



## **Regional Resource Adequacy**

### **Third Revised Straw Proposal**

**September 29, 2016**

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## 1. Executive Summary

The primary objective of this initiative is to implement a multi-state process that ensures that sufficient capacity is offered into the ISO's market to serve load and reliably operate the electric system. The ISO proposes to build on existing, proven mechanisms to create a multi-state ISO RA framework. The proposed framework provides the flexibility for Local Regulatory Authorities ("LRAs") and Load Serving Entities ("LSEs") to maintain much their current capacity procurement programs. The ISO will help to facilitate these programs by clearly communicating the ISO's forecasted reliability needs to LRAs and LSEs to inform capacity procurement decisions. The ISO intends to only change those tariff provisions that require modification to make RA work in the context of an expanded BAA that spans multiple states. This stakeholder initiative is focused on "need to have" items for an expanded ISO balancing area. It is important that the resource adequacy provisions for a multi-state ISO be established for consideration of entities potentially interested in joining an expanded ISO balancing area.

The third revised straw proposal includes discussion and additional details on the ISOs proposed changes to the following elements: (1) Load forecasting, (2) Reliability Assessment: including Planning Reserve Margin, uniform counting rules, resource adequacy showings and validation process, and backstop procurement need determination and cost allocation, (3) Maximum Import Capability, (4) Imports for resource adequacy, (5) External resource substitution for internal resources, and (6) Allocating resource adequacy requirements to LRAs and LSEs, (7) Monitoring locational resource adequacy needs and procurement, and (8) Updating ISO tariff language to be more generic.

The third revised straw proposal provides further information on the ISOs latest proposals on the following aspects of this initiative:

1. *Load forecasting* – The ISO is proposing a monthly peak load forecasting aggregation approach. This proposed approach utilizes individual LSE load forecast submittals to identify individual LSE level resource adequacy requirements as well as to determine the level of system resource adequacy needs by consolidating individual LSE level load forecasting data.
2. *Reliability Assessment* – The ISO is proposing to conduct a reliability assessment similar to current practice, with some additional modifications including use of a default system wide Planning Reserve Margin ("PRM") target and ISO determined resource capacity valuations using proposed uniform counting rules. The ISO also provides clarity on the resource showings and validation process as well as the proposed modifications to include the updated reliability assessment in the ISO's backstop procurement provisions.

3. *Maximum Import Capability* – The ISO has proposed to move forward with the Maximum Import Capability (“MIC”) modifications that were previously identified under the initiative. The ISO will make adjustments to the MIC calculation method in order to address situations where the peak load of a new region in an expanded balancing area occurs non-simultaneously with the peak load of the rest of the system and when there are no simultaneous constraints between certain areas of an expanded balancing area. The ISO is also proposing modifications to the MIC allocation process that are intended to reflect the ISO’s proposed Regional TAC policy and splits the MIC allocation based upon TAC sub-regions that are paying for parts of the underlying transmission in the overall system.
4. *Requirements for RA Imports* – The ISO is proposing clarifications to the RA imports provisions to remove ambiguity in the current provisions for imports qualifying for resource adequacy. These modifications are focused on ensuring that the tariff clearly states that all import resources shown on RA showings are required to be secured in the month-ahead time frame.
5. *External resource substitution for internal resources* – The ISO has considered removing the current restriction that disallows external resources from being used as substitute for internal resources that have been shown for RA. The ISO believes that the complexity associated with implementation outweigh the potential benefits of making modifications to these provisions at this time so the ISO proposes to defer this aspect of the initiative. The ISO has made this conclusion because it would require significant changes to provide the ISO the ability to track the requirement that similar must offer obligations were met.
6. *Allocating resource adequacy requirements to LRAs and LSEs* – This aspect of the proposal addresses the need for allocating RA requirements to LSEs with LRAs that do not wish to assume the role of receiving RA requirements from the ISO and then allocating such requirements to the respective LSEs. The second issue that this area of the proposal also addresses is the possibility that more than one regulatory entity oversees a multi-jurisdictional LSE’s procurement decisions. The ISO proposes to create a new mechanism for LRAs and state agencies to elect to defer allocation of RA requirements to the ISO so the ISO can allocate RA requirements directly to the LSEs under the deferring LRA’s jurisdiction. The ISO also proposes to allocate resource adequacy requirements directly to all multi-jurisdictional LSEs.

7. *Monitoring locational resource adequacy needs and procurement* – The ISO proposes to monitor the locational resource adequacy needs across an expanded balancing area. The ISO also will continue to monitor any internal constraints under the current ISO study processes in place today and will inform stakeholders about these locational needs. The ISO is not imposing any additional requirements under this aspect of the proposal.
8. *Updating ISO tariff language to be more generic* – This element of the ISO’s Regional RA proposal addresses the need for the tariff provisions related to resource adequacy to be more generic. The current tariff utilizes California-centric language that may not be applicable to entities in an expanded balancing area. The ISO believes this aspect of the proposal is necessary to avoid any unintended barriers associated with the current tariff language as the ISO balancing area expands.

## 2. Stakeholder Comments and Changes to Proposal

The ISO has received written comments on the second revised straw proposal, as well as three stakeholder working groups that were held since the last revised proposal was released. The ISO appreciates the input and feedback that stakeholders have provided and recognizes the significant efforts made by stakeholders to actively participate in this initiative.

A summary of stakeholder comments covering major topics under consideration in this proposal has been included in Appendix A. Please see the appendix for a listing of specific topical summaries of stakeholder comments and positions. There is also a link provided for the Regional RA webpage where all previously submitted stakeholder comments are posted and publicly available for review in their full entirety.

After consideration of stakeholder feedback and other factors, the ISO has made some notable changes to this iteration of the proposal as described below:

- **Load Forecasting** – The ISO is no longer proposing an hourly load forecasting requirement. The proposal has been modified to developing a monthly peak flexible load forecasting aggregation approach. This change will allow flexibility for individual LSEs and their LRAs or forecasting agencies to determine the coincidence adjustment methodology that fits their needs.
- **Planning Reserve Margin** – The ISO proposes that the Western States Committee have some authority for input and guidance on the proposed system-wide PRM target.

- Requirements for RA Imports – The ISO is proposing clarifications to the tariff provisions for RA imports. The ISO will clarify that that all imports shown by LSEs to meet RA requirements must be either: Demonstrated physical resources or groups/systems of resources (i.e., hydro systems), or established contractual arrangements that are identified as executed or otherwise secured prior to the due date for month-ahead RA showings.
- External Resource Substitution for Internal Resources – The ISO is no longer pursuing adjustments to allow for external resources to substitute for internal resources due to challenges and complexity associated with implantation of tracking changes to must offer obligations that would be necessary. The ISO has determined it is appropriate to defer this issue from scope of this initiative at this time.

### 3. Plan for Stakeholder Engagement

The ISO has previously published an issue paper and two straw proposals under the Regional RA initiative throughout the first half of 2016. The ISO also held three working groups on specific Regional RA topics over the summer of 2016. These working groups allowed for further discussion of complex issues and provided opportunities for stakeholder feedback in order to assist in the ISO’s policy development. The ISO plans to publish a draft final proposal in early December and will hold a stakeholder meeting and request submission of written comments before the end of December. Additional details and milestones for the Regional RA initiative process will be provided as further information becomes available.

The current schedule for this initiative is shown below.

| Milestone  | Date           |
|--|----------------|
| Third Revised Straw proposal posted                                | September 29   |
| Stakeholder meeting on Third Revised Straw proposal - (Folsom, CA) | October 6      |
| Stakeholder written comments on Third Revised Straw proposal due   | October 27     |
| Draft Final proposal posted  | Early December |
| Stakeholder meeting on Draft Final proposal - (Folsom, CA)         | Mid December   |
| Stakeholder written comments on Draft Final proposal due           | Late December  |

## 4. Introduction

On October 7, 2015, California Governor Jerry Brown approved Senate Bill No. 350 (“SB 350”), the Clean Energy and Pollution Reduction Act of 2015. The bill provides for the potential transformation of the ISO into a more regional organization. As entities located outside of the ISO’s current balancing area consider joining the ISO, it will be necessary to modify the ISO’s rules for resource adequacy to ensure they work effectively in a multi-state balancing area. The efforts undertaken through this initiative are intended to address this need to modify the ISO’s resource adequacy provisions to support regionalization efforts.

The primary objective of this initiative is to design and implement a multi-state resource adequacy process that ensures sufficient capacity is offered into the ISO’s market to serve load and reliably operate the electric system. The ISO proposes to build on existing mechanisms to create a multi-state ISO resource adequacy framework. The proposed framework provides the flexibility for LRAs and LSEs to maintain their current capacity procurement programs. The ISO will help facilitate these programs by clearly communicating the ISO’s forecasted reliability needs to regulatory authorities and LSEs to inform their capacity procurement decisions.

Resource adequacy is a critical feature that helps ensure the ISO can reliably operate the electric system while effectively serving load. To accomplish these important responsibilities the ISO must have sufficient resources available and offered into its markets. The ISO’s resource adequacy construct ensures that a sufficient pool of resources with the necessary attributes are available at the right time and in the right locations to meet reliability needs. The must offer obligations associated with the resource adequacy construct act as an important market power mitigation measure to protect against physical withholding. Reliability in the ISO balancing area is safeguarded through these forward planning mechanisms.

To help guide the direction of policy development for this initiative, the ISO previously established two main principles for this effort. The first principle is to only change those tariff provisions that require modification to make RA work in the context of an expanded BAA that spans multiple states. The second principle is to develop a construct that helps avoid resource leaning. In other words, the ISO intends to create a construct that would restrict the ability of individual LSEs or sub regions of the expanded balancing area system to procure less than their fair share of the overall resource needs and instead rely upon the resources that have been secured by other LSEs or sub regions of the system.

To accomplish these important resource adequacy revisions while following the aforementioned principles, the ISO focuses on changes that are necessary for resource

adequacy provisions that will work in a multi-state balancing area. Additionally, the ISO believes the proposed modifications to the resource adequacy provisions avoid the potential for resource leaning to the maximum extent possible, while attempting to disincentivize leaning when the potential exists.

## 5. Third Revised Straw Proposal

The ISO's third revised straw proposal builds on previous regional resource adequacy proposals and incorporates stakeholder feedback received to date. The policy topics addressed in this third revised straw proposal include the following topics:

- Load forecasting
- Reliability assessment:
  - Planning Reserve Margin
  - Uniform counting rules
  - Resource adequacy showings and validation process
  - Backstop procurement need determination and cost allocation
- Maximum Import Capability
- Imports for resource adequacy
- External resource substitution for internal resources
- Allocating resource adequacy requirements to LRAs and LSEs
- Monitoring locational resource adequacy needs and procurement
- Updating ISO tariff language to make it more generic

The following sections of the third revised straw proposal describe the various elements of the ISO's latest proposal and provide additional details and clarification.

### 5.1. Resource Adequacy Load Forecasting

The ISO proposes to revise the process for resource adequacy load forecasting. These revisions will focus on the load forecast submittals for individual LSEs that are used for resource adequacy needs determinations. The ISO must be able to establish monthly system coincidence peak forecasts throughout an expanded balancing area.



