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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking Regarding Policies and Protocols for Demand Response Load Impact Estimates, Cost-Effectiveness Methodologies, Megawatt Goals and Alignment with California Independent System Operator Market Design Protocols.

Rulemaking 07-01-041
(Filed January 25, 2007)

**ASSIGNED COMMISSIONER'S AND ADMINISTRATIVE LAW JUDGE'S
RULING REVISING PHASE 2 ACTIVITIES AND SCHEDULE**

On January 25, 2007, the California Public Utilities Commission opened Rulemaking (R.) 07-01-041 to address several specific issues related to the Commission's efforts to develop effective demand response (DR) for California's investor-owned utilities (IOUs). The Scoping Memo and Ruling setting the scope and procedural schedule for this proceeding was issued on April 18, 2007.

That Ruling described a second phase of this proceeding focused on setting goals for DR for 2008 and beyond and provided a tentative schedule for the second phase. As explained in the Scoping Memo, the second phase will focus on development of measurable goals that encourage types of DR activities that are consistent with state policy. This ruling modifies the existing activities and schedule for Phase 2 provided in the Scoping Memo. The revised Phase 2 process begins with the issuance of this ruling and the accompanying Energy Division report containing Energy Division staff's proposed goals and milestones for goal attainment (the attachment to this ruling). The record will be built

through opportunities for party comments and reply comments on the attached staff proposal.

1. Scope of Phase 2

As discussed in the April 18th scoping memo, Phase 2 of this proceeding will focus on the development of measurable goals to be met by DR activities in California. Previously, the Commission issued D.03-06-032, which set quantitative goals for load savings (in Megawatts or as a percentage of peak load) from price responsive DR programs for 2003-2007. The scoping memo recommended that the 2007 goal may be continued for 2008, in order to focus this phase of the proceeding on goals for 2009 and beyond; that recommendation will be addressed in a future proposed decision. The scope for Phase 2 of this proceeding, described in the original scoping memo, remains unchanged:

“[the] development of measurable goals that encourage types of DR activities that are consistent with state policy, and [development of] rules for the attainment of these goals, including the determination of what sorts of activities contribute towards those goals. ...

“The goals developed in this proceeding need not take the same form as the goals previously adopted for 2003-2007, which addressed the reduction of annual peak load (in megawatts or as a percent of peak) from non-interruptible DR activities. Similarly, the determination of what DR activities count towards the goals may differ from those used in the past, and may or may not be the same as used for resource adequacy. In developing these goals, the Commission will consider the CAISO’s need for accurate information on the amount and conditions for availability of DR in order to incorporate DR into its market design, forecasting, and procurement.

2. Revised Process and Schedule for Adopting Demand Response Goals

The April 18, 2007 scoping memo divides the major work of this proceeding into two phases. The first, ongoing phase, which began in May 2007, focuses on measurement and evaluation protocols and methodologies related to

existing and possible future DR activities. The second phase, formally launched by this ruling, focuses on the more policy-oriented issue of DR goals.

Since the scoping memo was issued, staff has researched the form and purpose of DR goals in California and throughout the country and developed proposed goals. The staff proposal contained in the attachment to this ruling proposes some possible goals for DR over the next several years, and is intended to provide a focus for comments and encourage additional party proposals. Goals outlined in the staff document may be accomplished through work in venues other than R.07-01-041. Where appropriate, the staff proposal notes additional Commission proceedings in which work towards the proposed goals may take place.

This ruling modifies the procedural schedule originally proposed for Phase 2. The revised schedule is presented below:

DATE	ACTION
October 1, 2007	Ruling issued with staff report and proposal for demand response goals
November 16, 2007	Comments and responsive goal proposals due from parties. Comments should include suggested wording for new or modified goals and milestones in Section VI of the report.
November 30, 2007	Reply comments due

The Administrative Law Judge (ALJ) may issue a decision based on the parties' comments on the staff proposal. Therefore, parties are encouraged to share their ideas and alternative proposals in the opening and reply comments so they can be fully explored. After the ALJ has received comments and reply comments she will evaluate the filings and determine whether additional information is needed to support a Commission decision. We intend to give

guidance to the utilities to assist with planning the utilities' 2009 to 2011 program applications.

On September 24, 2007, Pacific Gas and Electric Company sent a letter to the assigned ALJ on behalf of itself, Southern California Edison Company, and San Diego Gas & Electric Company (together the Joint Utilities) requesting that the schedule for Phase 2 be extended by 60 days from the tentative dates specified in the original scoping memo. The Joint Utilities suggest that such an extension would be necessary to allow parties to develop full goals proposals, as contemplated in the tentative Phase 2 schedule. As described above, the structure of Phase 2 has been changed to place responsibility for the development of the first goals proposal on Energy Division, and we believe that the time allowed for comments and reply comments will allow parties sufficient opportunity to develop comments on the staff proposal in this phase of the proceeding.

IT IS RULED that:

1. The Scope and issues to be resolved in Phase 2 of this proceeding remain as provided in the April 18, 2007 scoping memo.
2. The revised schedule for Phase 2 of this proceeding is as set forth in Section 2 above.
3. The filing and service instructions contained in the April 18, 2007, scoping memo in this proceeding remain in place.

