

LOADS IN SCED Version 2 and a Proposal for the Implementation of LMP Minus G

*Prepared by the Loads in SCEDv2 Subgroup
of the ERCOT Demand Side Working Group*

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Background

The efforts to develop and implement a workable settlement approach to allow third-party demand response providers to participate in the real-time market have been under way for several years. These efforts are based on the following factors:

- State law calls for ERCOT to permit demand response to participate in energy markets.
- There is a significant potential resource in residential and commercial air conditioning load.
- REP and third-party demand response providers have sought broader market opportunities.
- Third-party DR providers could bring their focus and expertise, and could invest in DR equipment at customers' premises that would remain viable even if the customer changes retail providers.

In 2011, the Technical Advisory Committee voted to endorse "LMP-G" rather than "Full LMP" as the settlement mechanism for direct participation in the real-time market by demand response providers. As presented at TAC, LMP-G was based on the principle that a customer should not get the benefit of the curtailment twice--*i.e.*, an LMP payment plus avoiding the cost of energy. TAC endorsed "volumetric" LMP-G (LMP-VG), which requires assignment of the estimated curtailed load (in MWH) back to specific customers. Through significant discussion and presentations from stakeholders, the LRISv2 Subgroup has determined (and consensus was reached at DSWG) that customer-specific curtailment cannot be estimated for the vast majority of customers, including all residential customers, with a sufficient level of accuracy.

Customer Aggregations for Residential and Small Commercial Customers

Residential and some non-residential customers must be aggregated to allow for accurate construction of a consumption baseline and estimation of the curtailment quantity. To do so, a minimum size of an aggregation will need to be defined. Some mid-to-large commercial/industrial customers may have their site-level curtailment quantity estimated with sufficient accuracy. However, residential customers account for over 50% of the ERCOT peak, and therefore represent the greatest untapped market segment potential for price responsive load. LRISv2 Subgroup recommends that customers or aggregations for which an accurate baseline may be estimated qualify for real-time energy settlement based on LMP-Proxy \$G. This method is based on estimating and settling the curtailment quantity at the level at which it can be done accurately, which for residential and small commercial customers is at the aggregation level. Both the volumetric G method and the Proxy \$G method would assign load back to the retail provider.

What is LMP-Proxy \$G?

Under LMP-Proxy \$G, if a DR provider reduces the consumption of a customer aggregation that it controls so as to be settled in the real-time market, the load reduction results in ERCOT settlement actions with respect to both the DR provider for the aggregation and the retail provider of the customer in the aggregation:

- ERCOT makes a payment to the DR provider at the rate of LMP-Proxy \$G times the amount of the load reduction.
- ERCOT assigns the amount of the load reduction to the retail provider whose customers experienced the load reduction and credits the retail provider at the rate of Proxy \$G times the amount of the load reduction.¹
- This approach eliminates double recovery at the wholesale level, but it does not prevent double recovery at a specific customer level, because of the inability to estimate load reductions for individual customers.

One of the economic objections to compensating demand response at Full LMP is that it represents a double payment: the demand response provider gets paid the LMP for reducing load, and retail provider (and the customer, depending on the contract) gets the benefit of not having to pay for the load at the LMP. Another objection is that the DR provider or customer should not get paid for something he does not own. Finally, ERCOT would be creating a deficit transaction by paying for demand response, without collecting the cost of the DR through a mechanism such as LMP-G. Normally, the sum of generation payments and load obligations match, but if a DR provider were paid to curtail load, there would be a mismatch between load and generation. The net amount paid to DR providers would become an uplift that must be allocated on some basis.

LMP-Proxy \$G addresses these objections: (1) it avoids the double payment issue by adding the load reduction back to the retail provider's wholesale settlement; (2) the DR provider effectively pays the retail provider the Proxy \$G rate for the load reduction; and (3) the revenue from the load that is added to the retail provider's settlement obviates the need for an uplift.

Conceptually, Proxy \$G is a proxy for a non-indexed "purchase price" or "contract price" that retail customers pay for their energy. Setting the Proxy \$G at an appropriate level is important. If the Proxy \$G rate is set too high, the amount paid to the DR provider (LMP-G) might be too little to compensate the DR provider for its operating costs and the customer for foregoing the consumption of electricity. If the Proxy \$G is set too low, it will be inadequate compensation to the retail provider for the lost opportunity to serve the customer.