## Load Forecasting Proposal Background

The ISO has explored various options for modifying the resource adequacy load forecasting provisions in previous iterations of the proposal.<sup>1</sup> The ISO proposes a bottom-up, monthly peak load forecasting aggregation approach. This approach utilizes individual LSE load forecast submittals to identify individual LSE level resource adequacy requirements. This will also allow the ISO to determine the level of system resource adequacy needs by consolidating individual LSE level load forecasting data.

The ISO believes it is vital to appropriately integrate targeted changes necessary under this proposal with the current processes utilized for load forecasting to the extent possible. For example, under the ISO's proposal, the California Energy Commission ("CEC") could continue conducting the load forecasting for California LSEs in the existing ISO balancing area with minimal impact to the current process. The ISO wants to provide similar flexibility for all LSE's and/or load forecasting agencies in an expanded balancing area to allow those organizations to continue to develop and conduct their own load forecasting with minimal impact to their current processes. To accomplish these important load forecasting objectives, the ISO explored various potential approaches and believes that a flexible, bottom-up, monthly coincident peak load forecasting approach is most appropriate.

The bottom-up, monthly peak load forecasting aggregation proposal will allow the ISO to establish the system coincidence peak load for use in the resource adequacy process in an expanded balancing area. The ISO will use this forecast aggregation process to identify the necessary level of system-wide resource adequacy requirements. Identifying system-wide resource adequacy needs will ensure that the ISO has adequate resources committed to meet the system coincident peak load forecast plus a PRM. Additional details for the latest resource adequacy load forecasting proposal are described below.

## Bottom-Up Load Forecasting Aggregation

The ISO proposes to utilize a bottom-up load forecast aggregation based upon individual LSE load forecasts. This approach allows LSE to determine how to conduct their individual coincident peak forecasting. To conduct a load forecast aggregation using individual LSE's provided load forecast submittals, the ISO will need to receive monthly coincident peak forecast submittals for all LSEs. This means that either the LSEs themselves, or a forecasting agency, such as the CEC, must submit these individual LSE load forecasts to the ISO.

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<sup>1</sup> A prior proposal discussed with stakeholders was to require hourly load forecasting submittals. Stakeholders commented that the previous direction was problematic, and this has helped inform the ISO's ultimate direction on this aspect of the proposal. The ISO agrees that it would be appropriate to move away from the prior hourly forecasting proposal.

To discern the system coincidence peak based on an expanded balancing area footprint, individual LSEs or forecasting agencies must forecast the individual LSE peak demand at the time of the expanded balancing area's system coincident peak. In other words, to capture the benefits of regional diversity, load forecasts conducted by individual LSEs or their forecasting agencies need to apply a coincidence adjustment to their non-coincident peak forecasts based on their contribution to the overall expanded regional footprint observed system peak. The ISO will provide historical monthly system peak data for use in this process and will post this information on the ISO's public website.

This proposed approach allows for maximum flexibility because individual LSEs can make their own determination of how to apply a coincidence factor unique to their needs to determine their coincident peak load forecasts. Therefore, it is not necessary for the ISO to develop a uniform coincidence factor methodology under this proposal.

The ISO proposes that if it does not receive a load forecast for an LSE in a timely manner, either from the LSE or the LSE's forecasting agency, then the ISO will conduct a load forecast for that LSE to determine that LSE's contribution to the ISO's overall resource adequacy needs and the individual LSE's RA requirements. The ISO also proposes to allow individual LSEs to defer their load forecasting responsibilities to their Utility Distribution Company ("UDC") if they choose to do so. This ability should help smaller LSEs that may not have sophisticated forecasting capabilities if their UDC's agree to submit a load forecast on their behalf. Alternatively, the ISO will allow a LSE to request that the ISO conduct its load forecast. If an LSE elects this option, the ISO will not accept a submission from the LSE, thus preventing the LSE from trying to game its RA requirement by selecting the load forecast it prefers.

### **System Load Forecasting Benchmark Check**

Although the bottom-up load forecast aggregation approach provides maximum flexibility to all LSEs to perform their own individual coincidence peak forecast, the forecast errors from inconsistent forecast methodologies in the LSE's individual coincidence peak forecast and transmission loss forecast may result in the fact that the sum of all LSE's individual coincidence peak forecast is not equal to the actual system coincidence peak. As a benchmark check, the ISO proposes to perform a system load forecast based on historical system load, historical weather simulation, actual and forecasted economic and demographic statistic data, and calendar information. Weather stations locate throughout large population centers within the expanded BAA. Economic Inputs include gross domestic product and population developed by Moody's Analytics for the metropolitan statistical areas within the expanded BAA. This system coincidence peak forecast is compared to the sum of all LSE's individual coincidence peak forecasts. If there is a big discrepancy, the ISO would like to make further

investigation to find out the behind reasons and make the corresponding recommendation to the LSEs.

### **Treatment of Load Modifiers**

The ISO has previously proposed that it would not define how various LSEs should include demand response, energy efficiency, distribution generation, and other potential load modifiers in load forecasting submittals.<sup>2</sup> The ISO's proposal is intended to provide entities the flexibility to use their own judgment on how these load modifiers are used and how they should be treated under their individual load forecasting approaches. The ISO continues to believe it is appropriate to allow LSEs and their LRAs or load forecasting agencies to make that determination and the ISO intends to allow for LSEs/LRAs to determine their treatment in individual load forecasting processes. The ISO notes that this proposal does not restrict the ability of LRAs or other load forecasting agencies from directing LSEs to utilize a particular treatment for these modifiers. In fact, this approach is intended to help individual LSEs meet their unique State or LRA policy goals because they are provided flexibility to determine the treatment of these items in their own load forecasting processes.

### **Load Forecast Updates for Retail Choice Load Migration**

The ISO believes it is appropriate to allow LSEs to update load forecasts intra-year only for load migration due to retail choice. Only monthly load forecast adjustments based on quantifiable and demonstrated load migrations, *i.e.*, changes in customer base due to direct access would be allowed. Some stakeholders requested that the ISO allow intra-year updates to load forecasts for other reasons outside of the LSE's control. The ISO understands these requests but disagrees with the need to allow that level of flexibility for intra-year load forecast updates because it would create significant gaming and manipulation concerns. For example, if the ISO allowed intra-year changes to load forecasts, LSEs that observed higher prices for monthly capacity procurement potentially could lower their load forecast for a portion of the year and reduce their resource adequacy obligation to lower costs. The ISO would not have the opportunity to fully review the load forecast updates, and ISO review is needed because of the flexibility provided by the proposed forecasting process and the inherent variation in potential methods that various LSEs may choose to utilize.

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<sup>2</sup> The ISO understands that resources such as demand response and distributed generation may be treated as supply resources in some states and under some circumstances. The ISO's proposal focuses only on instances when these resources are treated as load modifiers and not when the resources would be shown as supply resources for meeting RA requirements.

### **Accounting for Shifting Peak Hours**

Some stakeholders expressed concerns that changing system peak hours due to Distributed Energy Resources (“DER”) and other factors could pose significant issues if not properly taken into account. Under the proposed approach, individual LSEs and/or load forecasting agencies could account for potential peak hour shifts caused by net load peak changes due to DER or other factors. These entities are well situated to make LSE level adjustments for this concern by incorporating those projected impacts in individual load forecasting submittals. Individual LSEs and load forecasting agencies are best positioned to account for LSE specific contributions to shifting peak load hours because they have the most information regarding changing conditions in their own service territories.

### **Accuracy Concerns Associated with a Flexible Forecasting Proposal**

Some stakeholders expressed concern that the flexibility this proposal provides could cause inaccuracy due to the potential use of inconsistent forecasting methodologies. The ISO recognizes this possibility, but it does not believe these concerns are warranted because MISO implemented a similar approach, and it has proven workable. Experience in that region demonstrates bottom-up load forecasting results are consistently accurate compared to actual observed annual peaks.

Furthermore, recent load forecasting results from MISO were also consistent with a top-down system wide forecast that was conducted for the MISO balancing area over 3 consecutive years by an independent university forecasting group using publicly available state level econometric data and U.S. Energy Information Agency (“EIA”) forecasting data. The ISO continues to believe that the proposed flexible bottom-up load forecasting approach strikes an appropriate balance that allows for regional and individual differences to load forecasting that provides acceptable accuracy without dictating that uniform forecasting methodologies be utilized.

Finally, the ISO believes that the Western States Committee (“WSC”) will provide a potential forum for LRAs to come together to discuss the different approaches used to produce forecasts in different jurisdictions. Although the ISO is not proposing the WSC directly oversee load forecasting process, the WSC would be able to provide jurisdiction-to-jurisdiction transparency and guidance regarding LSE forecasting practices.

### **LRA Oversight of Jurisdictional LSE’s Load Forecast Submittals**

Several stakeholders raised concerns that the ISO’s load forecasting proposal would take control away from LRAs and state commissions that oversee the load forecasting for their jurisdictional LSEs. This flexible load forecasting proposal allows LRAs that

oversee individual LSE load forecasting to retain their established processes and input into the load forecast development and the coincidence factor methodologies their jurisdictional LSEs will utilize. The ISO reiterates that this proposal is not intended to eliminate their current ability to review and approve/acknowledge their jurisdictional LSEs' load forecasts. In fact, the ISO believes LRA involvement and review provides a necessary check that ensures the work conducted by the forecasting entities' are accurate and reasonable. The ISO proposal is not intended to supersede the LRAs' role in load forecasting; rather, the ISO believes that the robustness of the ISO system-wide load forecast aggregation would be bolstered by the continued involvement and review by LRAs/state commissions.

## **Proposed Load Forecasting Submittal Requirements**

The ISO will create a template to be used by entities for submitting individual LSE specific load forecasting data and other required forecasting information.

The ISO proposes the following load forecasting data and supporting documentation be required for individual LSEs load forecast submittals.

### **Primary Load Forecast Submittal Components:**

- Non-Coincident Peak Demand Forecast
  - Submittals should include the non-coincident peak demand forecast expected for the load served within the ISO balancing area. Non-coincident peak demand forecasts will be required for each month of the upcoming year and identify the hour that each monthly non-coincident peak is forecasted to occur. The submitted values should include transmission losses.
- Peak Demand Forecast, Coincident with ISO's System Monthly Peak Demand
  - Submittals should include the 1-in-2 (50/50 probability) peak demand forecast expected at the time of each of the ISO's system monthly peaks for the load served within the ISO balancing area.
  - Monthly coincident peak demand values are required for the upcoming year (*i.e.*, twelve monthly values). The coincident peak demand value should include transmission losses occurring at peak.
  - ISO will post the historic monthly peak data for previous years on the ISO website to be used by forecasters for calculating their coincident peak loads.

### **Supporting Load Forecast Submittal Components:**

The following documentation, calculations, explanations, and descriptions will be required in addition to the primary forecast elements described above.

- Narrative summary of the coincident peak forecasting methodology.
- Narrative summary of the non-coincident peak forecasting methodology.

Each of these narrative summaries should include an executive summary explaining how the forecast value is determined. The narrative summary should describe the primary input elements, variables, factors, etc. and explain the method by which these elements determine the forecast values.