Dated October 1, 2007, at San Francisco, California.

/s/ RACHELLE B. CHONG

Rachelle B. Chong
Assigned Commissioner

/s/ JESSICA T. HECHT

Jessica T. Hecht
Administrative Law Judge

ATTACHMENT

ENERGY DIVISION'S PROPOSED DEMAND RESPONSE GOALS

I. PREVIOUS GOAL SETTING

The California *Energy Action Plan II (EAP II)* places demand response (DR) at the top of the resource procurement loading order second only to energy efficiency (EE). It specifies five percent of system peak demand be met by demand response resources in 2007.¹ The five percent goal applies only to price-responsive demand response programs that are designed to address forecasted peaks or supply constraints. The five percent goal will not be achieved as enrollment in price-responsive programs to date is approximately two percent of system peak demand, or less than half of the target percentage.

The five percent goal for demand response was intended to promote the development of price-responsive demand response programs, and therefore does not include reliability programs. Price-responsive programs are typically triggered or dispatched on a day-ahead basis² meaning that participants are informed that the utility is interested in reducing peak load the next day. Price-responsive programs include rebate programs where customers are compensated for the amount of load drop they provide, or rate schedules where the customer is exposed to extremely high on-peak rates on certain days. Another type of price-responsive program pays capacity payments based the amount of load nominated by participants for reduction. Reliability programs include interruptible service programs and direct load control programs (oftentimes referred to as air conditioner cycling) and are triggered in emergency situations such as a CAISO Stage 2 Alert. The anticipated MW impact of reliability programs combined with the potential

¹ A five percent reduction in peak demand represents a decrease of \$240 million per year in electricity costs. Over a 20 year time horizon, the present value of benefits could be as much as \$3 billion. Faruqui, Ahmad and Hledik, Ryan, *California's Next Generation of Load Management Standards*, Prepared for California Energy Commission, Page 3 (July 2007).

² The IOUs' Demand Bidding and Capacity Bidding Programs offer a day-of notification option.

MW impact of price-responsive programs equates to approximately 5.7 percent of system peak demand.

In 2002 the Commission, through Rulemaking R.02-06-001, outlined several qualitative goals in an appendix entitled *California Demand Response: A Vision for the Future (2002-2007)*.³ Among the goals outlined in the Commission's Vision for demand response are:

Customer Service

- Electric consumers in California should be made aware of the time-variable nature of electricity costs and of general steps they can take to help lower those costs.
- All customers that desire it should have greater access to information about their own electricity use, at least weekly or daily, with the option for hourly or more frequent data.
- Technologies to enable demand response may also provide other customer service benefits including outage detection and management, power quality management, and other information capabilities.

Optionality

- Customers should have the ability to choose voluntarily among various tariff options, including:
 - Very large customers (over 1 MW): Hourly real-time pricing (RTP), critical peak pricing (CPP), or Time-of-Use (TOU) Pricing.
 - Large customers (200 kW to 1 MW): CPP, TOU or RTP
 - Residential and small commercial customers (under 200 kW): CPP, TOU or flat rate (the latter with an appropriate hedge for risk protection)
- Customers should also have the option to participate voluntarily in programs where they are paid to provide demand reduction as a dispatchable resource, including:

³ http://www.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/26965.PDF

- In ISO markets: real-time, hour ahead, day ahead, ancillary services, planning reserves
- In retail markets: such programs as direct load control, including air-conditioner or water pump cycling, and controllable thermostats

Investor-Owned Utility (IOU) Issues

- IOUs should be reimbursed for all reasonable expenditures on infrastructure and administration to enable demand response
- IOUs should be required to procure demand response resources as a portion of their overall procurement portfolio (target of 5% of peak demand by 2007) and as a portion of their reserve requirements beginning in 2004
- IOUs should also be provided an incentive mechanism to encourage the best choices for ratepayers
- Operation of an IOU's overall demand response portfolio should be designed to collect the approved revenue requirement and be revenue neutral to the IOU (e.g., revenues stay consistent with costs), with periodic true-ups as necessary
- All IOU demand response efforts should be periodically evaluated to determine past performance and improve future effectiveness

Technologies

- All customers should be provided an advanced metering system capable of supporting a TOU tariff or better, if cost-effective, and with minimal hardware upgrades necessary to choose among various dynamic tariffs
- All customers who choose to should be able to conveniently access their usage information using communications media (e.g., over the internet, via on-site devices, or other means chosen by the customer and respectful of potential privacy concerns)
- The broadest possible range of metering and communications technologies that can enable demand response should be encouraged (i.e., optionality), but all technologies should be compatible with utility billing and other back-office systems

- State building code (Title 24) updates provide a cost-effective opportunity to introduce demand response technologies during the construction of new buildings or renovation of existing buildings.

