

Memorandum

To: ISO Board of Governors

From: Steve Berberich, Vice President of Technology and Corporate Services and
Chief Financial Officer

Date: September 2, 2009

Re: **Decision on Proxy Demand Resource**

This memorandum requires Board action

EXECUTIVE SUMMARY

To further the goal of increased demand response in its wholesale markets and to respond to stakeholders' request for a product that will facilitate the participation of existing retail demand response programs in the ISO wholesale energy and ancillary services markets, California Independent System Operator Corporation (ISO) Management proposes a new demand response product, the *proxy demand resource*. Initially, this new product will capture approximately 500 megawatts of demand response capability and bring it into the ISO wholesale markets. It will also allow demand response aggregators to submit demand response bids on behalf of retail customers directly into the ISO markets. This enhancement should result in increased market efficiency and improved grid operations.

Management recommends this enhancement in order to:

- Remove existing barriers to participation for demand response resources;
- Integrate retail price responsive demand response programs into the ISO markets;
- Meet Federal Energy Regulatory Commission regulatory mandates to enable the comparable treatment of demand response resources in the organized wholesale electricity markets; and
- Implement the proxy demand resource product by summer 2010.

Along with the existing participating load product, proxy demand resources add to the demand response capability available to market participants. Management's proposal addresses shortcomings in the existing participating load program that inhibit the flexibility needed to incorporate price responsive retail demand response programs into the ISO markets. The proxy demand resource also

addresses stakeholder comments about a number of barriers to participation in the ISO markets for a significant portion of the existing demand response capability in California.

Implementation of proxy demand resource will:

- Allow a demand response retail aggregator to bid demand response directly into the ISO energy and ancillary service markets and to participate separately from the load serving entity as required by FERC *Order 719*;
- Allow retail demand response programs that are imbedded as part of the investor-owned utility's load to participate in the ISO markets through a market bid rather than through the current manual process; and
- Simplify forecasting and scheduling requirements for load serving entities to facilitate end-use customer participation.

Moved, that the ISO Board of Governors approves the proposed proxy demand resource product, as described in the memorandum dated September 2, 2009; and

That the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement this proposal.

BACKGROUND

Currently, the ISO is unable to tap the full spectrum of potential demand response resources available in California in a fully effective and efficient manner. Today, pump storage facilities can participate in the ISO energy markets and non-spinning reserve market through the ISO participating load program. However, the ISO has no access to a large portion of the existing demand response capability in California that is part of retail demand response programs managed by the three investor-owned utilities. Currently, these programs can only be triggered by the investor-owned utility based on a number of conditions such as price, ISO load forecast and temperature forecast.

Existing demand response programs managed by the three investor-owned utilities provide valuable demand response, but are not compatible with the current ISO participating load model. In 2007, as an incremental step, the ISO implemented a manual process for the investor-owned utilities to report to the ISO when their demand response programs were triggered. Under the new market design, this information is used by the ISO to adjust the procurement target for residual unit commitment (RUC) in the day-ahead market and the forecast for real-time energy procurement to account for the expected demand response. The proposed new product will integrate demand response programs into the ISO markets through market bids submitted to the day-ahead and real-time energy and ancillary services markets.

In addition, FERC *Order 719*, issued in October 2008, requires all independent systems operators to permit a demand response aggregator to bid demand response on behalf of retail customers directly

into the organized energy markets. The proxy demand resource proposal will meet this requirement by allowing a demand response aggregator to submit bids to curtail the load of customers separately from the load serving entities' bids to procure energy to serve those customers' load.

MANAGEMENT CRITERIA FOR DEVELOPMENT OF PROPOSAL

Management defined seven criteria to shape the proposal for proxy demand resource in order to:

1. *Enable demand response to compete directly with supply side resources.* Demand response should be reflected in the ISO day-ahead and real-time market optimization and prices.
2. *Solidify a clear set of rules for bidding and settlement.* Proposal should define settlement for all parties involved in demand response transactions at the ISO level.
3. *Allow direct access customers to participate in proxy demand resource.* Rules defined in proposal should not prohibit customers currently under direct access from participating in third party demand response aggregator or investor-owned utility demand response programs.
4. *Meet regulatory requirements.* Proposal should meet requirements in FERC Order 719 to allow a load serving entity and a demand response aggregator to participate in the ISO markets as a single entity or two separate entities.
5. *Motivate demand response resources in high priced areas.* Prices should encourage demand response to locate where it is needed most, i.e., in high price areas.
6. *Eliminate potential for double payments by ISO.* The ISO cannot pay both the load serving entity when metered demand is reduced due to demand response and the demand response aggregator for executing the load curtailment.
7. *Minimize cost shifting.* Rules should enable cost effective demand response rather than provide opportunities for payment without commensurate performance or other forms of cost shifting