- Descriptions of all forecast models used in the forecast process, including example calculations. These descriptions should include:
  - A textual summary of each forecast model, its principle, parameters, and all independent input variables.
  - Relevant tables or reports describing the statistical properties of each model.
  - Supporting citations and descriptions of forecast models used but not estimated from data specific to the forecasted load.
- A description of the economic and demographic information used as inputs to the forecast model and an assessment of the reasonability of the forecast from an economic and demographic viewpoint, indicating the response of the forecast to changes in such factors.
- Description of the process used to determine the input values used by the models and equations in the forecasting process.
- Documents or studies directly relied upon by the forecast process (e.g., end-use studies from which parameters are obtained).
- Actual and weather normalized monthly peaks for previous year
  - Non-Coincident Peak Demand
  - Peak Demand, coincident with ISO's System Peak Demand
- List of load modifiers and other load modifying resources such as demand response programs<sup>3</sup> (only those demand response programs that are not registered as supply side resources) and other related programs; these include adjustments for energy efficiency programs, behind-the-meter-generation, and distributed energy resources. For each load modifier adjustment or program, submittals should provide the following related information:
  - Categorization of each resource/modifier ("demand side resource", "energy efficiency", "behind-the-meter-generation", or "distributed energy resource").
  - Total MW of demand reduction expected at ISO's system peak for each load modifying resource or program.

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<sup>3</sup> List of resources or programs included in the forecast under the category of load modifiers including, but not limited to, demand-side management, direct-load control, or other programs through which retail customer load is reduced following notification or based upon special circumstances.

- Documentation supporting the total MW ISO system peak reduction value used in the forecast.
- For behind-the-meter-generation and distributed energy resources, a notation regarding whether or not the resource is connected to the network transmission system.

### **Load Forecasting Submittal Contact Information:**

In addition to the values and documents described above, forecast submittals should provide complete contact information for the primary point of contact for each LSE load forecast submittal. In other words, for each LSE specific load forecast submittal under this process the ISO will need a primary point of contact. If a forecasting agency such as the CEC or a UDC submits a load forecast on behalf of an LSE then that submitting entity must provide the contact information for the primary point of contact in their organization that has specific expertise of the development of that individual LSE load forecast submittal.

- Primary contacts should have sufficient knowledge of forecast development to be able to assist the ISO with any technical or informational questions that might arise during the forecast review process.

### **ISO Guidance on Reasonable Forecasting Methodologies**

Because the proposed approach is flexible and provides opportunity for utilizing different forecasting methodologies, the ISO will need to provide some guidance to the LSEs and forecasting agencies regarding acceptable and unacceptable statistical methodologies for load forecasting. To provide this guidance, the ISO intends to develop and publish a document that outlines the various statistical methodologies that are acceptable. The ISO proposes to develop this load forecasting methodology review document prior to any new participants joining an expanded ISO balancing area. This document will help guide forecasters in producing reasonable forecast submittals and will be similar to MISO's load forecasting review whitepaper.<sup>4</sup>

### **Load Forecasting Submittal Review Process**

Because the ISO is according significant flexibility to individual LSEs and LRAs and/or forecasting agencies, the ISO must be able to review any submittals for accuracy and ensure that reasonable forecasting methodologies have been used.<sup>5</sup> The ISO believes that the previously proposed review trigger is not appropriate under this revised flexible

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<sup>4</sup> MISO Peak Forecasting Methodology Review Whitepaper, <https://www.misoenergy.org/Library/Repository/Communication%20Material/Key%20Presentations%20and%20Whitepapers/Peak%20Forecasting%20Methodology%20Review%20Whitepaper.pdf>

<sup>5</sup> Previously, the ISO proposed a 4% variation from historical data would trigger an ISO review of individual forecast submittals.

load forecasting proposal. Instead, ISO proposes to review a subset of all of the individual LSE forecast submittals each year. The ISO will utilize aforementioned load forecasting methodology review document in this process. The ISO hopes this will deter inaccurate and unreasonable forecasting and discourage potential manipulation of individual forecasts.

The ISO also intends to publish all LSE specific load forecast error (%) for previous years once that data is available. This will provide an ability for all stakeholders to benchmark the accuracy of the proposed bottom-up aggregation approach. This will; provide transparency regarding the accuracy of LSE-specific level forecasting. The ISO would not post any confidential information, *i.e.*, the ISO would publish the individual LSE load forecast error percentage, but would not post the actual peak loads for individual LSEs.

Although the ISO will not review every LSEs forecast submittal each year, the ISO proposes to review a subset of all submittals. If this ISO review reveals an improper statistical method or unrealistic forecast, the ISO proposes the following process:

- The ISO will discuss the issues the ISO identified in its review with the all of relevant entities, including the LSE, and the LRA, and any involved forecasting agency.
- The ISO will not seek to adjust LSE forecasts if there is an adequate explanation or justification of the causes that triggered the ISO review.
- However, if the ISO believes that the entities have not adequately explained or justified the issues raised with the submittal, the ISO retains the right to request an adjusted load forecast that addresses the ISO's identified concerns be submitted by the forecasting entity.

The ISO reiterates that it would only require and LSE or forecasting agency to make adjustments to the load forecast submittal after a subsequent discussion between the ISO and all relevant entities, including the LSE and any LRA or forecasting agency that is overseeing the LSE load forecasts in question, and then only if the ISO's issues with the forecast remain unaddressed. The ISO proposes that it have the right to conduct a load forecast for LSEs that decline to resubmit an adjusted load forecast following the ISO's request to do so.

If the outcome of the review process is unacceptable, the ISO Alternative Dispute Resolution ("ADR") process is available as an additional avenue for potential recourse. Entities would be able to seek relief through the ADR process if they do not agree with the ISO's determination.



## 5.2. Reliability Assessment

The ISO believes a reliability assessment is necessary to ensure that LSE and LRA procurement programs have provided for adequate resources to be committed to the ISO markets. The proposed reliability assessment will mitigate the potential for undue “leaning” on the system by individual entities. To perform this reliability assessment, the ISO requires the following elements:

- System-wide PRM target to evaluate total system-wide procurement levels.
- Uniform counting methodologies for assessing the capacity value that each resource type can provide towards meeting the ISOs reliability needs.

The ISO is also providing has additional details on the minor changes needed for the ISO’s established resource adequacy showings and validation process. These details explain how the ISO proposes to evaluate individual resource adequacy showings and make deficiency determinations. The ISO also provides additional detail on the proposed revisions to the current backstop procurement authority and cost allocation tariff language that are necessary to fully implement this reliability assessment. The ISO’s latest proposal for each of these components of the reliability assessment is discussed in below.

### 5.2.1. System-Wide Planning Reserve Margin Target

To assess the adequacy of RA showings and properly conduct any reliability assessment, the ISO must first have an established system-wide PRM target to evaluate reliability levels and ensure adequate capacity will be made available to the ISO markets. It is important to establish the PRM target through a method that (1) accurately measures the appropriate level of reliability that must be maintained, and (2) mitigates the potential for entities to lean on the rest of the system.

The ISO recognizes that states should have significant input into establishing a system wide PRM and proposes a specific role for the WSC in that regard, The ISO’s latest PRM proposal is discussed in further detail below.

#### **ISO default PRM target: Probabilistic Loss of Load study approach**

The ISO proposes using a probabilistic study to determine a default system-wide PRM target. Probabilistic PRM targets are generally considered an industry best practice and are used in many other regions. This approach provides a robust and accurate assessment of the necessary reserve margins required to maintain a specified level of reliability across an expanded balancing area. The specified level of reliability can be measured using an established reliability criterion, such as 1-in-10 Loss of Load Expectation (“LOLE”). Additional aspects of how this study will be developed and the

role of the WSC in setting the system-wide PRM target are very important to considerations.

The ISO notes that the ISO considered the following major factors in developing a probabilistic PRM analysis methodology:

- Probability concepts such as LOLE provide the ability to quantitatively incorporate uncertainty in the assessment of power systems, which cannot be done using deterministic methods.
- LOLE is a complex probabilistic criterion that accounts for the dynamic nature of a power system because of these attributes:
  - Uses statistical methods to address future uncertainties in various system components.
  - Accounts for individual unit level variability of characteristics such as availability/outage rates.

The ISO proposes to utilize a LOLE study to identify the default system-wide PRM target. LOLE studies are conducted with powerful analytical software packages utilizing rigorous probabilistic methods, such as Monte Carlo simulation. Under this approach, multiple uncertainties in the system are considered simultaneously, and the output is obtained after a high number of simulated iterations. The ISO proposes to utilize an analytical software package and, with stakeholder input, would develop the assumption, models, techniques and cases it would utilize to complete a LOLE study. The intended process the ISO proposes to develop a loss of load study is detailed below.

### **Loss of Load Expectation PRM Analysis Process**

The ISO provides the following details outlining the necessary aspects and process for conducting the proposed default system-wide PRM study process.

The ISO has previously indicated that it would need to determine the appropriate level of reliability to be used in an LOLE analysis. In other words, the first step in the LOLE study process is to determine what level of LOLE is appropriate to use when studying the loss of load potential in order to establish the default system-wide PRM target (*e.g.*, 1-in-5, 1-in-10, etc.). As noted previously, many other regions use a 1-in-10 LOLE for their generation reliability criterion. This level of reliability is generally set by North American Electricity Reliability Corporation's ("NERC") regional entities through their established reliability standards. In the West however, the Western Electricity Coordination Council ("WECC") has not established any reliability criterion standard like many of the other NERC regional entities in other regions have done. Because there is no currently established WECC standard and the ISO observes the best practices utilized in other regions to be a 1-in-10 LOLE standard; the ISO proposes to conduct the

initial PRM analysis utilizing a 1-in-10 LOLE level of reliability in order to set the ISO's default system-wide PRM target.

The ISO will conduct a stakeholder process to establish the inputs, variables, cases, and model development, and such a process would ensure transparency and engagement with stakeholders at the time the study is being conducted. The ISO will build the appropriate models and cases, and collect the required inputs and data sources necessary to conduct the study. The ISO would also review the results and subsequent report on the study with its stakeholders as well.

The initial LOLE PRM analysis should occur after completion of this stakeholder initiative but prior to establishing the resource adequacy requirements for any new participants joining an expanded ISO balancing area. The ISO understands that stakeholders seek certainty on important issues such as the ultimate PRM target level. However, it is not feasible to conduct this sort of study in a truncated timeframe, and the accuracy of the results depend on dependable inputs and effective model design. Additionally, the system footprint and topology, resource mix, and load and other system conditions are variable and subject to change over the upcoming years. The analysis should be conducted with the most up to date information available. For these reasons, the ISO believes that this sort of probabilistic PRM approach will yield an appropriate PRM target to meet the specified reliability criterion, but the study will not be completed during this stakeholder initiative.

### **Role of Western States Committee in System-Wide PRM Target**

The ISO has been developing modifications for ISO governance in parallel with this and the Regional Transmission Access Charge ("TAC") initiative to support the regionalization effort. One of the items contained in the governance proposal is the proposed creation of a WSC, which would have authority over certain aspects of resource adequacy and TAC cost allocation issues. The ISO envisions the WSC playing a core role in determining the PRM. In the context of governance, the ISO is currently working on an issue paper that will discuss the proposed role of the WSC in this and other areas. The ISO will post this paper in the near future.

