

Docket No.: R.13-09-011

Exhibit No.: _____

Date: May 6, 2014

**DIRECT TESTIMONY
OF CALPINE CORPORATION**

1 **Q. Please state your name and title.**

2 A. My name is Matthew Barmack. I am Director, Market and Regulatory Analysis for
3 Calpine Corporation (“Calpine”). In this role, I work on market and regulatory issues
4 before the California Public Utilities Commission (“Commission”) and the California
5 Independent System Operator Corporation (“CAISO”) related to long-term procurement,
6 resource adequacy (“RA”), and renewable resources.

7

8 **Q. Briefly summarize your educational background and professional experience.**

9 A. I have been at Calpine for approximately five years. Prior to joining Calpine, I worked at
10 Pacific Gas and Electric Company (“PG&E”) for approximately three years. During my
11 time at PG&E, I focused on RA policy, the valuation of offers in competitive
12 solicitations, and analytic issues associated with valuing the capacity attributes of
13 generation, demand response, and other resources. Before joining PG&E, I worked in
14 economic consulting for nine years, first at the Brattle Group and subsequently at
15 Analysis Group. Most of my consulting work involved the economic analysis of
16 wholesale power markets, including the estimation of integration costs for renewable
17 resources, the analysis of behavior in bid-based wholesale markets, and the application of
18 the competitive screens that the Federal Energy Regulatory Commission uses in
19 analyzing mergers and granting market-based rate authority. I have an AB degree in
20 economics from Harvard College and a Ph.D. in economics from the Massachusetts
21 Institute of Technology.

22

1 **Q. What are the general Demand Response (“DR”) issues you will address in your**
2 **testimony?**

3 A. I will address the following three general issues regarding Demand Response (“DR”):

- 4 • DR should only be procured when it is cost-effective relative to other resources
5 providing the same suite of services.
- 6 • DR should be required to meet the same performance requirements as other RA
7 resources.
- 8 • DR should have the potential to set clearing prices for energy and ancillary services in
9 CAISO markets.

10 **Q. Please explain why DR should only be procured when it is cost-effective relative to**
11 **other resources providing the same suite of services.**

12 A. To be consistent with state law and the Loading Order, DR should only be procured to
13 the extent that it is cost-effective relative to other resources providing the same suite of
14 services. For example, in light of the current over-supply of conventional generation, DR
15 may not be a cost-effective source of RA capacity, energy, and/or ancillary services
16 relative to conventional generation. Thus, procuring DR instead of other, more cost-
17 effective resources could increase costs to ratepayers. A recent analysis produced by
18 Commission staff suggests that the average price of RA capacity delivered during the
19 years 2012 through 2016 was \$3.28/kW-month.¹ In contrast, PG&E, for example, pays
20 \$8-9/kW-month to customers enrolled in its Base Interruptible Program.² The three

¹ See Table 11 of the *2012 Resource Adequacy Report* (2014),
[http://www.cpuc.ca.gov/NR/rdonlyres/94E0D083-C122-4C43-A2D2-
B122D7D48DDD/0/2012RARReportFinal.pdf](http://www.cpuc.ca.gov/NR/rdonlyres/94E0D083-C122-4C43-A2D2-B122D7D48DDD/0/2012RARReportFinal.pdf).

² See *PG&E Electric Schedule E-BIP, Base Interruptible Program* (2013),
http://www.pge.com/tariffs/tm2/pdf/ELEC_SCHEDS_E-BIP.pdf. BIP incentive payments yield
PG&E energy benefits when BIP is actually dispatched in addition to RA benefits. Given that

1 Investor-Owned Utilities (“IOUs”) offer similarly high incentives for many of their DR
2 programs.³

3

4 **Q. Please explain why DR should be required to meet the same performance**
5 **requirements as other RA resources.**

6 A. To the extent that DR is procured to satisfy RA obligations, it should meet the same
7 performance requirements as other RA resources. If DR is counted toward meeting RA
8 capacity obligations, but is not held to the same performance requirements as other RA
9 resources, either reliability will be compromised or the CAISO and/or other Load Serving
10 Entities (“LSEs”) will be forced to procure additional capacity beyond the capacity
11 necessary to meet RA obligations in order to maintain reliability.

