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 (Filed September 19, 2013)

REBUTTAL TESTIMONY OF ENVIRONMENTAL DEFENSE FUND ON PHASE TWO AND PHASE THREE ISSUES

WITNESS:
Steven Moss
Partner, M.Cubed
2325 Third Street, Suite 344
San Francisco, California 94114
Phone – 415.643.9578
steven@moss.net

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I. INTRODUCTION

Environmental Defense Fund ("EDF") was pleased with the number of parties that submitted Testimony in this proceeding, demonstrating strong interest in a critical topic.[1] EDF is particularly supportive of Testimony that calls for more active development and deployment of Demand Response ("DR") programs and tariffs, including elements of Testimony filed by the CAISO, SDG&E, Sierra Club, The Clean Coalition, and TURN.

EDF offers this Rebuttal Testimony, pursuant to the California Public Utilities Commission's ("CPUC" or "Commission") "Joint Assigned Commissioner and Administrative Law Judge Ruling and Revised Scoping Memo Defining Scope and Schedule for Phase Three, Revising Schedule for Phase Two, and Providing Guidance for Testimony and Hearings," R.13-09-011,

[1] Testimony was filed by EDF, San Diego Gas & Electric ("SDG&E"), Pacific Gas and Electric Company ("PG&E"), Southern California Edison ("SCE"), Direct Access Customer Coalition and Alliance for Retail Energy Markets ("DACC" and "AReM"), Sierra Club, Joint Demand Response Parties ("Joint DR Parties"), Office of the Ratepayer Advocates ("ORA"), Opower, Marin Clean Energy ("MCE"), Natural Resources Defense Council ("NRDC"), California Large Energy Consumers Association ("CLECA"), Clean Coalition, The Utility Reform Network ("TURN"), Calpine Corporation, California Independent System Operator ("CAISO"), and EnergyHub.

issued on April 2, 2014 ("DR Testimony Guidance").[2] This Rebuttal Testimony responds to a number of issues raised in Testimony, including:

(1) A tendency to encourage continued reliance on past practices that are ill-suited to foster further deployment of DR in the context of a changing grid. As stated in the CPUC's "Order Instituting Rulemaking to Enhance the Role of Demand Response in Meeting the State's Resource Planning Needs and Operational Requirements," R.13-09-011, issued on September 19, 2013 ("DR OIR"), "as demand response programs evolved, so have the needs of the grid and the State's vision for future energy policy including the vision for the future of demand response."[3] The Commission should promulgate rules that allow DR-related programs to evolve beyond current approaches.

(2) Load modifying resource DR must receive commensurate treatment, in respect to Commission, investor-owned utility ("IOU"), and third-party attention and valuation as supply resources. As indicated in EDF's Opening Testimony, load modifying DR has the potential to address the largest portion of grid needs, Category 1 (Base Flexibility) needs.[4] Although other parties note the essential importance of load modifying DR, the bulk of Testimony submitted does not provide a method to support its success. New methods are needed to motivate the development and deployment of this resource, including the creation of state-of-the art tariffs and clear compensation for investor-owned utilities to develop and deploy value producing load modifying DR. The "smart grid" – and particularly smart meters – and the success of renewables have created new

[2] Steven Moss serves as the witness for this Rebuttal Testimony, and served as the witness for EDF's prior Testimony, which included witness qualifications and experience in Attachment A. Rebuttal Testimony is served May 22, 2014, pursuant to CPUC's "E-mail Ruling Granting Limited Extension of Time to Serve Rebuttal Testimony," R.13-09-011 (dated May 16, 2014).
[3] DR OIR at 6.
[4] *See* EDF Testimony at 13.

opportunities and new needs for load modifying DR. The Commission should seize this opportunity by ensuring that the value load modifying DR can provide is adequately compensated.

(3) A hesitancy to embrace DR as a means to address emerging grid requirements associated with flexible capacity.