### **Frequency of System-Wide PRM Target Analysis**

Given the magnitude of the time and resource commitments associated with conducting an LOLE study, the ISO proposes to conduct an LOLE study to determine the system-wide PRM target on a periodic basis, but not annually. The ISO proposes that the system-wide PRM target be refreshed, at a minimum, when significant changes to the ISO system, such as a new PTO joining the ISO balancing area occur. The ISO intends to set this default PRM target at a value that would remain fixed between LOLE study updates. Changes to the PRM would be made only once a new PRM value is

established by a new study with stakeholder input. This consistency provided by a typically static system-wide PRM target is intended to encourage certainty in consideration of the bilateral contracting construct utilized within the ISO balancing area and other related procurement decisions.

## 5.2.2. Uniform Counting Rules

Consistent counting rules that allow the ISO to determine whether sufficient system, local, and flexible capacity has been procured and enable an LSE to demonstrate the adequacy of its RA showings is a critical element of a regional RA program. Further, it ensures that all resources' capacity contributions reflect the capacity contribution to an expanded ISO, not just to a particular LRA. The ISO proposes uniform counting rules based on assessing the capacity value that each resource type can provide towards meeting the ISO's reliability needs and will be subject to an ISO deliverability assessment. The remainder of this section describe the ISO's proposed uniform counting methodologies and the associated resource/fuel types.

### **Pmax**

The Pmax methodology is an evaluation of a resource's maximum output, submitted by the resource's scheduling coordinator (SC), which may be verified by the ISO. The ISO proposes to apply the Pmax methodology for the following resource/fuel types.

1. Thermal: Nuclear, natural gas, oil, coal, geothermal, biomass, and biogas (excludes QFs)
2. Participating hydro

Although the resource SC submits the Pmax value, the resource may be subject to Pmax testing by the ISO. Specifically, the ISO would reserve the right to test the resource for any month in which the resource is shown for RA. The resource must demonstrate that it is able to maintain output at Pmax for one hour. If a resource is called for a Pmax test, the resource SC may provide the ISO with a demonstration that resource sustained output at Pmax for one hour based on a market dispatch in the previous 30 days. If such a demonstration is made, the ISO will waive the Pmax test.

### **Effective Load Carrying Capability (ELCC)**

The ISO will develop an Effective Load Carrying Capability ("ELCC") methodology to determine uniform counting rules for wind and solar resources. The ISO is not proposing to develop the ELCC methodology as part of the present stakeholder initiative. Instead, after completing the present stakeholder process, the ISO will

commence a new stakeholder initiative to develop all of the inputs, assumptions, and processes needed to conduct an ELCC study process.<sup>6</sup>

Although the specific details of the ELCC study will be determined in a separate stakeholder process, the ISO will determine ELCC values based on an assessment of entire ISO footprint. This ensures that the capacity benefits that resources provide to the expanded ISO are captured and that the impacts of geographic diversity are also properly reflected wind and solar capacity values. The ISO is only proposing to utilize ELCC for wind and solar at this time. However, it may review the benefits of applying this methodology more broadly and more technologies in the future.

Finally, fully developing an ELCC methodology applicable to an expanded ISO footprint in a transparent stakeholder process can be time consuming. Therefore, if the ISO unable to complete the ELCC study prior to the annual showing requirement for a new participant joining the ISO, it will utilize the exceedance methodology described in the Second Revised Straw Proposal in the present stakeholder initiative.<sup>7</sup>

### **Registered Capacity Value**

Supply-Side Demand response resources do not have a well-defined nameplate capacity or Pmax like most other resource types. Therefore, the ISO proposes to establish the uniform counting rules for supply-side demand response resources such as Proxy Demand Resources & Reliability Demand Response Resources by allowing the SC for the resource to submit a registered capacity value for these resources.

This methodology provides resource SCs with a significant latitude in determining the capacity value for the resource. Therefore, the ISO must be able to verify that these resources are capable of providing the capacity value for which they have been registered. The ISO has two methods for testing the capacity value of resources relying on registered capacity values. First, the ISO will perform audits of actual dispatches of the resource. These audits would assess the resource's bid in capacity and compare it to the performance of the resource. Further, the ISO would assess the bid-in quantity of the resource to ensure it has been available consistent with its registered capacity value. The second means of testing the veracity of the registered capacity value is through the ability to test the resource seasonally.

The ISO proposes three seasons:

- Pre-summer (January – April)

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<sup>6</sup> Examples of elements the ISO would be resolve include, but are not limited to converting annual ELCC values to monthly capacity values, establishing correct LOLE levels, and methods for developing load profiles and/or resource portfolios.

<sup>7</sup> See pg. 32-35 of the ISO's Second Revised Straw Proposal: <http://www.caiso.com/Documents/SecondRevisedStrawProposal-RegionalResourceAdequacy.pdf>

- Summer (May – September)
- Post-summer (October – December)

The ISO would be able to conduct one four-hour test per season if the resource has been shown as RA capacity. This ensures that the capacity value is based on a resource ability sustain output (*i.e.* load reduction) over the peak hours of the day. The ISO will only have the ability to issue a test event in situations meeting these following criteria:

- 1) The resource has not already demonstrated its ability to provide its registered capacity value for that season,
- 2) it is a non-holiday weekday, and;
- 3) it is during the applicable availability assessment hours for the month.<sup>8</sup>

If the resource fails the test, the ISO will assess the resource as unavailable under the RA Availability Assessment Mechanism for the number of MWs by which the resource fell short of the registered capacity value. The resource would be eligible for retesting by submitting a retesting request to the ISO. The ISO would then administer an unannounced retest within seven days of the request. If the resource fails a second test, the ISO would consider unavailable for RA for the lower testing shortfall MW quantity for the remainder of the season.

### **Historic Output**

The historical output methodology is a resource's monthly historic performance during the Availability Assessment Hours for the same month, using a three-year rolling average. For resources with missing data due to outages occurring during the availability assessment hours, the methodology will use average values for the same hours on the same calendar day, but from other years. The ISO proposes to use the historical methodology for the following resource/fuel types:

1. Run-of-the-river hydro
2. Qualifying facilities including Combined Heat and Power

### **Sustained Energy Output Test**

The ISO has always had to manage energy limited resources. However, there is an ever-expanding group of storage technologies that requires the ISO to more closely consider the RA capacity value than had been previously. Unlike thermal resources, holding Pmax for multiple hours would not risk draining the fuel source supplying the resource. For energy limited resources, the ISO must have confidence that they can sustain energy across daily peak. The ISO currently has two technology types that

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<sup>8</sup> CAISO tariff section 40.9.3.

would qualify for treatment under this option: Pumped hydro storage and non-generator resources (NGRs) that provide energy bids. Therefore, as with the resources using the registered capacity value, the ISO proposes to base the capacity value of energy limited resources based on the ability to sustain energy output for four hours. As a substitute for an actual test, the resource SC could substitute an actual four-hour dispatch from the previous 12 months as a demonstration of capacity value.

Additionally, an NGR's NQC shall not exceed the resource's maximum instantaneous discharge capability. Similar to a Pmax test for thermal resources, an SC would submit a request to the ISO to conduct a four hour Pmax test. The test would require an NGR to provide four hours of continuous output to determine its maximum discharge capability in order to establish the NGR's QC value.

### **Ancillary Service Testing**

There are currently two types of resources that participate in the ISO market by submitting non-energy bids. Specifically, participating load and Regulation Energy Management (REM) NGRs. Participating load participates by providing bids as non-spinning reserves, whereas REM-NGRs are only required to submit regulation bids. Because the ISO needs both products to reliably operate the system, these resources will have uniform counting rules. Because these resources are providing ancillary services, the ISO proposes using a 15 minute energy test to determine the capacity values. However, because these resources are not designed to provide sustained energy, the ISO will assess whether there is a need to apply a limit on the amount of RA capacity these resources can provide.

### **Process for Determining Capacity Values**

The ISO recognizes the importance of providing resource capacity values in a timely manner to (1) allow stakeholder review capacity values and request adjustments or correct errors in resource capacity values and (2) ensure LSEs are able to complete any procurement activities prior to the resource adequacy showings described in section 0. Therefore, the ISO proposes the following schedule<sup>9</sup> for releasing uniform capacity values:

| Date   | Milestone  |
|--------|--|
| May 1  | ISO publishes final Local, Flexible, and ELCC study results  |
| June 1 | All resources utilizing registered capacity value option submit registered capacity value to the ISO |

<sup>9</sup> All dates will be included in the ISO's Business Practice Manuals.

|            |   |
|------------|---|
| July 1     | Draft uniform capacity values posted to ISO website   |
| July 15    | Resource SC requests for modification to draft uniform capacity values must be submitted to the ISO |
| August 1   | Final uniform capacity values posted to ISO website   |
| October 31 | Final annual RA showings submitted to the ISO for validation purpose                                |

### 5.2.3. Resource Adequacy Showings and Validation Process

The ISO requires LSEs and suppliers to participate in a resource “showing” process. This resource adequacy showing process requires LSEs to demonstrate that they have procured and made available to the ISO adequate resources to meet system, local, and flexible operational needs and cross validates these demonstrations against supplier’s similar showings in their supply plans. The ISO validates these showings during each month-ahead assessment to ensure LSEs have met their resource adequacy requirements and determine whether any potential deficiencies exist and, if so, whether they would cause reliability concerns.

The ISO provides the following details and clarifications regarding how the validation process in the future. The ISO notes that it intends to continue utilize the current showing and validation process with some necessary modification. The most important modifications to note include the following changes:

- ISO will utilize the system-wide PRM target for the System RA assessment, no longer using individual LRA PRMs for this assessment. (Please see System-wide PRM section above for additional information, Section 5.2.1)
- ISO will utilize the uniform capacity values for resources (please see Uniform Counting Rules section above for additional details on uniform capacity value determination; Section 5.2.2).

LSEs will use RA showings to demonstrate to ISO what resources they have procured for RA purposes. Suppliers will continue to provide supply plans to confirm that the resource’s Scheduling Coordinator is committed to scheduling and/or bidding the RA capacity that has been reported to ISO. The supply plan will continue to be the means that establishes the commitment of RA resources and confirms the status of a resource as an RA resource. The ISO will validate RA showings and supply plans against the uniform capacity values list for all ISO resources, and the ISO will cross-validate RA and



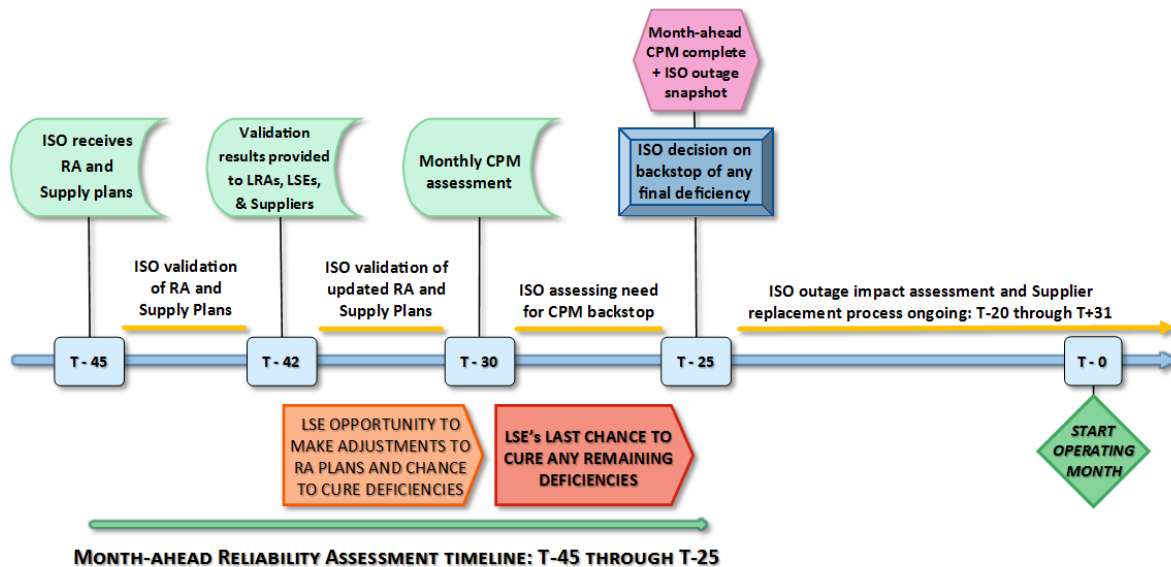
supply plans under this process. Showings for a particular Resource ID should not exceed the deliverable uniform counting rules MW capacity value.