12

13 **Q. Please explain why DR should have the potential to set clearing prices for energy**
14 **and ancillary services in CAISO markets.**

15 A. DR should have the potential to set clearing prices for energy and ancillary services in
16 CAISO markets. Supply-side DR will have the potential to set clearing prices in CAISO
17 markets when it participates directly in CAISO markets through the Proxy Demand
18 Resources (“PDR”) or Reliability Demand Response Resources (“RDRR”) programs. It

BIP is dispatched infrequently, however, the energy benefits are small and the vast majority of the benefits associated with the program are RA-related. Hence, the incentive payments reasonably can be compared to bilateral prices for RA capacity alone. For example, a PG&E analysis suggests that RA benefits account for approximately \$59.7 million of the \$60.3 million in benefits projected for BIP over the 2012-2014 period. *See* cells G107:G113 of the BIP tab of <http://www.cpuc.ca.gov/NR/rdonlyres/DCB586AA-359B-4658-9EE7-DE3BDB0D9574/0/PGEDemandResponseReportingTemplatewithDefaultFIXED.xls>.

³ For example, SCE’s incentives average \$9.76/kW-month across its entire DR portfolio. *See* <http://www.cpuc.ca.gov/NR/rdonlyres/33DE2697-93B6-475F-9B1F-146A1BF073AD/0/SCEDemandResponseReportingTemplateFIXED.xls>, Portfolio tab, cells F62÷F56÷1000÷12=\$9.76/kW-month.

1 is less clear, however, how demand-side DR could set clearing prices, though, it could be
2 reflected in price-responsive load bids by LSEs in CAISO day-ahead markets.

3

4 If DR does not have the potential to set clearing prices (*e.g.*, if it is dispatched outside of
5 CAISO markets) then it could lead to the dispatch of DR at prices higher than the prices
6 at which additional energy is available from clearing price markets. In addition, this
7 inefficient dispatch of DR could suppress clearing prices by effectively reducing demand
8 in clearing price markets, further eroding the already fragile economics of resources, such
9 as conventional generation resources, that are compensated through clearing prices and
10 on which the state continues to rely to ensure reliability.⁴ The same concerns apply to the
11 use of DR to provide ancillary services.

12

13 **Goals for Demand Response**

14 **Q. Please provide a detailed explanation of your RA concerns, specific to the**
15 **bifurcation framework adopted in D.14-03-026.**

16 A. As noted above, DR should be subject to the same performance obligations as other
17 resources to qualify as RA capacity. In the development of must-offer obligations for
18 flexible RA, the CAISO went to great lengths to define a specific must-offer obligation to
19 accommodate the operating characteristics of DR resources. This must-offer obligation

⁴ See *e.g.* CAISO 2013 Annual Report on Market Issues & Performance, Tables 1.7, 1.8, and Figure 1.22, at 55-56, <http://www.aiso.com/Documents/2013AnnualReport-MarketIssue-Performance.pdf> (the CAISO's analysis indicates a decrease in the net revenues of combined-cycle gas turbines in 2013 as compared to prior years and that estimated net revenues also fall short of estimated annualized fixed costs).

1 only applies to a limited set of hours in a day and does not apply after a resource has been
2 dispatched a certain number of times in a month.⁵

3

4 To prevent over-reliance on resources that are only available for a limited set of hours or
5 for a limited number of dispatches, the CAISO capped the amount of resources subject to
6 the reduced must-offer obligation that can be used to comply with flexible RA
7 procurement requirements. In doing so, the CAISO struck a careful balance between
8 creating special rules to accommodate preferred resources, such as DR, and ensuring that
9 reliability is maintained.

10

11 The Commission should ensure that DR resources that are procured by the IOUs are
12 consistent with CAISO's carefully considered balance between accommodating preferred
13 resources and maintaining reliability with respect to both performance requirements and
14 RA counting.