2. DEMAND RESPONSE SHOULD BE FOSTERED TO MEET THE NEEDS OF A CHANGING SYSTEM

As described in EDF's Opening Testimony, the Commission should adopt policies that serve to enable and activate DR. In particular, the Commission should go beyond "aspirational goals" or plans to develop plans[5] to instead create hard incentives and policies that provide a pathway for increased, smarter DR using a thoughtful, transparent timeline delimitated with milestones. As stated by the CPUC in its DR OIR:

> The Commission has collaborated with stakeholders to make demand response programs more effective, yet its work is not complete. As demand response programs have evolved, so have the needs of our electric grid. In previous decisions, the Commission stated its intent to consider further and deeper changes to demand response programs.[6]

After providing a summary of previous demand response dockets, the DR OIR section concludes: "the time is ripe for the aforementioned deliberation."[7]

Although parties have offered varying estimates of the amount of megawatts currently available, collectively this information tells the same story: existing and expected levels of DR tariff and program penetration are far from the Commission's goals or the rapidly emerging grid

[5] PG&E Testimony at 1-2.
[6] DR OIR at 4.
[7] *Id.* at 6.

demand for this resource under current policies.[8] Valuable DR resources are not being harvested at the levels needed to meet what could and should be expected.

As the California Large Energy Consumers Association ("CLECA") noted in its Testimony, a 2009 Commission decision required that 10 percent of utility DR programs be compliant with CAISO's Proxy Demand Resource.[9] Similarly, as described in Southern California Edison Company's ("SCE") Opening Testimony, the Commission adopted price-responsive DR goals in 2002, to be achieved in 2007, which are at best only being met now, in 2014.[10]

The inability to meet Commission-mandated goals is not a failure of DR. Rather, it indicates the lack of necessary mechanisms to overcome institutional and other barriers to encourage IOU, third-party, and ratepayer development, deployment, and adoption of this resource. An auction mechanism, if well-designed and coupled with a market designed to receive DR, may serve as a pathway for supply resource DR to grow. Work to allow third-party access, accurate valuation of all types of DR, and accurate accounting into forecasting is still needed, however. Moreover, and as discussed below, the need to compensate load modifying DR for the value it produces is a pressing requirement.

3. LOAD MODIFYING DEMAND RESPONSE NEEDS A REVENUE STREAM MATCHED WITH THE VALUE IT PROVIDES

As discussed in EDF's Opening Testimony, load modifying DR, such as properly crafted and marketed tariffs, can create innovative access to substantial amounts of behavior-driven and

[8] *See* EDF Testimony at 11-12 (quoting the California Energy Commission's 2008 Update Energy Action Plan, which reports that "The first *EAP* set a goal of five percent of peak demand to come from price response from consumers by 2007. We are nowhere near that goal and must reinvigorate our efforts in this area.").
[9] CLECA Testimony at 4. CLECA calls the Commission decision, D. 09-08-027, at 130, "arbitrary," but regardless of the alleged basis of a CPUC ruling, it remains a regulatory mandate, and one that in this case is far from being met.
[10] SCE Testimony at 6.

technologically-enabled DR. However, compensation for the value produced by this approach is essential to motivate resource owners to provide needed load modifying DR. Ensuring compensation for value produced is a two-fold issue. First, load modifying resources need to receive commensurate treatment as other assets that perform the same function. Second, the manner or pathway for such commensurate treatment, including compensation, must be determined.

Commensurate Treatment. Most parties agree that load modifying DR should receive commensurate treatment with supply resource DR, including commensurate valuation and compensation. CAISO explicitly acknowledges the role load-modifying DR can play in ensuring resource adequacy, and suggests the criteria by which this asset can be measured for this purpose, as follows:

> If load modifying demand response is consist ently 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 re sponse 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.[11]

As indicated in our Opening Testimony, EDF fully concurs that effective load-modifying DR needs to alter load at times that are coincident with system needs, and, better yet, when and where these needs are expressed both at the system and local levels. Load modifying DR has the potential to do exactly this – able to provide the value that CAISO acknowledges would be helpful to the electricity grid. Although CAISO may not be able to directly dispatch load modifying DR, this fact does not reduce the value of this resource, as long as its availability can be accurately and transparently measured. A DR asset that is able to reduce or prevent a system need (rather than provide a responsive action) should receive compensation for the value it

[11] CAISO Testimony at 6.

provides to the system. Put differently, there is little reason to solely focus on responsive treatment at the expense of a preventative cure. Both work to the same end – a healthy and functioning electricity grid – and should be valued commensurately.

