



**Comments of the *Environmental Defense Fund*
On the California Energy Commission's 2013 Integrated Energy Policy Report
Lead Commissioner Workshop on
Increasing Demand Response Capabilities in California Docket # 13-IEP-1**

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1. Introduction

Environmental Defense Fund (EDF) is a national non-profit consisting of passionate, pragmatic environmental advocates who believe in prosperity *and* stewardship, focusing on the most critical environmental problems. EDF appreciates the opportunity to provide comments to the California Energy Commission on the 2013 Integrated Energy Policy Report Lead Commissioner Workshop on Increasing Demand Response Capabilities in California, Docket Number 13-IEP-1.

California is a national and international leader on environmental policy, including laws that reduce greenhouse gas (GHG) emissions (AB 32) and require IOU's to have a 33% RPS (SBX1-2). The Public Utilities Commission and the Energy Commission have also established a clear loading order¹ to define the utilities' approach to meeting our energy needs: energy efficiency first, followed by Demand Response (DR), then renewables and only then conventional resources. EDF welcomes this effort by the CEC to address the role of DR in meeting our clean energy goals, consistent with the loading order that they have defined.

2. EDF's Position

The system needs reliable, low cost, flexible load in order to integrate increasing amounts renewable resources being driven by California's clean energy goals. The IEPR should reflect the enormous potential for DR to provide least cost solutions to renewable integration. In general, there are two types of flexible demand:² Supply side, or demand that participates directly in the wholesale energy and ancillary services markets as pseudo generation, and which is directly dispatchable by the system operator, including automated DR (ADR); and demand side, or price responsive demand, which includes Time Of Use (TOU), Critical Peak Pricing (CPP) as well as demand which is able to respond directly to real time price signals.

¹ See [CPUC and CEC Energy Action Plan](#)

² See [CAISO Demand Response and Energy Efficiency Roadmap: Making the Most of Green Grid Resources, Draft, June 12, 2013](#)

In these comments, EDF addresses:

- The new role for DR in the wake of SONGS and expected Once Through Cooling (OTC) closures
- Principles for DR in IEPR

2.1. The SONGS and Imminent OTC Closure Also Presents Some Unique Opportunities

The SONGS and imminent OTC closures presents a number of unique opportunities towards meeting California's clean energy goals. The elimination of 2,200 MW of base load generation in the location constrained³ region along with near term OTC closures means not only that creative solutions need to be pursued to ensure ongoing system reliability, but also that whatever replaces these resources can be procured in a manner that provides far more flexibility and ultimately greater value to the rest of the grid as a whole.

Given the high costs of outages and the relatively high Locational Marginal Prices (LMP) that may be experienced under peak load conditions, Demand Side Management (DSM) solutions, including Energy Efficiency (EE), Demand Response (DR) and Distributed Generation (DG) pose especially compelling alternatives when compared to building new generation or transmission. Given the high value proposition that DSM solutions can play in the areas affected by the SONGS closure and planned OTC retirements, we commend the CEC for taking closer look at the role DR can play in meeting these needs.

2.2. General Principles

The big challenge facing California is how to create a reliable electric grid at least cost while at the same time reducing fossil fuel consumption, increasing reliance on renewable resources, including variable generation resources, along with increasing energy efficiency and reducing per capita consumption. This is an enormously challenging task, made even more complicated by the complex regulatory structures that exist within the state.⁴

In the remainder of this section we enumerate several high-level principles that we believe should inform the various state agencies as they collectively consider these issues.

2.2.1. A Holistic, Integrated Optimization Approach Presents Significantly More Benefits than One Which Does not Consider Symbiotic Interactions

California must take advantage of a more integrated and least cost approach⁵ to its clean energy future, one that incorporates multiple, symbiotic components. Judiciously applied and integrated DSM solutions provide a timely opportunity for gaining experience in addressing some of the challenges that will result from the SONGS closure – as well as the planned increased in clean, renewable generation - especially when the value proposition incorporates consideration of the relative costs of building new conventional generation and transmission. Focusing on regional reliability attributes substation-by-substation and neighborhood-by-neighborhood may provide even more focused system benefits.

³ Location constrained refers to regions with sub optimal local generation assets as well as limited transmission connectivity to the rest of the grid.