Cross validation is the first step the ISO conducts during each month-ahead assessment process. In this step, the ISO matches LSE records to supplier records and generates basic errors and warnings when records do not match. The ISO will confirm that the total MW value for each resource ID does not exceed each resource’s deliverable MW capacity value as determined through ISO uniform counting rules process. Any error-free capacity submissions become committed as RA capacity. Once designated capacity records on RA and supply plans pass individual validation and cross validation, resources and associated capacity are established as RA capacity for duration indicated in the showings and are subject to the ISO’s tariff provisions regarding bidding, availability, outage reporting, and replacement.

Resource adequacy showings and the validation process allow the ISO to identify any potential deficiencies for individual LSEs and on a system-wide basis. The ISO will use the system-wide PRM target as an input to determine whether the system RA requirements have been met. The ISO will notify any potentially deficient LSEs and provide opportunities to cure those potential deficiencies as shown in the following diagram.

**ISO Resource Adequacy Showings and Validation Timeline**

The following diagram illustrates the timeline for the ISO showings and validation process that was approved by the ISO Board under the RSI 1 initiative. This timeline reflects the changes that will be implemented in accordance with that approved process. The dates indicated in the diagram are not yet in affect.



#### 5.2.4. Backstop Procurements Need Determination and Cost Allocation Modifications

The current resource adequacy framework in the ISO balancing area is based on bilateral procurement. Under this framework, LSEs procure capacity through bilateral contracts to meet their RA requirements for system, local, and flexible capacity. The ISO is permitted to engage in backstop procurement pursuant to its Capacity Procurement Mechanism (“CPM”) provisions only in a limited number of defined circumstances in order to maintain reliability. Backstop procurement is not automatic or mandatory under the CAISO tariff. Rather, the ISO has discretion whether to procure backstop capacity if there is a capacity deficiency or potential reliability event. The ISO notes that in the near future it will begin procuring CPM capacity pursuant to a competitive solicitation process. The ISO will be able to procure the lowest cost resource(s) to meet identified reliability needs that require backstop procurement.<sup>10</sup>

To determine whether the ISO’s reliability needs have been met, the ISO will conduct the reliability assessment described above. If the ISO determines that there is a shortage of capacity that needs remedied based on the reliability assessment, the ISO will inform stakeholders and to evaluate the need for potentially exercising its backstop procurement authority. The process the ISO will follow in situations where it identifies reliability need are defined in the ISO tariff under Section 43A.<sup>11</sup> To effectively incorporate the proposed reliability assessment the ISO, will need to make some adjustments to these tariff provisions. In particular, the ISO will need to reflect the language used to describe the reliability assessment proposal, as detailed below.

The current ISO tariff language does not expressly contemplate the ISO performing a reliability assessment as proposed under this initiative. The ISO is proposing to revise the tariff to recognize that a reliability assessment may identify a shortage that the ISO needs to cure and authorize the ISO to procure backstop capacity as a last resort to cure the shortage. If the ISO determines that there is a shortage of capacity based on the reliability assessment, the ISO will continue to follow the notification processes described above prior it conducting any backstop procurement. The ISO will provide the same level of transparency and protections against unnecessary or over procurement that exist under today’s backstop procurement framework.

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<sup>10</sup> This proposal does not discuss the mechanics of the competitive solicitation process. Stakeholders seeking additional information regarding that process should refer to section 43A of the ISO tariff.

<sup>11</sup> Section 43A Capacity Procurement Mechanism as of Sep 25, 2016:

[http://www.caiso.com/Documents/Section43A\\_CapacityProcurementMechanism\\_asof\\_Sep25\\_2016.pdf](http://www.caiso.com/Documents/Section43A_CapacityProcurementMechanism_asof_Sep25_2016.pdf)

Specifically, the ISO proposes to revise Section 43A of the ISO tariff for the following four categories of CPM designation to recognize a potential shortage that could result from the reliability assessment:

- Insufficient RA resources in a LSE's annual or monthly RA plan
- Deficiency in local capacity area resources in a LSE's annual or monthly RA plan
- Collective deficiency in a local capacity area after accounting for all procured RA resources
- Cumulative deficiency in the total flexible RA capacity in the annual or monthly flexible RA capacity plans or in a flexible capacity category in the monthly RA plans of LSEs

These four categories of CPM designation are affected because applying the system PRM requirement or uniform resource adequacy counting rules used in the reliability assessment may result in a shortage of one of these four types of resource adequacy capacity. Only these categories of CPM designation are affected under the proposal. Other CPM tariff language regarding reporting requirements, transparency, opportunities to cure, duration of designation, etc. would not change.

The ISO does not propose any changes to the tariff language regarding the following three categories of CPM designation:

- A "Significant Event" occurs that threatens reliability and there are insufficient resource adequacy resources available to address the problem
- Reliability or operational need requires the ISO to "Exceptionally Dispatched" non-resource adequacy capacity
- Capacity that is at risk of retiring in the current resource adequacy compliance year and will be needed for reliability by the end of the calendar year following the current resource adequacy compliance year

## **Backstop Procurement Decision and Cost Allocation Process**

In the proposed reliability assessment, the ISO will evaluate the overall system-wide level of procurement provided through the cross-validated RA showings against the system-wide PRM target in order to determine resource sufficiency or identify a system-wide cumulative deficiency. A cumulative deficiency occurs when the sum total of all RA capacity shown is less than the approved system wide RA requirement. It is possible for an individual LSE to be deficient and not have a resulting cumulative deficiency if another LSE has shown capacity in excess of its requirement. It is not possible to have a cumulative system deficiency if all LSEs show their required quantity of RA capacity. The ISO may opt to engage backstop procurement only where there is an identified cumulative deficiency that remains uncured. Additionally, the ISO will only

make a backstop decision after all deficient LSEs have been notified of the deficiency and provided with opportunities to cure.

If the ISO procures backstop capacity to fill an uncured cumulative deficiency, it will only make a designation sufficient to fill the deficiency (*i.e.* the ISO will only procure up to the amount needed to eliminate the cumulative deficiency, not to cure each individual LSE deficiency). The associated costs will be allocated first to those LSEs that have not met their individual system RA requirements. This is consistent with the current ISO cost allocation rules for backstop procurement for collective deficiencies. Cost allocation for any backstop procurement will continue to be based on the short LSEs' proportional share of any backstopped cumulative shortage.

The equation for this cost allocation method can be expressed as follows:

$$\text{Total cost allocation to a deficient LSE} = \text{Backstop MW procured} \times \left( \frac{\text{LSE showing deficiency}}{\text{Sum of all deficiencies of deficient LSEs}} \right)$$

Examples of how this cost allocation will be applied were presented at the August 10, 2016 working group meeting.<sup>12</sup>

### 5.3. Maximum Import Capability

The ISO previously indicated that it was necessary to revisit both the MIC calculation and allocation methodologies to align the processes with the needs of an expanded balancing area. The ISO has provided detailed background on the MIC calculation and allocation processes in previous proposals.<sup>13</sup> Also, the ISO has previously explained how the current process is flexible enough in most aspects to accommodate the existing rights and practices of potential new participants in an expanded balancing area. The ISO continues to believe that the previous proposals to modify the calculation and allocation process are needed. The ISO provides additional details on why the recommended changes are necessary and how these modifications will be implemented in the following sections of this proposal.

The ISO also notes that some stakeholders have recommended that the ISO consider a transition period or transitional mechanism for the proposals to modify the MIC calculation and allocation. The ISO has considered this stakeholder input and has determined that it would not be appropriate to develop a transition period or transition mechanism for these MIC refinements. The MIC proposals are intended to be workable

<sup>12</sup> This presentation is available at <http://www.caiso.com/Documents/AgendaandPresentation-RegionalResourceAdequacyWorkingGroup-Aug102016.pdf> at slides 27-33.

<sup>13</sup> Regional RA Revised Straw Proposal at pg. 19-24: <http://www.caiso.com/Documents/RevisedStrawProposal-RegionalResourceAdequacy.pdf> & Regional RA Second Revised Straw Proposal at pg. 15-16: <http://www.caiso.com/Documents/SecondRevisedStrawProposal-RegionalResourceAdequacy.pdf>

for any new potential expanded balancing area and are not intended to be a transitional modification. Although the ISO has not been convinced that a transitional mechanism is needed, the ISO understands the potential concerns expressed by some stakeholders. Therefore, the ISO commits to monitor the MIC process as the ISO and stakeholders gain experience with these proposed refinements in an expanded footprint and reevaluate the need for further MIC refinements in the future.

## **Establishing a Pre-RA Commitments Date for MIC Process**

Currently, March 10, 2006 is the cut-off date for considering what arrangements count as Pre-RA Commitments in the Available Import Capability Assignment Process. The ISO recognizes that discussion must occur regarding a new “cut-off date” for considering what existing contractual obligations constitute Pre-RA Commitments under the Available Import Capability Assignment Process for potential new entrants in an expanded balancing area. The ISO envisions that this cut-off date discussion should set the Pre-RA Commitment cut-off date for all entities in a potential new PTO system that joins the ISO. This process should set the cut-off date at a date prior to the related RA process for the upcoming year in which a new PTO planned to join the ISO balancing area.

### **5.3.1. MIC Calculation Proposal**

The ISO believes that the proposed change to the MIC calculation methodology change is needed. The change is intended to be used in limited circumstances and meant to address situations where the peak load of a PTO that joins the ISO occurs non-simultaneously with the peak load of the rest of the system and when there are no simultaneous constraints between certain areas of an expanded ISO balancing area. Using the current MIC methodology without the proposed adjustment to the MIC calculation would needlessly restrict the MW amount that can actually be reliably achieved for certain branch groups. The affected branch groups are mainly those used to serve the peak load in new areas where peak is not simultaneous with the rest of the system and are identified to have no simultaneous constraints with the rest of the system. The ISO demonstrates that this change would not undermine the reliability of the system in the following section. The ISO also provides details on the proposed MIC calculation methodology enhancement and clarifies how the proposal would be implemented.

