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 (January 25, 2007)

PHASE 3 PREHEARING CONFERENCE STATEMENT OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR

Dated: August 15, 2008

CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION

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The California Independent System Operator Corporation ("CAISO") submits this Prehearing Conference Statement for Phase 3 of the proceeding, pursuant to the Assigned Commissioner's and Administrative Law Judge's Amended Scoping Memo and Ruling dated July 18, 2008 ("Phase 3 Scoping Memo").

In the Phase 3 Scoping Memo, Commissioner Chong and ALJ Timothy J. Sullivan (the ALJ assigned to this phase of the proceeding) have noted that:

> In Phase 3 of this OIR, we will build a record to address the operation of the investor-owned utilities' emergency triggered DR programs in the future electricity wholesale market. (Phase 3 Scoping Memo at p.1);

and

> The original scoping ruling for this proceeding also noted the need to ensure that DR programs adapt to function within the day-ahead market that will be implemented with the CAISO Market Redesign and Technology Upgrade (MRTU). The CAISO plans to implement MRTU before the summer of 2009. The Commission has recommended that the CAISO account for existing DR in a way that does not promote procurement of redundant supply-side resources. A key to resolving this issue is identifying where there are disconnects or gaps between existing retail DR programs and the CAISO's operational needs for the wholesale market, both at this time and when MRTU will be implemented. (Phase 3 Scoping Memo at p. 2, citing OIR at p. 8..)

I. INTRODUCTION

The CAISO appreciates that the Commission has implemented this phase to address the important policy issues pertaining to the treatment and benefit of emergency-triggered demand response programs[1] and how these programs affect both reliability and the wholesale electricity market. In this proceeding, the CAISO has consistently argued that emergency-triggered DR programs are not useful in the context of *planning* or *the operation of the system on a day-to-day basis*, nor do these programs add depth or

[1] The CAISO considers both BIP and Stage 2 triggered direct load control programs, like A/C cycling, as Emergency-triggered demand response programs.

liquidity to the wholesale electricity markets. This is *not* to say that emergency-triggered demand response programs have *no* system benefits; indeed they do provide some benefits to the system, and, perhaps more significantly, benefits to end-use electricity consumers, but we must note that these benefits take the form of

- protection against involuntary firm-load shedding and
- enhancement of service reliability;

after the system is has degraded to a stage of *crisis* and/or the underlying assumptions of the resource adequacy program *have already been violated*. The primary efforts of this phase should build DR programs and products that are useful for normal, albeit stressed system conditions—the conditions that, if we plan correctly, should represent the vast majority of the time.

The CAISO has been working cooperatively with the three IOUs, as well as representatives from CLECA and CMTA, to consider possible modifications to the Base Interruptible Programs operated by the IOUs, in order to address the CAISO's concerns arising from the current approach of counting these programs as resource adequacy capacity. The CAISO is optimistic that these discussions and proposals, along with the output of Phase 3 of this proceeding, will help to inform the stakeholders and the Commission, and will yield long-term solutions to the treatment of emergency-triggered DR programs, solutions which are mutually acceptable to the Commission and to the CAISO.

II. ANALYSIS AND DISCUSSION OF THE QUESTIONS POSED IN THE PHASE 3 SCOPING MEMO

1. Can any of the existing emergency-triggered programs be used prior to a CAISO-declared Stage 1 or Stage 2 Emergency?

In our June 25, 2007 Comments re: ALJ Ruling Requesting Information on Emergency-Triggered Demand Response, the CAISO drew a *distinction between:*

> i) issues pertaining to the subject of determining a level of desired service reliability for Utility Distribution Company ("UDC") end use customers; and
>
> ii) issues pertaining to maintaining systems operation for the bulk power grid, which is the core mission of the CAISO[2].

We submit that this Question No. 1 is a question related to the first subject, that being the desired reliability of customer service that the IOUs want to establish for their customers, within their service territories. In this regard, we note that the Phase 3 Scoping Memo makes mention of non-CAISO system related use of DR, commenting that:

> Some IOUs may be using emergency triggered DR to address local transmission/distribution system issues as well. We will also need to determine how many megawatts of these programs are needed to maintain local system reliability.[3]

Accordingly, the CAISO defers to the IOUs to provide information to the Commission as to the potential uses and benefits of these non-dispatchable DR resources, to support or enhance customer distribution service within the IOU service territory.