Proxy \$G should also be an amount that is administratively workable and one that is not determined by market participants. Direct ties to prices in the wholesale market were rejected because they would need to be re-determined frequently. The LRISv2 Subgroup

¹ A hypothetical DR load reduction and the resulting settlement is shown in an attachment.

recommends that Proxy \$G should be set using the ERCOT-wide average PUCT-approved POLR rates for each rate class. For most customers on fixed prices, the POLR rate should be well above the energy price that the customer is paying for the energy, providing affected retail providers ample compensation for the load responsibility allocated to them. At the same time, the expected price range in which DR providers might activate a load response are well above this Proxy \$G, so customers and DR providers would be adequately compensated.

Consensus Principles

Developing a settlement approach was an important task of the LRISv2 subgroup and DSWG, but they also developed a number of consensus principles related to the economics of DR participation in the real-time market:

- Loads should be permitted to actively participate in real-time market.
- Loads participating in real-time market would contribute to wholesale price formation.
- Loads should not receive financial benefit more than once for providing demand response.
- The existing ORDC and Loads in SCED “bid to buy” market structures should be preserved.

These groups also recognized that there are other issues that needed to be resolved through the stakeholder process before such participation in the energy market can become a reality.

Customer and Retail Provider Concerns

The LRISv2 subgroup and DSWG recognized that implementing LMP-G would impact customers and retail providers, and developed the following principles relating to customers and retail providers:

- The customer has the right to select or change a DR provider, which could be a third party or a retail provider, or cancel participation with a DR provider.
- A retail provider would be notified if its customer agrees to have his load response managed by a DR provider.
- Rules should be developed that preclude DR-blocker strategies by retail providers and slamming strategies by DR providers.
- Rules should ensure an adequate transition period for retail providers to manage their existing customer relationships.

- Customer engagement and protection rules will be needed, so that retail providers and DR providers compete on equitable terms, and customers have appropriate protections and recourse in place.
- Rules should specify how a customer's electric service rate may change when they sign up with a DR provide and the customer is already on a DR rate with the retail provider.

Because these issues affect residential and small commercial customers and their retail contracts, they are likely to be of interest to the Public Utility Commission. Some are beyond the purview of the ERCOT stakeholder process. The Commission may want to adopt rules in these areas or at least ascertain that the rules adopted through the stakeholder process adequately address them. The transition period is one that is particularly likely to need to be addressed by the Commission. For this period, rules should define a retail provider's rights with respect to a customer's legacy rate plan when customer selects a DR provider, if the current rate plan includes an incentive tied to DR capability. In general, the Commission's rules require retail providers to honor their contracts with customers. It will probably require a Commission rule to allow a retail provider to move a customer to a different rate plan if the customer is on a DR-related rate plan and then selects a DR provider to represent its load in the ERCOT energy market. Beyond the question of PUC areas of interest, the Commission may be concerned that it does not have sufficient authority in this area, for example, authority to adjudicate disputes involving customers, retail providers, and DR providers.

Implementation Mechanisms

The LRISv2 subgroup and DSWG also recognized that LMP-G would require certain implementation measures to facilitate this settlement approach; they developed the following concepts as needed measures to implement LMP-G:

- A new concept of demand response provider of record (DR-POR), patterned on the REP of record, in which ERCOT would maintain a system to record and update the customer-DR-POR relationships.
- A system to notify ERCOT and the current REP or DR provider of customer enrollment in a DR program and other key events, such as a switch of DR providers or a customer's termination of an enrollment.
- A system to resolve competing claims to be customer's DR-POR.

The systems to track customers' enrollment with a DR-POR, provide notifications, and resolve conflicts are essential to the smooth operation of a system for DR participation in the energy market. In particular, retail providers serving customers on DR-related rate plans need to be notified that a customer has selected another DR provider, and that the retail provider will no longer get the benefits of the DR aspects of the plan. There was a concern that the cost of the systems would be expensive, particularly if Texas SET were

used as the notification system. In the October LRISv2 subgroup meeting, however, ERCOT staff proposed that notifications be made using NAESB communications standards and the use of a web-based system for resolving disputed claims to customers that would be similar to MarkeTrak. While these proposals appear to be promising lower-cost solutions, additional discussion will be required.