Coordination Issues

- Effective demand response efforts will require coordination among the agencies promulgating this vision statement, as well as the California Independent System Operator (ISO) and the California Legislature.
- Coordination will also be necessary related to:
 - IOU procurement planning
 - IOU rate design modifications, either in general rate cases, or separate venues
 - Energy efficiency (and other public purpose) programs
 - Other peak demand reduction programs
 - ISO efforts to develop transparent wholesale market pricing mechanisms
 - Legislative reports such as required by SB1976 and Public Utilities Code Section 393
 - Necessary legislative change to rationalize rate design structures

II. THE VISION STATEMENT'S QUANTITATIVE GOAL: WHY THE FIVE PERCENT GOAL HAS NOT BEEN ATTAINED

A report prepared for the California Energy Commission (CEC) in April 2007 titled "The State of Demand Response in California"⁴ provided several reasons why the demand response five percent goal has not been met. The reasons cited in the report are re-stated here.

First, the five percent goal pertains solely to price-responsive programs, which require advanced interval metering. When the Commission set the five

⁴ <http://www.energy.ca.gov/2007publications/CEC-200-2007-003/CEC-200-2007-003-D.PDF>

percent goal (in 2003), it anticipated many customers would have the advanced metering necessary to participate in price-responsive programs. The deployment of advanced metering has taken longer than originally anticipated, which leaves achievement of the five percent goal mostly to the large customer class (those greater than 200kW demand) who represent about one-fourth of the system load. Achieving the five percent goal from large customers alone requires them to reduce their peak demand by about twenty percent.

Second, even as advanced metering is installed for customers under 200kW, a large portion of the electricity consumption from these customers will continue to be assured of no rate increases under Assembly Bill 1X, but also unable to benefit from more dynamic rate structures.

Third, large customers (>200 kW) already face time-of-use (TOU) rates that charge higher prices for consumption and demand during peak periods. Some parties claim that much of the potential for peak load reduction from these customers has already been realized as they have adapted their operations to higher peak prices.

Other reasons for not meeting the five percent goal include the perception that the incentive levels are too low to create much customer interest and the technologies to facilitate load reduction do not produce enough savings to offset their investment. Lastly, the lack of a robust wholesale market in which demand response resources can participate has deflated the potential growth of demand response.

POTENTIAL DEMAND RESPONSE

In a recent report by the Brattle Group for the California Energy Commission (CEC), it was estimated that the technical potential for demand response is about 25 percent of system peak demand which represents the most that can be achieved with maximum deployment of the best available technologies. It was also estimated that the economic potential of demand response, which represents the maximum deployment of cost-effective technologies, is 12 percent of system peak demand. The market potential was estimated to be

five percent of peak demand, which represents the likely deployment of cost-effective technologies.⁵

III. MEETING THE VISION STATEMENT'S QUALITATIVE GOALS: ACCOMPLISHMENTS AND SHORTCOMINGS

As discussed earlier, the *California Demand Response: A Vision for the Future (2002-2007)* vision statement articulated several qualitative goals beyond the five percent quantitative goal set by the Vision, and later affirmed by the Energy Action Plan. Several of the qualitative goals in the Vision are relevant presently and prospectively. The issues of customer service, optionality and technology are particularly relevant in light of the AMI rollout.

Most California retail electricity customers are not aware of the time-variable nature of electricity costs, nor of general steps that can be taken to lower costs. Through advanced metering deployment, a basic level of energy usage feedback for customers' use will be available (hourly usage provided the next day), but advances in customer information feedback are expected to occur through communication protocols such as Home Area Networks (HAN). The Commission ordered SDG&E to work with the other IOUs to develop a statewide, commercially available open standard for HAN.⁶

HAN is a communication portal that can be integrated into the AMI meter. Because the HAN allows communication between the meter and appliances/devices in the home, customers could be able to access real-time information about their electricity usage, price, total cost and other parameters in real time. HAN technology could also facilitate additional customer service benefits, such as the ability to control appliances remotely, detection and understanding of inefficient usage patterns and the ability to participate in direct load control programs

The 2002-2007 Vision statement also outlined goals for optionality, many of which have encountered deployment and implementation barriers. For

⁵ *Supra* note 4 at pp. 5-6

⁶ D.07-04-043, Ordering Paragraph 4.

example, the 2002-2007 Vision stated that very large customers should have the ability to choose voluntarily among various tariff options such as hourly real-time pricing (RTP), critical peak pricing (CPP) or time-of-use pricing (TOU). Today large customers must participate in TOU, and they also have the option to participate in a CPP rate. But the participation levels in CPP have been modest, at best. An RTP rate (based on hourly or more frequent market prices) has not been developed. The goal set for residential customers to participate in similar dynamic pricing tariffs has not been accomplished, for reasons provided earlier. Further, the ability of customers to participate voluntarily in programs where they are paid to provide demand reduction as a dispatchable resource in CAISO markets (real-time, hour ahead, day ahead, ancillary services and planning reserves markets) has not been realized yet. The goal of offering customers the option to install programmable thermostats could be further advanced.

