

**CAISO COMMENTS ON
TOP-DOWN vs. BOTTOM-UP APPROACH FOLLOWING
APRIL 29, 2005 RESOURCE ADEQUACY WORKSHOP**

Pursuant to the discussion at the April 29, 2005, resource adequacy workshop and the e-mail of Mr. Ramirez of the Energy Division, dated April 29, 2005, the CAISO provides further comments on the relative merits of the top-down (“TD”) and bottom-up (“BU”) approaches. These comments are provided to facilitate preparation of the anticipated Phase 2 workshop report. As such, the comments necessarily reflect the CAISO’s current evaluation of the issues raised by Mr. Ramirez and are not intended to limit in any way the CAISO’s future comments on the Phase 2 workshop report or subsequent proposed decision.

A striking outcome of the workshop process was the substantial convergence of the BU and TD approaches. This convergence arises, in large part, from two factors: (1) the concession by certain proponents of both approaches of the need to accommodate existing or “legacy” resources and (2) the apparent inclusion in the TD proposal of a mechanism to ensure that LSEs did not over rely on use limited resources. As a result of these factors, the resource stack (the stair-step) procured by any particular LSE to meet its RA obligation likely will be similar under both approaches. Moreover, either of the TD or BU approaches appear to satisfy California’s basic RA needs and constitute advancement towards developing a more durable and stable electricity market. In this regard, the TD approach better conforms to the CAISO’s long-term view as to the desirability of a capacity market. Nevertheless, recognizing that the two proposals are transitional in nature, the CAISO emphasizes that the Commission should focus on adoption of an interim framework that can be expeditiously implemented to meet the June 1, 2006 RA timeframe.

Impact on the future: Are we heading in the right direction? The TD better conforms to the CAISO’s long-term vision.

In his February 28, 2005 Assigned Commissioner’s Ruling Providing Guidance on Steps for Potential Capacity Market Development (“Capacity ACR”), President Peevey identified several elements of an organized capacity market that could complement and aid in the effectiveness of the Commission’s RA program.

Those elements included,

- A forum for ESPs and other LSEs with smaller scale reserve requirements to meet their resource adequacy requirement in a cost-effective manner and for the efficient sale of small quantities of capacity;
- A more effective means of providing market transparency, market monitoring, and market power mitigation;
- A means of addressing “load migration” concerns and reducing stranded costs; and

- A means to make compliance and enforcement of the RAR more manageable.

SCE recently echoed the sentiments of President Peevey's Capacity ACR in an April 13, 2005, letter to the Honorable Lloyd Levine, Chair of the Assembly Utilities and Commerce Committee, by stating "[a] wholesale capacity market modeled after Eastern markets, such as the NYISO, could, if properly structured, provide the stability needed to incent investment in new generating capacity. **A functional capacity market that incents investment in new capacity, retains existing capacity, and allocates the cost of all capacity in the market equitably could support a competitive retail market, and must be implemented in advance of a competitive retail market to ensure reliability.**" [Emphasis in original.]

The CAISO similarly supports the creation of some form of capacity market. The details of the appropriate structure of such market properly remains the subject of further evaluation, but the CAISO believes that an essential attribute of this market is the trading of a physical and verifiable capacity product. This requires a transition from reliance on firm energy products to a capacity product to satisfy RA obligations. Other RTO capacity markets transact in a single standard "all hours" capacity product. Accordingly, to the extent that the Commission foresees building upon the experience of other regions in developing a centralized capacity market, in contrast to following an original and untested course, the TD approach provides an advantage as a transitional mechanism.

The TD approach is more amendable to integration of a single standard capacity product. The BU approach, in contrast, is inherently hostile to a uniform product because it follows an LSE's load duration curve specifically to create time differentiated capacity products. Consequently, under the TD approach, as existing products expire and must be replaced by a conforming capacity product, the LSE's portfolio will transition toward reliance on the standard product to be traded in the centralized market. The conversion to a standard product following the BU would necessarily be more abrupt. However, as the CAISO noted in prior comments, the BU approach is also amendable to a centralized capacity market. That market would transact in multiple products differentiated by varying availability periods. There may be advantages to such a market, but there may also be unintended consequences created by the product differentiation. The CAISO has not performed any analysis in this regard, so is unable to comment other than to identify the inherent risk of pursuing an untested approach.

