



California ISO
Your Link to Power

2nd Draft Final Proposal

Standard Resource Adequacy Capacity Product

ISO 2ND Draft Final Proposal
February 27, 2009

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1 EXECUTIVE SUMMARY

The purpose of this document is to present the ISO's draft final design proposal for a Standard Resource Adequacy Capacity Product (SCP). This 2nd version of the draft final proposal represents the culmination of a stakeholder process on SCP that was started in Summer 2008, and is the proposal which the ISO expects at this time to present to its Board of Governors for approval at the March 2009 Board meeting and, if approved, to file at FERC shortly thereafter. The term "draft final" means that the ISO will still consider possible modifications to this proposal based on submitted stakeholder comments received no later than March 6, 2009, but fully expects that any such modifications would not affect the fundamental structure of the proposed SCP design. The final ISO proposal on SCP will be published in conjunction with the documentation prepared for the March Board meeting.

In initiating the SCP effort the ISO did not have to start from scratch to create the SCP. Currently (and in MRTU) there is a process defined for the RA program which has been functioning since 2006. The ISO intends to maintain that same process when SCP is implemented and is only recommending a few key enhancements at this time. Also, a broad coalition of stakeholders had already spent a lot of time preparing elements of a standard capacity product prior to the ISO stakeholder process, which has been valuable in enabling the SCP effort to arrive at this draft final proposal.

The key enhancements to the existing RA program that would result from the SCP proposal are:

- Implementation of an availability standard in the ISO tariff. If a resource receives payments for providing RA capacity, there is an expectation that the full RA capacity of that resource will be available to the ISO, i.e., the resource is not on a forced equipment outage or derate that diminishes its ability to provide the full amount of its RA capacity. Under the SCP, resource availability will be measured on a monthly basis and compared against a single availability standard or target based on the historic performance of the RA resource fleet during the peak hours of each month of the previous year.
- Implementation of availability incentives. The SCP proposal will provide incentives for each resource to meet or exceed the target availability standard. On a monthly basis the ISO will assess non-availability charges to resources whose availability falls short of the target, and will provide credit payments to resources whose availability exceeds the target. Credit payments will be funded through the non-availability charge revenues so that this mechanism is financially neutral on a monthly basis.

Other important elements of the ISO's SCP proposal include:

- Unit Substitution. A resource owner will be able to substitute a non-RA resource for an RA resource on forced outage in order to avoid the outage being counted against the RA resource's availability. A pre-approval process will be required for RA capacity required for local needs to ensure that the replacement capacity is comparable to the original RA capacity in an operational sense. System RA capacity will be exempt from the pre-approval process.
- Transition to SCP. There are provisions for transitional grandfathering of existing RA contracts that were signed before January 1, 2009. Such grandfathered

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contracts would be exempt from the ISO-enforced availability standards and incentives under the SCP. These transitional provisions would expire with the expiration of such contracts.

- Deferment of SCP availability standards and incentives for certain RA resource types. The ISO proposal would not initially apply the SCP availability provisions to intermittent renewable generation (wind and solar), Qualifying Facilities (QFs), and demand response resources. The ISO intends to revisit the applicability of the SCP provisions to these resource types at a later date.

Finally, in conjunction with the SCP effort the ISO and stakeholders have discussed an enhancement to the existing Resource Adequacy Must Offer Obligation (RA MOO) that would enable the ISO markets to utilize both the energy supply and ancillary services capabilities of RA capacity in an optimal manner. Accordingly this draft final proposal also includes provisions for an Ancillary Services Must Offer Obligation (AS MOO), which the ISO intends to include in bringing its SCP proposal to the Board and filing at FERC. The AS MOO as described in this proposal would not alter the applicability of RA MOO as defined today, nor would it be dependent on whether or not the RA capacity is subject to the SCP availability provisions. Rather, the AS MOO would simply allow the ISO to utilize the certified AS capability of RA capacity that is already subject to RA MOO or that has offered to supply energy in the ISO markets.

The ISO is requesting that stakeholders submit their comments on this draft final proposal to SCPM@caiso.com by March 6, 2009.

2 INTRODUCTION

This paper addresses two enhancements to the RA program – the Standard Resource Adequacy Capacity Product and the addition of an Ancillary Services Must Offer Obligation (AS MOO) to enhance effectiveness of the Resource Adequacy Must Offer Obligation (RA MOO)

The implementation of a Standard Capacity Product (SCP) is a step forward in streamlining California's Resource Adequacy (RA) program. The RA program was implemented to ensure that adequate resources would be available to serve load. As the RA program evolved over the years, participants identified a need to develop a standardized capacity product to facilitate the selling, buying and trading of capacity to meet RA requirements. Stakeholders have affirmed to the ISO that their ability to efficiently transact RA contracts is hindered by the current method of negotiating agreements between parties without a standard product definition for trade. The need for resolution was highlighted during the ISO's Market Initiatives Roadmap process where the Standard RA Capacity Product was ranked highest priority out of a list of over 70 initiatives.¹ Stakeholders have expressed their desire to have this product implemented in the ISO Tariff as soon as possible so that it may be used as the basis for capacity contracting during 2009 for the 2010 delivery year. As a result, in 2008, the ISO began the stakeholder process for designing the SCP.

In parallel, the California Public Utilities Commission (CPUC) is also conducting proceedings to further the development of California's Resource Adequacy Program.

¹ *Market Initiatives Roadmap Process, Final Report on Ranking of High Priority Market Initiatives 7/7/2008* <http://caiso.com/1ff9/1ff9aee434530.pdf>

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Currently the CPUC is engaged in Phase 2 of R.08-01-025², the “Order Instituting Rulemaking to Consider Annual Revisions to Local Procurement Obligations and Refinements to the Resource Adequacy Program.” Clearly, the ISO, the CPUC and market participants are all seeking to accomplish the same goal – enhance the current RA program for the State of California. This proposal is intended to bring us closer to that objective.

3 IMPLEMENTING RESOURCE ADEQUACY WITH SCP AND AS MOO

3.1 IMPLEMENTING THE STANDARD CAPACITY PRODUCT

In the course of the ISO’s stakeholder process on the SCP, it became clear that two elements were key to the SCP design:

- Specification of availability standards for RA capacity and associated incentives for suppliers of such capacity to comply with those standards, both of which would be incorporated into the ISO tariff; and
- Clear specification of the applicability of the SCP standards and incentives, including potential exemption or transitional “grandfathering” of certain types of RA capacity.

As a result the ISO proposal in this document focuses on these key elements.

In addition, in stakeholders’ submitted comments there was broad (but not total) consensus on some issues regarding the changes to the RA framework under SCP:

- The current RA process should be changed as little as possible.
- The LSEs responsibility should end with the submission of their RA plans.

This section of the paper outlines the proposed changes to the current RA program that would result from adoption of the proposed SCP. It provides a summary of the updated resource adequacy framework. It is based on the Business Practice Manual (BPM) for Reliability Requirements and Tariff Section 40 regarding Resource Adequacy. Figure 1 displays the process flow.

Each year the ISO’s RA process begins with the publication of the Local Capacity Study and the Deliverability Study. The purpose of the Local Capacity Study is “to determine the minimum capacity needed in each identified transmission constrained “load pocket” or Local Capacity Area to ensure reliable grid operations”.³ The Deliverability study establishes the deliverability of generation in the ISO in the balancing area. It also establishes the total import capability for each import path allocated to each LSE. The information contained in these reports along with generator data is used to compile the annual Net Qualifying Capacity (NQC) Report which is a listing of the NQC of “all Participating Generators and other Generating Units that request inclusion”⁴ for the next compliance year.

² *Order Instituting Rulemaking to Consider Annual Revisions to Local Procurement Obligations and Refinements to the Resource Adequacy Program*, Assigned Commissioner’s Ruling and Scoping Memo, 9/15/2008 <http://docs.cpuc.ca.gov/efile/RULC/90797.pdf>

³ 2010 Local Capacity Area Technical Study Manual pg 3

⁴ BPM for Reliability Requirements pg 34

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LSEs utilize the NQC report to identify resources which are available to contract to provide capacity to satisfy their RA requirement. Currently, there are no standard provisions dealing with availability requirements and incentives for RA capacity, and consequently contracting parties must agree on such provisions themselves and the terms and conditions can vary among the contracts. The SCP will provide availability standards and incentives located in the ISO tariff, which contracting parties will be able to incorporate by reference into their bilateral RA contracts.