Regarding the 2002-2007 technology goals, the state has been making significant advances as both PG&E and SDG&E have received approval to deploy cost-effective advanced metering throughout their respective service territories. SCE has received approval for its two-part advanced metering pre-deployment project, and its full deployment application is now under consideration. If SCE's advanced metering application is found to be cost-effective and approved, customers for the state's three largest electric utilities would have advanced meters within the next five years. The 2002-2007 Vision also emphasized "the broadest possible range of metering and communications technologies that can enable demand response should be encouraged". As noted above, the deployment of HAN is expected to encourage more technology. More advances in the area of technology can be made, such as cutting edge concepts like AutoDR, where demand response is automatically triggered by a price signal or other event.

IV. PARTICIPATION OF DEMAND RESPONSE IN THE WHOLESALE MARKET

THE ROLE OF CAISO AND MRTU

The 2002-2007 Vision also highlights several goals regarding coordination with other entities. A critical goal is coordinating with the CAISO in its efforts to develop transparent wholesale market pricing mechanisms and the integration of demand response resources into its wholesales markets and grid operations. The CAISO is working to implement its Market Redesign

and Technology Upgrade (MRTU) through which the CAISO intends to fully support dispatchable demand response which is also referred to as Participating Load. In addition, under MRTU, a price-sensitive demand curve can be submitted into the CAISO's forward energy market by the LSE as an indication of the LSE's willingness to buy out of the forward energy market or perhaps rely on a demand response resource instead. Finally, it is anticipated that price-responsive demand response will be able to participate in the CAISO's energy market, which will allow demand bids at Load Aggregation Points in the Day-Ahead Market and settle real-time deviations from Day-Ahead schedules at the Real-Time Imbalance Energy price.

The CAISO's MRTU defines demand response resources as either Participating Load or Non-Participating Load. Participating Load are dispatchable demand response resources that can participate in the CAISO's imbalance energy and ancillary services markets (at this time limited to pumped storage facilities) and are modeled with added functionality in the CAISO's MRTU software. Participating Load is that set of demand response resources that are large enough (one MW or more from single or aggregate sources) and reliable enough (able to provide appropriate metering and telemetry data) to model their operational characteristics analogous to how generation resources are modeled.

In the initial release of the MRTU software, Participating Load will be able to participate in the wholesale energy and ancillary service markets with certain limitations that will be remedied in later MRTU releases. The CAISO is working to address limitations in its Release 1 and intends to develop a more robust and comprehensive integrated solution for participation of dispatchable demand response resources in Release 1A of MRTU.

The CAISO envisions three broad categories of demand response. Demand response that: 1) reduces the Load Forecast, 2) provides reliability services to the CAISO, and 3) is strictly emergency responsive. Demand response resources that can reduce the Demand Forecast include bid-in demand or price responsive demand response resources that fulfill CAISO's definition of either non-participating load or Participating Load. CAISO's second category, Reliability Services, includes imbalance energy and ancillary services such as imbalance energy and non-spinning reserves, which currently can be only served by demand response resources fulfilling CAISO's definition of Participating Load. Lastly, CAISO has created a category for Emergency Response demand response resources. These

resources are the utility reliability demand response programs described earlier, which are called only during a declared system emergency or local transmission emergency.

Within 12 months of the implementation of MRTU Release 1, the CAISO will implement Scarcity Pricing per direction from the FERC.⁷ Scarcity Pricing is a mechanism that, based on certain conditions, allows market prices to rise automatically, potentially beyond any applicable bid cap, when there is a shortage of supply. According to the CAISO, properly designed scarcity prices should stimulate demand response.⁸ In theory high market prices should stimulate demand response at the retail level, but that presumes that the scarcity prices are transparent to retail customers in a timely manner so that they can take appropriate actions to reduce their energy use. Current retail demand response programs are not designed to reflect scarcity prices that customers can respond to.

The 2002-2007 demand response goals recognized the need to coordinate with the CAISO. The CAISO is actively creating market mechanisms for the participation of dispatchable demand response in the wholesale market. Given the anticipated developments by the CAISO, it is now necessary to develop new demand response goals that address how existing and future retail DR programs will interface with wholesale markets.

V. ENERGY DIVISION PROPOSES THE FOLLOWING DEMAND RESPONSE GOALS

1. CUSTOMERS AS A DEMAND RESPONSE RESOURCE

⁷ *Order Conditionally Accepting the California Independent System Operator Corporation's Electric Tariff Filing to Reflect Market Redesign and Technology Upgrade*, 116 FERC ¶ 61,274 at P 1078 (2006).

⁸ California ISO Straw Proposal, Reserve Scarcity Pricing Design, September 5, 2007; available at <http://www.caiso.com/1c51/1c51b3ab4fea0.pdf>.

As noted earlier, the Commission's '02-'07 goals with respect to optionality have not been fully attained. Large customer participation levels in CPP have been modest, at best. An RTP rate (based on hourly or more frequent market prices) has not been developed. The goal set for residential customers to participate in similar dynamic pricing tariffs has not been accomplished, for reasons provided earlier.