2. How are emergency-triggered programs useful for resource adequacy purposes?

The CAISO has argued strenuously before the Commission that emergency-triggered demand response programs are *not useful* for resource adequacy purposes and

[2] See CAISO Comments re ALJ Ruling Requesting Information on Emergency-Triggered Demand Response, filed June 25, 2008, at pp. 3-5.
[3] Phase 3 Scoping Memo at p.4, fn 9.

should not count as Resource Adequacy capacity[4]. Instead emergency-triggered demand response programs should either: 1) be transitioned and reformulated into products that align with and can participate in the CAISO's day-ahead and real-time markets or 2) serve as tool for the IOUs to hedge against involuntary firm load shedding, a level of protection which is above and beyond the Planning Reserve Margin level, and for use

[4] See, e.g., CAISO Comments re ALJ Ruling Requesting Information on Emergency-Triggered Demand Response, filed June 25, 2008, at pp. 3-5, wherein we stated:

> It is from the perspective of the power grid operator that CAISO has repeatedly stated, as the ALJ has noted in her ruling, that:
>
> > These emergency triggered DR programs are useful to mitigate the emergency (i.e. as an alternative to load shedding), but [are] not useful in the forward or real time markets to reduce demand or operate as a generation resource substitute for the provision of ancillary services.
>
> Once an emergency situation occurs on the grid, systems operations will be managed and grid reliability maintained by instructing firm load shedding, after all available generation resources and inter-control area options are utilized, and should no other load curtailment options or load management schemes exist. The CAISO's core reliability function is to ensure the efficient use and reliable operation of the transmission grid, consistent with the achievement of planning and operating reserve criteria no less stringent than those established by the Western Electricity Coordinating Council ("WECC") and the North American Reliability Corporation ("NERC"). In contrast, serving end-use load and providing for service reliability is a core function of the UDC.
>
> Accordingly, we focus on generation and non-generation resources from the standpoint of Resource Adequacy ("RA"). The Commission's prior articulation of the concept bears repeating:
>
> > Resource procurement traditionally involves the Commission developing appropriate frameworks so that the entities it regulates will provide reliable service at least cost. This involves determining an appropriate demand forecast and then ensuring that the utility either controls, or can reasonably be expected to acquire, the resources necessary to meet that demand, even under stressed conditions such as hot weather [footnote omitted] or unexpected plant outages. 'Resource adequacy' seeks to address these same issues. In developing our policies to guide resource procurement, the Commission is providing a framework to ensure resource adequacy by laying a foundation for the required infrastructure investment and assuring that capacity is available when and where it is needed." (D.04-01-050, pp. 10-11.)
>
> From the CAISO's systems operations perspective, we consider the primary value of emergency DR programs to lie in their ability to provide an ex ante order of priority to load shedding, when grid reliability is threatened. This mechanism substitutes for the less socially desirable approach of implementing a series of immediate geographic rotating outages, in which all loads on electric circuits are disconnected. Such load prioritization is not a core function of the CAISO, even though such emergency response capability, if available, is useful to the grid operator for managing system conditions. A prioritized system that can incrementally reduce loads will help the grid operator prevent more broad-ranging, involuntary firm load shedding, by preserving the capacity of the resources that are providing the CAISO's minimum required levels of operating reserves.

when the system is in a critical state, or when the underlying resource adequacy program assumptions have otherwise, *already been violated*.

The fundamental dilemma is this: Emergency-triggered programs, as currently configured, count as Resource Adequacy capacity and, therefore, count as part of the Planning Reserve Margin, yet the CAISO *cannot* plan around and *does not* have access (availability) to these DR resources until *after* the CAISO declares a Stage 2 or Stage 3 Emergency. The thrust of the CAISO's argument has consistently been that emergency-triggered demand response programs should not qualify as "resource adequacy" resources, since, on a day-to-day basis, WECC and NERC reliability standards require that the CAISO *must plan to serve all the load* (including the load that these resources might ultimately curtail), and so we *must* have sufficient operating reserves to prevent an emergency *in the first instance*. Accordingly, ironically, to have access to the emergency-triggered DR resources as currently configured, the CAISO would have to plan to *be in an emergency*, rather than plan to *avoid* one. Thus, emergency-triggered DR programs are not useful as resource adequacy capacity.

3. What is the effect and usefulness of the emergency-triggered DR programs to mitigate scarcity pricing under MRTU?

Scarcity Pricing is a mechanism that lets the CAISO's wholesale energy and Ancillary Services ("A/S") market prices rise, potentially, beyond any applicable bid cap, when there is a shortage of supply in the market[5]. Emergency-triggered DR programs will not mitigate scarcity pricing because, by their nature, they are *not in the market* and

[5] In the Phase 3 Scoping Memo, Commissioner Chong and ALJ Sullivan have noted that:

> Following the general practice in other ISO markets, shortage is defined as the inability of the CAISO to procure sufficient regulation or operating reserves through market mechanisms. For purposes of this question parties should refer to the CAISO's Final Reserve Scarcity Pricing Proposal, dated July 11, 2008, which can be found at: http://www.caiso.com/2001/2001dfbd6bcd0.pdf (Phase 3 Scoping Memo at p. 6 fn 12.)

are only activated after the CAISO is in a reserve shortage (i.e. Stage 1 or Stage 2), or to address a local transmission emergency.