In the year ahead and month ahead timeframes, LSEs and Resources that supply RA capacity are required to provide information to the ISO demonstrating that the Resource Adequacy Requirements will be met for that period. LSEs submit Resource Adequacy Plans which identify specific resources that the LSE is relying on to satisfy its forecasted peak demand and reserve margin for the reporting period. SCs for the Resources are responsible for Supply Plans which are a verification and confirmation of the information contained in the LSEs Resource Adequacy Plan. Thus the Supply Plan “establishes a formal business commitment between the CAISO and Resource Adequacy Resources by confirming the status of the resource as [a] Resource Adequacy Resource.”⁵

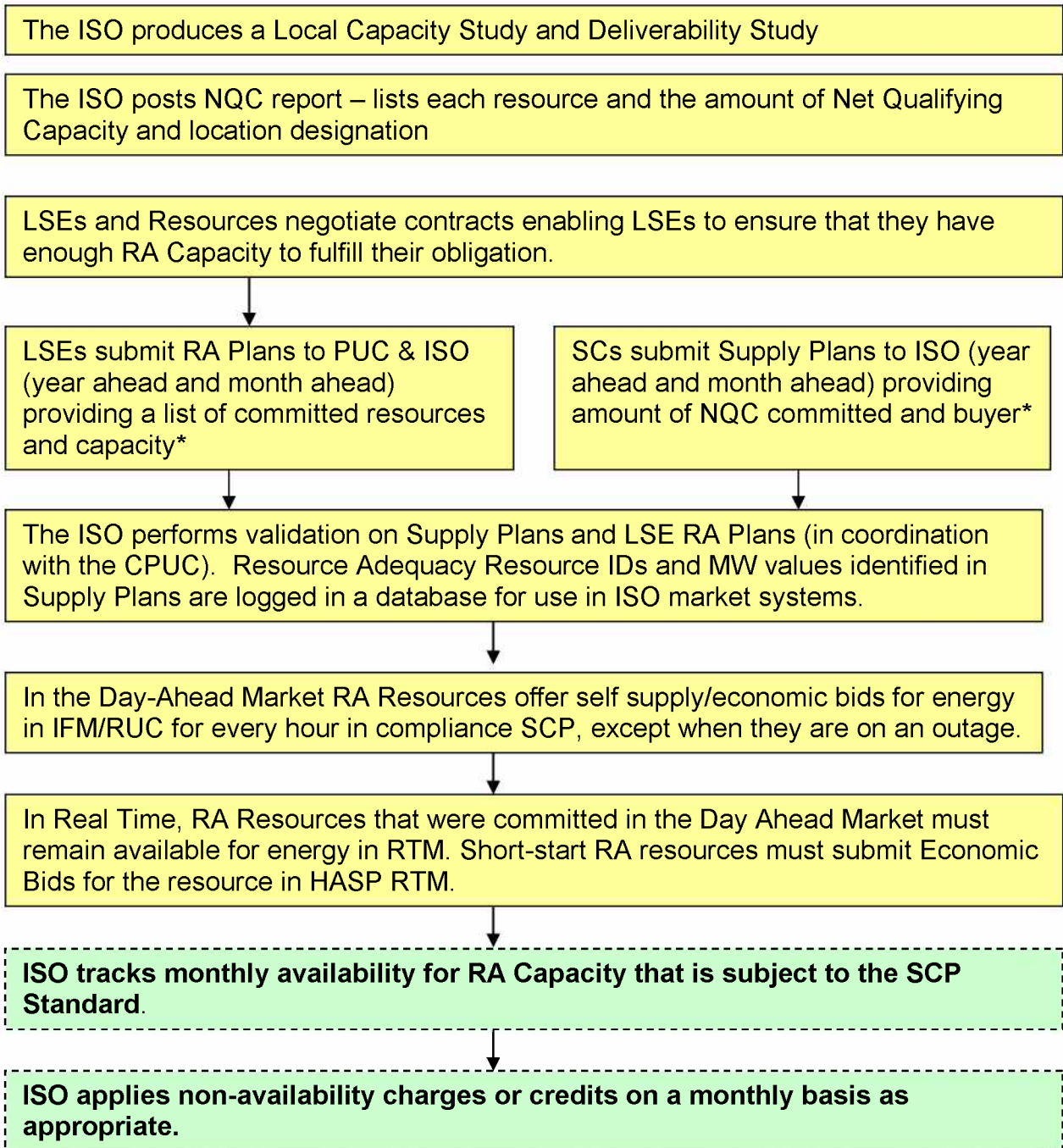
The Resource Adequacy Plans and Supply Plans are cross-validated by the ISO. For CPUC jurisdictional entities, the CPUC ensures that LSEs are in compliance with their RA requirements through their RA Plans, while the ISO provides feedback on the physical generating units and system resources listed in their RA Plans to see if the SCs of those resources submitted a Supply Plan confirming that the RA capacity was sold in accordance. For Non-CPUC jurisdictional entities, the ISO reviews the RA Plans and Supply Plans in the same manner as for the CPUC jurisdictional entities and sends any discrepancies to the Local Regulatory Authority (LRA).

All RA capacity that is confirmed through the RA Plans and the Supply Plans and that is not exempt (or deferred during initial implementation) from the SCP provisions in accordance with the criteria outlined in Sections 6 and 9 will then be subject to the ISO-tariff-based SCP availability standards and incentives. This means that such capacity will be tracked by the ISO for availability in the targeted compliance hours of each month (i.e., whether the full amount of RA capacity is available and not on a forced equipment outage or derate), and will be subject to a non-availability charges or credit payments depending on the extent to which its availability deviates from the SCP availability standard.

⁵ Id. At 22

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1. Figure1 –ISO RA Process under MRTU



* For the initial implementation of SCP, Contract holders who wish to grandfather their contracts will be required to submit certifying documentation. See Section 9 for additional information.

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3.2 THE ANCILLARY SERVICES MUST OFFER OBLIGATION

SCs for RA resources are required to make their RA capacity available to the ISO in accordance with the RA MOO provisions of Section 40 of the ISO tariff. In the Day-Ahead Market an RA resource that is subject to RA MOO must submit economic bids or self-schedules for their RA capacity in the IFM and RUC. Economic bids can be offers to supply energy or ancillary services or both. There are certain exceptions to this rule including Extremely Long Start Resources and Use Limited Resources.

RA resources that were committed in the IFM or RUC must remain available through Real-Time. Short Start Units and Dynamic System Resources that supply RA capacity subject to the RA MOO and are not scheduled in either the IFM or RUC are still subject to the RA MOO in the next day's Real Time Market and must submit Economic Bids or Self-Schedules into that market.

Extremely Long Start Resources

Extremely Long Start (ELS) Resources are those resources that are flagged in the master file and have a start-up time that is greater than 18 hours. Such resources must be given start-up instructions prior to the publication of Day Ahead Market results in order to be available as needed during the next operating day. ELS resources can also be system resources that have contractual limitations that require the energy to be committed prior to the publishing of the Day-Ahead Market results. For these units a special Extremely Long Start Commitment process is used. This process is described in Section 6.8 of the BPM for Market Operations.

RA MOO for Energy and Ancillary Services

As noted above, the current RA MOO tariff language allows suppliers of RA capacity to meet their RA MOO by offering offer energy or ancillary services or a combination of both, but does not specifically require the supplier to offer both energy and ancillary services if the capacity is certified to provide ancillary services. This limits the ISO's ability to co-optimize the use of all the capabilities of RA capacity, and may thus increase the cost of scheduling energy and procuring ancillary services in the IFM. Under the proposed AS MOO a supplier of RA capacity that is already subject to the other RA MOO provisions would have to be available for the ISO to optimally utilize that capacity for either energy or AS, to the extent the capacity is certified to provide AS.

In implementing the AS MOO the ISO would still allow RA capacity to self-schedule energy in the IFM, and the market optimization would try to procure all required AS from resources that offer AS through their economic bids or AS self-provision. If the RA capacity offers economic bids for energy, however, the AS MOO would require that resource to offer economic bids for AS for the same capacity to the extent it is certified to provide AS, so that the market can schedule that capacity for energy or AS or a combination of both in the most optimal manner. In addition, in the event that the market cannot procure all required AS from economic AS bids and AS self-provision, the AS MOO would allow the ISO to reduce the energy self-schedule of subject RA capacity to provide AS. In such instances the compensation for providing AS would be based on the Ancillary Services Marginal Prices as specified in the MRTU tariff. .

There are two key reasons why the AS MOO is being proposed. First, upon MRTU start up the FERC MOO will no longer apply and the pool of resources that must offer into the

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market will be limited to RA resources. Second, in the IFM the ISO optimizes energy and ancillary services to meet 100 percent of its forecast AS requirements and there will need to be enough AS supply in the market to perform this optimization. This enhancement helps ensure supply sufficiency and market liquidity.

There has been considerable discussion regarding the AS MOO in the ISO's reserve scarcity pricing stakeholder process. In the final proposal for the reserve scarcity pricing design posted on ISO website on July 15, 2008, the following revisions were proposed:

- 1) All RA resources must submit AS bids for 100% of their AS certified RA capacity into the DAM, even if the RA capacity has been self-scheduled for energy. Otherwise, a zero (\$0/MW) bid will be inserted;
- 2) All RA resources with AS certified capacity, with the exceptions as discussed below, will always be considered for energy and AS in the DAM IFM energy and AS co-optimization.
- 3) The ISO will honor RA capacity energy self-schedules unless it is unable to procure 100% of its AS requirements in the DAM. In such case, the ISO would curtail the energy self-schedule, or portion thereof, to allow certified AS capacity to be used for AS.
- 4) Due to various restrictions of operating conditions, hydro RA resources that offer energy bids should submit AS bids, together with their energy bids, in the day-ahead market for all their available AS capacity based on the expected available energy.⁶ Hydro RA units submitting energy self-schedules will not be required to offer AS in the DAM for the RA capacity corresponding to their energy self-schedules.
- 5) Non-Dispatchable Use Limited RA Resources will be exempted from the DAM AS must-offer requirement.

4 MARKET DESIGN PRINCIPLES

The SCP was created based on the following market design principles:

1. The purpose of the SCP is to meet the RA Requirement. The SCP is being developed to streamline and improve the current RA process for market participants and the ISO. The SCP enhances the existing procedures by providing a device that facilitates capacity trading and establishes performance rules in the tariff.
2. The SCP is fungible and can be easily traded. By its very definition a standard capacity product should have an enduring nature and represent a set of similar attributes. The SCP utilizes the Net Qualifying Capacity (NQC) that has been set forth in Section 40.4.1 of the tariff and the imports that are reported by LSEs and the SC representing resources to determine the amount of SCP MWs that a resource will provide.
3. SCP MWs are bound by the availability standards and incentives in the tariff. Sections 6 of this proposal describe this process.