There is a need to create retail tariffs/programs for all customers, including residential and small commercial customers, which incorporate proper market signals, aligned with wholesale market prices. Properly designed tariffs lead to appropriate incentives for smart energy usage. With full AMI deployment, the availability of time-varying rates is also necessary. Customers should also have the ability to access information on current market conditions and energy prices, forecasted market prices of energy for the day-ahead market on an hourly basis. This same interface should allow the customer to set up personalized protocols for direct load control options utilizing customer purchased technology add-ons or utilization of Home Area Network functionality.

Through the Statewide Pricing Pilot, residential customers, like commercial and industrial customers, have demonstrated their ability reduce their electricity consumption in response to higher prices. Significant demand response will occur among customers purely as a result of their enrollment in dynamic pricing, even without their enrollment in other demand response programs or load aggregation.

The Commission's General Rate Case proceedings, such as A.06-03-005, are determining the details on how rates, for the purpose of demand response, are designed and implemented.

2. ALIGNMENT OF RETAIL DEMAND RESPONSE PROGRAMS WITH THE WHOLESALE MARKET

An important first step toward alignment of retail demand resources and CAISO wholesale markets has been the CAISO's formation of its MRTU

Release 1 Working Group.⁹ Under the CAISO's leadership, this working group recently developed a draft Demand Response Resource User Guide¹⁰ which establishes a process by which utility price-responsive demand response programs will be incorporated into MRTU Release 1. Specifically, the User Guide explains how existing demand response programs will be accounted for by the CAISO in its day-ahead Residual Unit Commitment (RUC) process and in its real-time unit commitment processes. What this means is that utility demand response MWs will be accounted for by the CAISO to offset the additional capacity that the CAISO procures to meet its day-ahead and real-time demand forecasts. The User Guide is expected to be implemented by the CAISO and the IOUs for the summer of 2008. The process described in the User Guide is manual, but should be replaced by an automated process in the near future.

The successful development of the User Guide represents the beginning stages of alignment between the retail demand response programs and wholesale markets, but the IOU demand response resources need even greater inclusion into the CAISO's wholesale markets. Specifically this means shaping future retail demand response resources that enable more effective participation in wholesale markets such as day-ahead, day-of and real-time. Existing IOU price-responsive programs have triggers that are not necessarily tied to market prices, but instead are triggered by proxies (temperature, system load, etc.) that are expected to reflect market conditions. Better alignment of IOU retail DR programs/tariffs will require a number of adjustments to the design and operation of existing programs such as the timing of program dispatch as well as the basis for the dispatch. The participation of the CAISO is a critical element in successfully accomplishing this goal as the CAISO has authority over the future structure of its wholesale markets through its MRTU releases. The working groups it has established are expected to clarify the specifications for demand response resources in those markets.

⁹ Four other working groups have been formed: DR Participation in MRTU Post-Release 1, Demand Resource Product Specification, Infrastructure for Demand Resources, and Vision for Demand Resources.

¹⁰ <http://www.caiso.com/1893/1893e350393b0.html>

3. SEND THE PROPER MARKET SIGNAL TO DEMAND RESPONSE PARTICIPANTS

Demand response resources should react to economic signals sent by the wholesale market. Currently, very few states with competitive wholesale markets offer demand response participants incentives beyond what can be obtained from the market. Some states offer ratepayer-funded technical and feasibility audits to potential demand response participants. Energy Division's research found only one other state, Connecticut, that offers other incentive payments in addition to incentives participants receive through wholesale markets.¹¹ The operable theory behind wholesale market participation of demand response is that the market sends the proper signals and economic incentives to participating demand response resources. Demand response resources must be responsive to marketplace economic and constraint signals.

The relationship to Scarcity Pricing is particularly relevant. The CAISO has stated that demand response is critical to the stability of the CAISO markets¹² and that increasing demand response will reduce the likelihood that scarcity pricing will be triggered.¹³ The CAISO is currently studying other wholesale markets that have implemented scarcity pricing and is considering implementing a scarcity demand curve and utilizing ancillary services to place downward pressure on scarcity prices. Currently demand response resources play a limited role in CAISO's ancillary services market. Most demand response resources in California are not accurately aligned with wholesale market pricing signals. Assuming that the anticipated implementation of Scarcity Pricing does not slip, retail demand response

¹¹ See, 2007 Conn. PUC LEXIS 133, DPUC Review of CL&P and UI Conservation and Load Management Plan for Year 2007-2008, Docket No. 06-10-02 (May 23, 2007); 2007 PUC LEXIS 169, 258 P.U.R. 4th 148, DPUC Review of UI and CL&P 2007 Summer Electric Conservation Incentive Program Docket No. 07-06-21 (June 22, 2007); see also 2003 Comm. PUC LEXIS 42 DPUC Review of the Connecticut Light and Power Company's and The Illuminating Company's Conservation and Load Management Programs and Budget Docket No. 03-01-01 (March 26 2003).

¹² *Supra* note 7.

¹³ *Id.*

programs would need to be properly installed by 2009 so that customers can respond to Scarcity Pricing. Misalignment of retail demand response programs and Scarcity Pricing would be detrimental to market functionality and California's ratepayers.

