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)

REPLY COMMENTS OF THE CALIFORNIA INDEPENDENT SYSTEM OPERATOR ALJ RULING REGARDING THE COST EFFECTIVENESS FRAMEWORK

The California Independent System Operator Corporation ("CAISO") submits its reply comments pertaining to the ALJ's Ruling re Comments on the Cost Effectiveness Framework, dated April 4, 2008, ("Ruling") and Attachment A to the Ruling, "Draft Demand Response Cost Effectiveness Protocols" ("Staff Protocols").

Gross Margins

The CAISO supports the view of various parties (including SCE, PG&E, TURN, and DRA) who comment that a "gross margin" should be included in the evaluation of avoided costs of a DR program. It is the CAISO's opinion that, in principle, valuation of the avoided costs of a DR program through use of a proxy Combustion Turbine ("CT") unit must consider and include a deduction for "gross margins" or "peak energy rents" representing cost-offsetting revenues that the resource would generate from participating in the market.

When considered in tandem with the CAISO's observation (in our opening comments) that the avoided costs of new CTs will also vary by location (i.e., that new CTs are not needed in all locations and hence DR cannot be considered to displace a new

CT in every location), subtracting gross margins from the avoided cost valuation calculation would further align DR cost-effectiveness estimates with the actual net cost of avoided investments in new peakers.

TURN's Comments state that the CAISO currently includes a gross margin adjustment for peak energy rents in CAISO's determination of prices paid to generators under our Reliability Capacity Service Tariff (RCST). (See TURN's Comments at pp. 5-6.) While this is correct, the readers should note, for context, that the RCST provisions were reached through settlement. Thus, TURN's indication of the costs of a new CT in its hypothetical example on page 10 of TURN's Comments, where the net cost of a new CT is presented at $40/kW-year, needs to be contrasted against current estimates of the costs of new generation by the CEC, which would suggest a much higher cost for adding new capacity.[1]

The challenge and cautionary note is that care must be taken to arrive at the "right" cost of new capacity. The CT bogy itself is a difficult metric to pin down, because parties can point to various specific examples to present a range of cost of new entry values. Whether one accepts those values depends on whether one accepts that the case specific cost components are representative. Otherwise, the issue of whether to adjust for peak energy rents may, in the end, add little refinement to the cost metric. Accordingly, developing a sound methodology to determine the cost of new entry capacity is the critical first step, upon which the principle of "gross margins" builds.

Pursue a Market-Based Approach

A theme runs through some of the parties' comments to the Staff Protocols that caught the CAISO's attention: At a high level, the comments intimate that the Staff

[1] The CEC study on this matter is "Comparative Costs of California Central Station Electricity Generation Technologies," Draft Staff Report, June 2007, CEC-200-2007-011-SD. This study is available at the CEC's web-site at http://www.energy.ca.gov/2007publications/CEC-200-2007-011/CEC-200-2007-011-SD.PDF .

Protocols do not consistently uphold the principle that supply-side and demand-side options should be evaluated on an equal and comparative basis, to "best assure that customers are obtaining the least cost resources … consistent with the preferred loading order." (PG&E's Comments at p. 4.) Without a comparison of supply-side and demand side resources on a parity basis, there will be more difficulty in integrating DR resources into CAISO wholesale markets. In this connection, SDG&E states that the "[t]he Staff Protocols clearly move away from a market-based approach and will make integration with the CAISO more difficult." (SDG&E's Comments at p. 5.) PG&E effectively makes the same point, stating that "[a]t the end of the day, the Commission should keep its main objective in sight and adopt a market-based cost effectiveness methodology that will promote coordination and integration with the CAISO's markets." (PG&E's Comments at p. 14.)

The CAISO has appreciated the Commission's continuing efforts to promote alignment of the IOU DR programs with the CAISO's market design in the next DR program cycle, and the CAISO would not want to see any degradation of this alignment. That being said, however, the CAISO agrees with the observations made by PG&E and SDG&E, in that the Staff Protocols would appear to create a challenge in pursuing a market-based approach.