15

⁵ See *CAISO Flexible Resource Adequacy Criteria and Must-Offer Obligation, Market and Infrastructure Policy, Revised Draft Final Proposal, Category 3 (Super-peak flexibility)*, at 32-34 (March 7, 2014), <http://www.aiso.com/Documents/RevisedDraftFinalProposal-FlexibleRACriteriaMustOfferObligation-Clean.pdf>.

1 **Supply Resources Issues**

2 **Q. In addition to the elements listed in the DRAM proposal,⁶ are there provisions that**
3 **should be included in a standard contract? Explain the reason for each**
4 **recommended provision.**

5 A. In assessing the cost-effectiveness of DR procured through the Demand Response
6 Auction Mechanism (“DRAM”), potential reliability and energy value differentials
7 should be considered. It is unclear whether the Commission intends to place any
8 requirements on the prices at which DR procured through the DRAM must offer these
9 resource into CAISO markets. Resources that only offer energy into CAISO markets at
10 prices close to the offer cap,⁷ for example, may not provide the same reliability and other
11 benefits as resources that are more generally available, which can create reliability and
12 energy value differentials.

13
14 It is possible that the DRAM itself can capture these value differentials. For example, a
15 resource that is offered into the CAISO markets at the offer cap will almost never be
16 dispatched and, as a result, will provide little or no energy value to the party that holds
17 the rights to the energy value, whether that is the DR provider or a LSE. To the extent
18 that there is little or no energy value for the DR provider to monetize, it must recover its
19 customer acquisition, metering, and other costs through capacity payments.

20 Consequently, the DR provider will submit high offers into the DRAM, which are less

⁶ See Demand Response Auction Mechanism Proposal, Attachment B to the *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* (April 2, 2014).

⁷ An “offer cap” or “Maximum Price for Energy Bid ” is the maximum price suppliers are permitted to offer into the CAISO markets, currently set at \$1000/MWh.

1 likely to be selected than other resources with higher energy value and, correspondingly,
2 lower offers in DRAM.

3

4 Alternatively, the Commission could place limits that are more restrictive than the
5 CAISO offer caps on the levels at which resources selected through DRAM can bid in
6 CAISO energy and ancillary services markets.

7

8 **Q. The DRAM proposal is to base the capacity cost cap for each auction on the average**
9 **of bids received, per auction. Are there additional factors that should be considered**
10 **in constructing a capacity cost cap? Is a different approach preferable?**

11 A. Calculating the capacity cost cap based on the average of bids received in a particular
12 auction could lead to inefficient results. For example, in an auction with many low
13 offers, the average of bids will be low in absolute terms. An offer that is higher than the
14 average in a low-offer auction could still be cost-effective in absolute terms, but might
15 not be selected because it is higher than the average in this particular low-offer auction.
16 Conversely, an auction with many high offers will have a high average bid level. Offers
17 that are lower than this high average may not be cost-effective in absolute terms, but
18 might be selected because they are lower than the average of the offers in the particular
19 auction.

20

21 To avoid this inefficient result, at least in the initial auctions, procurement through the
22 DRAM should be limited to procurement that satisfies an absolute cost-effectiveness test.

1 Once the Commission and the IOUs gain experience with the DRAM, clearing prices
2 from previous auctions may be used to set cost caps for subsequent auctions.

3

4 **Q. In D.14-03-026, the Commission discusses its policy of increasing the amount of**
5 **demand response integrated into the CAISO market. Provide your thoughts on how**
6 **the Commission can determine an appropriate annual goal for overall demand**
7 **response integrated into the CAISO market.**

8 A. The DRAM proposal articulates a goal of procuring price-responsive DR equivalent to
9 5% of peak load through the DRAM. Further, the proposal stipulates that DR procured
10 through DRAM will be integrated in CAISO markets. The DRAM proposal should be
11 clarified to specify whether the Commission envisions a goal for CAISO market-
12 integrated DR that is higher than or distinct from the 5% goal for DRAM.

13

14 **Q. Does this conclude your opening testimony?**

15 A. Yes.