*4. EXPLORE WHOLESALE MARKET PARTICIPATION
BY DEMAND RESPONSE PROVIDERS AND SMALL AGGREGATED LOAD*

Demand response aggregators, also known as curtailment service providers or demand response providers, are important demand response market participants in California and elsewhere. Unlike many of the east coast markets where aggregators provide demand response resources directly to the wholesale market, aggregators in California provide demand response megawatts to the IOUs through IOU-administered programs and contracts. Allowing aggregators to provide demand response megawatts directly to the CAISO could stimulate demand response as exemplified by the east coast markets, PJM, NYISO and NE-ISO.¹⁴

Modifying the role of aggregators from IOU contractors to CAISO wholesale market participants would be a major change for the California energy market. The CPUC, in collaboration with the CAISO, should begin a process of exploring the implications of the change and whether and how the change will be successful. This process could occur through one of the working groups formed by the CAISO. It will be important to determine what policies are necessary for ratepayer protection, and what the appropriate rules are for curtailment service providers to schedule and bid their load into the wholesale market. The east coast markets have created special rules for curtailment service provider participation which can be used as a model.¹⁵

¹⁴ PJM recently set a new demand response record on August 10 2007 of 1,945 MW. (See <http://www.pjm.com/contributions/news-releases/2007/20080810-demand-response-record.pdf>)

¹⁵ PJM Manual 11: Scheduling Operation, Revision:30, Effective Date March 20,2007, Prepared by Forward Market Operations, PJM 2007. Available at <http://www.pjm.com/markets/demand-response/reference.html>

See also NYISO's Demand Response Program Evaluation, available at http://www.nyiso.com/public/products/demand_response/index.jsp

Footnote continued on next page

Currently, price-responsive demand response in California relies on commercial and industrial customers with loads larger than 200 kW. Participation of residential and small commercial customers of PG&E and SDG&E in retail DR tariffs/programs will be enhanced once they are outfitted with advanced meters. As these utilities transition to advanced metering and dynamic pricing for residential customers becomes available in their territories, the incorporation of aggregated small residential loads as demand response into the wholesale market may hold promise. Further exploration of this concept should be a goal of the state. Depending on the outcome of SCE's AMI application, A.07-07-026, similar issues may arise in the SCE territory.

In the eastern U.S., wholesale market operators, such as PJM and NE-ISO, have begun pilot programs for demand response resources that cannot meet the financial obligations for full market participation. These markets are also working with smaller demand response resources to create protocols for metering and baseline information that allows these resources to participate in the market.¹⁶ These developments indicate that there may be ways to accommodate small aggregated demand response in markets and such flexibility should be explored further in collaboration with the CAISO, possibly through one of the CAISO's working groups.

5. ENCOURAGE TECHNOLOGY DEVELOPMENT

Research and development of demand response technologies can lead to advanced capabilities applicable beyond their current use. For example, SCE has been working with Lawrence Berkeley National Laboratory (LBNL) on a pilot spinning reserve program utilizing AC cycling. This pilot employs technology that enables the program operator to cycle customer AC units in a

(ISO-New England has Demand Response Providers who are equivalent to PJM's Curtailment Service provider. See ISO New England Load Response Program Manual, Revision: 9 (April 7, 2006)) available at http://www.iso-ne.com/rules_proceeds/isone_mnls/index.html.

¹⁶ See, ISO New England Load Response Program Manual, Revision 9, (April 7, 2006) pp. 1-1 - 1-5; PJM Manual 11 Scheduling Operations, Revision 30 (March 20, 2007) pp. 93-103.

manner that provides spinning reserves but with minimal discomfort for the participants. A specific goal for the next three years is to encourage similar innovation which could lead to either new price-responsive programs or the expansion of existing demand response programs beyond their current capabilities (as being demonstrated by the SCE pilot).

The LBNL Demand Response Research Center (DRRC) has been operating automated demand response (AutoDR) pilot programs since 2003. According to the DRRC, AutoDR provides commercial and industrial customers with electronic, Internet-based price and reliability signals that are linked into the facility energy management control system (EMCS) and related whole-building controls. AutoDR price and reliability signals trigger automatic customer-programmed energy management and curtailment strategies. The AutoDR price and reliability signals can be used to automate response to dynamic pricing (CPP and RTP) as well as conventional interruptible and demand bid options.

Automating demand response improves the repeatability of the demand response, reduces on-site labor costs associated with manual DR, and hardens the resource by requiring commitment to a consistent set of strategies. Automating DR with standardized, open protocols provides a DR infrastructure for future wide scale implementation that can be extended into future building and appliance controls. In 2006, the Commission authorized IOU budgets for AutoDR programs. Technologies like AutoDR are a key component to gaining customer acceptance to DR programs and could also lead to greater functional capabilities that may better enable wholesale market participation.