In this regard, the comments by PG&E and SDG&E, mentioned above, underscore the point which the CAISO made in its initial comments, and which we reiterate here, that the Staff Protocols seem to frame DR too narrowly, by characterizing DR as "insurance against low probability and/or intermittent events that have severe consequences when they occur."[2] Such statements carry the impression that the

[2] The Staff Protocols, at page 3, make the observation (in Section 1A Intended Use of Protocols) that "in general, demand response resources provide `insurance' against relatively low probably and/or intermittent events that can have severe consequences, when they occur." The CAISO submits that this has been the traditional role of DR, but that opportunities for fuller and more frequent use of DR as an every-day supply-substitute resource are on the rise.

Commission wishes to perpetuate the notion that DR is merely a tool to be used when supply is extremely tight. From the CAISO's perspective, such statements do not appear to adhere to the spirit of the loading order under the California Energy Action Plan, which explains that energy efficiency and DR should be considered as useful resources and real alternatives to supply-side options, in addressing California's growing energy needs.[3] Again, the CAISO suggests that the Commission consider reframing such statements in the protocol and convey a clear predilection for market-based approaches and market-integrated DR resources in the overall cost-effectiveness framework.

With greater emphasis on market-based approaches, there will be a greater emphasis on the locational benefits of DR resources, which suggests that a heavier weighting should be applied to the "right place" and "right certainty" criteria discussed in the Staff Protocols. As these market-based concepts are weighted more heavily in evaluating the cost-effectiveness of DR, there will be a greater and more natural alignment with CAISO's wholesale markets, as well as economic and reliability benefits to California consumers.

For instance, the implementation of CAISO's MRTU market design will include locational marginal prices (LMPs), which are prices set at specific points throughout the CAISO control area, using the lowest production cost of all available resources, while observing all transmission limits. Accordingly, there will be higher LMPs in certain

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In this regard, the CAISO's opening brief, at pages 2- 3 recommended adding language to the Staff Protocols discussing the increasing opportunities for use of DR and stated that:

> The CAISO submits that adding this language to the Introduction will tee up, for consideration in the next iteration of more permanent protocols, the fact that there is increasing recognition that DR resources should be thought of as 365-day resources, potentially deployed at any hour of the day, in order to provide services to the grid on a basis comparable to generation. This point includes the idea that tailoring customer energy usage presents an opportunity for the provider to lower energy costs and create revenue streams (which can be applied to such things as the funding of capital improvements that enable greater usage of a smart grid).

[3] Information on the Energy Action Plan, including the 2008 Energy Action Plan Update can be found on the CPUC's web-site at http://www.cpuc.ca.gov/PUC/energy/electric/Energy+Action+Plan/ .

areas and lower LMPs in other areas because of differences in load and resource distributions and the topology of the transmission system in various parts of the control area. The influence of additional DR capacity and participation in high LMP areas will likely have a greater avoided cost benefit than DR resources located in lower LMP areas. The LMP pricing approach will work in tandem with CAISO's process for study and publication of annual local capacity needs[4] which identifies those locations where the grid most needs and values capacity additions—and thus point out where DR resources can be most cost-effective.[5] This information (and particularly the LCR process and output, which is available and useful even today to evaluate DR programs) can be used to target where DR resources should be developed, to have the greatest impact and, therefore, greatest benefit/value to the system.

The CAISO wishes to stress that the next iteration of the Staff Protocols must include, as a substantial component of the DR evaluation, the extent to which the DR program is capable of displacing new generating assets in specific locations on the grid. To lay the groundwork, the CAISO respectfully requests that the Commission take a step back from the "evaluation" of DR programs in the abstract, and affirmatively and confidently state that a key component of cost-effective DR programs is the degree to which they truly avoid capacity and energy. In this regard, we recommend that the Staff Protocols be refined to state that a key component of the "right place," "right certainty" criteria is the degree to which a DR program avoids capacity and energy in specified geographic areas. Further, we suggest that the protocols state that, to comply with this component, the IOU should correlate proposed DR programs for the 2009-2011 cycle

[4] We refer here to the CAISO stakeholder process for the CAISO annual determination of local capacity requirements and the report of CAISO's LCR Study, which is the end product of that process.
[5] In its comments, EnerNOC recommends that the Draft Protocols be modified to require the "right place" and "right certainty" criteria be made available publicly, so that both internal and third-party DR programs can be designed to target particular areas of need. (EnerNOC Comments at pp. 12-13.) The CAISO would assert that the Local Capacity Requirements Technical Study and report provides this information.

with the ten local capacity areas identified in the CAISO's 2009 Local Capacity Study, and discuss the extent to which these programs address local reliability needs.

