Rulemaking	13-09-011
Exhibit No.:	ISO-DR001
Witness:	John Goodin

Order Instituting Rulemaking to Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements	Rulemaking 13-09-011

TESTIMONY OF JOHN GOODIN ON BEHALF OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements	Rulemaking 13-09-011

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Q. Please state your name and business address.

A. My name is John Goodin. My business address is 250 Outcropping Way, Folsom, California 95630.

Q. By whom and in what capacity are you employed?

A. I am employed in the Market and Infrastructure Policy department for the California Independent System Operator Corporation as the regulatory policy manager.

Q. Please describe your educational and professional background.

A. I have been employed with the ISO since before the ISO commenced operations in 1998. I joined the ISO's client relations department in December 1997 as an account manager, serving key clients and leading special projects. In December 2005, I joined the Market and Product Development group as a Senior Market and Product Developer as lead staff engaged in the development of resource adequacy policy. In November 2007, I became the ISO lead for demand response issues. In October 2011, I became the regulatory policy lead, and was subsequently promoted to regulatory policy manager in January 2013 within the Market and Infrastructure policy department. My responsibilities include evaluating, developing, and managing ISO policy positions on

state and federal regulatory issues that impact ISO market design and infrastructure policy concerns.

Prior to joining the ISO, I was employed by the Pacific Gas and Electric Company ("PG&E") for over nine years, and for a brief period, by PG&E Energy Services. I spent a majority of my tenure at PG&E working on load modifying management and load management related programs, both at the program management level and directly with retail customers. I have a B.S. degree in Mechanical Engineering from the California Polytechnic State University, San Luis Obispo.

Q. What is the purpose of your testimony in this proceeding?

A. The purpose of this testimony is to present the Commission with certain perspectives and recommendations in connection with the phase three issues and questions posed in Attachment A, Guidance for Testimony, in the Joint Assigned Commissioner Administrative Law Judge Ruling and Scoping Memo Defining Scope and Schedule for Phase Three, Revising Schedule for Phase Two, and Providing Guidance for Testimony and Hearings. The scope of Phase Three of this proceeding includes determining parties' specific resource adequacy concerns as they relate to the bifurcated framework of demand response. My testimony addresses how the Commission should treat demand response in the context of the California's resource adequacy program. Specifically, I explain why demand response serving as a supply resource should count as a resource adequacy capacity, and why demand response serving as a load modifier should not. My testimony also addresses the characteristics of supply side and load modifying demand response resources.

I. RESOURCE ADEQUACY CONCERNS

Q. Should supply and load modifying demand response receive different resource adequacy treatment?

A. Yes. The Commission should treat supply and load modifying demand response differently for resource adequacy purposes. Supply side demand response should count as resource adequacy capacity; load modifying demand response should not. This approach is consistent with the State's loading order, the Commission's demand response bifurcation decision in this proceeding (D. 14-03-026), and the Commission's resource adequacy policy framework.

Q. Please explain why limiting resource adequacy capacity qualification to supply-side demand response resources is consistent with both the Commission's resource adequacy policies and the loading order.

A. Fundamentally, load modifying demand response and supply-side demand response resources have different goals that determine eligibility for resource adequacy qualification. The Commission's recent bifurcation decision provides that demand response should be configured to either modify load, by reducing the amount of load that must be served by supply resources, or serve load as a clean alternative supply resource. This decision states that load modifying resources are resources that reshape or reduce the net load curve, and supply resources are resources that are integrated into the California ISO's energy markets.[1] Both types of demand response can meet the objectives of the loading order, but both types do not need to count as resource adequacy capacity.

The State's loading order, as established by the Energy Action Plan, supports investments in cost-effective energy efficiency and demand response programs. The

[1] *See* Commission Decision 14-03-026 at 28, ordering paragraphs 2 and 3.

purpose of the loading order is to satisfy California's future energy needs through reliance on cost-effective resources procured in a preferred order to reduce greenhouse gas emissions. By investing in environmentally preferred resources, like energy efficiency and demand response, California can meet its future energy needs and avoid or defer building conventional fossil-fired resources and new transmission and distribution facilities while reducing its greenhouse gas emissions. The loading order, however, does not specify that all demand response must qualify as resource adequacy capacity. Rather, implicit in the loading order is the notion that load served by resource adequacy capacity should be reduced through the procurement of energy efficiency and demand response.