⁶ It is consistent with the MRTU Tariff Section 40.6.4.3.2.

5 PRODUCT DEFINITION

The SCP is a set of attributes defined in the ISO MRTU tariff which specify the availability standard, charges and credits applied to RA capacity. There will be one availability standard that will be applicable to RA resources⁷ each month during the upcoming compliance year, which will be based on the historic availability of the RA resource fleet during a pre-defined set of peak hours during a previous three-year period. Non-availability charges will be applied on a monthly basis to RA resources that fail to achieve the target availability value during that month. RA resources that exceed the target availability value during the month may receive a credit payment to the extent such funds are available from the collection of financial penalties for that month.

6 AVAILABILITY STANDARD AND INCENTIVES

Overview and Summary

The current RA programs of the CPUC and LRAs do not differentiate among RA capacity in terms of the Forced Outage rate of the procured RA resources. Parties procure RA capacity under bilateral arrangements and a price is paid for the capacity. The bilateral arrangements may have availability requirements and incentives to encourage performance. Stakeholders have asked the ISO, as part of the SCP, to incorporate resource availability standards and incentives into the ISO Tariff to facilitate contracting. Stakeholders envision that, with an availability standard and incentives in the ISO Tariff, parties can refer in their contracts to the ISO Tariff provisions thereby simplifying and improving contracting.

Stakeholders have suggested that there be a standard that considers the Forced Outage rates of RA resources, rewards RA resources that have low Forced Outage rates by providing additional compensation and charges RA resources that have high Forced Outage rates by applying an unavailability charge. A system such as this during the compliance year would recognize and differentiate among RA resources that experience low Forced Outages compared to RA resources with high Forced Outages. To address this aspect of the SCP, the ISO has developed an availability standard and incentives.

There will be a unique target availability value established for each month of the compliance year, calculated based on the historic actual availability of the RA resource fleet during a pre-defined set of peak hours during each respective month over each of the past three years.⁸ The monthly target availability value will be applicable to all RA resources each month during the upcoming compliance year.

“Availability” will be defined as not being on a Forced Outage, as currently defined in the ISO Tariff, to an extent that would prevent the RA resource from offering to the ISO markets and providing the full MW value of the RA capacity that the resource has sold to an entity for RA purposes and provided to the ISO in an RA showing.

“Non-availability charges” will be applied to RA resources that fail to achieve the target availability value in a given month, and RA resources that have exceeded the target

⁷ This excludes resources whose SCP implementation has been temporarily deferred or grandfathered.

⁸ Certain types of RA resources are excluded from the calculation of the RA fleet. These exclusions are discussed in detail in this proposal.

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availability value for a given month may receive an “availability credit” to the extent such funds are available from the collection of non-availability charges in that month. The tariff provisions described below are intended to provide incentives for each resource that has sold RA capacity to be available to provide that capacity to the ISO.

The availability standard and incentives will be subject to review and potential modification in subsequent years, and any multi-year RA contract signed after these initial SCP provisions have been approved by FERC will continue to be subject to any changes made in the SCP and RA obligations incorporated in the ISO Tariff.

Outages under the ISO Tariff

The ISO Tariff defines several types of Outages. To provide context for the discussion in this paper, relevant definitions from Appendix A of the current ISO Tariff are provided below.

Outage: Disconnection, separation or reduction in capacity, planned or forced, of one or more elements of an electric system.

Forced Outage: An Outage for which sufficient notice cannot be given to allow the Outage to be factored into the Day-Ahead Market or Hour-Ahead Market scheduling processes.

When the ISO implemented its current Outage reporting penalties in 2007 the ISO interpreted variations of output of wind generators and Qualifying Facilities (QF) not to be reductions in capacity but reductions in output. The following guidance was provided to market participants:

Question/Comment 5:

“As available” Qualifying Facilities, which supply energy with a profile that resembles a wind Generating Unit should not have to report availability as the output of these Generating Units is constantly changing, making the availability report of little value.

Answer 5:

The CAISO does not consider normal variations in the output of Qualifying Facilities for which the output depends on a process separate from the production of electricity to represent changes in the unit’s maximum output capability. As such, these normal variations are not required to be reported. Aside from these normal variations in output, participants are required to report reductions in the maximum output capability of a Qualifying Facility if a Participating Generation Agreement (PGA) for the unit has been entered into with the CAISO (or if the unit is a Resource Adequacy Resource) and the reduction meets the reporting threshold.

The threshold for reporting Outages that is specified in the ISO Tariff section 9.3.10.3.1 is as follows: “Report a Generating Unit’s Availability after it is reduced (from the value registered in SLIC) by at least 10 MW or 5 percent of the Generating Unit’s PMax, whichever is greater, for an outage that lasts 15 minutes or longer.”

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Penalties specified in the ISO Tariff for not reporting Forced Outages range up to \$5,000 per unreported or late reported Outage, depending on the number of violations. Penalties in the ISO Tariff for reporting false information range up to \$10,000, depending on the number of violations. In addition, egregious violations will be referred to FERC, which has a number of sanctions available to it, including \$1 million per day penalty authority.

Any gaming consisting of reporting inaccurate availability data will be referred to FERC which has \$1 million per day penalty authority.

Peak Hours Availability Assessment

The availability standard and incentives are focused on the actual MW of capacity that has been sold and provided to the ISO. During the course of this stakeholder process the ISO considered whether the availability standard should be established by assessing Forced Outages during all hours of the month versus assessing Forced Outages during the peak-hours of the month.

The ISO proposes that the assessment of availability will look at performance during a pre-defined set of peak hours in the month. The ISO proposes to define the RA peak hours based on the operating periods when high demand conditions are likely to occur and therefore resource RA performance is most critical to maintaining system reliability.

The proposed peak-hours are shown in the table below. The five hours of each day have been chosen because, based on actual data, the ISO has found that the peak load hour always falls within that five-hour range. These hours are when the ISO has typically experienced the coincident peak demand during each of the months. By assessing performance during the hours when the system is most likely to be capacity-constrained, this approach provides appropriate incentives for resources to take actions to improve peak-period availability.

Month	Operating Hour	Exclusions
Apr – Oct	14:00 - 18:00	Saturday, Sunday and federal holiday
Jan - Mar, Nov & Dec	17:00 - 21:00	

The ISO will monitor the results of using only a peak hours assessment. If refinement is needed of the defined peak hours, or some alternative form of metric such as an all-hours metric is needed, the ISO will consider that as a future enhancement.

Sources of Outage Data

The ISO considered using either data from its scheduling and outage logging system (“SLIC”) or data reported to NERC using the Generator Availability Data System (“GADS”) protocol. The ISO proposes to use data from its SLIC system for outage data. Using SLIC data will allow for implementation of SCP for compliance year 2010. It is not feasible to implement a NERC GADS approach for compliance year 2010. Although the ISO proposes to use SLIC data to implement SCP; it is willing to consider moving to NERC GADS data in the future if warranted. The ISO intends to implement SCP using SLIC data, and to assess how well SCP it is working with SLIC data over a trial period of one or more compliance years.

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The ISO will use data from the ISO SLIC system to assess the availability of RA resources greater than 10 MW in size.

Because the requirement in the ISO Tariff is for all resources to only report forced de-rates that exceed the greater of 10 MW or five percent of the resource's capacity, resources that are less than 10 MW in size are not required to submit forced outage data to the SLIC system. However, a new requirement will be established under the SCP where resources that are less than 10 MW in size will be required each month to submit Outage data separate from SLIC that is equivalent to Outage data submitted by resources greater than 10 MW. Thus, for RA Resources less than 10 MW in size, the ISO will use the Outage data provided by the resource to determine the availability of those RA resources.

The ISO will develop a template that such resources will use each month to submit their Outage data to the ISO. The data that will be submitted will identify all forced Outages that have occurred over the previous calendar month. The data will include start and end times, MW availability and cause of Outage. The template would be submitted shortly after the end of each month, accompanied by a sworn affidavit by one of the executives of the company (similar as to what is done for the submission of Congestion Revenue Rights eligibility data).

There will be a minimum size threshold of 1.00 MW for this requirement, i.e., resources less than 1.00 MW do not have to submit Outage data each month and will not be subject to the availability standard and incentives (and these resources will not be included in the calculation of the target availability).

SLIC data will be used for the initial implementation of the SCP; however, it is recognized that the ISO Tariff does not require that resources report every MW of Outages and it may be desirable to develop more detailed reporting requirements at a later date, perhaps including a more detailed monthly submission from all RA resources.

Determination of Start and End Times of Outages

The start time used in calculating the availability percentage for each resource each month will be *the time the Outage actually occurred*, as reported by each SC in the SLIC system. The end time used in the calculation will be *the time the Outage completion was reported* to the ISO in the SLIC system. In technical terms, the Availability Point will be used to determine the Outage start time. The Availability Actual will be used to determine the Outage end time. The principle predicating this process is to capture the time the resource was actually operational and also available to the ISO systems. If an Outage has ended but has not been reported to the ISO, the ISO systems cannot dispatch it and so it is not available to the ISO systems.

Monthly Target Availability Value

There will be a unique target availability value established for each month of the compliance year (12 values for each year), calculated based on the historic actual availability of the RA resource fleet during a pre-defined set of peak hours during each

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respective month over each of the past three years⁹. The target availability value will be established before the start of the upcoming compliance year that will be applicable to RA resources each month during the upcoming compliance year.