Value of Program Notification Timing

> The CAISO seeks to clarify the following comment from CLECA:
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> Day-ahead notification is very different [,] in two ways [,] for event-based programs. While it is true that the customer can better plan for an event, if notified a day in advance, under such circumstances the logical response from the customer's perspective would be to decide to reduce operations on the day of the event, perhaps scheduling maintenance. The customer will be reluctant to turn all its equipment on, just to turn it off. However, the CAISO has indicated that what it expects of these customers is a load *drop*, not a *reduced* load. Thus if a customer decides to reduce its load in anticipation of an event, the CAISO says this is less valuable. (CLECA Comments at p. 3; underlining added for emphasis; italics in original.)

CLECA's comment mischaracterizes the CAISO's perspective on load curtailment, timing and, importantly, notification. What the CAISO has objected to is the circumstance in which customers on emergency-triggered DR program curtail load "in anticipation of an event" without the CAISO's knowledge. If the CAISO declares a Stage 2 emergency and anticipates that it will gain 600 MW of demand relief at 3:00 PM, but 200 MW of that 600 MW has already curtailed, in anticipation of the event, then the grid condition will be worse than if the CAISO had faced a forced outage or derate of a the same MW quantity from a generator. In a simple example, because there is 200 MW more of load than the CAISO had expected, the CAISO's operating reserve now increases (by a percentage of the 200 MW load that did not drop). The CAISO now needs to procure another 200 MW, on *very* short notice (i.e. within minutes), and, also, an additional MW increment to cover the operating reserve margin for the load that did not drop. (This increment is another 6 to 7 percent over what it would have been if a 200MW generator had tripped off).

Let us compare the above DR deviation to a deviation by a generator. The DR example above is analogous to a very large generator experiencing a 33% derate and not reporting it to the CAISO, during a most critical period in CAISO operations (a Stage 2

emergency). The generator owner/scheduling coordinator's failure to provide notice to the CAISO, for a resource of this size, would constitute a violation of the CAISO's outage coordination reporting requirements and the generator/SC would be subject to sanctions, per the CAISO tariff.[6]

Thus, the CAISO is simply stating that curtailment in anticipation can be acceptable but that the information must flow in a manner that the CAISO can have the knowledge of such activities.

In the day-ahead situation, as long as the CAISO has timely notice that a DR program will be called on a day-ahead basis (and therefore, curtailed the next day), then the CAISO can plan and possibly avoid (as appropriate) committing certain resources. However, where the expected load drop changes (because the situation is dynamic in nature) as the day-of approaches, then the CAISO needs to be apprised of these changes in the expected load drop.

For a day-of program, advanced curtailment is still possible, but only if the CAISO is given timely notification. The CAISO must know how much advanced-curtailment has occurred before the agreed-to activation time. If this agreed-upon time is 3:00 PM, then, just like it would with any other resource the CAISO expects the load drop to occur at 3:00 PM, and not before, in anticipation of the event. Accordingly, advanced curtailment carries with it the obligation to notify the CAISO before the agreed-upon activation time.

Placing a value on DR program notification timing is challenging. Combining non-spin and spin prices may not be a sufficient metric for determining a "timing" value, as SCE has suggested in its comments.[7] Spinning reserve capacity comes from resources synchronized to the grid and, therefore, generally are not the domain of short start resources and are likely not an appropriate benchmark to value DR program notification timing. On the other hand, non-spin may be the most relevant market-based metric.