⁴ [Rewiring California: Integrating Agendas for Energy Reform, Little Hoover Commission, December 2012](#)

⁵ E Woychik, M Martinez and K Skinner, Integrated Demand-Side Management Cost Effectiveness and Optimization Methodology, Advanced Workshop in Regulation and Competition: 26th Annual Western Conference, June 2013

2.2.2. Prepare for the Worst by Enabling the Best: Locationally Targeted DR, DG and EE Are Key to Grid Resiliency

In general, the more flexible a grid can become, the more resilient it is to unplanned generation outages, loss of key transmission or distribution elements, or sudden and unforeseen changes in demand. Flexibility means the ability of any one of these elements to change its behavior on operational timescales (seconds to tens of minutes). Historically, the grid operator has relied almost exclusively on conventional generation assets to ensure grid flexibility and reliability, including having peaking generators on standby.

But as California moves towards a clean energy future, such reliance on thermal generation should no longer be seen as the strongest alternative, especially due to the excessive GHG emissions this poses. Challenges associated with building new transmission also make this alternative an especially costly option. Historically, as well, demand has been considered a completely inelastic commodity. But as the tradeoffs between GHG emissions and consumer needs and preferences are considered, increasing the flexibility of load becomes a cost-saving solution to addressing grid reliability while reducing air and climate change pollution.

2.2.3. Increase Demand Participating Directly in the CAISO Wholesale Markets

A robust wholesale DR market does not currently exist within California. There are several reasons for this:

Within California, load participating in either wholesale or price responsive DR programs must do so either through the retail or commercial programs run by the Investor Owned Utilities (IOU), or by signing up with third-party Demand Response Providers (DRP). IOU controlled retail DR programs (commercial or residential) that enable DR to participate in the wholesale energy markets are not instantaneously available to the grid operator, since to utilize these IOU controlled DR resources, the grid operator first needs to request access from the IOUs. Even a small delay in the time it takes to request and ultimately dispatch those DR resources greatly reduces their value to the grid operator.

Furthermore, while the DR programs run by third party aggregators are able to offer their services directly into the wholesale energy markets, to date participation in such wholesale DR programs has been limited, partly because of the complexity of such programs. For starters, only until very recently has the issue over the rate at which DR participation is compensated been resolved.⁶ Furthermore, while DR resources participating in DRP programs receive compensation for the virtual generation (or negawatts) that they provide to the grid operator, the capacity value of their resources in reducing the RA obligation of the LSE is not directly available to them, and must instead be valued through bilateral contracts between the DRPs and the IOUs. And in the absence of a wholesale capacity market such as exists in PJM, such transactions are neither transparent nor liquid.

Market rules and regulatory structures must be developed that will enable direct participation of load in the wholesale DR markets. This includes determining the appropriate compensation mechanism not only for the virtual generation (or negawatts) provided by the DR resource, but also directly compensating the DR resources for the capacity value they provide to the system, while correspondingly reducing the capacity obligation of the respective LSE. And as the system moves towards increased penetration of variable generation resources and an evolving definition of capacity that includes a broader suite of capabilities including the ability to provide

⁶ CPUC Proposed Decision Adopting Policies for Demand Response Direct Participation, R. 07-01-041, November 29, 2012

flexible ramping services, DR resources must be allowed to participate in and be compensated by such new markets.

2.2.4. Cost Effective Telemetry Requirements Must Be Adopted that Enable the Participation of DR into the Wholesale Energy Markets

Telemetry requirements, which give the CAISO real time visibility and control of its supply side assets, are currently the same for wholesale DR participants as for conventional generation. Given the CAISOs strict and high cost telemetry requirements, this makes participation in wholesale DR markets financially challenging except for the largest DR providers. Telemetry obligations must instead be developed that reduce the financial barriers for participation in the wholesale DR market. This will be most important in enabling the participation of small commercial or residential DR providers.

2.2.5. Standardized, Transparent and Fungible Capacity Contracts Will Provide a Mechanism for DR to be Compensated for its RA Value

Increased transparency and standardization within California's existing bilateral capacity market can provide a more level playing field for third party DR providers (DRPs), who at this time can only receive capacity credit through bilateral IOU contracts that in most cases lack transparency. For example, PJM has incredibly robust DR participation in its wholesale capacity markets in part because of its transparency. Yet there are significant challenges with the PJM approach and other similar wholesale capacity markets throughout the country. So while we are not recommending this exact approach in California, we note that the transparency of the PJM wholesale capacity market may be one key to its success which could be adopted within California.