In its previous proposal, the ISO proposed a single annual target value. The ISO now proposes a unique value for each month of the year as this will provide a more equitable target for resources to be measured against as different months of the year have different outage profiles. This change should mitigate stakeholder concerns that a single annual target value is unfair and may not be nearly revenue neutral to an RA resource that actually achieves an actual annual availability that is equal to the target annual availability.

The target availability value will be established well before the applicable compliance year and will be updated each year. The value will be posted by the ISO by June 1 of each year to be factored into procurement for the subsequent compliance year. The timeline for development of the target availability value is shown below (using the 2015 compliance year as an example).

- Data from January through December for 2011, 2012 and 2013 will be used for determining the value that would be in effect for compliance year 2015.
- The ISO will assess the 2011-2013 data in early 2014.
- The ISO will publish a single value in June 2014.
- The ISO will assess the actual availability of RA resources each month during 2015.

As discussed above, the formula for the target availability value will use monthly data over three years. However, in the first year of SCP (compliance year 2010) three full years of historical data will not be available for all months because the RA program did not start until June 2006 (only 2007 and 2008 have a full 12 months of data). The calculation will be run using data from June 2006 through December 2006, i.e., those months will have the benefit of three full years of monthly data. Starting with compliance year 2011 and beyond, three full years of historical data will be used in the calculation.¹⁰

The ISO will use only data from its SLIC system to calculate the target availability value in the first year of the SCP. In subsequent years (when data from resources less than 10 MW is available) the ISO will use both data from its SLIC system and the Outage data that is submitted by resources that are less than 10 MW in size to calculate the target availability.

Only resources that have been provided as RA resources, have an ISO Resource ID, submit Outage data, and have the availability standard and incentives applicable to them will be used to calculate the target availability value. Resources that are not subject to the availability standard and incentives because applicability has been deferred, or resources that have been exempted from the provisions, will not be included in the calculation.

⁹ The compliance year for RA is currently established as a calendar year.

¹⁰ Note that resources less than 10 MW in size will be included in the calculation for determining the target availability value as the ISO receives historical actual monthly Outage data from these resources.

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The target availability value will be calculated using an RA fleet that includes RA resources that have been grandfathered so that there are ample RA resources in the calculation (if we exclude grandfathered RA resources, then the RA fleet may be only a few hundred RA resources and not comparable to the 600-resource RA fleet that is currently supplying RA capacity).

As discussed at the end of this section, application of the availability standard and incentives has been deferred for wind, solar, QF and demand response RA resources. These types of RA resources will not be included in the calculation of the target availability value until such time as the availability standard and incentives apply to them.

Three types of resources will be excluded from this calculation: liquidated damages energy contracts, use-limited resources (ULR), and non-resource specific RA imports. Liquidated damages energy contracts are excluded because these types of RA resources are exempt from the availability standard and incentives (see discussion at the end of this section). ULRs are excluded from the availability target calculation because the historical outage data for these types of resources does not differentiate between Forced Outages and Outages due to energy limits. At the point when ULR outage data provides this type of distinction, it will be included in the target calculation. Further discussion of ULRs and the SCP is provided in the Ambient Outages section below. Non-resource-specific RA imports will not be included in the calculation of the target availability value because these types of RA resources have their own unique metric (see the discussion at the end of this section).

Further, since there is a minimum size threshold of 1.00 MW for reporting outages, i.e., resources less than 1.00 MW do not have to submit Outage data each month and will not be subject to the availability standard and incentives, resources less than 1 MW in size will not be included in the calculation of the target availability.

Since each month can have a unique set of RA resources, and each RA resource may offer different amounts of RA capacity, the target availability value will be calculated by summing the total available RA capacity MW across all compliance hours of the month and all RA resources subject to the SCP, then divided by the total sold RA capacity MW for the same set of hours and resources. The criteria for Forced Outages to be included in the calculation are described in the next section (Monthly Assessment of Actual Availability).

An example of how the target availability value will be calculated is provided below. The example uses a simplified model where:

- There are only two RA resources in the RA fleet; and
- The “month” consists of only six hours.

Example of Calculation of Target Availability Value for a Month

Assume for simplicity two RA resources and six-compliance-hour month.

	August 2006	August 2007	August 2008	
Unit A				
MW Sold as RA	100	90	100	Reference Period Totals

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				MW Available	MW Sold
Actual MW				290	290
Available: Hour 1	100	90	100		
Hour 2	90	90	100	280	290
Hour 3	90	90	0	180	290
Hour 4	70	70	0	140	290
Hour 5	80	80	100	260	290
Hour 6	100	90	100	290	290
	530	510	400	1440	1740
Unit B					
MW Sold as RA	50	60	50		
Actual MW				150	160
Available: Hour 1	50	50	50		
Hour 2	30	0	50	80	160
Hour 3	30	0	50	80	160
Hour 4	40	50	50	140	160
Hour 5	50	50	50	150	160
Hour 6	50	50	50	150	160
	250	200	300	750	960
All RA Resources				2190	2700

The calculation demonstrated above allows us to determine the target availability value in a manner that weights the availability of each resource by the amount of RA capacity MW sold by that resource. The formula that reflects the RA MW of each resource is shown below:

X = total of all RA capacity MW available over all compliance hours of the reference period and all resources subject to the SCP

Y = total of all RA capacity MW sold over all compliance hours of the reference period and all resources subject to the SCP.

Then the target availability rate is X/Y (or 100 * X/Y as a percent).

Based on the example above:

$$X = 530 + 510 + 400 + 250 + 200 + 300 = 2190^{11}$$

$$Y = 600 + 540 + 600 + 300 + 360 + 300 = 2700^{12}$$

$$\text{Then } X/Y = 2190 / 2700 = 0.8111 \text{ or } 81.1\%$$

Thus, the target availability value in this example that would be applicable for the month of August 2010 is 81.1%.

Monthly Assessment of Actual Availability

¹¹ For example, the first data point, 530, is the sum of August 2006, Hours 1 – 6 for Unit A.

¹² For example, the first data point, 600, is the MW sold as RA in August 2006 for Unit A which is 100, multiplied by 6 hours

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An assessment of each RA resource's availability each month during the applicable peak hour period against the target availability value will be done each month. The assessment will look at each RA resource's availability during the RA peak hours in the month using either

- SLIC data (for resources 10 MW or greater), or
- Data submitted by the resource (for resources less than 10 MW)

"Available" will be defined as not being on a Forced Outage during the applicable peak hour period to an extent that would prevent the resource from providing its full RA capacity value if called upon by the ISO. The formula for determining availability will use the MW value for each RA resource of the RA capacity that has been sold. The formula does not use the nameplate capacity, Pmax capacity, Qualifying Capacity, or Net Qualifying Capacity value.

Availability for each RA resource for each month will be determined by calculating: (a) the total RA capacity MW available over all compliance hours of the month, divided by (b) the total RA capacity MW designated in the RA plan for the same hours. Thus an RA resource is considered 100% available if it has no Forced Outages during the defined peak hours in a month. Any Forced Outages during peak hours during a month will decrease the resource's availability from 100% available. Maintenance Outages and Scheduled Maintenance taken in a month will not decrease the resource's availability from 100% available.

Treatment of Outages

Stakeholders have asked the ISO to provide additional detail regarding how Outages are treated in SLIC, and, in particular, how Forced Outages are determined versus "non-Forced Outages" for purposes of the SCP availability standard. For example, stakeholders are concerned with whether Outages submitted in SLIC for ambient derates or to inform the ISO of "forbidden ranges" after startup of MRTU will be treated as Forced Outages under the SCP availability standard. Stakeholders also have asked if the ISO believes that SLIC needs to be modified to implement the availability standards. To address these topics, the ISO provides the information below.

There are two ways that an Outage can be classified as a Forced Outage.

- If the Outage is not submitted three days or more in advance of an Outage that Outage is considered to be a Forced Outage. In other words, there is a timeline basis to determining whether an Outage is a Forced Outage or not a Forced Outage.¹³
- A resource might request an Outage three days or more in advance of a requested Outage, but, if the ISO does not approve the Outage (this could occur if system conditions will not allow the ISO to reliably operate the system if the Outage were to be taken) then, if the resource goes out on an Outage less than 72 hours in advance of the Outage, that Outage is classified as a Forced Outage.

¹³ The specific language regarding timing from section 3.4 of Procedure T-113 is as follows: "submit the request for CAISO approval no later than 1130 hours at least three (3) working days prior to the starting date of the Outage."

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The key determinant of whether an Outage is a Forced Outage is timing (the three day threshold). The ISO protocol for Outages, including the timeline, is described in Procedure T-113¹⁴. If an Outage occurs and the resource operator is not able to provide the 72-hour notice to the ISO, and a resource operator is entering the Outage in SLIC, the SLIC application will display a popup message that notified the resource operator that the Outage will be considered to be a Forced Outage and will ask if the resource operator wants to continue with the data entry (i.e., there is no ambiguity about whether any Outage submitted is a Forced Outage, or is not a Forced Outage – the resource operator knows as the data is being submitted how the Outage will be classified).

The ISO has designed SLIC to include functionality that will not classify certain types of Outages as Forced Outages, regardless of the time when the Outage is submitted, provided that the resource operator codes the data correctly when it is entered.¹⁵ This functionality has been in place for a number of years. Currently, Outages submitted using “Normal Cards” and “Ambient Cards” when submitted in SLIC are not classified as Forced Outages. This functionality will not change under MRTU. This functionality is described below.