The Commission's resource adequacy policy framework, adopted in 2004, guides resource procurement and promotes infrastructure investment by requiring that load serving entities procure capacity so that capacity is available to the ISO when and where needed.[2] As the Commission's website states:

> Resource Adequacy program has two goals. First, it provides sufficient resources to the California Independent System Operator to ensure the safe and reliable operation of the grid in real time. Second, it is designed to provide appropriate incentives for the siting and construction of new resources needed for reliability in the future.[3]

For resource adequacy purposes, a load serving entity can procure properly configured supply-side demand response like any other supply resource and count that resource toward satisfying their resource adequacy requirements. Conversely, a load serving entity can procure a load modifying resource, which can help the load serving entity reduce the need for resource adequacy capacity. Both types of demand response

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2 http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/

3 http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/

have resource adequacy benefits - supply resources can satisfy a resource adequacy requirement and load modifying resources can reduce the resource adequacy need. This distinction is a critical component to implement the operational bifurcation adopted in D. 14-03-026. The decision now aligns the Commission's demand response program policies with the central tenets of the loading order and the Commission's resource adequacy program. By bifurcating demand response resources into two distinct categories— supply and load modifying resources— the Commission can now distinguish between the type of demand response programs that expressly qualify as resource adequacy capacity from those load modifying demand response resources that reduce resource adequacy capacity needs when they favorably affect the underlying load parameters used to set local, system, and flexible resource adequacy requirements.

Q. Should load modifying demand response resources qualify as resource adequacy capacity in the same manner as supply-side resources?

A. No, load modifying demand response should not count as a resource adequacy resource that can satisfy a load serving entity's resource adequacy procurement requirement. Load modifying resources may mitigate the resource adequacy need, but should not count toward the resource adequacy requirement.

Load modifying demand response is not like a supply-side resource, which is available to the ISO when and where needed. Load modifying demand response is not available to the ISO through a schedule or bid into the ISO's market processes or included in the market optimization to create a feasible dispatch of resources. It is, therefore, inappropriate for load modifying demand response to count directly as resource adequacy capacity used to satisfy a load-serving entity's resource adequacy requirement.

While not counting as resource adequacy capacity, load modifying demand response can favorably reshape the demand curve and reduce future needs for resource adequacy capacity. The resource adequacy benefits from load modifying demand response arise when load modifications occur that alter the net load curve in ways that reduce peak demand and ramping needs. These reduced needs, if consistent and persistent over time, will result in lower generic, local and flexible capacity requirements in follow-on resource adequacy compliance years. In fact, load modifying demand response is just one type of load modifier on the system. There are other prevalent and growing load modifiers such as distributed generation, rooftop solar, electric vehicle charging, and energy efficiency. Load serving entities can avoid the need to procure resource adequacy capacity or make long-term generation, transmission and distribution investments when load modifying programs, like demand response and energy efficiency, are successful and lower resource adequacy needs. These programs can minimize or even reduce the system's need for generic, local and flexible capacity, even as load grows.

Q. Do load modifying demand response resources avoid resource adequacy capacity procurement?

A. Load modifying demand response can "bend the curve" on system, local and flexible resource adequacy capacity procurement needs. If load modifying demand response is consistently showing up at the right times and in right places to reduce peak demand and lower ramping needs, then yes, load modifying demand response can help load serving entities avoid procuring resource adequacy capacity. If, however, load modifying demand response does not occur coincident with system needs, and does not help reduce peak demands or ramps, then it has less or even no resource adequacy benefit. For example, if load modifying demand response is not available during the system peak then

the ISO must directly dispatch other resources to meet the system's coincident peak demand. In this case, the load modifying demand response would not have effectively reduced resource adequacy needs because it did not reduce the dispatch of other resources at the same time the system reached its highest coincident peak demand.