2.2.6. Device Specific Metering and Control Is Becoming More Widespread. Developing Standards and Effective Valuation Approaches that Take Advantage of these Technological and Manufacturing Shifts Will Incentivize Adoption

With reductions in metering and telemetry costs and with the widespread availability of Internet connectivity, real-time, device-specific monitoring and control is becoming more widespread. Developing market rules that manufacturers can integrate into devices with with standardized, secure and resilient communication protocols, along with the means by which to value these DR contributions, will enable customer participation in both supply and demand side DR.

Several things need to occur for such a solution to become viable. First, standards must be developed, and device manufacturers must be encouraged to continue to develop and increase market penetration of devices with device specific monitoring and control functionality including, for example, Home Energy Management Systems (HEMS), smart thermostats and smart appliances. And second, market rules, regulatory structures and valuation methods must be developed that will facilitate participation in both supply and demand side DR. Only when both of these barriers have been sufficiently addressed in a manner that is transparent and easy to use will LSE customers begin to recognize the value proposition of such technologies and be willing to offer portions of their load to direct or indirect operator control.

2.2.7. Demand Side DR Needs to Count Towards LSE Resource Adequacy Obligations, Both Generic and Flexible, and Compensated Accordingly

DR participating in the wholesale energy markets has a clear capacity value which can be counted in a manner similar to conventional generation: DR reduces peak load and therefore acts effectively as generation, and so is able to directly reduce an LSE's RA obligation. Under new proposed RA rules for flexible capacity being developed by the CPUC and CAISO, DR also impacts the Flexible Capacity Requirement (FCR) directly through reductions of peak load and maximum three-hour contiguous ramp, and so should also be allowed to count towards the FCR.

Demand side, or price responsive demand will also lead to reductions in peak load, and so the value of reducing the respective LSE's RA obligation should be passed on to those participating in such programs as a means of appropriately compensating those providing this valuable service. As the CAISO develops more experience with these differing price responsive DR structures, the CAISO will be able to model the price elasticity with a high degree of confidence. Over time this will enable such programs to more effectively be valued and utilized by the CAISO in its forecasting and real time operations.

3. Conclusion

EDF appreciates the opportunity to provide comments to the CEC on this important work. We believe that the CEC can provide important and timely guidance to the CPUC and CAISO on how adoption of Demand Response approaches can help meet the states aggressive renewable integration goals at least cost.

First and foremost, we believe the CEC should adopt aggressive DR goals for the state in this 2013 IEPR. Only by aiming high can the CEC sufficiently motivate the CPUC and the CAISO to take the steps needed to meet the loading order. Second, it is important to distinguish between market-based and price-responsive DR, and to identify the barriers to achieving each.

DR that can directly participate directly in wholesale energy markets and be dispatchable by the CAISO is of the highest value to the grid operator. Barriers for more complete adoption of this supply side DR include:

- Providing a mechanism and appropriate compensation for more DR to participate directly in wholesale energy and ancillary service markets.
- Telemetry standards that do not financially preclude smaller DR providers.

Price responsive DR includes TOU and CPP rate structures as well as more dynamic pricing models. Barriers to a more complete adoption of demand side DR include:

- The development of transparent and easy to understand mechanisms for LSE customers of any size to participate in and be justly compensated for their DR contributions, such as those being considered in the PUC's residential rates proceeding.
- The development of valuation mechanisms and manufacturing standards for Internet based automation technology, including HEMS as well as appliance specific monitoring and control.

And central to both types of DR:

- Increasing the overall transparency of the existing bilateral LSE capacity markets will enable a more transparent mechanism for valuing the benefits that DR provides to the grid operator and will result in more widespread adoption.
- Create mechanisms for accounting for the reduction in LSE RA obligations resulting from DR participation, both supply and demand side, in a manner that effectively compensates the DR provider for the value added.

The SONGS closure is a prelude to developments that can result in one of two futures: An expensive future with excessive reliance on standby natural gas generation, or a least-cost future with engaged and enabled customers as well as with distributed generation and storage. EDF urges the CEC to use the IEPR to create a tangible vision for a lower-cost, customer-enabled, clean-energy future – and continue California’s thought-leadership on clean energy.