- Normal Cards: “Normal Cards” are provided to document operating points when a resource cannot be dispatched due to engineered holding points. The Normal Card has been designed to allow hold points for designed engineered limitations in a resource. Normal Cards are each good for only a four-hour period and are used to work around the limitation of the ISO system that cannot recognize things such as forbidden ranges and ramping constraints. If a resource operator submits a Normal Card, the Outage is not classified as a Forced Outage. The Outage will look like a Forced Outage at first when the data is being submitted to SLIC due to the timeline, but by using the proper code on the drop down list of the Normal Card the Outage will not be recorded in SLIC as a Forced Outage. Instead, the Outage will be shown as a Normal Card. Normal Cards can be used by resources such as combined cycle resources that want to enter data into SLIC relative to forbidden ranges after startup of MRTU.¹⁶
- Ambient Card: Ambient Cards are used to document limitations on the resource, such as those caused by temperature, weather and lack of fuel or emissions. If the Ambient Card is submitted with the proper codes, even if not 72-hour notice has been provided to the ISO, that Outage will be recorded as an Ambient Card.

The ISO proposes that Outages submitted in SLIC using a Normal Card will not be counted against the hourly availability of the resource under the SCP availability standard as the Net Dependable Capacity of the RA resource is still available to the ISO.

Although Outages submitted using Ambient Cards will not be classified in SLIC as Forced Outages, Outages submitted using an Ambient Card that are for derates of capacity due to temperature, i.e., ambient conditions, will be counted against the hourly availability of the resource under the SCP availability standard.

¹⁴ Procedure T-113 can be found at the following link:

<http://www.caiso.com/docs/2002/01/29/2002012913333822467.pdf>

¹⁵ The ISO for years has offered and conducted extensive training to plant operators on how to use SLIC and submit Outages, including the types of coding described in this proposal.

¹⁶ Normal Cards are described in the ISO SLIC Web Client document posted on the ISO web site at the following link: <http://www.caiso.com/docs/2004/01/28/2004012807111918934.pdf>

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Normal weather fluctuations such as temperature are reasonably predictable by the resource owner. Since normal weather patterns are predictable, the resource owner can anticipate these conditions and should sell a commensurate amount of RA capacity that reflects those conditions.

The assessment of a resource's actual availability will not count Outages that are submitted using an Ambient Card that are for de-rates due to Uncontrollable Forces (as defined in Appendix A to the Tariff). Uncontrollable Forces are defined as "Any act of God, labor disturbance, act of the public enemy, war, insurrection, riot, fire, storm, flood, earthquake, explosion, any curtailment, order, regulation or restriction imposed by governmental, military or lawfully established civilian authorities or any other cause beyond the reasonable control of the CAISO or Market Participant which could not be avoided through the exercise of Good Utility Practice."

In addition, consideration will be made in assessing the actual availability of SCP resources that qualify as a ULR under the ISO Tariff. The ISO proposes that Outages submitted using Ambient Cards for temperature-related de-rates for ULRs will be counted against their availability as they would for any other SCP resource, but only up to a point. Once a ULR encounters an energy limit constraint, such Outages will no longer count against the SCP availability determination for the relevant month. The rationale for this exemption is as follows: ULRs provide monthly advisory use plans to the ISO that indicate their energy limitations and the ISO uses this information to determine how to best utilize the resources to meet system needs. These resources are expected to provide the full amount of RA capacity that they are contracted to supply within the energy limit constraints of the resource. Therefore, until an energy limit constraint is encountered, the resource is expected to provide the full amount of RA capacity that it has sold.

To ensure that ULRs provide reasonably accurate use plans to the ISO, the ISO will assess the accuracy of resource use plans compared to actual operation of the resource. The chronic submittal of inaccurate use plans will be brought to the attention of the resource and any relevant LRAs.

The ISO will review the current codes in SLIC relative to the submittal of Ambient Cards and will modify SLIC as necessary to implement this aspect of the SCP. Since the only event submitted under an Ambient Card that will count against availability is for a temperature related de-rate, the simplest solution may be for the ISO to add a code (or modify the existing codes in SLIC) so that Ambient Card drop down list has only one code that will be used to communicate all temperature de-rates that a resource would use where it has to de-rate its capacity to reflect the impacts of temperature. Given the approach taken in this proposal, it is not necessary to define the events that are not considered to be Uncontrollable Forces.

Example of Monthly Assessment of Actual Availability

The actual availability of each RA resource each month will be calculated as described below.

- The ISO will assess each resource's operational status during the applicable peak hour period for each month using the Outage data provided by the resource's Scheduling Coordinator to the ISO through the SLIC system (or, if the resource is less than 10 MW in size, using the Outage data provided by the

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resource after the conclusion of the month). Each hour during the applicable peak hour period that the resource has no Forced Outages that impair its contracted RA value will be counted as the resource having a 100% availability for that hour.

- For each hour during the applicable peak hour period that the resource is partially or fully curtailed a pro-rated percentage will be calculated. For example, a 100 MW resource that is available for 50 MW for the hour during an applicable peak hour period will be counted as 50% available, or the same resource curtailed to 0 MW for 30 minutes will also be counted as 50% available.
- The ISO will calculate a monthly average availability for each resource during the applicable peak hour period. The calculation will be based on the actual hours that the resource is available during the applicable peak hour period compared to the target available hours during the applicable peak hour period for that month.

The actual availability of each resource each month during the applicable peak hour period will be calculated and compared to the target availability. In months where there are no Forced Outages, the actual availability of the resource would be above the target availability since it is assumed that in each month there will be some RA resources that have Forced Outages which will result in a target value of less than 100% availability. In months where a Forced Outage occurs during the applicable peak hour period, the actual availability would be less than 100%.

The formula for determining the availability of a resource during the applicable peak hour period in any given month will be as follows:

$$A_{jn} = \frac{\sum \text{Hourly RA MW Available from Resource } j \text{ in month } n}{(\text{RA MW Capacity of Resource } j) \times (\text{Total Compliance Hours of Month})}$$

Where A_{jn} = Availability Percentage of Resource j in Month n during the applicable peak hour period.

As only peak hours will be used in the assessment, the Hourly RA MW Available from Resource and Total Compliance Hours of Month will only include peak hours. In essence, the ISO will sum the MW that are available in the month for only the defined peak hours.

An example of the monthly assessment is provided below.

Example of Monthly Assessment of Actual Availability

Assumes a six-hour month.

Assumes Unit A sold 100 MW as RA.

Unit A

Hour 1	100	
Hour 2	90	90MW for full hour
Hour 3	100	
Hour 4	70	▶ 100MW for 42min / 0 MW for 18min = 70MW
Hour 5	80	▶ 100MW for 35min / 50MW for 14min / 0 MW for 11min = 80MW
Hour 6	100	
	530/600	

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88.3% Monthly Availability

Incentives

During the course of this stakeholder process the ISO considered both financial and physical incentives. The two approaches are summarized below.

Incentive	Description
Financial	Charge (or credit) assessed during compliance period or just after its conclusion for not meeting (or exceeding) the standard within the compliance period
Physical	Adjustment to Net Qualifying Capacity for subsequent compliance period for not meeting the standard within the current compliance period

The ISO proposes to add a non-availability charge to the ISO Tariff as a financial incentive. A financial incentive is supported by a majority of stakeholders, who believe that it provides the correct incentive for RA resources to be available. There is very little support among stakeholders for a physical incentive. Failure to achieve the target availability value in any month during the compliance year will result in a non-availability charge from the ISO to the Scheduling Coordinator. Each RA resource will have an incentive to ensure that it performs to limit its exposure to the non-availability charge.

The proposals for a financial incentive that were provided by stakeholders in previous rounds of stakeholder comments on the SCP included the following elements:

- Each resource's availability should be compared to actual fleet availability;
- Resources with lower-than-standard availability during peak load periods should receive charges, while resources with higher-than-standard availability should receive credits; and
- Resources with availability of less than 50% should have a charge applied to the entire RA capacity; those with availability of greater than 50% but less than the target should have a charge applied to a portion of their RA capacity.

The ISO has used many of these principles in developing its proposed availability standard and performance incentives.

A non-availability charge, or potentially an availability credit, will be applied to Scheduling Coordinators of RA resources. A non-availability charge will be applied each month to the Scheduling Coordinators of resources that do not meet the target availability as part of the first feasible settlement statement after the conclusion of the applicable month. A potential availability credit will be made each month (to the extent that funds generated from non-availability charges are available) to resources that exceed the target availability as part of the first feasible settlement statement after the conclusion of the applicable month.

The non-availability charges and availability credits will be settled all within the same settlement month. After consulting internally with its Finance department, the ISO has concluded that there is no need to wait until the non-availability charges funds are received to later pay out the availability credits.

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The intent for the non-availability charges and potential availability credits is that each month would be treated separately from other months, with its own “account” of non-availability charges collected and potential availability credits going out (to the extent such funds are available) to the RA resources that exceed the target availability. The “account” for each month would either be paid out to RA resources that have exceeded the target availability or put it into the Real Time neutrality and paid back to measured demand, i.e., any excess not paid out to resources that exceed the target availability will be paid out to measured demand.

A dead band of 5.0% will be used around the target availability (2.5% on either side of the target availability value) to limit the amount of non-availability charges and availability credits. The dead band provides for non-availability charges and availability credits to only be assessed when RA resources perform significantly better or worse compared to the established availability standard.

The “price” value in the non-availability charge formula will be the replacement cost (or ISO “backstop” cost) of capacity that is established in the ISO Tariff. That value is currently \$41/kW-year, as established in the Interim Capacity Procurement Mechanism (“ICPM”) provisions.¹⁷ The ISO intends that the price value of the successor to the ICPM would be used in the SCP non-availability charge formula.