That said, the foregoing discussion of the advantages of the TD approach presupposes the existence of a standard capacity product. No such standard capacity product currently exists, although considerable progress was made during Phase 2 workshops in refining the contractual template developed by Silicon Valley Manufacturing Group. Without such product, the implementation of the TD approach to satisfy the June 1, 2006 start-up date is jeopardized. It

should be emphasized, however, that under either the TD or BU approach, the Commission should clarify the core attributes of a RA eligible capacity product. While the BU approach may currently utilize existing products, the Commission's goal should be to transition to a capacity only paradigm. Accordingly, the Commission should establish a procedure to develop and adopt a standard product or set of attributes for inclusion in the Phase 2 decision. The standard product is critical for the immediate "implementability" of the TD approach. Similarly, the articulation of the capacity attributes is necessary for the development of the time differentiated BU capacity products.

Differences in the ability of the CAISO to operate efficiently and effectively – With refinements, both proposals can potentially allow the CAISO to meet its operational needs

As noted in the CAISO's prior comments, the principle difference between the "pure" TD and the BU proposals is the sources for establishing the parameters of the resource's obligation. In the TD, the resource is obligated by rule, incorporated into RA agreements, to offer for all hours it is physically capable of running consistent with environmental or other regulatory limitations. In contrast, the BU resources are limited only by their physical and regulatory limitations, but also by contractual offer periods, such as 24hrs, 16 hrs, 8 hrs.¹ This creates a possible impact on the CAISO's ability to optimize resources. The CAISO dispatches resources on the basis of system efficiency and conditions. To the extent the pool of resources is limited by an LSE's selection of its portfolio based on LSE expected load characteristics, inefficiencies and potential operational issues may be introduced during the CAISO's efforts to optimize resource dispatch on a system-wide basis. However, the TD approach will also be subject to this inefficiency if existing contractual arrangements are deemed eligible to satisfy the RA obligation during a transition period. However, this issue remains over the longer-term with the BU approach, but diminishes under the TD approach as LSEs transition to a standard capacity product, as described above.

The "grandfathering" of existing contractual arrangement also causes convergence in the two approaches in several other operational respects as well. First, the CAISO commented with respect to the BU approach that specific standard availability periods must be established. It is simply untenable for CAISO operators to be subject to idiosyncratic availability obligations based on individual contract terms or characteristics. CAISO operators must know what

¹ The CAISO included in its earlier comments that the BU approach requires the development of standard offer periods. The Joint Parties appear to agree. Accordingly, the Workshop Report should explicitly solicit comment on appropriate offer periods to create a record sufficient for their adoption should the Commission support the BU approach.

tools are available to them to solve the myriad system problems that they may face. If existing contracts are to count, the TD approach also must group these contracts into standard availability times.

Second is the issue of energy deficiency in any particular hour. The BU proponents contend that the BU counting rules prevent LSEs from relying too heavily on energy-limited resources so as to ensure that each LSE's portfolio can meet that LSE's energy requirements as well as capacity obligations. However, it has been pointed out that high load periods can occur during off-peak times, especially Sundays. Such time period would be identified on the BU LSE load duration curve as likely being satisfied by a peaking resource, i.e. 6 x 16 or 5 x 8. Yet, due to contractual limitations, the resource would not, in fact, be available to the corresponding point on the load duration curve. Thus, the CAISO has strongly advocated that an off-peak BU analysis must be implemented as a precondition to the CAISO's support of a BU approach.

Again, if existing (contract based) resources are eligible to satisfy a TD approach, the same energy deficiency concern exists because the collective set of resources offered to meet the peak hour may not include any off-peak resources. The TD approach prepared on behalf of Mirant, attempts to address this problem by providing that an LSE cannot include more than the "maximum cumulative contribution" ("MCC") of specified resource categories, which are based on physical and contractual availability limitations. (See, Exhibit 1 to "Top Down" Alternative to Joint Parties Proposal for Load Forecast and Year/Month Ahead Showing that Supports an All Hours RAR ("TD Proposal").) Therefore, from an energy perspective, the two approaches employ similar remedial concepts to ensure that the energy sufficiency will be provided in all hours.