Another perspective on the value of DR program notification timing relates to the grid operator's cost for start-up and minimum load. In order to optimize costs and

[6] See, e.g. CAISO Tariff Sections 37.2.3 [Operations & Maintenance Practices] and 37.4.2 [Scheduling and Final approval of Outages].
[7] SCE Comments, at p. 16.

resources under MRTU, the CAISO will use a mix of resources that have varying start-up and minimum load costs. This resource portfolio allows the CAISO to meet the reliability needs of the day. In optimization, some reliable, quick start resources can substitute for long-start and medium-start resources that may have comparatively higher costs. If the quick start resource is a reliable, quick-start DR program, then there may be value captured, to the extent the DR resource (like a quick start generation unit) can avoid start-up and minimum load costs of the longer and medium start units.

The CAISO believes that further investigation is needed before placing a value on notification timing and incorporating that value into the cost-effectiveness protocols. For this round, SCE's analysis of the relative value of program notification timing may be a starting point, if the analysis conveyed in Table IV-4 of SCE's Comments is based only on a non-spin price curve.

As a final point, we note that a characteristic of a proxy CT is a quick start capability. In comparing the proxy to a DR resource, we believe that the notice component of the DR resource (i.e. how quickly it can be called) is the parallel to the quick start capability of the CT. This concept is tightly bound to the "value of notification timing." Accordingly, should the Commission decide to incorporate a notification timing value into the protocols, then the valuation methodology should include the potential to discount programs that no not have a short notification timeframe (such as a day-ahead only DR program).

Emergency DR Programs

The CAISO supports DRA's assertion that:

> emergency programs that are triggered at CAISO's Stage 2 or Stage 3 emergencies do not avoid CAISO's resource procurement for serving loads of customer who participate in these emergency programs. (DRA Comments at p. 11)

As the CAISO has previously stated in filings in this proceeding and in the resource adequacy proceedings[8], the CAISO must commit sufficient resources on a daily

[8] See, e.g., Resource Adequacy Rulemakings R.05-12-013.

basis to meet the total forecasted demand, including the non-firm load that is associated with emergency-triggered DR programs. Accordingly, emergency demand response programs do not relieve the CAISO of the obligation to commit capacity, on a daily basis, for the component of demand that they purport to curtail. So it bears repeating that these DR resources do not serve the function of reducing total forecasted demand and do not avoid generation capacity. Therefore, these resources should have different treatment and evaluation criteria in the Staff Protocols.

The CAISO is currently working with the IOUs and with CLECA to investigate options to transition, where possible, existing emergency triggered DR programs, so that they are better integrated into the wholesale electricity markets and grid operations, while preserving their use-limited nature. In this regard, because these programs, as currently configured, do not avoid capacity procurement, it is essential that the resource triggers be reshaped so that the programs can be incorporated into the CAISO's day-ahead and/or day-of planning process and, therefore, justifiably qualify as planning reserve margin and avoided generation capacity.

As such, newly created emergency-triggered DR programs should no longer be evaluated against avoided capacity costs, but, rather, only against avoided energy costs. As conveyed in the Staff Protocol "most of the benefits provided by DR programs are related to avoiding relatively low probability future events (e.g. unusually high demand and/or energy prices) in relatively few hours, whose occurrence could have significant economic consequences." (Staff Protocols at p. 4.) Emergency-triggered DR programs embody this sentiment more than any other DR programs and do not, in reality, alter the amount of Planning Reserve Margin that the system requires to operate under normal (i.e. non-emergency), but stressed conditions. However they can impact system prices, when triggered during high stress periods, and, therefore, they can contribute to avoided energy costs. Any newly created emergency-triggered DR programs should embody this

principle of avoided energy cost, not avoided capacity cost, and the Staff Protocols should incorporate this principle.

Dated: May 2, 2008

Respectfully submitted,

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CERTIFICATE OF SERVICE

I hereby certify that on May 2, 2008. I served, by electronic mail, a copy of the foregoing Comments of the California Independent System Operator re: Load Impact and Cost Effectiveness Straw Proposals on the Service List for Proceeding R07-01-041.

Executed on May 2, 2008 at Folsom, California

//s//Anna Pascuzzo

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