Some might argue that, under the following scenario, emergency-triggered DR resources could mitigate a scarcity pricing mechanism:

- If the CAISO were simultaneously to be in a scarcity pricing condition and under a Stage 2 Emergency declaration, and
- During such conditions, there were a dispatch of enough emergency-triggered DR resources to induce substantial load reduction, then
- The result could be a mitigation of scarcity pricing in the hours immediately subsequent to the dispatch of the emergency DR.

This result does not necessarily follow in actuality, however. In actuality, a direct load reduction (represented by the dispatch of an emergency-triggered demand response program) would only reduce the CAISO's operating reserve requirement by 7% of the "nameplate" MW level of the DR resource—because the emergency DR is only being utilized as unspecified general load reduction rather than as a targeted injection of A/S into the system, all of which is a function of timing for call of the resource. Accordingly, the dispatch of even a large MW amount of demand curtailment (say, for example, 500 MWs, representing the dispatch of an emergency-triggered demand response program) would only produce a correspondingly small reduction (approximately 35 MW) in the CAISO's operating reserve requirement. Thus, under a typical scenario, wherein the CAISO load level was 45,000 MW, the operating reserve requirement would be approximately 7% of that amount, or 3,150 MW. If, for example, the DR resource were called, and load were reduced to 44,500 MW (the load drop caused by the large [500 MW] emergency-triggered demand response program), then the operating reserve requirement would only change to 7% of 44,500 MW = 3,115 MW or, as described above, *only 35 MW lower then before the program was triggered—so five hundred MWs of load curtailment yielded only 35 MW of operating reserves, an approximate fourteen -*

to-one benefit.[6] Accordingly ability of the DR resource to mitigate the scarcity price of A/S resources would appear to be relatively small.

In contrast, however, if a DR program could offer its resource *directly into the CAISO's operating reserves market*, for example, to sell non-spinning reserves, then the DR resource could provide a *one--to-one benefit*, to relieve a scarcity pricing condition. To illustrate using the above example, then, instead of merely causing a 35 MW reduction of the operating reserve, the direct offer to the CAISO of 500 MW in non-spinning reserves (from a large Participating Load DR resource), if awarded, would meet 500 MW of the CAISO's total 3,150 MW operating reserve requirement; this application (direct into the CAISO market) would be *approximately 14 times more effective* than if the DR resource were merely to provide a simple load reduction. Were DR resources employed in this way, the ability of the resource to affect scarcity pricing would be much more significant.

4. Should the emergency-triggered DR programs, as currently configured, be counted toward the Commission's Planning Reserve Margin? Why? Or Why not?

The CAISO urges that the Commission *not count* emergency-triggered demand response programs toward the Planning Reserve Margin. Quite simply, these resources are not suitable as planning resources—in fact, they stand the concept of planning reserves on its head. To access the resources, the system condition must degrade beyond stressed condition. We must be in emergency condition. Prudent planning does not incorporate the regularized calling of emergencies in order to access those resources needed to run the system.

[6] In the example, it took 14.29 MWs of load curtailment to obtain each MW of operating reserves. (500 MW [the DR program nameplate level and curtailed load] divided by 35 [the 7% of operating reserves achieved from the 500 MW load reduction] = approx 14.29) When one considers the average cost per MW when DR is procured, the cost of achieving these 35 MWs of operating reserves is especially poignant.

One could argue that the current policy of qualifying close to 2,000 MW of emergency-triggered demand response as RA qualifying capacity potentially jeopardizes reliability, because it provides the systems operator (CAISO) *with only 11% effective PRM* to operate the system under normal but stressed conditions. In order to have access to the full 15% PRM, the CAISO, as the responsible Balancing Authority, would have to be in violation of WECC reliability standards and declare a Stage 2 Emergency (which is recognition of an existing/impending operating reserve shortage) to access the additional 3% to 4% PRM that is tied up in these emergency-triggered demand response programs. We submit that this is a policy so unsustainable as to warrant a Commission determination putting an immediate end to adding new participants to current RA-qualifying emergency-triggered DR programs (including BIP and direct load control programs, like A/C cycling programs).

