/program.
- Limiting the approach to aggregations of residential and small commercial customers, on the basis that most of them are on fixed rates.

Even under this simplified approach, there will surely be learning to take place by all involved, and the process will continue to evolve.

Therefore, we recommend that ERCOT use its ability to pilot projects to allow a fixed amount of customer loads to participate for a period of time, to help evaluate the proposed simplified approach, and make further adjustments.

Conclusion

In summary, we propose a limited pilot program to enable third party DRP participation in the real-time energy market. The program would be open to aggregations of small and medium-sized loads and would enable *economic* dispatch by the ISO in a manner that contributes directly to price formation. Customers today are exercising greater control of their energy usage but the value is unrecognized by the energy market. As demand patterns continue to change, through time-based retail products (i.e., free nights/weekends), smart thermostats, 4CP response, utility load management programs and behind-the-meter DG and storage, it is increasingly important to enable ways for these resources to contribute to price formation in ERCOT's energy-only market.