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The California ISO's Standardized Resource Adequacy Capacity Product Proposal

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Executive Summary

The ISO's standard capacity product process is best thought of as supplementing the must-offer obligation for Resource Adequacy (RA) capacity, rather than fully defining a standardized capacity product. The must-offer obligation is described in Section 40 of the ISO tariff, but at this time those tariff provisions do not specify any performance standards or compliance incentives to ensure the availability of RA capacity. The ISO's standard capacity product (SCP) proposal addresses this gap and is therefore a timely and important step toward strengthening the must-offer obligation and defining a standardized RA product. One of the ongoing criticisms of the current RA process is the ambiguity behind what exactly is being "bought" (or sold) in a RA transaction. Under the current framework, a supplier of RA capacity is selling a commitment to comply with the ISO's must-offer obligation. This links the must-offer requirement and the RA process. It is therefore very important to recognize this effort as one that formalizes availability standards to support the must-offer requirement (no matter how that requirement is procured) rather than standardizing "capacity."

That said, we fully support the efforts to formalize and define the concept of availability under the must-offer obligation. However, the process itself highlights the potential weaknesses of having a must-offer obligation as the central deliverable "product" provided by the RA process. Three areas of concern with the current proposal are: (1) separate standards applied to different resource types, (2) the measurement of the hours over which performance measured, and (3) the relatively mild financial incentives provided by the mechanism overall. We suspect that in the future, all of these elements will have to be revisited in developing a comprehensive policy for long-term resource adequacy.

1. Introduction

This opinion comments on the California Independent System Operator's (ISO) standardized capacity product (SCP) proposal. The primary motivation for the SCP proposal is to create a capacity product with standardized features to facilitate trading of Resource Adequacy (RA) capacity. The two key elements of the SCP design are: (1) the inclusion in the ISO tariff of availability standards for RA capacity and to provide incentives for suppliers of this capacity to adhere to those standards and (2) a clear statement of the applicability of these standards and incentives to specific generation units or contract arrangements. The ISO's SCP proposal also is accompanied by a separate ancillary services must-offer obligation (AS MOO) proposal for

generation units that sell RA capacity. Specifically, the criteria for determining whether a resource is subject to AS MOO are not the same as the criteria for determining whether a resource is subject to SCP availability tracking and performance incentives.

This opinion is based on the document, "Second Final Draft Proposal: Standard Resource Adequacy Product" dated February 27, 2009. MSC members have also participated in a several joint MSC/Stakeholder meetings where this topic was discussed. The most recent meeting was on December 11, 2008. We are grateful for the ISO staff and stakeholders for their participation in these meetings.

A standardized capacity product defined in the ISO tariff should lower the transactions costs associated with the purchase and sale of RA capacity. For that reason, we support the SCP proposal's goals of establishing availability standards and incentives for compliance with these availability standards for RA capacity. However, we also recognize the potential downside of formalizing a standardized capacity product in the ISO tariff. The ISO tariff could list requirements for a SCP that ultimately increase the cost of providing RA capacity with no corresponding system reliability benefit. Specifically, the tariff could impose requirements for the SCP that a significant number of existing or proposed resources are unable to meet. To avoid specifying features that do not increase liquidity in the market for RA capacity or enhance system reliability, we support a cautious approach to specifying characteristics of the standardized capacity product.

The ISO's SCP proposal is consistent with this cautious approach. However, we continue to be concerned that the RA process focuses on purchasing capacity subject to a must-offer requirement. Consequently, we believe the current SCP proposal is better described as the "must-offer availability measurement and enforcement mechanism," because the proposal concentrates on measuring deviations from the must-offer obligation through forced outages and derates, and penalizing generation units for failing to meet the availability standards associated with the must-offer requirement. However, there a number of aspects of the must-offer obligation that limit its ability to provide the appropriate incentives for market participants to make available sufficient generation capacity each hour of the day for the ISO operators to meet their energy and ancillary services needs. The remainder of this opinion describes the strengths of the current SCP proposal, potential shortcomings, and suggestions for future enhancements.

2. Forced Outage Tracking and Generation Unit Availability Measurement

Standardized approaches to tracking forced outages and computing the availability factors for generation units are an essential first step to improving the performance of the RA process. For example, if all market participants know that a forced outage rate or availability factor is computed the same way for all generation units in the ISO control area, this will allow them to make more informed choices about how to best meet their local and system-wide RA capacity needs.

Nevertheless, we are concerned that current focus of the SCP on forced outages only, rather than all generation outages not planned in advance, may undermine the ultimate goal of

improving system reliability. For example, whether an outage is classified as a forced outage depends on how much advance notice is given to the ISO operators. If the ISO is notified of an outage more than three days in advance, then that outage is not classified as a forced. However, the ISO may decide not to grant a generation unit's request for an outage when this request is made more than three days in advance. If the unit owner subsequently has an outage, then this outage will be classified as a forced. The SCP's focus on forced outages alone does not penalize generation unit owners that are able to anticipate their unit failures or de-rates three days in advance.