6. GRID ENHANCEMENT FOR ENABLING DEMAND RESPONSE

Grid enhancements have the capability to better enable demand response resources. For example, demand response resources that can be called by load aggregation point will be an asset to the state, the IOUs, demand response providers and overall grid reliability. As the CAISO moves forward and gains experience with MRTU, it will be better able to collect detailed grid operations information. Over the next few years information should be collected by the IOUs about demand response resources by load aggregation point which could lead to the ability to call on these resources in specific areas to relieve congestion, high prices and avoid rolling blackouts.

Investment in integrated data sources by the IOUs may help the CAISO retrieve the information needed to control demand response resources with exacting locational granularity (for example the installation of real-time data or Supervisory Control and Data Acquisition (SCADA) systems data stores for feeder and/or substations). The capability to supply real-time data will help enhance verification, and reliability of demand response resources, and could also help alleviate the need for complicated baseline methodologies for small demand response resources. For the next three years, the Commission should further explore the potential of grid enhancement and their respective costs. Acquiring this information would then inform the Commission about possible next steps.

*7. FORMALIZE COMMUNICATION FOR THE
DISPATCH OF EMERGENCY DR PROGRAMS*

There is a need to establish a communication protocol between the IOUs and the CAISO with respect to the dispatch of emergency-triggered demand response programs. The protocol would outline the details of communication between the IOUs and the CAISO concerning the dispatch of IOU emergency programs so that the CAISO is fully aware of the resources that are available for use later in the day. This protocol becomes even more relevant if in the future direct load control resources are able to operate as both a reliability resource such as ancillary service, and an emergency resource.

**VI. ENERGY DIVISION'S PROPOSED DEMAND RESPONSE GOALS
AND MILESTONES FOR GOAL ATTAINMENT**

1. CUSTOMERS AS A DEMAND RESPONSE RESOURCE

GOALS:

- Create retail tariffs/programs for all customers, including residential and small commercial customers, which incorporate proper market signals, aligned with wholesale market prices, which create incentives for smart energy usage. Proper tools for participation should be made available at the least possible cost to the customer.

- Develop a load impact protocol that measures the demand response attributable to load reduction which may be a result of dynamic pricing.
- Create a customer information interface that is user-friendly, operates on a universal platform which allows the customer to see current market prices of energy, forecasted market prices of energy for the day-ahead market on an hourly basis. The interface should allow the customer to set up personalized protocols for load management options utilizing customer purchased technology add-ons or utilization of Home Area Network functionality.
- Educate the public about 1) the time varying nature of the cost of energy, 2) the ways in which they can adjust usage to lower their energy bills and 3) the environmental benefits of reducing peak load usage.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- The IOUs attain the demand response MW levels for residential and small commercial customers that they estimated in their advanced metering applications.
- Residential and small commercial customers have access to information interfaces, either through the IOU or third-party providers.
- The load impact protocols developed in R.07-01-041 will provide measurement of demand response attributable to dynamic pricing tariffs.

2. *ALIGNMENT OF RETAIL DEMAND RESPONSE PROGRAMS WITH THE WHOLESALE MARKET.*

GOAL:

- Demand response resources will be able to participate in CAISO's day ahead and/or real-time wholesale markets.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- The IOUs 2009-2011 DR programs/tariffs will have design features that enable them to participate in the CAISO's market operations.

- The process of offsetting RUC and real-time unit commitment with IOU demand response programs will move from a manual process to an automated one.
- During the 2009-2011 timeframe, retail demand response programs will be able to actively bid into the wholesale market on a price sensitive bid curve.
- The CAISO working groups provide guidance for demand response resources participation in each of the MRTU releases.

3. *SEND THE PROPER MARKET SIGNAL TO DEMAND RESPONSE PARTICIPANTS.*

GOAL:

- Demand response resources will respond to price signals sent by the wholesale market.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- The IOUs 2009-2011 DR program designs will incorporate price signals sent by the wholesale market.
- Retail demand response programs are established that enable ratepayers to respond to Scarcity Pricing.

4. *EXPLORE GREATER MARKET PARTICIPATION BY DEMAND RESPONSE PROVIDERS AND SMALL AGGREGATED LOAD*

GOALS:

- Consider modifying the role of aggregators from IOU contractors to CAISO wholesale market participants.
- Explore the potential of small aggregated load participating as demand response in wholesale markets.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- Develop the policy considerations for allowing aggregators to participate directly in CAISO wholesale markets.
- Develop the policy considerations for allowing small aggregated load to participate in CAISO wholesale markets.
- Develop the rules and protocols for implementation if decision-makers decide to move forward with either concept.

5. *ENCOURAGE TECHNOLOGY DEVELOPMENT*

GOALS:

- Research and develop demand response technologies that enable more market participation.
- Develop innovative demand response technologies that enable participation in CAISO's ancillary services market.
- Increase participation in AutoDR programs.
- Customers are offered several different types of demand response technologies and services.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- 2009-2011 IOU program proposals include AutoDR programs and other programs that encourage demand response technology.
- 2009-2011 IOU program proposals include pilot programs like SCE's AC cycling pilot which operates like spinning reserve.
- Collaborate with third-party research groups including the Lawrence Berkeley Labs and the Demand Response Research Center to increase demand response with technology.
- The CAISO's Infrastructure for Demand Resources working group includes the exploration of grid enhancements
- IOUs successfully establish a statewide, commercially available open standard for HAN.