Differences in costs to Californians, including ISO costs – Cost issues will more likely depend on whether existing contractual resources conform to set offering periods

The draft Second Interim Opinion Regarding Resource Adequacy appropriately affirmed that "the goals of assuring infrastructure investment and assuring capacity availability should be accomplished at the lowest reasonable cost." One of the useful outcomes of the additional workshop process has been to eliminate the hyperbole surrounding the purported cost differences between the BU and TD approaches. The hyperbole originally appeared to arise from a misunderstanding of the TD approach and the need to somehow "fill-in" the time periods in which resources were subject to legitimate physical (or contractual) limitations. Nevertheless, the CAISO perceives some remaining cost issues that should be addressed, which can be separated into two categories: (1) costs associated with additional procurement solely to satisfy the RA requirement and (2) the unit or MW price of an eligible capacity product.

Additional Procurement

As an initial matter, to the extent existing resources are accommodated, the potential incremental difference in the cost of satisfying either of the demonstration standards will be considerably reduced. Nevertheless, the BU proponents assert that the use of an LSE specific load curve as well as reliance on the existing state of the market in terms of LSEs' existing portfolios and available products mitigates the need for an LSE to incur significant additional procurement costs. This is not necessarily true. As noted, the CAISO strongly asserts that the BU approach must be clarified to include standard offer periods and that those offer periods must be defined to meet the CAISO's needs in meeting system requirements. To the extent the LSEs existing contractual resources do not comport with the standard offer periods, additional procurement would be required. At this time, the CAISO does not have information to estimate the scope of any necessary procurement.

The TD approach suffers from a similar limitation. If existing resources are accommodated, the TD approach also requires those resources to be grouped into a manageable set of offer periods. The CAISO simply cannot be put in the position of having to interpret bilateral contracts or accommodate a myriad number of operating and contractual limitations. Again, to the extent the existing resources do not permit compliance with the offer periods and sum to the 15-17% planning reserve margin, the LSE would be required to engage in additional procurement.

Moreover, to the extent the TD approach attempts to "assure that individual LSEs do not overly rely on limited availability resources," there may be an impact on smaller LSEs. As described in the TD approach prepared on behalf of Mirant, an LSE cannot include more than the "maximum cumulative contribution" ("MCC") of specified resource categories, which are based on physical and contractual availability limitations. (Exhibit 1 to TD Proposal.) The MCC appears to be derived from a CAISO system load duration curve, not an LSE specific curve. This is appropriate and the CAISO agrees that the MCC would have to be calculated in that manner. For larger LSEs, the system load curve will reasonably conform to their specific load curve so that there would be very little difference between procuring under the TD or BU approach, i.e., the stair-step function will be similar. However, for smaller LSEs, whose load profile does not mirror the system load profile, some changes in procurement may be necessary. The cost impact of this very limited scenario is unclear, but unlikely to be of material significance.

Capacity Costs

The CAISO believes Mirant has provided reasonable support for finding that the value of capacity in off-peak times is minimal. (See, TD Proposal at 4-5.) This leads to a conclusion that there is little opportunity costs from the seller's

perspective of moving to a 24 x 7 obligation because the seller is unlikely to recover significant value in the off-peak periods. The CAISO also finds reasonable SCE's comments that there is nevertheless greater potential for the supplier to earn additional revenue under the BU approach because of the absence of any obligation during non-contracted for periods. SCE further notes that such revenue can benefit consumers by reducing the contribution to overall costs a seller must receive from the sales of capacity to LSEs under the jurisdiction of the Commission. These two positions can be reconciled. Simply put, the cost benefits, if any, from the BU approach are unlikely to be meaningful. This occurs because the greatest difference is resolved through the imposition of a monthly obligation. Thus, providing generators the opportunity to commit their capacity to the Pacific Northwest if not otherwise contracted to a California LSE for that RA month.