In general, we believe that outages, whether planned or forced, during times when capacity is needed by the ISO operators should be treated symmetrically in terms of economic penalties. We recommend that in the future ISO require generation unit owners to provide it with greater advance notice for scheduled and maintenance outages and then have all subsequent unit outages regardless of the cause count as forced outages. Specifically, generation unit owners could update their annual maintenance schedule before the start of each month, subject to the approval of the ISO. Any other outages that prevent a unit owner from making its full RA capacity available to the ISO markets during that month would then be counted as forced outages. A mechanism that treats outages symmetrically should not create incentives for resource owners not to undertake sufficient maintenance activities.

The SCP proposal excludes a significant amount of generation resources from the calculation of the target availability value that is used to assess penalties and pay credits: liquidated damages energy contracts, use-limited resources, and non-resource specific RA imports. Use limited resources (ULRs) are only excluded from the calculation of the target availability value for the first year of the SCP. They are to be included in the calculation starting the following year as compatible availability data from ULRs becomes available. Non-resource specific RA imports are subject to a 100 percent availability standard. Intermittent resources (wind and solar generation units) are temporarily deferred from the SCP provisions. Although we understand the ISO's reasons for treating each type of resource differently, this approach can undermine the representativeness of the resulting target availability factor and its use as a basis for assessing penalties and paying credits. Moreover, these exemptions can limit the benefits realized from creating a standardized capacity product because certain resource types must meet different performance standards. This differential treatment of resources also creates an incentive for load-serving entities to procure less reliable resources to meet their RA obligations whenever possible because these resources are likely to be offered at a lower price than resources subject to the SCP availability standard and performance mechanism.

3. All Hours Do Not Require the Same Amount or Type of Available Generation Capacity

The ISO's proposal recognizes the fact that different hours of the day and different months of the year require different levels of generation availability and have different costs to system reliability for a failure to meet availability standards. However, within the designated peak hours of the day—from 14:00 to 18:00 from April to October and 17:00 to 21:00 in the remaining days of the year—the ISO proposal does not distinguish between the significant differences that exist in the benefits associated with certain generation units being made

available to the ISO operators.

Specifically, the ISO proposal also does not recognize that having certain generation resources available provides greater system reliability benefits in some hours of the year than in other hours of the year. For example, having an in-state thermal plant located close to a major load center provides greater reliability benefits during hours when the transmission lines into the load center are congested versus hours when there is unloaded transmission capacity into that load center. This logic implies that a buyer of RA capacity obtains a more valuable service from an in-state thermal plant than it does from a liquidated damages energy contract, a use-limited resource, or non-resource specific RA import. This is partially reflected in the fact that a liquidated damages contract or non-resource specific import cannot count towards a local RA requirement. This logic also highlights the fact that in terms of system reliability, the ISO is getting something very different from a must-offer obligation applied to a thermal generation plant than it is from a use-limited or intermittent resource.

In the future, the ISO may wish to redefine the must-offer obligation as an ancillary service, with the short-term performance requirements required for such services, rather than as an element of the RA process. A must-offer obligation with the SCP availability standard and performance incentive yields much greater system reliability benefits when it is applied to an in-state fossil-fuel unit versus an intermittent wind or solar energy resource. Therefore defining the must-offer obligation as an ancillary service provided by dispatchable resources with known locations will allow an in-state thermal plant to be rewarded for the greater reliability benefits it provides. Similar to other ancillary services, the must-offer ancillary service could be provided by any generation unit that meets the performance standards required to provide that service.

4. Assessment of Financial Penalties

Assessing penalties for failing to meet the availability standard and paying credits for exceeding it provides incentives for high levels of generation unit availability. However, the appropriate target level for the availability standard should not unnecessarily burden generation unit owners, increase RA capacity procurement costs, or reduce system reliability. We understand that the current value of performance penalty of $41/kW-year was established in the Interim Capacity Procurement Mechanism (ICPM). However, the value of the ICPM capacity payment is likely to change. For this reason, we recommend that the ISO allow for considerable flexibility in setting the levels of financial penalties and the availability standard. The values of these penalties and availability targets should be revised on an annual basis. The ISO should also be able to change them at any time if the existing values are determined to hinder efficient system operation.

Market pricing mechanisms are ideally suited to finding the appropriate penalties and rewards for maintaining high levels of system reliability. We recommend that in the future the ISO consider this approach to setting the level of penalties and rewards for high levels of system reliability. For example, a supplier that has sold a fixed-price forward contract to supply 500 MWh of energy for given hour must either purchase this energy from the short-term market or produce that energy from its own generation unit. Consequently, this supplier faces the full cost

of failing to provide energy from its generation unit, even if the short-term price rises as a result of this supplier not producing energy from its generation unit. This fixed-price forward contract also provides the proper incentives for the unit owner to make its capacity available to the short-term market. If the supplier is confident that there will be adequate energy and ancillary services capacity offered into the short-term market during a given day, this supplier may decide not to offer its capacity into the short-term market and meet it forward contract obligation through purchases from the short-term market. Therefore, a supplier with a fixed-price forward contract obligation to supply energy or ancillary services for its full RA capacity bears the full cost of any errors it might make in failing to offer its generation unit into the ISO markets. If a supplier's generation capacity does not need to be available for the system to operate reliably, the resource owner should not be penalized for failing to make its unit available to the ISO. Conversely, the resources owner should be severely penalized for failing to make its unit available if system reliability would be imperiled by this the unit being unavailable to the ISO.