Non-simultaneous analysis of historic import observations proposed works without causing reliability issues because once the MIC levels are determined under this approach, they will be used as input assumptions in the generation interconnection and annual transmission planning processes to ensure that MIC levels are deliverable to the aggregate of load and that there are no simultaneous import constraints.

The ISO has also determined that there currently are no simultaneous import constraints between the existing ISO system and the PacifiCorp system. Therefore, the MIC into the existing ISO system and into PacifiCorp can be determined on a non-simultaneous basis without causing reliability issues. The ISO intends to evaluate simultaneous constraints for any expanded areas of the ISO balancing area using the following methodology.

Simultaneous deliverability constraints can be identified among imports and/or internal generation. Those constraints are resolved by a least squares algorithm where the internal generation and/or imports with the highest impact on the constraint is curtailed more than those with a smaller impact, as described in the generation interconnection BPM. If over the course of time simultaneous constraints are identified between MIC intertie points, then a similar approach could be utilized.

If the ISO finds simultaneous import constraints during planning and/or operating studies, then the ISO will calculate the MIC for the new system (or part thereof) simultaneously with the existing part of the ISO that has the same simultaneous constraint. Based on previous planning and/or operating studies, if there are no identified simultaneous import constraints between the new system joining the ISO and the existing ISO, then the ISO will determine the MIC for the new system on a non-simultaneous basis.

The ISO has also identified that current available planning and operational studies show that the following areas have non-simultaneous constraints: California, PacifiCorp East and PacifiCorp West.

### **5.3.2. MIC Allocation Proposal**

To revise the MIC allocation methodology, the ISO proposes to limit the initial allocations of MIC capability only to those ISO sub-regions that are defined by the Regional TAC sub-regions on a load ratio share basis of only the LSEs serving load within those sub-regional TAC areas.

This proposal to modify the MIC allocation process to reflect the ISO's proposed Regional TAC policy splits the MIC allocation based upon TAC sub-regions that are paying for the underlying transmission of the overall system. This proposed modification would ensure that LSEs in the current balancing area will still receive similar allocations of MIC capability that are made available by the current balancing area interties today. Excluding sales and transfers, the same LSEs (based on their load in the current balancing area) would only be able to nominate RIC ("Remaining Import Capability") on those interties into the current balancing area (identified as one of the sub-regional TAC areas). LSEs serving load within new areas of the expanded balancing area (identified as one of the sub-regional TAC areas) will receive all of the

RIC capability that is provided by its current system's capability, with the ability for entities in that sub-region to nominate only on interties into that TAC sub-region area.

The ISO believes that this proposed modification to the MIC allocation process to reflect the Regional TAC policy direction will ensure that LSEs in the current balancing area maintain access to current MIC allocations, and new TAC sub-regions areas in an expanded balancing area would receive the MIC that TAC sub-region of the system brings to an expanded BAA. The ISO believes that this is appropriate given the underlying cost causation and payment structure that is being envisioned under the Regional TAC policy.

The ISO's proposal to split these MIC allocations to each TAC sub-region will still allow LSEs to utilize MIC in other sub-regions of the ISO through the bilateral trading under Step 8 (Transfer of Import Capability) of the MIC allocation process. This will allow for LSEs to bring system RA resources into the footprint if they have transferred/purchased some MIC capability into different TAC sub-regions. The ISO also notes that under Step 13 (Requests for Balance of Year Unassigned Available Import Capability) of the MIC allocation process all of the remaining MIC capability that has yet to be assigned on all interties would be open for nomination by all LSEs in all areas of the entire expanded ISO BAA.

The ISO believes that splitting the initial allocations, combined with the ability to bilaterally transfer MIC between the Regional TAC sub-regions, and the final Step 13 of the MIC allocation process that allows any entity to nominate any remaining MIC anywhere in the footprint will balance the need to maintain fair initial MIC allocations to sub-regions. The proposal also provides LSEs flexibility to utilize system RA imports brought into to the system across all interties in an expanded balancing area in order to realize the benefits of a larger geographic footprint.

## **Description of Changes to MIC Process**

The ISO provides the following details describing how the ISO plans to design and implement changes to the MIC process under this proposal.<sup>14</sup> The following MIC process modification will allow the ISO to track and validate the different sub-area allocations during the process in order to accomplish the proposed split of the MIC allocation among sub-regions to align with the Regional TAC proposal.

1. The ISO will establish MIC by intertie based on the existing methodology as updated to accommodate non-simultaneous peaking areas that have non-simultaneous constraints with the rest of the system.

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<sup>14</sup> The current MIC allocation process is described in the section \_\_\_ of the ISO's tariff.

2. On an Intertie basis: After subtracting the ETC and TOR held by outside the BAA LSEs from MIC, the ISO assigns the resulting Available Import Capability to “TAC sub-regions” in the same percentage as the transmission assets are paid for by LSE in different TAC sub-regions. The ISO will use the Total Import Capability from all sub-regions to determine the Load Share Quantity for each Load Serving Entity that serves Load within the CAISO Balancing Authority Area. The ISO will use the Total Import Capability within each TAC sub-region to determine the Load Share Quantity for each Load Serving Entity that serves Load within each TAC sub-region of the CAISO Balancing Authority Area.
3. Continue to protect ETC and TOR for inside the BAA LSEs regardless of TAC sub-regions.
4. Continue to protect Pre-RA Import Commitment for inside the BAA LSEs regardless of TAC sub-regions.
5. The ISO allocates the RIC on a Load Share Ratio to LSEs within each sub-region if they have not exceeded their Load Share Quantity within the same TAC sub-region.
6. The ISO posts the Assigned and Unassigned Capability within each TAC sub-region by Intertie.
7. ISO notification of LSE Assignment Information – done by each TAC sub-region.
8. Transfer of RIC among market participants, open to all LSE and all interties however tracked by TAC sub-region for correct allocations in steps 9-12.
9. First LSE/Market Participant request of assignment of RIC within each TAC sub-region by Intertie.
10. ISO notification to LSEs of initial RIC Assignments and Unassigned Capability within each TAC sub-region by Intertie.
11. Secondary LSE/Market Participant request of assignment of RIC within each TAC sub-region by Intertie.
12. ISO notification to LSEs of secondary RIC Assignments and Unassigned Capability within each TAC sub-region by Intertie.
13. Requests for Balance of Year Unassigned Available Import Capability, open to all and not locked in by TAC sub-region.

The ISO provides the following example to illustrate how the proposed modifications would be implemented.

### **MIC Allocation Example**

Assume load in sub-region Alpha is 80% of total load (Beta is the remaining 20%):



| Intertie                 | Sub-region | % load in TAC sub-region | Intertie A | Intertie B | Intertie C | Intertie D | Intertie E |
|--------------------------|------------|--------------------------|------------|------------|------------|------------|------------|
| Sub-region               |            |                          | Alpha      | Alpha      | Alpha/Beta | Beta       | Beta       |
| OTC                      |            |                          | 800        | 500        | 1000       | 100        | 2000       |
| Total MIC                |            |                          | 700        | 300        | 800        | 100        | 850        |
| LSE 1/Outside BAA        | N/A        | 0                        | -          | -          | 300        | -          | 250        |
| % TAC sub-region payment |            |                          | 100%       | 100%       | 80%/20%    | 100%       | 100%       |
| MIC shared in BAA        |            |                          | 700        | 300        | 400        | 100        | 600        |
| LSE 2/Inside BAA         | Alpha      | 80                       |            |            |            |            |            |
| LSE 3/Inside BAA         | Alpha      | 20                       |            |            |            |            |            |
| LSE 3/Inside BAA         | Beta       | 40                       |            |            |            |            |            |
| LSE 4/Inside BAA         | Beta       | 60                       |            |            |            |            |            |

Without ETCs, TORs and Pre-RA Import commitments each LSEs would get its Load Share Quantity within each TAC sub-region of the CAISO Balancing Authority Area to be allocated among the interties in its sub-region.

|       | Load Share Quantity in Alpha sub-region | Load Share Quantity in Beta sub-region |
|-------|---|--|
| LSE 2 | 1400 MW x 80 % = 1120 MW                | 800 MW x 0 % = 0 MW                    |
| LSE 3 | 1400 MW x 20 % = 280 MW                 | 800 MW x 40 % = 320 MW                 |
| LSE 4 | 1400 MW x 0 % = 0 MW                    | 800 MW x 60 % = 480 MW                 |

However most LSE do have ETCs, TORs and/or Pre-RA Import Commitments and for this example assume the ISO will protect for the following existing arrangements:

| ETC + TOR + Pre-RA Import Commitment | Intertie A | Intertie B | Intertie C | Intertie C | Intertie D | Intertie E |
|--------------------------------------|------------|------------|------------|------------|------------|------------|
| TAC sub-region                       | Alpha      |            |            | Beta       |            |            |
| LSE 2                                | 100        | 0          | 50         | 0          | 0          | 0          |
| LSE 3                                | 0          | 300        | 0          | 0          | 20         | 0          |
| LSE 4                                | 200        | 0          | 0          | 0          | 80         | 300        |
| MIC shared in BAA                    | 700        | 300        | 400        | 100        | 100        | 600        |
| RIC after step 4                     | 400        | 0          | 350        | 100        | 0          | 300        |

### Example - Resulting MIC Allocations:

#### LSE 2:

- LSE 2 receives RA import allocations for 100 MW on intertie A and 50 MW on intertie C (in sub-region Alpha).
- LSE 2 is eligible for Remaining Import Capability in sub-region Alpha where it is below its Load Share Quantity in this sub-region, however it is not eligible to receive RIC after step 4 in sub-region Beta since it is at its Load Share Quantity in this sub-region.
  - Because the rest of the LSEs in sub-region Alpha are above their Load Share quantity in sub-region Alpha it will get 80% of 80% (or 100%) of RIC after step 4 = 750 MW to be later allocated by the LSE among Interties A (up to 400 MW) and intertie C (up to 350 MW). Check total LSE 2 Alpha sub-region allocation  $100+50+750=900$  MW < 1120 MW its load share quantity, therefore RIC allocation = 750 MW result is valid.

#### LSE 3:

- LSE 3 gets RA import allocations for 300 MW on intertie B (in sub-region Alpha) and 20 MW on intertie D (in sub-region Beta).
- LSE 3 is not eligible to receive RIC in sub-region Alpha since it is above its Load Share Quantity in this sub-region, however it is eligible to receive RIC after step 4 in sub-region Beta. It will get 40% of 100% of Beta RIC after step 4 = 160 MW to be later allocated by the LSE among Interties C (up to 100 MW) and intertie E (up to 300 MW).

- ISO will check total LSE 3 Alpha sub-region allocation 300 MW > 280 MW its load share quantity, no RIC should be allocated, therefore RIC allocation = 0 MW result is valid. Check total LSE 3 Beta sub-region allocation 20 + 160 MW < 320 MW its load share quantity, therefore RIC allocation = 160 MW result is valid.
- Reallocation after LSE 4 was limited to its Load Share Quantity in Beta sub-region. LSE 3 gets 40% of 40% (or 100%) of 140 MW to be reallocated. Check again total LSE 3 Beta sub-region allocation 20+160+140 MW <= 320 MW its load share quantity, therefore RIC allocation = 300 MW result is valid. Therefore final Beta RIC allocation after step 4 = 300 MW to be later allocated by the LSE among Interties C (up to 100 MW) and intertie E (up to 300 MW).