Indeed, the CAISO believes that the real value in off-peak sales inures in favor of LSEs. It is through an LSE's diversity in both supply and load that encourages efficiency through exchanges and other off-peak sales.² Such forward commitments by LSEs can be accommodated through the CAISO MRTU design. This is accomplished by LSEs scheduling explicit load export (price taker) and their desired resource at a desired price. The export load and resource will clear the IFM with the export receiving "firm" transmission under the CAISO Tariff. Given that a central principle of RA is to ensure that resources are committed to serve California load when needed, it is appropriate that the default position is for the resource to serve California LSE needs unless the market or the LSE dictates otherwise. The TD approach better accommodates this RA principle.

Differences in implementation ability – The BU approach has the edge

Both the TD and BU proposals require further definition prior to implementation. There are three essential elements that will need to be acknowledged and defined to implement the BU approach. First, the BU approach must have standardized offer periods, which the Joint Parties have supported, but have not specifically defined at this time. Second, as discussed above, the BU proposal cannot be relied upon without an off-peak reporting and assessment obligation. The very basis of the standard offer periods is that they require a resource to offer during certain hours and in most cases certain days. For example, the 8

² The details regarding how MRTU would accommodate forward commitments were discussed during the workshop. The workshop participants represented that MRTU provides the flexibility to take advantage of the West's regional diversity.

hours product is typically only available for the weekdays.³ Third, the BU proposal needs to define the hours in which the standard offer periods are to exist. It is assumed the peak might be covered by an 8 hour period. Thus, it would be appropriate for the 8 hour product to be available for the hours from 13:00hrs to 21:00hrs, for example. Similarly, all other products need to be defined.

Further, it is not clear that any great difference exists between the TD and BU approaches with regard to the upfront clear and achievable standards. The Joint Parties argue that the TD approach will require considerable effort to define the exceptions for RAR resources. The CAISO believes that the universe of resources requiring this type of “exceptions” analysis is relatively small, i.e., solar, etc. Conversely, the BU approach will include a reporting of the hours that a resource is to be available to the CAISO. The TD will include the same reporting obligation if existing contractual resources are accommodated. Under TD framework, LSEs will also be required to communicate those hours in which their resources are not able to meet the 24x7 offer obligation. The CAISO believes the practical challenges of implementing these two perspectives are similar, but that the BU approach does appear more amendable to expeditious implementation with the clarifications set forth above.

Differences in ability to measure compliance -

Any compliance feature cannot, and should not, place the CAISO in the position of having to interpret bilateral contracts or accommodate myriad operating and contractual limitations. Further, with the large quantity of existing firm energy contracts in many LSEs’ portfolios, the RA obligation of many resources may change day to day and hour-to-hour, creating the possibility that the CAISO would be required to track the availability obligation on an hourly basis by resource. Consequently, CAISO enforcement of resource adequacy obligations on resources appears problematic, if, and until, the RA obligation is established under the CAISO Tariff (e.g., when LD contracts are limited), and the CAISO can incorporate the terms of a standard capacity product that determines eligible resources.

One way to potentially simplify compliance and accommodate the transition plan for RA implementation is to focus on defining and enforcing LSE obligations after the fact based on their performance in the Day Ahead, Hour Ahead and Real Time. Each LSE provides the CAISO with information on the resources and the

³ Therefore, the question is whether the LSE has procured commitments from sufficient resources for the off-peak hours as well as the full days of Saturday and Sunday.

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responsible SCs that are meeting their RA requirement. The CAISO can verify after the fact that the LSE's resources were either scheduled, bid or reported as on forced or planned outage. This approach avoids any need for RAR driven accommodations of constraints in forward scheduling and in real time, provides the LSE with complete flexibility in how it schedules and bids its resources, including management of energy-limited resources, and allows the ISO to avoid interpreting any bilateral contracts. Resource performance would be enforced through the existing tariff terms -- UDP, No Pay for A/S and the Enforcement Protocol.