We believe it is important to emphasize that far greater differences in the capacity value of specific generation resources are likely under the locational marginal pricing (LMP) market of the Market Redesign and Technology Upgrade (MRTU) relative to the current market design because of transmission constraints and other reliability constraints that will be modeled in the day-ahead, hour-ahead and real-time markets under MRTU. Certain resources are likely to receive significantly higher revenues in excess of their production cost under MRTU versus the existing market design. California's RA policies will need to be sufficiently flexible to adjust penalties and payments to reflect the greater locational benefits provided by certain generation resources under MRTU.

5. Resource Substitution

We also support the use of resource substitution in the SCP proposal. If there is a unit with the equivalent effectiveness for meeting the local energy and ancillary services requirements of a generation unit that is unavailable, then substituting this unit for the unavailable unit should not create any reliability problems. However, a major challenge to implementing unit substitution is finding a generation unit that is in fact equally effective as the unavailable unit. Unless this unit is located at the exact same location in the transmission network, it is unlikely to be as effective. We therefore recommend that in the future the ISO consider a market-based approach to resource substitution.

The fixed-price forward contract solution is one such market-based approach that addresses the resource substitution problem in manner that accounts for differences in the effectiveness of the best substitute generation unit, particularly in the LMP market that will be implemented under MRTU. In particular, if a supplier does not fulfill its obligation to provide energy or ancillary services from its generation unit, then the locational marginal price (LMP) at that unit's location gives the replacement cost for that generation capacity. The solution to the day-ahead integrated forward market (IFM) yields least cost mix of available generation resources to replace that generation unit's output if it is unavailable to supply energy or ancillary services in the day-ahead timeframe. The solution to the hour-ahead scheduling process or the real-time market serves this same role if the outage occurs between the close of the day-ahead

market and the start of the real-time market. There is no need for the ISO to make a determination as to whether unit substitution is possible. The ISO markets provide the least cost mix of generation units to substitute for the unavailable unit. If the supplier has a fixed-price forward market obligation to supply a certain quantity of energy or ancillary services, then the supplier will pay the full market-determined replacement cost of failing to meet its contractual supply obligation. Although we understand the need for the ISO to start with physical substitution of resources, we recommend that it consider market-based financial approaches to achieving the same goal at lower cost to consumers.

6. Financial Approaches to Resource Adequacy

As should be clear from the above comments, we support a transition towards a more market-based and incentive-based approach to designing a standardized capacity product. This product builds on an important lesson from the events of June 2000 to June 2001 in California that it is ultimately financial incentives, not the presence of adequate physical generation resources that causes suppliers to make generation capacity available to ISO market. Consequently, one approach to defining RA capacity would be to require all suppliers to sell a fixed-price cap contract equal to their RA capacity at a pre-specified strike price that clears against the LMP at their location. The ISO could set a maximum strike price, but retailers would be free to sign cap contracts at lower strike prices.

To understand how this mechanism would function, consider a generation unit that sells 100 MW of RA capacity. Associated with this 100 MW of RA capacity is a requirement to sell a cap contract for energy or ancillary services or a combination of the two that clears against the price at that unit's location with strike price of say $150/MWh. If the unit owner sold an energy cap contract, this implies that during all hours when the LMP at that unit's location is above $150/MWh, the unit owner would be required to pay the difference between the LMP at that location and $150/MWh times the 100 MW of RA capacity sold. This mechanism requires the seller to bear the full cost of any local energy or ancillary services shortfall that results in prices above the strike price of the cap contract.

An advantage of this approach to the SCP is that it does not require exempting any RA capacity from the SCP process. Intermittent or energy-limited resources can manage the fact that they cannot be available or produce energy or supply ancillary services during all hours of the year through purchases from the short-term market or resource substitution. For example, a hydroelectric generation unit can sell a combination of cap contracts for energy and ancillary services equal to its RA capacity. Then this unit would be obligated to make the payments implied by these cap contracts if actual energy or ancillary service prices exceed the strike price in the cap contracts.

One might be concerned that such a strict definition of performance from suppliers who sell capacity would disadvantage renewable generation and work against the state's goals in increasing supply from such sources. This need not be the case. If the state takes its renewable requirements seriously, and enforces the goals with financial penalties for non-compliance, those goals can be met. The relative values of the underlying components of renewable generation

would change, the capacity value may be lessened and therefore the "renewable" component would necessarily become greater. This might, for example, be reflected in higher prices for renewable energy credits (RECs) if they were utilized for compliance with a portfolio standard.

We maintain that such an outcome is preferable to masking the underlying differences in performance characteristics of various types of generation. Different resources provide value to the system in many different ways, and each would ideally have its properly distinguished revenue streams. Products for long-run resource adequacy, whatever form they take, would similarly require comparable performance from all sellers, thereby creating a truly "standardized" capacity product.