The CAISO respectfully submits that the Commission must establish a clear plan that either 1) transitions these programs to price-responsive structures that are available to the CAISO before a Stage 1 Emergency, or 2) treats these emergency-triggered demand response programs as some type of capacity *that is separate and distinct from RA capacity,* should the Commission find that these programs should be maintained, to serve as a form of insurance, to protect against unexpected events that would otherwise be resolved through the involuntary shedding of firm load.

In our Comments Re: ALJ Ruling Requesting Information on Emergency-Triggered Demand Response, the CAISO offered the conclusion that a MW range of 500 to 1,000 MW, corresponding to a range of 1 to 2 percent of peak system load, is an appropriate quantity of emergency-triggered DR that is useful to the system during such serious system emergencies, to protect against involuntary firm load shedding. As we stated in our Comments, our conclusion carried with it the express corollary that these emergency DR resources would be *accompanied by the full 15% of resources that qualify*

as satisfying the PRM and are available to the CAISO *in advance of any emergency.* We wrote that:

> **These Megawatts Should Not Be Counted For Resource Adequacy**
>
> The CAISO's comments carry with them CAISO's express and oft-repeated caveat that any emergency-triggered DR programs should not "count" as Resource Adequacy ("RA") capacity. As the Commission has previously recognized, to the extent the CAISO must commit non-RA resources to serve the forecasted demand, there will be a cost consequence to the current treatment of these resources as resource adequacy resources. Indeed, the CAISO submits that cost consequence may offset the purported economic justification for counting emergency-triggered DR programs as a RA resource in the first instance.
>
> Accordingly, the CAISO urges the Commission to articulate that its going-forward policy will be to work toward excluding emergency-triggered DR programs from the RA program, and that it will continue to pursue efforts to ensure DR program characteristics that align with the Commission's RA and DR objectives. The Commission must then consider the economics of this type of resource. [7]

5. Should the Commission direct the utilities to close existing Resource Adequacy (RA)-qualifying emergency-triggered DR programs to new entrants? Why or Why not?

Yes, the Commission *should close* existing RA-qualifying emergency-triggered DR programs to new entrants. Please see our response to Question No. 4, above, for our discussion of this subject.

6. Should the Commission direct the utilities to transition customers on these emergency programs to price-responsive DR programs? In what time period should this happen?

Yes, the Commission *should direct the utilities to transition customers* on these emergency programs to price-responsive DR programs, where appropriate. It is the

[7] CAISO Comments re ALJ Ruling Requesting Information on Emergency-Triggered Demand Response, filed June 25, 2008, at p. 16.

Commission's prerogative to establish the level of service reliability that the Commission desires for Utility Distribution Company end-use consumers. As for the appropriate timeframe, the Commission should transition these programs over this next three-year program cycle (i.e. by or before 2012).

7. Should there be an option for existing and new customers to provide non-RA qualifying emergency responsive DR? What would the attributes be for such a product?

The CAISO would support a Commission determination that provided an option for new and existing customers to offer non-RA qualifying emergency responsive DR. As the CAISO states in our response to Question No. 4, above, the CAISO concluded, in its Comments Re: ALJ Ruling Requesting Information on Emergency-Triggered Demand Response, that a MW range of 500 to 1,000 MW, corresponding to a range of 1 to 2 percent of peak system load, is an appropriate quantity of emergency-triggered DR that would be useful and could be maintained, like an insurance policy, to protect against unexpected events that would result in involuntary firm load shedding.

We submit that such a product should be structured as a performance-based, energy-only product, that would likely be paid a relatively high energy price, when called upon, and predicated upon the emergency resource delivering the load reduction and meeting its performance requirements/standards. Such a product could maintain a Stage 2 Emergency and local-transmission emergency trigger, and should deliver the expected response within a period of 15 minutes to no-longer- than 30 minutes, in order to satisfy the North American Electric Reliability Corporation's (NERC) Disturbance Control Standard and the Transmission Operating Procedures.

8. How should the current IOU emergency-triggered DR programs be changed, if at all, to integrate better with MRTU? What changes might be appropriate

The three critical attributes that a resource must have to participate in the wholesale electricity markets under MRTU is a *strike price*, a dispatchable/callable *quantity* and a geographic *location*. To better integrate with MRTU, emergency-triggered DR programs, like all DR resources, must possess, at minimum, these three attributes.

With a clear *strike price*, a DR program can be offered and cleared in the Day-ahead Market (DAM), and, if configured appropriately, participate in the CAISO's ancillary service and/or real-time energy markets. DR resources participating in the wholesale energy and ancillary service markets add depth and liquidity, and, therefore, enhance the efficacy of these markets, benefiting *all loads* that clear in these markets.