II. SUPPLY-SIDE DEMAND RESPONSE CHARACTERISTICS

Q. What is a supply-side demand response resource and how is it different from a load modifying resource?

A. A supply-side resource is a resource that can be scheduled in day-ahead or real-time operation and that a system operator can include in system-wide dispatch when needed, where needed, and for a needed quantity. A similar construct to describe these attributes is "right place, right time, and right amount." In other words, supply-side demand response resources have the ability to remove a specified amount of energy from the electric grid at a given time and place in order to serve the power flow needs of the electric grid. It is this capability that distinguishes supply-side demand response from load modifying demand response. A load modifying program, such as a critical peak pricing tariff or even a simple load conservation message may be able to satisfy one of these attributes, but not all. For instance, a load modifying program may be callable at a certain time or during certain system conditions, but the resulting demand response is generally enacted through voluntary and behavioral actions. Load modifying programs, like critical peak pricing or conservation requests do not normally result in a targeted outcomes – e.g. a specific megawatt reduction in a specific area. Instead, the actions taken by consumers reshape and modify energy demand across the system and over multiple operating hours.

A distinguishing characteristic of supply-side demand resources is that the resource operator models them similar to how a resource operator models a generating unit. In the ISO system, for example, the ISO models the attributes of supply resources and optimizes them along-side all other resources, ensuring a feasible and economic dispatch. Conversely, the ISO does not model in its systems the attributes of load modifying demand response. Load modifying demand response does not register as a grid resource or make its attributes subject to a centralized dispatch but instead serves to shape load that is served by supply-side resources.

Supply-side demand response resources are bid and settled in the ISO markets through a scheduling coordinator like other participating supply resources. It is the submission of bids, along with the modeled resource attributes, that allows the ISO to consider all other available resources and dispatch those supply-side resources that produce the overall least-cost solution while observing system and reliability constraints. Load modifying resources are not evaluated in this way; their affect is embedded in the forecasted demand to be served in any dispatch interval by the set of available supply-side resources, including supply-side demand response resources.

Q. Should emergency and local resource adequacy demand response resources be configured as supply-side resources?

A. Yes, pursuant to D. 14-03-026, a supply-side emergency or local resource adequacy demand response resource must be integrated into the ISO market so that the ISO can dispatch the resource. Emergency and local resource adequacy demand response resources are, by nature, unique in that they must be responsive on short-notice or in local capacity areas to address specific ISO reliability conditions due to contingencies or energy shortages. In these instances, the ISO must have sufficient resources that can be

called upon on to resolve a reliability threat in compliance with applicable reliability standards, including, for example, 60 minutes to restore operating reserves, 30 minutes to ensure transmission flows are back within system operating limits, and 15-minutes to restore area control error following a reportable disturbance when contingency reserves are dispatched. ISO witness Neil Millar provides more specifics on these operational requirements in his prepared testimony.

Given that these critical emergency and local resource adequacy demand response resources are required during stressed system conditions, it is important that the ISO operator has a timely and complete view of what resources, megawatt quantities, and operating characteristics are available in real-time. Continuing to coordinate and dispatch emergency demand response programs during stressful operating conditions through phone calls and email with third parties is not a productive, efficient, or convenient way to manage critical resources. For the overall efficacy of resource and grid management processes, there must be generally standard dispatch and operational practices between supply-side demand response resources and other conventional supply resources.

Q. Does all demand response have to be integrated into the ISO market as supply-side resources?

A. No, not all demand response must be integrated into the ISO market as supply-side resources. In fact, over time, a majority of demand response may come from load modifying actions that are tied to price signals that reflect both system and local conditions. These load modifying actions may create a more favorable load shape (i.e. slower, shorter ramps; fewer instances of over-generation; less of a delta between peak and off-peak conditions; and lower peak demand). In other words, load modifying demand response can create a flatter, more predictable overall net load curve. In the

spirit of the loading order, if load modifying demand response is effective at reshaping the net load curve, then the system will require less generic and flexible capacity, and therefore, reduce overall resource adequacy procurement needs.