Compensation Pathway. Although many parties agree with the premise that load modifying DR should receive commensurate attention, value, and access, views diverged in respect to how to structure pathways for compensation. EDF's Testimony suggested resource adequacy ("RA") credits as a possible compensation method for load modifying DR resource owners to benefit from the value they provide to the system. Some IOUs recommended that DR procurement through Requests for Proposals ("RFP") should provide a basis to enlarge the resources' footprint.[12] Ultimately, cost-based principles could be leveraged to automatically and necessarily provide accurate compensation. Regardless, the Commission should determine a viable approach to compensate load modifying DR, either through one or a combination of the pathways described in the body of Testimony and work submitted in this proceeding, or through another mechanism that accomplishes the underlying goal: to provide an asset that creates value with access to a revenue stream.

RA Credits. In Opening Testimony, CAISO argued that RA credits should not be provided to load modifying DR even if the resource results in demonstrable value to the grid. Although EDF's Testimony recommended that RA credits be available to all types of DR that create benefits to the system, that suggestion is based on the underlying principles discussed above, which are more important than the mechanism chosen to achieve them.

The most important aspect of this issue is ensuring that the benefits created by both load modifying and supply resource DR are treated commensurately, are transparent, and can be leveraged to motivate IOUs, ratepayers and third parties to actively develop, deploy, and adopt

[12] PG&E, page 1-8.

DR. Likewise, DR's load modifying benefits need to be directly accounted for in investment decisions – including those related to RA – at the distribution, transmission, and generation level.

From this perspective and as noted above, RA credits are just one mechanism that should be considered by the Commission to be available to catalyze load modifying DR development and adoption. If an alternative approach is needed that is commensurate but distinct from what supply resource DR will receive, one possibility would be to devise a "RA Rebate." This rebate could be secured by a utility demonstrating achievement of avoided load. Commensurate to an RA Credit, this mechanism would provide compensation to asset owners for value produced. By isolating the credit to the load modifying "bucket," beneficial changed load shapes achieved through this resource could be distinguished from load changes secured through supply resources. For example, an IOU could explicitly link an adopted load modifying tariff or measure to a change in the forecasted need for flexible, peak, or other capacity, and be rewarded ex-poste for successfully achieving the forecasted change.[13] Regardless, if this approach is more appealing to parties, the issue would appear primarily definitional.

However, if an appropriate alternative incentive mechanism is not identified, the Commission should consider relying on RA credits to properly value load modifying DR. As stated by CAISO, both load modifying and supply resources "…do not need to count as resource adequacy capacity,[14]" but if treating them in that fashion provides an important service, the Commission is not prohibited from doing so.

In its attempt to demonstrate that RA credits should not be offered to load modifying resources, CAISO cites the Commission's website, as follows:

[13] To police against gaming, the rebate could be calibrated so as to be highest for an accurate forecast, with small additional benefits for exceeding the forecast, and penalties for falling to achieve it.
[14] CAISO, page 3.

> 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.[15] Second, it is designed to provide appropriate incentives for the siting and construction of new resources needed for reliability in the future.[16]

Load modifying DR is capable of meeting both RA goals described above in a cost effective and reliable manner. Time- and place-based tariffs and programs which lead to permanent, regular, or intermittent reductions in the need for flexible or peak capacity, or are available to address reliability needs, contribute to ensuring that CAISO has sufficient resources, by filling in, or reducing the need to fill in, gaps at predictable times. Likewise, well-crafted time- and place-based tariffs are an excellent tool through which to provide pricing incentives to site new resources, including enabling devices, storage, photovoltaic arrays, and other generating assets. Again, a resource that prevents, rather than cures, a system issue, should not be devalued.

Requests for Proposals. If the CPUC determines that RFPs are a viable method of procurement for load modifying resources, these RFPs should focus on securing cost-based tariffs and associated enabling devices, and/or be in response to Commission-sanctioned incentives. In addition, all preferred resource RFPs – including energy efficiency, DR and storage – structured based on cost-effectiveness thresholds could serve as a supplement to securing additional capacity, though should not be used as the primary means to do so.