#### LSE 4:

- LSE 4 receives RA import allocations for 200 MW on intertie A (in sub-region Alpha), 80 MW on intertie D and 300 MW on intertie E (in sub-region Beta).
- LSE 4 is eligible for Remaining Import Capability in sub-region Beta where it is below its Load Share Quantity in this sub-region, however it is not eligible to receive RIC after step 4 in sub-region Beta since it is above its Load Share Quantity in this sub-region.
  - LSE 4 will receive 60% of 100% of Beta RIC after step 4 = 240 MW to be later allocated by the LSE among Interties C (up to 100 MW) and intertie E (up to 300 MW).
  - ISO will check total LSE 4 Alpha sub-region allocation 200 MW > 0 MW its load share quantity, no RIC should be allocated, therefore RIC allocation = 0 MW result is valid.
  - ISO will check total LSE 4 Beta sub-region allocation 80+300+240 MW > 480 MW its load share quantity, therefore RIC allocation = 240 MW result is NOT valid. Reduce RIC allocation to 100 MW to make allocation <= with Load Share Quantity. Therefore final Beta RIC allocation after step 4 = 100 MW to be later allocated by the LSE among Interties C (up to 100 MW) and intertie E (up to 300). Now go back to other LSEs Beta sub-region to reallocate.

### Modifications to Existing MIC Process

The following table describes what steps under the existing MIC process the ISO proposes to revise.

| MIC Process Step |  | Proposed Modification Status   |
|------------------|--|--|
| Step 1           | Determination of Maximum Import Capability on Interties into the ISO BAA   | No change to tariff. <i>(Slight change to methodology of determination in order to accommodate non-simultaneous peaking areas that have non-simultaneous constraints with the rest of the system.)</i> |
| Step 2           | Determination of Available Import Capability by Accounting for Existing Contracts and Transmission Ownership Rights Held by Out-of-Balancing Authority Area LSEs | Change to tariff. <i>(No change regarding continued protection of ETC and TOR for outside the BAA LSEs. Change required to accommodate TAC sub-regions.)</i>   |
| Step 3           | Determination of Existing Contract Import Capability by Accounting for ETCs and TORs Held by ISO Balancing Authority Area LSEs                                   | No change to tariff. <i>(No change regarding continued protection of ETC and TOR for inside the BAA LSEs.)</i>   |
| Step 4           | Assignment of Pre-RA Import Commitments  | Change to tariff. <i>(No change to protection of Pre-RA Import Commitments. Remove unnecessary 2007 language and simplify LSEs selection of anticipated scheduling point.)</i>                         |
| Step 5           | Assignment of Remaining Import Capability Limited by Load Share Quantity   | Changes to tariff. <i>(Change to accommodate TAC sub-regions.)</i>   |
| Step 6           | ISO Posting of Assigned and Unassigned Capability  | Changes to tariff. <i>(Change to accommodate TAC sub-regions.)</i>   |
| Step 7           | ISO Notification of LSE Assignment Information   | Changes to tariff. <i>(Change to accommodate TAC sub-regions.)</i>   |
| Step 8           | Transfer of Import Capability  | Changes to tariff. <i>(No change to transfer of Import Capability – not locked in by TAC sub-region. Remove unnecessary 2007 language.)</i>  |

| MIC Process Step   |   | Proposed Modification Status  |
|--------------------|---|---|
| Step 9             | Initial Scheduling Coordinator Request to Assign Remaining Import Capability by Intertie      | Changes to tariff. ( <i>Change to accommodate TAC sub-regions.</i> )  |
| Step 10            | ISO Notification of Initial Remaining Import Capability Assignments and Unassigned Capability | Changes to tariff. ( <i>Change to accommodate TAC sub-regions.</i> )  |
| Step 11            | Secondary Scheduling Coordinator Request to Assign Remaining Import Capability by Intertie    | Changes to tariff. ( <i>Change to accommodate TAC sub-regions.</i> )  |
| Step 12            | Notification of Secondary Remaining Import Capability Assignments and Unassigned Capability   | Changes to tariff. ( <i>Change to accommodate TAC sub-regions.</i> )  |
| Step 13            | Requests for Balance of Year Unassigned Available Import Capability                           | No change to tariff. ( <i>No change to requests for Balance of Year Unassigned Available Import Capability – not locked in by TAC sub-region.</i> ) |
| Section 40.4.6.2.2 | Bilateral Import Capability Transfers and Registration Process                                | No change to tariff   |

## Allocation of MIC capability created by new regionally cost-shared transmission projects

In the future, if there are new regionally cost-shared transmission projects<sup>15</sup> that create additional MIC capability, the ISO would allocate that shared transmission capability proportionally to each sub-regional TAC area based on the relative shares of the costs of the project that was included in that sub-regional TAC areas rate. The ISO proposes to allocate new and/or additional MIC capability created by new cost-shared transmission projects based on the associated cost allocation to TAC sub-regions of the

<sup>15</sup> TAC Options Revised Straw Proposal: “New regional facilities” are defined here to mean facilities that are planned and approved under an integrated transmission planning process that would be established for planning transmission for the entire expanded ISO BAA, and that meet certain criteria specified in this proposal. The costs of new regional facilities would be allocated to multiple sub-regions of the expanded ISO in accordance with the decisions of a new body of state regulators to be formed as part of a new ISO regional governance structure in conjunction with the integration of the new PTO.

<http://www.caiso.com/Documents/RevisedStrawProposal-TransmissionAccessChargeOptions.pdf>

new lines. Specifically, the ISO would make the MIC allocation on an intertie basis for any new cost shared projects creating a new intertie.

For each new intertie, the ISO would make the allocation after subtracting the ETC and TOR held by outside the balancing area LSEs from the available MIC, with the resulting Available Import Capability assigned to each of the TAC sub-regions in same percentage as the new transmission assets are paid for by LSEs in the different TAC sub-regions. The ISO will calculate the MIC created by these new cost shared projects using the forward looking MIC calculation process that is already established for evaluating MIC for public policy needs.

#### 5.4. Requirements for RA Imports

The ISO has previously indicated that it would be beneficial to clarify requirements for import resources qualifying for RA purposes for numerous reasons.<sup>16</sup> The requirements and expectations related to the physical availability of imports used to meet RA system requirements are important to ensure those resources are made available to the ISO when needed as well as to maintain the integrity of the resource adequacy program that is based upon resources being physically available. In the April 13, 2016 Regional RA Revised Straw Proposal, the ISO stated:

*“RA showings that designate import MWs to meet RA obligations across interties using either Non-Resource-Specific System Resources, Pseudo-ties or Dynamically Scheduled System Resources are to be used in conjunction with a MIC allocation and are considered to be a firm monthly commitment to deliver those MWs to the ISO at the specified interconnection point with the ISO system.”<sup>17</sup>*

Current tariff provisions allow LSEs to meet system RA capacity requirements using imported resources. These provisions are not specific on the various types of import resources that can count as RA capacity to meet system RA capacity requirements and are not specific regarding the timing that non-resource specific contractual obligations must be secured. As noted in prior proposals, current provisions allow LSEs to meet RA system capacity requirements using imported resources, and these imported resources do not have to be tied to a specific physical resource. For example, LSEs can use imported RA capacity from a non-resource specific import resource to meet system resource adequacy requirements. Stakeholders and the ISO Department of

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<sup>16</sup> Regional RA Second Revised Straw Proposal, May 26, 2016, p. 10:

<http://www.caiso.com/Documents/SecondRevisedStrawProposal-RegionalResourceAdequacy.pdf>

<sup>17</sup> Regional Resource Adequacy Revised Straw Proposal, April 13, 2016, p. 19:

<http://www.caiso.com/Documents/RevisedStrawProposal-RegionalResourceAdequacy.pdf>.

Market Monitoring (“DMM”) have provided input indicating that these provisions should be clarified to provide more clearly enforceable provisions and proper guidance to stakeholders on this topic.<sup>18</sup>

Given that the current ISO tariff is not specific regarding certain issues surrounding the requirements for imported resources that may qualify for system RA purposes, the ISO believes that it is appropriate to clarify these provisions in this initiative. Additionally, the ISO has previously discussed related issues with stakeholders. One of the issues that was explored was the potential role for resources such as bilateral spot market purchases or short-term firm market purchases procured at market hubs outside of the BAA to meet a portion of an LSE’s system RA requirements. The ISO believes the proposed clarifications to the RA imports provisions will also appropriately address this question and provide needed clarity on this import resources qualifying for resource adequacy issue.

The concern from the ISO’s perspective is that this current tariff ambiguity could be interpreted as allowing LSEs to demonstrate through RA showings that they have met their RA requirements and move into the operating month without securing these contractual obligations prior to the month-ahead timeframe. This means that the ISO could be relying on unsecured resources that may have been double counted as available for use by other balancing areas.

The ISO does not agree with the above interpretation and proposes to clarify the tariff provisions for RA imports. These modifications will be focused on ensuring that the tariff clearly states that all import resources shown on RA showings will be required to be secured in the month-ahead time frame (T-45). The ISO clarifies that the following types of resources will qualify as RA imports:

- Resource Specific Resources
- Non-Resource Specific Import Resources:
  - Non-resource specific systems or groups of physical resources, (e.g., hydro systems)
  - Non-resource specific contractual obligations for capacity or firm energy delivery that must be secured prior to the month-ahead showings are due.

The intended effect of this proposal is that the ISO will not allow intra-month spot market energy purchases or other contractual arrangements that have not been executed or

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<sup>18</sup> DMM has submitted written comments in the stakeholder process explaining that RA imports are only required to be bid into the day-ahead market. These imports can be bid at any price and do not have any further obligation if not scheduled in the day-ahead energy or residual unit commitment process. DMM has expressed concern that these rules could allow a significant portion of resource adequacy requirements to be met by imports that may have limited availability and value during critical system and market conditions.

otherwise secured prior to the due date for RA showings to be eligible for purposes of meeting RA requirements. Only contractual arrangements for import resources that have been secured prior to RA showing deadlines for the month-ahead time frame (T-45 days) would qualify for use in meeting RA requirements.

The ISO would continue to validate RA showings through cross-validation of LSE and supplier showings in order to verify there are matching contract reference numbers provided. If no corresponding contract reference are provided, the ISO would reject those portions of RA showings. The ISO believes that this proposal is appropriate to ensure reliability and avoid potential gaming, manipulation, and capacity leaning that may be permitted by the ambiguity of the current tariff provisions.

### **5.5. External Resource Substitution for Internal Resources**

In the previous straw proposal, the ISO introduced this topic to examine the potential for adjusting the current substitution rules to allow external resource to substitute for internal resource experiencing a forced or planned outage. Currently, the ISO tariff does not allow an internal, non-local resource providing RA capacity that goes on a forced outage to provide substitute capacity from an external resource. The tariff includes this requirement because an external RA resource potentially might not be required to meet the same must-offer obligation as an internal RA resource. For example, the amounts shown on many RA showings and supply plans represent power sales contracts for terms such as 5x16 or 5x8 (days of the week and hours per day) and current provisions only require those resource to have must offer obligations during those specified hours.