Changing emergency-triggered DR programs to be able to bid and clear a reliable *quantity* of load curtailment capability, particularly on peak load days, can reduce or slow peak load growth overall, and, therefore, decrease California's need to build additional peaking capacity. For instance, in 2007, the CAISO's peak load was 48,491 MW. If DR resources could have lowered the peak load by 5% to 46,066 MW or by 2,425 MW, such DR resources would have only been needed for approximately 15 hours. In other words, in 2007, the CAISO system exceeded 46,066 MW only 15 hours out of 8,760 hours in the year. For perspective, in 2007, SCE's I-6/BIP program cost approximately $53 million dollars and was *never* triggered.[8] Thus, changing emergency-triggered DR programs to integrate into MRTU is essential to ensure that ratepayers are getting the highest value and receiving appropriate system benefits from the curtailment capability of these DR programs.

[8] Report of Southern California Edison Company (U338-3) on Interruptible Load Programs and Demand Response Programs, January 22, 2008.

Further, emergency-triggered DR programs should be changed so that they can be dispatched or called by *location,* or, at minimum, by the CAISO's defined local capacity areas.[9] Under MRTU, geographic specificity is essential to the value of a resource given there is benefit under MRTU of dispatching resources nodally to resolve local congestion problems and, in the context of resource adequacy, there is higher value placed on resources that are located and developed in areas that are either capacity deficient and/or are heavily dependent on local generation resources to satisfy the demand in that particular load pocket.

Finally, the CAISO has produced a Guidance Document[10] on MRTU provisions that support demand response programs, which will be useful when considering changes to emergency-triggered DR programs. The objective of the Guidance Document is to summarize the CAISO market's capability that is available upon the start of MRTU to:

1. Support demand response programs, using Non-Participating Load functionality;
2. Introduce a planned enhancement of the Non-Participating Load functionality, called Proxy Demand Resource; and
3. Provide guidance on ways Participating Load functionality may be used in conjunction with demand response programs.

9. How should utility emergency-triggered DR programs be changed, if at all, to help with the integration of intermittent renewable resources?

To maintain system stability and operability for a system with increased amounts of intermittent renewable resources, like wind and solar, the CAISO will need more fast-ramping and regulating resources, greater imbalance energy capability, and increased

[9] For details on local capacity areas, see the CAISO's 2009 Local Capacity Technical Analysis Report and Study Results at: http://www.caiso.com/1fba/1fbace9b2d170.pdf
[10] This document will be published on the CAISO web site shortly and will be located at: http://www.caiso.com/1893/1893e350393b0.html

energy-storage, to enhance the load-following capability and frequency responsiveness of the existing power system. For instance, to meet the 20% Renewable Portfolio Standard by 2010, the CAISO will likely need an additional 50 to 100 MW of regulation capability and an additional +/- 1,000 MW of incremental and decremental-load-following capability per hour.[11] DR resources, like emergency-triggered DR programs, will be useful in helping with the integration of intermittent renewable resources, to the extent that such DR resources can be configured to participate in the CAISO's real-time energy market and, therefore, be dispatched economically by the CAISO or, in the future, to participate, as frequency-responsive regulating reserves, in the CAISO's ancillary services market.

[11] Regulation is the minute-to-minute frequency control of the system that is automatically performed by the CAISO's Energy Management System's Automatic Generation Control. The CAISO's current regulation requirement is approximately 600 to 700 MW of regulation per hour (±350 MW). Wind generation will increase regulation by 50 to 100 MW (±400MW).

Load following capability is handled through the dispatch of imbalance energy dispatched through the market based on economic resource redispatch every 5 minutes and security constrained dispatch every 15 minutes. Current levels are of imbalance energy dispatched per hour is approximately ±1000 to ±3000 MW per hour of both incremental and decremental energy. With increased intermittent resources, future imbalance energy dispatch may increase by ±1000 MW or more depending on the season and the hour of the day.

The CAISO produced a detailed study on the transmission and operating issues and recommendations for integrating renewable resources on the California ISO-controlled Grid. This study is titled *Integrating Renewable Resources* issued November 2007 and can be found at:
http://www.caiso.com/1ca5/1ca5a7a026270.pdf

Dated: August 15, 2008

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on August 15, 2008. I served, on the Service List for Proceeding R.07-01-041, by electronic mail, a copy of the foregoing Prehearing Conference Statement of the California Independent System Operator for Proceeding Phase 3 .

Executed on August 15, 2008 at Folsom, California

/s/ Anna Pascuzzo

Anna Pascuzzo,
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