Cost-Based Principles. Although an appropriate revenue mechanism would still need to ultimately be designed, load modifying DR tariffs could be structured in such a way that their design would intrinsically provide for value to ratepayers and third parties. Development of these tariffs could be induced in several ways. For example, the Commission could further

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[15] CAISO appears to argue that "real time" implies that the resource is available to the Operator to be called on in a given moment. An alternative definition is that "real time" means that a resource will transparently appear at a given time and place, without necessarily being called upon. As the relied upon language comes from a website, definitions are not provided (as is more common with a technical or legal document). The plain language reading of this term would appear to be more consistent with the latter definition.

[16] CPUC, RESOURCE ADEQUACY *at* http://www.cpuc.ca.gov/PUC/energy/Procurement/RA/ (last modified Apr. 26, 2014).

advance its existing policy that rates be cost-based by insisting that tariffs be offered that reflect the distribution-specific costs of providing electric service, at a given time, with an emphasis on tariffs that reflect coincident peaks, so that local and system benefits are created. If marketed correctly, such tariffs could, in turn, induce beneficial load shifting, as well as absolute reductions in electricity use, by energy users, as assisted by third parties. The tariffs themselves, and the resulting actions by ratepayers and third parties, would thus necessarily be cost-effective. To the extent that the IOUs fully adhere to cost-based principles, the need for a revenue mechanism would be aided. Likewise, the development and deployment of geographic- and time-variant cost-based tariffs could be induced by creating a compensation stream for the value produced.

4. DR CAN MEET FLEXIBLE CAPACITY NEEDS

In its Testimony, CLECA presents information suggesting that DR may be ill-suited to fill flexible capacity needs. EDF acknowledges that some types of DR are better able to address reliability needs, as CLECA suggests, and that these DR types can be valuable. However, while CLECA is correct in stating that some DR programs are a poor match to meet flexible capacity requirements – a point supported in EDF's Opening Testimony – other DR programs, by changing load shape, have the potential to perform precisely this service. Certain types of load modifying DR, including time-variant rates, hold particular promise to help address flexible capacity needs.

The differences in CLECA's and EDF's Testimony on this issue are in large part definitional. CLECA states that "DR for flexibility service is a new concept and would involve a

market product that can be ramped up and down and can follow load."[17] This may be true for certain DR programs in respect to Category 2 and 3 flexible capacity, which is predicated on intermittency needs. These programs, even if they are not able to provide flexible capacity, may still be helpful in addressing other system needs. At the same time, other types of DR, including but not limited to auto-DR, holds the potential to provide flexible capacity.

Likewise, Category 1 flexible capacity, which demands a large amount of frequently available resources, much of which is required during predictable time periods, is well-suited to be addressed, in large part, by load modifying tariffs and programs. By providing preventative reductions, rather than instantaneous treatment, certain types of load modifying programs (like, for example time-variant rates) have the potential to address grid needs at the front end. This is particularly true in respect to tariffs tied to enabling communication and control devices, which can be built-up based on geographic coincident peaks and bundled together to address an aggregation of capacity needs. Doing so is the next essential step in creating the grid of the future. For example,

> To integrate intermittent renewable energy sources, we really need to start taking demand-side participation seriously …Time-varying pricing is the direct route to the goal. Sacramento Municipal Utility has recently had a very successful rollout of critical -peak pricing, one form of time -varying pricing …My own research suggests that time -varying pricing …would reduce bills for the majority of residential and industrial customers, and that it wo uld raise bills by more than 20% for only a few percent of customers. Those are the cu stomers who consume the most at peak times and impose the most cost on the system. Prices that reflect the cost of electricity would be a more effective way to integrate renewables and a fairer way to allocate the costs.[18]

[17] CLECA, page 17.

[18] Severin Borenstein, *Money for Nothing?* ENERGY ECON. EXCHANGE, May 12, 2014.

Over the long-run, these tariffs and programs can be used to reshape load so that it better matches production costs, becoming the system's primary avenue to reduce flexible capacity needs on the front end.

This concludes the Testimony of Steven Moss.

Respectfully signed and submitted on May 22, 2014

On behalf of Environmental Defense Fund,

Witness:

/s/ Steven Moss

Partner
M.Cubed
2325 Third Street, Suite 344
San Francisco, California 94114
Phone: 415-643-9578
Email: steven@moss.net

Party on Record:

/s/ Michael Panfil

Michael Panfil
Attorney
Environmental Defense Fund
1875 Connecticut Ave., NW
Washington, DC 20009
Phone: (202) 572-3280
Email: mpanfil@edf.org