The non-availability charge formula will work as shown below. It will be a monthly charge (and will recognize the dead band).

Actual Availability	Formula ¹
For resources with availability of 50% and up to the target availability percent, recognizing the dead band	(Target Availability- Dead Band - A_{jn}) x (RA capacity in kW) x (ISO backstop replacement cost of capacity)
For resources with availability less than 50%	(RA capacity in kW) x (ISO backstop replacement cost of capacity)

Where A_{jn} = Availability of Resource j in Month n

The funds collected from the application of non-availability charges will be allocated to RA resources that exceed the dead band for target availability. The funds will be distributed by calculating a monthly availability credit rate and applying it to the amount of capacity that exceeded the dead band above the target availability standard (i.e., a 90% target and with 5.0% dead band will provide a potential availability credit to those RA resources that exceeded a 92.5% availability rate). The monthly availability credit rate will be determined by dividing the total monthly non-availability charges dollars by the sum of MW of all resources that exceeded the target plus dead band. Resource availability credits will equal the monthly availability credit rate times the MW availability above the target plus dead band level and calculated as shown below.

A monthly availability credit rate will be determined by dividing total monthly non-availability charges dollars by the sum of all MW exceeding target plus dead band of all RA resources.

- $\text{Rate} = \text{Total Revenue } \$ / \sum_j [((\text{Target} + \text{Dead Band}) - A_{jn}) \times \text{RA MW}_j]$
 - $\text{Payment}_j = \text{Rate} \times ((A_{jn} - (\text{Target} + \text{Dead Band})) \times \text{RA MW}_j)$
- Where A_{jn} = Availability of Resource j in Month n

¹⁷ The ICPM tariff, including the pricing provisions, sunsets on December 31, 2010.

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Example

- A 90% target with a 5.0% dead band will provide a potential availability credit to RA resources that exceed a 92.5% availability rate (90.0% plus 2.5% means resources that achieve greater than 92.5% are eligible to receive an availability credit)
- 500 MW resource available 100% of time during a month would receive an availability credit = Monthly Availability Credit Rate *(100.0%-92.5%)*500

The ISO desires to provide an incentive to RA resources to strive to achieve an availability level greater than the target availability, and hence be eligible to receive potential availability credits. The ISO also recognizes that there could be instances where in a particular month many RA resources have been assessed a non-availability charge and there are just a few RA resources that have exceeded the target availability. This situation could lead to a potential windfall to these few RA resources. Therefore, the ISO proposes to “cap” the potential availability credit each month so there is not a windfall to just a few entities that are above the target availability value and return any excess non-availability charges funds by putting those funds into Real Time neutrality and paying the funds back to measured demand.

The ISO also recognizes that it should be careful not to establish incentives for LSEs to procure poor quality resources for RA purposes that may trigger very large non-availability charges proceeds, a portion of which may flow back to the LSE under the “cap” approach described above. To provide a strong incentive to RA resources to strive to exceed the target availability, while at the same time balancing the amount that might be returned to measured demand, the ISO proposes to use three times the non-availability charge rate that is charged to RA resources that fail to meet the target availability as the maximum rate to pay the RA resources that exceed the target availability. Thus, RA resources that exceed the target availability never get paid more per MW than three times the non-availability charge rate, but may get less if not enough non-availability charges funds are collected. If there is any remaining surplus, then that surplus would be put it into Real Time neutrality and paid back to measured demand. The use of three times the non-availability charge rate as a cap should provide a strong incentive for RA resources to shoot for, and should in most cases mitigate any large windfall amount that might accrue and be paid back to LSEs. The ISO expects the amount of any excess funds in a month beyond what is paid out as availability credits to be very small, if any, as the cap is three times the non-availability charge rate. The ISO believes that it is efficient to establish a simple mechanism to pay out this small amount of funds each month if there are any funds to pay out as excess. The ISO has chosen to pay the funds to load because load is the entity that is paying for RA capacity (both RA procurement and backstop procurement).

In the case of a month where there are non-availability charges funds, but no RA resource has exceeded the target availability, then those funds will be placed into Real Time neutrality and paid back to measured demand.

Examples

This section shows how the ISO will accounts for availability with the SCP tariff. There are two subsections. The first subsection discusses various possible Outage scenarios and how they impact: (a) the CPUC counting rules, and (b) the financial impact under

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SCP. The second subsection provides two examples for calculating non-availability charges and availability credits based on the proposed SCP provisions.

Outage Scenarios and RA Resources

<p>Example RA Resource Parameters Resource ID – RESOUR_2_AB1X3 P-Max – 551.70 MW NQC – 550 MW RA Capacity – 400 MW - 300 MW sold to LSE1 - 100 MW sold to LSE2</p>
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Table A - Capacity Counting Impact under CPUC rules

Scenario	Description	Impact
1	Scheduled Outage in a non-summer month ¹⁸ lasting 6 days	Resource can count for 400 MW.
2	Scheduled Outage in a non-summer month lasting 10 days	Pro-rated counting rule ¹⁹ – resource can count for 171 MW ²⁰ .
3	Scheduled Outage in a non-summer month lasting 15 days	Resource cannot count for the month.
4	Scheduled Outage in a non-summer month for any duration scheduled after due date for monthly RA reports	Resource can count for 400 MW.
5	Forced Outage in a non-summer month of any duration	Resource can count for 400 MW.
6	Scheduled Outage in a summer month, July, lasting 7 days ²¹	Resource can count for 400 MW.
7	Scheduled Outage in a summer month, July, lasting 9 days	Resource cannot count for the month.
8	Scheduled Outage in a summer month for any duration scheduled after due date for monthly RA reports	Resource can count for 400 MW.
9	Forced Outage in a summer month of any duration	Resource can count for 400 MW.

Table B - Financial Impact under SCP

Scenario	Description	Impact
1	Approved Scheduled Outage of any duration	No financial Impact to SC of the resource

¹⁸ Non-summer months are October – April.

¹⁹ Pro-rate rule for Scheduled Outage between 7-14 days in a non-summer month = $[1 - (10\text{days}/31\text{days}) - 0.25] * 400 \text{ MW}$

²⁰ Assumption would be that the two LSEs would divide the 171 MW 75%/25%

²¹ CPUC's summer rule is that Scheduled Outage duration of less than 25% of days in the month, or 7.75 days in July, can count fully for the RA month.

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2	Scheduled Outage requested and denied then submitted as Forced Outage	Non-availability charge assessed to SC of the resource (if outside of the dead band)
3	Scheduled Outage requested and denied but substitute unit offered and accepted	No financial impact to SC of the resource
4	Scheduled Outage requested and denied and substitute unit offered and denied	Non-availability charge assessed to SC of the resource (if outside of the dead band)
5	Forced Outage for equipment failure	Non-availability charge assessed to SC of the resource (if outside of the dead band)
6	a. Ambient Card submitted for Outage due to events beyond the control of the resource operator (e.g. earthquake, environmental limits, other catastrophe)	a. No financial Impact to SC of the resource
	b. Ambient Card submitted for Outage due to predictable temperature events that could be reasonably anticipated by the resource operator	b. Non-availability charge assessed to SC of the resource (if outside of the dead band)
7	Normal Card submitted for an Outage	No financial impact to SC of the resource
8	Forced Outage converted to Planned Outage after 72 hours	Outage counted toward non-availability charge (if outside of the dead band) for first 72 hours, with remaining duration not counted against availability

Notes:

- As noted in Table A, scenario 4 and 8, a Scheduled Outage created and approved after the due date for RA reports (approx one month before the actual month) does not impact the counting of the RA resource under the CPUC's counting rules because the LSE cannot be held to procure additional capacity after the filing due date. There would be no financial impact under the SCP.
- Wind, solar, Qualifying Facility and demand response RA resources are subject to all CPUC Scheduled Outage counting rules, but there will be no financial impact for Forced Outages at the start of SCP because the application of non-availability charges and availability credits for these types of resources has been deferred (see discussion at the end of this section).

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Financial Impact Examples

Table C

Assume: Monthly target availability value of 93.5% (Tolerance of band 91.0-96.0%)

Applicable replacement capacity price of \$41/kW-year

Scenario A: Non-Availability Charge \$ < Availability Credits \$

In this scenario, there were more SCP MWs that exceeded the availability target and tolerance band (96.0%) than there were below this range (91.0%). In this case 20.8 MW exceeded vs. 15.2 MW that did not.

Resource	Availability %	Status	SCP MW	MW Below Target	Non-Availability Charge (MW *1000)* \$41/12)	MW Above Target	Availability Credit (MW * Credit)
1	94%	=	100	0	\$0	0	\$0.00
2	93%	=	100	0	\$0	0	\$0.00
3	98%	>	200	0	\$0	3.2	(\$7,989.74)
4	97%	>	200	0	\$0	1.6	(\$3,994.87)
5	90%	<	300	-4.2	(\$14,350)	0	\$0.00
6	100%	>	400	0	\$0	16	(\$39,948.72)
7	80%	<	100	-11	(\$37,583)	0	\$0.00
8	93%	=	200	0	\$0	0	\$0.00
9	95%	=	300	0	\$0	0	\$0.00
10	92%	=	100	0	\$0	0	\$0.00
Total				-15.2	(\$51,933)	20.8	(\$51,933.33)
						Credit per MW	(\$2,496.79)
						Capped Credit per MW (replacement capacity price * 1000/12 * 3 = \$10,250)	N/A
Total charges due (did not meet target availability)						(\$51,933)	
Total credits (exceeded target availability)						(\$51,933)	
Excess distributed to load						\$0	

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Table D

Scenario B: Non-availability charge \$ > Availability credit \$ (with 1 unit below 50% availability)

In this scenario, the amount of SCP MWs below the availability target was greater than the amount that exceeded the target (104.2 MW vs. 20.8 MW). Additionally the non-availability charges \$ exceeded the cap (3 times the replacement cost price). In this case the capped credit amount is used to calculate the credit for those who exceeded target availability. The amount of non-availability charges \$ that were collected over the capped amount was distributed to load.