STAKEHOLDER PROCESS

Development of initial proposal

Through summer 2008, the ISO held a series of demand response technical design sessions to develop a market-based demand response product. Following these sessions, Management determined that the ISO participating load program did not provide the flexibility needed to integrate retail demand response programs managed by the investor-owned utilities into the ISO wholesale energy and ancillary services markets. In particular, the forecasting requirements for scheduling load are extremely difficult, particularly for demand response programs whose customer enrollments change from month to month. Also, stakeholders expressed concern that direct access customers whose load

is served by a different entity from the investor-owned utility could also participate in investor-owned utilities' demand response programs, further complicating forecasting requirements.

In response to stakeholders input, Management developed a proxy demand resource proposal. In order to simplify forecasting and scheduling, Management proposed that the load serving entities' load continue to be forecasted and scheduled or bid-in at the default load aggregation point (default LAP). Management further proposed that the demand response aggregator bid the demand response portion of the load into the ISO markets at a custom LAP as a defined proxy demand resource. The load serving entity and the demand response aggregator could be the same entity or two separate entities.

LECG (a market consulting firm) identified concerns in its February 2005 report *Comments on the California ISO MRTU LMP Market Design*¹ in the case where demand response dispatches are not settled at the same location as the underlying demand schedules. In order to avoid these concerns, Management proposed settling both the demand response and the forecasted load of the load serving entity at the default LAP price. Management also proposed the load serving entity receive credit at the day-ahead price for the amount of demand response that cleared the day-ahead market.

Stakeholders including Southern California Edison, Pacific Gas and Electric, Alliance for Retail Energy Markets (AREM), Energy Users Forum (EUF) expressed a number of concerns with the original proposal. They commented that settling the demand response portion of the load at the default LAP while dispatching the demand response at the custom LAP would discourage demand response participation in high price locations where it is needed the most. They were also concerned that demand response was not measurable and reportable since day-ahead demand response was settled as an adjustment to the load serving entities' day-ahead schedule while real-time demand response performance was settled as uninstructed deviation rather than by using a defined baseline to determine performance.

Development of Straw Proposal

From February 2009 through July 2009, Management worked with stakeholders through an interactive working group process to refine the proposal for proxy demand resource and addressed issues raised with the initial proposal. The ISO and stakeholders considered three different options, determined the positive and negative aspects of each option and discussed LECG's concerns and settlement impacts.

In March 2009, Management published a straw proposal developed jointly with stakeholders through the working group process. Based on stakeholder input, the proposal contained a number of changes. One significant change was to settle the demand response directly with the demand response aggregator at the custom-LAP price. To avoid double payment for the demand response, the day-ahead load of the load serving entity would be adjusted to account for demand response that cleared the market to calculate uninstructed imbalance energy. Another significant change was that the ISO

¹ Comments on the California ISO MRTU LMP Market Design", which is Attachment C to the ISO's May 13, 2005 amendments to its MRTU comprehensive design as filed with FERC is available at: <http://www.caiso.com/docs/2005/05/13/2005051314175518804.pdf>.

will determine actual delivery of the demand response using a pre-determined baseline. Verified performance against baseline would determine the energy settlement with the demand response aggregator at the custom LAP. A majority of stakeholders submitted comments that indicated their support for the straw proposal.

In March 2009, Management and stakeholders met with the Market Surveillance Committee to seek their input on LECG's concerns as they relate to proxy demand resource. The Market Surveillance Committee opinion, which also raises concerns, is *Attachment A* to this memo. The opinion raised concerns regarding the use of historical baselines and the potential for demand response aggregators to be paid for demand response without providing any actual reduction in power. The opinion recommended the ISO avoid the use of historical baselines to determine demand response performance and instead require the demand response aggregator to purchase their baseline in the preceding market and this baseline would be compared to meter reads in real-time to determine performance.

The ISO considered the MSC opinion and, while it has some merit, we identified number of problems with the MSC approach that make it infeasible to implement at this time.