6. *GRID ENHANCEMENT FOR ENABLING DEMAND RESPONSE*

GOALS:

- Better enable demand response resources through enhanced grid infrastructure and technology such as smart grid technology.
- Enable demand response resources to be called by load aggregation point or greater specificity.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- The IOUs will share information to enhance CAISO's ability to call on demand response resources by location.
- The IOUs will provide a report to the Commission by summer 2008 detailing what steps can be taken and what technologies can be used, at what cost, to upgrade the grid for better demand response.
- The CAISO's Infrastructure for Demand Resources working group includes the exploration of grid enhancements.

7. *FORMALIZE COMMUNICATION FOR THE DISPATCH OF EMERGENCY DR PROGRAMS*

GOAL:

- Create a communication protocol for the CAISO and IOUs with respect to the dispatch of emergency demand response programs.

MILESTONES FOR DETERMINING GOAL ATTAINMENT:

- A communication protocol shall be developed by the IOUs in consultation with the CAISO.

VII. ADDITIONAL QUESTIONS FOR PARTIES TO ADDRESS

1. Should the Commission develop new quantitative demand response goal(s)?
 - a. If quantitative goals are adopted should it be program specific and/or utility specific?
 - b. Should a quantitative goal be calculated as a percentage of a benchmark (such as system peak demand) or some other means?
 - c. Who should propose the goal, the CPUC, the CEC, the CAISO, the LSE's or another third party?
 - d. What programs should be considered for goal setting?
2. If quantitative goals are not adopted, what should IOUs use for their Long-Term Procurement Plans (currently the IOUs use the five percent goal in their LTPPs)? Should the Long Term Procurement process be

- used as a forum for the setting of quantitative goal setting for each of the IOU's demand response MW requirements?
3. Assuming that there is enabling technology, what are the pros and cons of allowing programs such as AC cycling to participate in both ancillary service and emergency service CAISO programs?
 4. How often should goals be revisited?
 5. Are there goals to pursue with respect to demand response and energy efficiency in terms of implementation, planning and regulatory process? What are the drawbacks and benefits to a more integrated approach between these two resources?
 6. Should the Commission establish a goal of reducing the number of demand response programs/tariffs options to reduce potential customer confusion?
 7. What additional demand response policies need to be considered?

APPENDIX A

DEMAND RESPONSE GOALS IN OTHER STATES

As part of its initial efforts in developing this white paper, Energy Division conducted exhaustive research of demand response in the other forty-nine states, specifically how other states have developed their goals with respect to demand response. The appendix summarizes the research gathered by Energy Division and is provided for informational purposes.

In most states demand response, for utility cost basis recovery purposes, is not a stand-alone program. Most states couple demand response with either energy efficiency (EE) or an overarching demand-side management (DSM) program. California's stand-alone demand response program is unique in several aspects.

Some states, such as Colorado, allow demand response megawatts to fulfill a certain percentage of the state's renewable portfolio requirement. Illinois has an energy efficiency portfolio requirement which may include demand response measures. Other states, such as Florida, have set very specific megawatt goals for individual utility programs. *The Florida Energy Efficiency and Conservation Act (FEECA)*, Chapter 366.82, Florida Statutes, requires the Florida Public Service Commission to adopt goals to reduce and control the growth rates of electric consumption, and to reduce and control the growth rates of weather sensitive peak demand. In Order No. PSC-94-1313-FOF-EG issued October 25, 1994, the Florida Public Service Commission set numeric demand-side management goals for the four largest investor-owned electric utilities. DSM as defined by Florida law includes not only demand response but energy efficiency measures and distributed generation measures.

New York's demand response goals are set by the New York Public Service Commission but advised by the utilities. The New York Public Service Commission requires the utilities to enroll customers in the New York Independent System Operator's demand response programs. In 2002 the New York Commission set EE and DR goals in response to a state energy shortfall. Connecticut's goals have been location specific. The Connecticut Commission has required the state utilities to obtain a certain amount of demand response in service constrained areas.

In most states utilizing integrated resource plans (IRP) the utilities propose programs and accompanying megawatt goals in their IRPs for commission approval. Commissions may approve, deny or modify those goals or programs. The research conducted by Energy Division elucidated several aspects of the nature of demand response among other states. Goal setting for demand response in other states is generally mixed with either energy efficiency or demand side management. The goals themselves are generally proposed by the regulated entities for approval by the regulating agency. This research shows that other states have created viable working models for demand response participation, incentives and functionality that California may be able to utilize in structuring its demand response programs in the future.

(END OF ATTACHMENT)

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I have provided notification of filing to the electronic mail addresses on the attached service list.

Upon confirmation of this document's acceptance for filing, I will cause a Notice of Availability of the filed document to be served upon the service list to this proceeding by U.S. mail. The service list I will use to serve the Notice of Availability of the filed document is current as of today's date.

Dated October 1, 2007, at San Francisco, California.

/s/ ELIZABETH LEWIS

Elizabeth Lewis