Resource	Availability %	Status	SCP MW	MW Below Target	Non-Availability Charges (MW *1000)* \$41/12)	MW Above Target	Capped Availability Credit (MW * Capped Credit)
1	94%	=	100	0	\$0	0	\$0.00
2	93%	=	100	0	\$0	0	\$0.00
3	98%	>	200	0	\$0	3.2	(\$32,800.00)
4	97%	>	200	0	\$0	1.6	(\$16,400.00)
5	90%	<	300	-4.2	(\$14,350)	0	\$0.00
6	100%	>	400	0	\$0	16	(\$164,000.00)
7	49%	<	100	-100	(\$341,667)	0	\$0.00
8	93%	=	200	0	\$0	0	\$0.00
9	95%	=	300	0	\$0	0	\$0.00
10	92%	=	100	0	\$0	0	\$0.00
			Total	-104.2	(\$356,017)	20.8	(\$213,200.00)
						Credit per MW	(\$17,116.19)
						Capped Credit per MW (replacement capacity price * 1000/12 * 3)= \$10,250	(\$10,250.00)
Total charges due (did not meet target availability)						(\$356,017)	
Total credits (exceeded target availability)						(\$213,200)	
Excess distributed to load						(\$142,817)	

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Reporting

The ISO proposes to include the following information in an annual report that will be posted by June 1 of each year:

- Annual target availability value; and
- Information on the average availability of the RA fleet, total non-availability charges assessed; and total availability credits issued.

Deferral for Wind, Solar, Qualifying Facility and Demand Response Resources

There are several types of RA resources whose Qualifying Capacity (“QC”) value is calculated each year based on historical actual hourly output data, which, by its nature, may include some Outage hours that occur during the period during which actual output is measured in determining the QC. These RA resources include wind, solar and Qualifying Facility resources. Therefore, if the availability standard discussed herein were to be applied to these types of resources, then those resources may be put in a position where Outages may be double-counted. The ISO supports a uniform standard that will apply to all RA resources, but recognizes that some changes may need to be made to the CPUC and LRA counting procedures to reflect that the QC of these types of resources is already de-rated to reflect actual output and may include some level of Outages. Therefore, the ISO proposes that the availability standard and incentives initially will not apply to RA resources whose QC value is calculated each year based on historical actual hourly output data that may include some Outage hours that occur during the period during which actual output is measured. This means that wind, solar and Qualifying Facility RA resources initially will not be subject to these the availability standard and incentives of the SCP. The deferral of these provisions to these types of RA resources is temporary, and in the future the ISO will revisit the applicability of these provisions to wind, solar and Qualifying Facility RA resources. The ISO will coordinate with the CPUC and LRAs on changes that may be made in the future to prevent double-counting of Outages.

Several types of DR resources currently count for RA. Some of the RA DR resources have an ISO Resource ID, but most of the RA DR resources do not have an ISO Resource ID nor do they report Outage data to the ISO. Rather than have some portion of RA DR resources be subject to the availability standard and incentives at implementation of the SCP and have other DR resources that are not subject to these provisions because of factors such as some DR resources do not have a Resource ID and some do not report Outage data, the ISO proposes to defer applicability of these provisions to RA DR resources until the time when dispatchable DR functionality has been implemented under MAP after MRTU startup. The ISO will revisit applicability of these provisions to RA DR resources in the context of, or in parallel with the DR proceeding, as well as the timing of implementation of dispatchable DR functionality.

Exemption for Liquidated Damages Energy Contracts

Liquidated damages energy (“LD”) contracts are financial contracts and are not physical contracts tied to a specific resource. Energy from LD contracts is delivered internal to the ISO and the ISO does not know where the LD contract was sourced from. Furthermore, this type of RA capacity is not subject to Outage reporting requirements

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and does not have associated Outage data upon which to measure availability and apply the incentives. The ISO supports a uniform standard that will apply to all RA resources, but recognizes that since this type of RA resources are not represented by a physical resource it is not possible to apply the availability standard and incentives to LD contracts. The ISO notes that the quantity of such RA capacity has decreased each year over the last three years and the use of LD contracts for RA purposes has been phased out by the CPUC as of 2008, i.e., 2008 was the last year that these types of resources were allowed to count for RA by the CPUC (there is one exception, for CDWR contracts). The ISO strongly encourages LSEs to not procure these contracts for RA purposes.

Different Approach for Non-Resource-Specific RA Imports

Non-resource-specific RA imports that are not tied to a specific resource pose a dilemma for the ISO²². The root of the dilemma is that such RA capacity is not subject to Outage reporting requirements and does not have associated Outage data upon which to measure availability and apply the financial incentives. At the same time, the quantity of this type of RA capacity is significant enough that the ISO is reluctant to simply waive the availability standard and incentives for this capacity. The ISO would therefore like to determine a way to measure availability for this type of import capacity in a manner that is meaningful and reasonable given the absence of an associated physical supply resource, and that will provide appropriate incentives to maximize availability.

The ISO proposes to measure availability for non-resource-specific RA resources based on the offer of the capacity into the ISO markets. Under MRTU, RA imports must offer into the Day-Ahead market the full amount of their RA capacity and will have to establish a Resource ID to be able to conduct these transactions. Since imports have to schedule with a Resource ID under MRTU, the ISO could track the extent to which each RA import resource offers into the Day-Ahead market the full amount of its RA capacity. Thus non-resource-specific RA imports could be held to a target availability value and the ISO could apply non-availability charges and allow these resources to be eligible for potential availability credits. The ISO proposes using a monthly target availability value of 100% of RA hours for this type of RA resource. If there is a path or branch group de-rate during a month it will not be counted against the non-resource-specific RA import resource's availability in that month.

Non-resource-specific RA imports will be separated into a distinct SCP category. This category will have its own self-funded account where monies that come in from non-availability charges assessed to non-resource-specific RA imports will be used to fund availability credits to non-resource-specific RA imports. Separate accounting is necessary as the metric for non-resource-specific RA imports is different than the metric for other types of SCP RA resources and needs to be treated separate from the other SCP capacity.

²² Note that resource-specific RA imports will be treated like other RA resources (such as thermal resources) and will be subject to the availability standard and incentives. Path or branch group de-rates in a month will not affect the availability calculation for resource-specific RA imports during that month.

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The target availability for non-resource-specific RA imports will be set each month at 100.0% with no dead band.

The “price” value in the non-availability charge formula will be the replacement cost (or ISO “backstop” cost) of capacity that is established in the ISO Tariff. That value is currently \$41/kW-year, as established in the Interim Capacity Procurement Mechanism (“ICPM”) provisions.²³ The ISO intends that the price value of the successor to the ICPM would be used in the SCP non-availability charge formula.

The money collected from non-availability charges assessed to non- resource-specific RA imports will be used to provide availability credits to non-resource-specific RA import resources that achieve 100% for the period.

As is discussed in the sections above for the non-availability charge that will be assessed to internal RA resources, the ISO proposes to “cap” the potential availability credit each month that may be available to non-resource specific RA imports so there is not a windfall to just a few entities that are above the target availability value and return any excess non-availability charges funds by putting those funds into Real Time neutrality and paying the funds back to measured demand. The ISO proposes to use three times the non-availability charge rate that is charged to non-resource-specific RA resources that fail to meet the target availability as the maximum rate to pay the non-resource-specific RA resources that exceed the target availability. Thus, RA resources that exceed the target availability never get paid more per MW than three times the non-availability charge rate, but may get less if not enough non-availability charges funds are collected. If there is any remaining surplus, then that surplus would be put it into Real Time neutrality and paid back to measured demand.

In the case of a month where there are non-availability charges funds paid by non-resource-specific RA imports, but no non-resource-specific RA import resource has qualified as eligible to receive availability credits, then the non-availability charges funds will be placed into Real Time neutrality and paid back to measured demand.

Non-resource-specific RA import resources will not be included in the calculation of the target availability value for other RA capacity as these resources have their own unique metric.

It is assumed that any resource-specific RA import capacity will be treated like internal RA resources for purposes of SCP: the resources would use SLIC to report Outages, and the ISO would insert default bids for the resources if the resources fail to offer their RA capacity and are not on an Outage.

7 UNIT SUBSTITUTION

The ISO proposes to adopt a provision to allow a supplier of RA capacity that is tied to a specific generating resource the ability to substitute an alternative resource in the event the RA resource is on an outage, and by means of such substitution to avoid counting the outage of the RA resource toward the monthly availability assessment. This provision will offer reliability benefits by encouraging the availability of otherwise non-RA

²³ The ICPM tariff, including the pricing provisions, sunsets on December 31, 2010.

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capacity when RA resource outages occur, provided the substitute is comparable to the original RA resource. This is an advantage for both the SCs and the ISO – SCs can potentially avoid non-availability charges by requesting substitution and the ISO may be able to avoid backstop procurement by suggesting a unit substitution in the event of a forced outage.

Resources designated to meet local RA needs will be required to prequalify their alternate units. Suppliers will need to provide their unit substitution requests along with their supply plans in advance of the coming year. An ISO evaluation will be done to ensure that the substitute resource is a resource which appears to be capable of providing system reliability benefits equivalent to the system reliability benefits provided by the original RA resource. This will be done in advance of the compliance year so that the ISO will not need to assess the acceptability of the substitute in real time. A template will be provided for submitting these requests to the ISO.