Those issues are:

- Earnings would depend more on whether real-time prices are higher or lower than day-ahead prices than on the performance of the demand response resource. This provides incentive to game the difference between the day-ahead and real-time price without providing any physical demand reduction;
- Possible conflicts with existing rules around direct access; and
- Limited incentive for customers to provide demand response due to existing retail rate design^[1].

Management views the proposal described in the MSC opinion as similar to the ISO existing participating load program with the difference being that the MSC proposal accommodates the demand response aggregator as a separate entity from the load serving entity. Management plans to consider the MSC proposal as a variation to participating load. Stakeholders clearly communicated to the ISO that the participating load program created barriers to entry for demand response for the reasons described in prior sections of this memo. Management believes there is a need for proxy demand resource as designed, as a means to integrate retail demand response programs into the ISO markets. As discussed below, Management is pursuing robust verification measures to address both LECG's and MSC's concerns associated with that issue.

Final Proposal

In July 2009, following consultations with participants and refinement of the initial and straw proposals, Management issued a draft final proposal featuring the following product design attributes:

- A demand response aggregator may participate in the ISO markets separately from the load serving entity;
- The load serving entity must approve the registration of a new proxy demand resource requested by a demand response aggregator;
- Proxy demand resource is eligible to participate in the day-ahead energy market, 5-minute real-time energy market and ancillary services market to provide non-spinning reserve;
- Bids to curtail load, defined as proxy demand resources, are bid and settled at a custom-LAP and settlement occurs directly between the ISO and the demand response aggregator;
- The load serving entity continues to forecast and schedule their total load at the default-LAP;
- Performance of the proxy demand resource is determined through a pre-determined baseline calculation using the last 10 non event days with a look back window of 45 days and a bi-directional morning adjustment capped at 20%;
- The ISO will adjust the settlement of the load serving entity based on the measured performance of the proxy demand resource to ensure there is no double payment for the demand response; and
- Demand response performance will be monitored by the ISO through a robust measurement and verification plan to ensure that demand response paid for was actually provided to the market.

Other independent system operators have had measurement and verification processes to monitor demand response performance in place for some time. Management will benchmark with the other independent system operators and develop a plan for measurement and verification prior to the target implementation date spring 2010. Management is estimating that three to four additional staff resources will be needed to administer the proxy demand resource product.

Generally, stakeholders expressed support for the final proposal. Remaining[12] stakeholder concerns were centered on conditions of registration of proxy demand resources and the monitoring and verification of demand response performance. Some stakeholders believe that the ISO should set as a precondition of registration that certain commercial agreements are in place between the load serving entity, end-use customer and demand response aggregator. Stakeholders also commented that load serving entities should not have the ability to reject the registration of proxy demand resources while others commented that the load serving entity should have the ability to reject a registration for any reason. Some stakeholders raised concerns about Management's proposed plan to monitor demand response performance and believe that minimum bid prices and revenue caps should be in place when proxy demand resource is implemented. Other stakeholders support Management's proposal to perform measurement and verification rather than imposing design limitations that may be unwarranted that may create barriers for demand response to enter the wholesale markets.

After careful consideration of stakeholder comments Management feels comfortable proceeding with the proposal. The majority of stakeholder agreed that settlements beyond what occurs between the ISO and the demand response aggregator should take place outside of the ISO settlement process. Therefore the ISO will not ensure the existence of commercial agreements or terms of settlements that occur outside of the ISO as a precondition of the registration process. In addition, since the load serving entity pays for power it did not consume in the day-ahead market as a result of the

performance of proxy demand resource, the ISO believes that the load serving entity should have the ability to approve the registration of a proxy demand resource that contains its customers. Lastly, Management will develop a measurement and verification plan to address demand response performance and believe this will address stakeholder concerns. Additional limitations may be placed on proxy demand resources in the future if it is determined to be necessary based on market analysis and participant behavior.

Stakeholder comments and concerns are summarized in a stakeholder matrix which is *Attachment B* to this memo.

MANAGEMENT RECOMMENDATION

Management recommends that the Board approve the proxy demand resource proposal as described in this final proposal section of this memo with an implementation target of spring 2010. The implementation of proxy demand resource will integrate price responsive retail demand response programs into the ISO markets allowing the ISO to incorporate additional demand resources into the reliable operation of California's electric system.