III. DEMAND RESPONSE GOALS

Q. What is an appropriate annual goal for the amount of supply-side demand response?

A. The loading order established a priority for "preferred" resources that should be considered first before relying on conventional fossil-fired generation to meet California's future energy needs. In the context of the loading order, the Commission should establish annual supply-side demand response goals tied to the Commission's long-term procurement authorizations. Specifically, the Commission should seek to align its goals to use demand response as a resource adequacy capacity with the specific procurement authorizations for preferred resources promulgated in recent long-term procurement plan decisions. California ISO witness Neil Millar is providing additional details about the steps being taken by California ISO transmission planners and operators to incorporate the demand response procurement targets established in the Commission's long-term procurement proceeding.

IV. LOAD-MODIFYING DEMAND RESPONSE AND SUGGESTED IMPROVEMENTS

Q. How can the Commission improve the use and effectiveness of load modifying demand response?

A. For ratepayer funded load modifying demand response programs that are event-based, the Commission should apply similar, if not identical, performance obligations and non-compliance penalties to utility programs as those applied to third-party demand response providers who operate under the utilities' aggregator managed portfolio programs. Such

obligations would include minimum program curtailment levels and the enforcement of non-compliance penalties for underperforming load modifying demand response programs. These safeguards will help secure the delivery of effective load modifying demand response.

Q. Should utilities continue to develop and operate supply-side demand response programs?

A. Regulated load serving entities, like the large investor owned utilities, are naturally suited to offer load-modifying demand response measures, particularly through rates and tariffs. Utilities can enhance load-modifying measures that are effective at reducing the balancing area's need for conventional fossil-fired generation and new transmission and distribution infrastructure by favorably reshaping the load curve through pricing, rates, and incentive mechanisms.

In contrast, the development, integration, and operation of supply-side demand response resources in the ISO market may create additional costs and risks for the utilities and ratepayers. The Commission should consider whether third-parties could perform the services required to operate and offer supply-side demand response resources for less money than the utilities and less ratepayer risk.

Focusing on load-modifying measures is in contrast to the utilities currently looking to increase their investment in the development, integration, and operation of supply-side demand response resources integrated into the ISO market. It is timely for the Commission to weigh the cost of supply-side demand response integration for each utility and consider if this is prudent and appropriate ratepayer expenditure, especially if third-parties could perform the same services required to operate and offer supply-side demand response resources for less money and ratepayer risk.

If each utility proposes to make significant investments in new systems and software, including changes to legacy customer information systems, then it may be imprudent for the Commission to authorize such duplicative expenditures and, instead, consider having the utilities bid these operational functions out to qualified third-parties.

Additionally, if the utilities continue to develop and operate supply-side demand response resources, the utilities must satisfactorily demonstrate to what degree their existing wholesale scheduling, bidding and settlement function, staff, and infrastructure can be leveraged for integrating supply-side demand response. In other words, the utilities must demonstrate the incremental costs of integrating supply-side demand response given wholesale market operations already exist within each utility. Additionally, the utilities already perform demand response forecasting and baseline calculations that can be leveraged for wholesale scheduling and settlement purposes. Again, the utilities must demonstrate what costs are incremental to integrate supply-side demand response given existing retail demand response operational infrastructure and resources already exist.

As a general principle, the Commission should look to transfer ratepayer costs and risks to the competitive market where feasible and where sufficient numbers of third-party providers exist. By creating a competitive market for delivery and operation of supply-side demand resources, costs will be more transparent, and the utilities will be empowered to competitively procure least cost supply-side demand resources, like all other resources, through short and long-term competitive procurement solicitations. This procurement structure can help reveal the cost and value of capacity from supply-side

demand response resources, and protect ratepayers by enacting performance standards as part of all supply-side demand response procurement contracts.

As an alternative to a fully competitive market, or as a transition to a competitive supply-side demand response market, the utilities could contract with third-parties to integrate and operate supply-side demand resources on their behalf. Under this model, competitive providers/operators manage their own costs and risks; they do not require ratepayers to fund their infrastructure investments. The Commission should investigate how a third-party demand response operations model would work and what minimum level of investment the utilities would have to make to enable a competitive procurement model for supply-side demand response resources.

Q. Does this conclude your initial direct testimony?

A. Yes, it does.