When a supplier has a forced outage, they may request a substitution from their pre-approved list in the day-ahead time frame, prior to the close of the IFM. The ISO would have the discretion of approving this request based on the prevailing system conditions.

Some stakeholders have suggested that resources should be able to substitute any non-RA resource in the same LCA and that requiring pre-approval is holding substitute resources to a higher standard than the original resources listed in the supply plan. The ISO's view is that the additional scrutiny is appropriate. In the annual showing the ISO takes all of the supply plans that it receives and ensures that that the configuration of submitted resources and MWs provide the right mix to cover the capacity needs. During the year, if a resource has a forced outage and wants to substitute another resource, the ISO must evaluate whether that unit will maintain that same balance and provide the same benefit. The fact that a unit is in the same Local Area does not necessarily mean that it will provide the same benefit.

Resources designated for system RA needs will not be required to pre-qualify alternate units for substitution. If a system RA unit has an outage that will count against its availability, the supplier, prior to the close of the IFM, may request the use of a non-RA unit to be used in the place of the original unit. The ISO will make every effort to accommodate these requests to the extent that they provide the same level of reliability as the originally designated resource. For example if a supplier requests a substitute unit that would still cause the ISO need to procure backstop capacity, that unit substitution request would be denied.

8 CREDIT REQUIREMENTS

Most stakeholders who commented did not see the need for credit requirements. A few agreed that credit requirements would be necessary if financial penalties were assessed and suggested they be netted with the SCs entire portfolio.

In the updated straw proposal the ISO suggested that since the penalties due to unavailability would not be used to fund the procurement of a backstop, no specific credit requirement should be necessary for Scheduling Coordinators (SCs). At the MSC/Stakeholder meeting the SCP team updated its proposal, indicating that SCs for

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capacity resources should be responsible for creditworthiness due to the obligation to pay the bonus incentive to SCs of resources to exceed the target availability metric.

Based on stakeholder comments and additional internal discussions, the ISO believes that there is no need for a “special” credit policy for SCP. The general credit policy, as described in Section 12 of the ISO tariff, should provide sufficient credit coverage. This is based on the following considerations:

- SCP performance penalty will appear as a new charge type on the monthly invoice, similar to the penalty for un-instruction generation deviation, and is part of the liability of each SCs portfolio.
- Most RA providers are creditors of the ISO. The penalty may be netted out with the provider’s credit on the same invoice on the same invoice.

Additional details about the general credit policy are provided in the Business Practice Manual for Credit Management.

9 TRANSITION ISSUES

LSEs sign bilateral contracts with resources to meet their RA obligations. While most stakeholders support the concept of SCP (which standardizes availability standards in the ISO tariff rather than requiring unique language in each RA contract), some parties are concerned that upon SCP implementation they will be exposed to conflicting or duplicate availability standards and incentives due to the provisions in their existing contracts. It is our understanding that some current contracts contain availability standards that may expose contracting parties to double penalties. In other contracts, SCs or LSEs may not be able to pass penalty assessments on to resource owners.

In our recent stakeholder forums, a number of stakeholders have expressed a desire to allow existing contracts a transition period before moving to SCP. To this end the ISO requested that stakeholders offer proposals describing more precisely how appropriate transitional arrangements might be structured to address these concerns, and in response received only two specific proposals (a set of joint comments by NRG Energy, Reliant and SDG&E and a suggestion by SCE). On December 12th the ISO sent out a market notice with a questionnaire to gather information related to existing resource adequacy contracts that stakeholders felt would need grandfathering. The ISO received a total of 20 responses, 12 submitted by RA Resources and 9 from LSEs with RA contracts (one entity filled out both types of questionnaire).

Based on the data received and subsequent stakeholder conversations the ISO has developed a proposed solution to the transition issue that enables parties to grandfather their contracts while still providing additional certainty that RA capacity will be available to the ISO. These are the elements of the ISO’s proposal:

Contracts signed:	Grandfathering Status
Before January 1, 2009	Exemptions will be provided for the current term of the RA contracts. Renewals and evergreen type extensions will not extend the term of the grandfathering. Resources will be required to certify the start date of the contract, the expiration date, the resource ID and the amount of capacity that will be grandfathered.

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After January 1, 2009	No grandfathering will be available for these contracts.
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Stakeholders who require a “transition period” from their existing RA contracts to the SCP will be able to exempt their contracts based on the timeframes and limitations provided in the table. The ISO will require a supplier to provide certification of the start and end dates of the contract, the Resource ID, the contracted LSE and the number of MW for grandfathering. Although the timing for this documentation has not been finalized, the ISO will need this information soon after FERC approval in order to provide information on the 2010 NQC list that will be published in July. At the very latest, the grandfathering requests would need to be submitted and validated prior to January 2010. The ISO will need to establish the expiration date for the grandfathered Non-SCP MW of each contracted resource in our systems. A market notice will provide the details of this schedule.

Contracts that were signed before January 1, 2009 and did not have an opportunity to consider the upcoming SCP availability standards when their contracts were signed will be able to maintain their exemptions for the primary term of the contract. Once the contract expires, or if the parties decide to end their exemption prior to contract expiration, the RA capacity associated with that contract will be subject to the SCP tariff provisions. Novations will be accepted as long as they do not change the initial term of the contract or the amount of MW of RA capacity.

Once the initial term of the grandfathered contract expires, the MWs associated with those contracts will be subject to the tariff provisions of SCP.

In addition to the revisions provided in the table above, the ISO has also considered the case of a resource that has RA capacity for grandfathered contracts along with RA capacity that is not grandfathered and is subject to availability standards, charges and credits of the Standard Capacity Product. The following examples show how the availability will be impacted when a resource with this type of arrangement has an outage that counts against availability.

Sample Resource Data:

- Pmax = 600 MW
- Sold RA Capacity = 400 MW made up of:
 - Grandfathered RA Capacity (non-SCP MW) = 300 MW
 - SCP MW = 100 MW

Calculation to determine the SCP MW subject to count against availability:

$$\text{Max } \{0, (\text{Total Outage MW} - [\text{Pmax} - \text{Total RA Sold}])\} * (\text{SCP MW} / \text{Total RA MW})$$

Outage example 1 – 50 MW forced outage

In this example the capacity of the unit has been reduced from 600MW to 550 MW. The total RA Capacity that was sold (SCP MW and Non-SCP MW) is equal to on 400 MW of the unit. Because the total RA capacity that was sold is not affected by the outage, it would not count against the SCP availability standard.

$$\begin{aligned} & \text{Max } \{0, (50 \text{ MW} - [600\text{MW} - 400 \text{ MW}])\} * 100\text{MW}/300\text{MW} \\ & 0 \text{ MW} * 25\% = 0 \text{ MW of SCP subject to count against availability} \end{aligned}$$

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Outage example 2 – 400 MW forced outage.

In this scenario the capacity of the unit has been reduced from 600 MW to 200 MW. The total RA capacity that was sold will be affected by this outage by 200 MW. The first 200 MW of the outage were not sold as RA capacity, but the last 200 MW of the outage will be applied to the sold RA capacity pro-rata between the SCP and Non SCP MW.

$$\begin{aligned} & \text{Max } \{0, (400 \text{ MW} - [600\text{MW} - 400 \text{ MW}])\} * 100\text{MW}/300\text{MW} \\ & 200 \text{ MW} * 25\% = 50 \text{ MW of SCP subject to count against availability} \end{aligned}$$

Outage example 3 – 600 MW forced outage

In this scenario the entire unit is forced out and all of the RA MW sold as SCP will be counted against availability.

$$\begin{aligned} & \text{Max } \{0, (600 \text{ MW} - [600\text{MW} - 400 \text{ MW}])\} * 100\text{MW}/300\text{MW} \\ & 600 \text{ MW} * 25\% = 100 \text{ MW of SCP subject to count against availability} \end{aligned}$$

10 OTHER ISSUES

Metered Subsystems (MSS)

The SCP availability standard and incentives cover Metered Subsystems the same as any other type of LSE. With regard to Load Following MSS the current BPM Section 6.3 and Tariff Section 40.2.4 explain that Load Following MSS must provide an annual RA Plan but no monthly submissions are required. Section 40.3 subjects Load Following MSS to Local Capacity Area RA requirements, whereas Section 40.6 of the tariff exempts Load Following MSS from the RA must offer requirement. The ISO expects therefore that the SCP availability standard and incentives would apply only to the Local Capacity Area RA capacity submitted by a Load Following MSS.

RA less than Pmin

Section 40.4.3 of the MRTU tariff describes the general qualifications for supplying NQC. One situation that had not been contemplated when writing this section was when a resource is contracted for an RA amount that is less than the Pmin of the committed unit. In an upcoming MRTU 205 filing with FERC, the ISO remedies this omission by adding language that “For a resource with contractual Resource Adequacy capacity less than Pmin be available to the ISO for commitment or dispatch at Pmin subject to tariff provisions for Bid Cost Recovery so that the resource’s Resource Adequacy capacity can be utilized as required by this CAISO Tariff.”

RA Registry – This is an implementation feature that may be deferred for a future release.

Bulletin Board Feature – This is an implementation feature that may be deferred for a future release.

11 NEXT STEPS

February 27 – Publish 2nd Final Draft Proposal

March 6 – Written comments due to SCPM@caiso.com

March 26, 27 – Board of Governors Decision

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April – File Tariff language.