PUC Areas of Concern

There are aspects of an LMP-G settlement approach that are likely to be of concern to the Public Utility Commission. Key issues are highlighted below:

- Can retail providers recover the cost of load assigned to them under an LMP-G settlement? Commission rules for residential and small commercial customer require retail providers to bill on the basis of correct meter readings, so a retail provider would probably not be able to add kilowatt-hours to the bill when ERCOT adds them to the retail providers' QSE's settlement. However, the PUC rules give retailers broad latitude in designing their rates, and they could probably include charges for ERCOT costs or simply charge a higher rate for the risk associated with serving customers in a DR program. Retail providers will presumably want to have a clear determination on this issue from the Commission.
- Can retail providers with a customer on a DR-related rate switch the customer to a different rate if the customer chooses a different DR provider? For example, if a retail provider has customers on a market-based pricing plan, and its hedging strategy depends on some level of customer response to its notifications that high prices are imminent, can it switch the customer to a different plan if the customer chooses another DR provider. Ultimately, this appears to be a contractual issue, but retail providers would presumably not have a term in their contracts today to give them the latitude to switch customers to a different rate plan. For these reasons, the retail providers have expressed that the Commission should adopt a transition period in which they would be able to move a customer to a different rate plan in these circumstances.
- Other areas that are appropriate for the Commission to address are the customer's right to choose to participate in a DR program or not and choose a DR provider and customer engagement and protection rules to ensure that DR providers and retail provider compete on equitable terms.
- Areas that the Commission will likely want to be certain that ERCOT has provided for (and may want to address in a rule) include a process for notifying retail providers that a customer has chosen a DR provider and a system for resolving competing claims to customers.

Participation in SCED and Performance Requirements

The adoption of an LMP-G settlement approach would be a major step in permitting third-party DR providers to represent loads in the energy market. Two different approaches to such participation have been discussed at subgroup meetings. The first would have DR

providers participate in SCED, which would involve registering as resources, submitting bids, responding to ERCOT base-point instructions, and having their performance measured for compliance with the instructions. Under this approach, the performance standards for DR resources might be less stringent than those that apply to most generation resources, recognizing that most load resources, while able to respond to instructions to reduce their load, may not be able to follow a series of base-point instructions every five minutes. Luminant made a proposal for relaxed performance standards in connection with the adoption of NPRR 555, and this proposal has been discussed in the subgroup. The second approach would have DR resources participate in the energy market without being required to follow base points. Registration as DR resources and notice to ERCOT of a planned deployment would be required. These issues need further discussion in DSWG and the subgroup.

NOIE Areas

In order for a DR provider to operate in a NOIE area, it would need to obtain the NOIE's permission.

Other Issues

There are other issues that have been raised that will need to be discussed further at DSWG and the subgroup to fully flesh out a proposal for DR to participate in the real-time energy market. Key issues are highlighted below:

- What is the appropriate size and configuration of an aggregation that ERCOT can accurately estimate load reductions for? What are the characteristics of an individual customer that ERCOT can accurately estimate load reductions for?
- How should snap-back be addressed? For air-conditioning load, if a load reduction is made pursuant to a DR deployment in a period of high prices, the aggregated load of the customers in the DR resource will be below normal or baseline consumption during the event. After the event, the aggregated load will be above the normal customer baseline, as the AC systems restore the inside temperatures to the customers' preferred temperatures. The higher consumption during this period is referred to as snap-back. It poses potential problems for the retail providers in hedging during the period following the deployment. The subgroup has recognized the need for more discussion on methods to minimize the snap-back risk to retail providers.

Attachment: LMP-Proxy \$G Settlement

Assume

- A DR provider's load reduction is 1 mw
- Settlement Point Price is \$1000; Proxy \$G is \$150

Outcomes

- ERCOT payment to DR provider = $LMP - \$ProxyG = \$1000 - \$150 = \850
- Load added to LSE's QSE is 1 mw; ERCOT payment to LSE's QSE is \$150
- Short load QSEs pay ERCOT \$1000
- ERCOT payments and obligations balance
 - ERCOT pays \$850 to DR and \$150 to LSE's QSE
 - DR is meeting resource shortfall of 1 MW at value of \$1000
 - Short load QSEs pay ERCOT, in aggregate, \$1000
- Impact on LSE with customers in DR aggregation
 - If LSE is 1 mw short of resources, LSE QSE's net charge = \$850
 - If LSE's adjusted obligation in RT (after the DR load is added back) is fully covered, ERCOT does not charge LSE's QSE for the load; LSE QSE's net charge = - \$150
 - In either case above, the LSE is better (or worse) off by Proxy \$G - retail rate, compared to the situation with no DR provider