The ISO has previously agreed to explore this substitution restriction because some stakeholders believe this rule could create barriers for regional expansion by limiting the pool of replacement resources for entities in an expanded balancing area. Previously the ISO proposed to remove this restriction and developed some of the details that would be required. The ISO has reconsidered its previous proposal to remove this restriction and, at this time, proposes not to remove the restriction due to the complexities associated with implementation.

The ISO previously explored what changes would be needed to allow an external resource to substitute for an internal resource that is on a forced or planned outage. The ISO identified that in order to make this change to the substitution restriction at least two conditions would have to be met by external resources to substitute for internal resource:

1. External resource/entity would require sufficient MIC allocation to be used for the substitution; and



2. External resource has the capability to fulfill the RA must-offer obligation of the outage resource (for example, if the internal RA resource has a 24x7 must-offer obligation, then the substitute resource allocation on the required Interties would be required to fulfill a 24x7 must-offer obligation).

The ISO believes that it would be unduly burdensome to implement the necessary changes at this time. Specifically, it would require large system changes to enable the ISO to track the requirement that similar must offer obligations and related requirements were met. For example, allowing an external resource to be used for substitution that did not have the same must-offer obligation requirements would require that resource take on a similar must-offer obligation as the internal resource it was replacing. This need seems relatively straightforward, but it has raised concerns because of the significant system changes that would be required to track and implement the modified must offer obligations, including the potential for changes to the master file information associated with that resource.

Additionally, the ISO would need to create systems to allow for the transfers and tracking of transfer/designations of MIC allocations and this would require that LSEs, suppliers and SCs coordinate and bilaterally trade MIC intra-year in order to ensure that sufficient MIC had been made available and designated for use by that import resource.

The ISO believes that the potential benefits of this previous proposal are far outweighed by the implementation complexity that would be required and thus has determined that it is appropriate to defer this issue.

## 5.6. Allocating RA Requirements to LRAs and LSEs

This aspect of the proposal addresses two potential issues related to allocating RA requirements to potential new ISO participants. The first issue is the need for allocating RA requirements to directly to LSEs when its state or local regulatory agency that does not wish to assume the role of receiving and allocating RA requirements from the ISO to its respective LSEs. The second issue is the possibility that more than one regulatory entity oversees and/or approves a multi-jurisdictional LSE's procurement decisions.

To address these issues, the ISO proposes two related changes to the current RA allocation process. With respect to the first issue, the ISO proposes to create a new mechanism for LRAs and state agencies to elect to defer allocation of RA requirements to the ISO so the ISO can allocate RA requirements directly to the LSEs under the deferring LRA's jurisdiction. With respect to the second issue, the ISO proposes to allocate resource adequacy requirements directly to all multi-jurisdictional LSEs.

This element of the proposal is not intended to change how LSEs and LRAs in the current ISO balancing area receive and/or allocate RA requirements. It is only intended to (1) address any potential barriers or issues related to multi-jurisdictional LSEs and (2) allow the ISO to directly allocate RA requirements to LSEs to accommodate those utilities whose state commissions/LRAs prefer for the ISO allocate RA requirements. Stakeholder comments have sought further clarity on this issue and the ISO provides the following additional details to address this issue.

The first aspect of the proposal is to create a mechanism that would allow LRAs to defer the allocation of resource adequacy requirements to the ISO. If an LRA exercises this option, the ISO will allocate the resource adequacy requirements directly to the LSEs under the jurisdiction of the deferring LRA using the ISO's default allocation methodologies. The ISO continues to propose this additional mechanism to accommodate LRAs that prefer that the ISO allocate resource adequacy requirements to individual LSEs.

The second proposal addresses the needs of multi-state, and thus multi-jurisdictional, LSEs and how they would receive their allocations of resource adequacy requirements. The ISO previously proposed allocating directly to multi-jurisdictional LSEs all system, local, and flexibility RA requirements to avoid any related allocation issues that could arise from splitting up LSE requirements based upon the various LRAs/jurisdictional entities that oversee the multi-jurisdictional LSE. The ISO proposed a direct allocation to create a more streamlined and administrable RA program.

Some stakeholders raised concerns with this approach related to local and state regulatory agencies potentially losing some control over allocation of RA requirements to multi-jurisdictional LSEs. Recognizing those concerns, the ISO considered potential alternative approaches in the previous proposal. One of the options was for the ISO to always defer allocation to multi-jurisdictional LSEs to each LRA, and to provide those regulatory agencies the option either to: (a) receive the RA requirements for all of their jurisdictional LSEs and then allocate them; or (b) defer to the ISO to provide all LSEs under that LRA's jurisdiction with their respective allocations of RA requirements.

Due to the complexity of the calculations and LRA-specific need determinations that would be required for each individual LRA area of a multi-jurisdictional LSE, the ISO had determined it is appropriate to allocate all RA requirements directly to multi-jurisdictional LSEs. Allocating resource adequacy requirements directly to multi-jurisdictional LSEs is a more straightforward approach for calculating and allocating the overall resource adequacy requirements of such LSEs.

This approach is consistent with the practice in other regional transmission organizations that have had to deal with multi-jurisdictional LSEs.<sup>19</sup> Additionally, the ISO believes that this approach is appropriate given the vastly increased complexity and necessary changes associated with the ISO calculating requirements for subsets of multi-jurisdictional LSEs in order to provide each individual LRA its share of the multi-jurisdictional LSE's resource adequacy requirements, only to have those LRAs reallocate the requirements to the multi-jurisdictional LSE. This proposal removes unnecessary complexity and streamlines the allocation process in an appropriate manner.

The ISO notes that multi-jurisdictional LSEs and relevant LRAs would still be responsible for determining how any associated costs would be assigned to individual jurisdictions and the LSE's customers. The ISO believes it is appropriate to leave those retail level cost allocation details to be worked out amongst the multi-jurisdictional LSE and its LRAs.

### 5.7. Monitoring Locational Resource Adequacy Needs and Procurement

Rather than impose the zonal RA requirements the ISO previously contemplated, the ISO believes that it would be more appropriate, at this time, to monitor the regional or zonal resource adequacy needs across an expanded footprint, which is the ISO's current practice. The ISO also will continue to monitor any internal constraints under the current ISO study processes in place today. The ISO proposes to internally monitor and evaluate procurement by LSEs in an expanded BAA before considering any zonal RA procedures and/or requirements in the future.

The ISO will accomplish this aspect of the proposal for locational needs through its current technical study processes. An example of the type of information that is currently reviewed annually through the annual ISO Local Capacity Technical Report.<sup>20</sup>

| Zone           | Load Forecast (MW) | 15% reserves (MW) | (-) Allocated imports (MW) | (-) Allocated Path 26 Flow (MW) | Total Zonal Resource Need (MW) |
|----------------|--------------------|-------------------|----------------------------|---------------------------------|--------------------------------|
| SP26           | 28401              | 4260              | -7792                      | -3750                           | 21119                          |
| NP26=NP15+ZP26 | 22199              | 3330              | -4346                      | -2902                           | 18281                          |

<sup>19</sup> The ISO notes that in other regions, such as MISO and PJM, those ISOs/RTOs directly allocate the RA requirements to all LSEs, which avoids these potential issues, and the multi-jurisdictional LSEs and their regulators work out how to allocate the associated costs amongst their customers.

<sup>20</sup> 2016 Local Capacity Technical Report Apr 30, 2015:

<http://www.caiso.com/Documents/Final2016LocalCapacityTechnicalReportApr302015.pdf>

As noted above, the ISO will continue to monitor regional/zonal resource adequacy needs in any expanded balancing area, as well as the level of procurement in locational areas, to determine whether to revisit the issue of zonal requirements at a later date.

The zonal boundaries the ISO will study will be determined by known major transmission constraints such as WECC Paths that limit power transfers between the regions. For example, if PacifiCorp were to become part of the balancing area there would be three WECC paths that would create four candidate zones: PACE, PACW, Northern California and Southern California.

- Path 26 between Northern California and Southern California
- Path 66 (COI) between PACW and Northern California
- Path 17 (Borah West) between PACE and PACW

### 5.8. Updating ISO Tariff Language to be More Generic

This element of the ISO's Regional RA proposal addresses the need for the tariff provisions related to resource adequacy to be more generic. The current tariff utilizes California-centric language that may not be applicable to entities in an expanded balancing area. The ISO believes this is necessary to avoid any unintended barriers associated with the current tariff language as the ISO balancing area potentially expands. The ISO described this intended tariff clean up in previous proposals and does not have additional clarification or details to provide in this iteration of the initiative. The ISO continues to believe that this element of the proposal is complete and will provide the details on specific changes to the tariff language to accomplish this proposal during the tariff stakeholder process.<sup>21</sup>

## 6. Next Steps

The ISO will discuss this Third Revised Straw proposal with stakeholders during a meeting on October 6, 2016. Stakeholders are asked to submit written comments by October 27, 2016 to [initiativecomments@caiso.com](mailto:initiativecomments@caiso.com). Please use the template at the following link to submit your comments:  
<http://www.caiso.com/informed/Pages/StakeholderProcesses/RegionalResourceAdequacy.aspx>

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<sup>21</sup> The ISO's tariff stakeholder process is conducted after the policy stakeholder process is complete but before the tariff language is filed with FERC.

## Appendix A – Summary of Stakeholder Comments on Regional RA Issues

The following section provides summaries of stakeholder comments received on the various topics under this initiative. The ISO has posted each set of stakeholder comments received on the ISO website. The full sets of comments are available on the Regional RA webpage here:

<http://www.caiso.com/informed/Pages/StakeholderProcesses/RegionalResourceAdequacy.aspx>

The table below shows the acronyms the names of the stakeholders that submitted written comments and are used in the stakeholder comments summary sections below. Some stakeholders are referred to in the summaries simply by the full company or organization's full name.

| Acronym | Name of Stakeholder                                 |
|---------|---|
| AWEA    | American Wind Energy Association                    |
| BAMx    | Bay Area Municipal Transmission                     |
| BPA     | Bonneville Power Administration                     |
| CDWR    | California Department of Water Resources            |
| CLECA   | California Large Energy Consumers Association       |
| CMUA    | California Municipal Utilities Association          |
| CPUC    | California Public Utilities Commission              |
| EDF-RE  | EDF-Renewable Energy                                |
| ICNU    | Industrial Customers of Northwest Utilities         |
| IID     | Imperial Irrigation District                        |
| LSA     | Large-Scale Solar Association                       |
| NCPA    | Northern California Power Agency                    |
| NIPPC   | Northwest & Intermountain Power Producers Coalition |
| ORA     | Office of Ratepayer Advocates                       |
| PG&E    | Pacific Gas & Electric                              |
| PPC     | Public Power Council                                |
| SCE     | Southern California Edison                          |
| SCL     | Seattle City Light                                  |
| SDG&E   | San Diego Gas & Electric                            |
| SVP     | Silicon Valley Power                                |
| UOCS    | Utah Office of Consumer Services                    |
| UTC     | Washington Utilities & Transportation Commission    |

|                      |   |
|----------------------|---|
| WRA-NRDC-NEC-WGG-UCE | Western Resource Advocates, Natural Resource Defense Council, Northwest Energy Coalition, Western Grid Group, & Utah Clean Energy |
| WPTF                 | Western Power Trading Forum   |

**Stakeholder comments on Load Forecasting**

BPA, XES, and NV Energy support or are not opposed to the previously proposed load forecasting process. CLECA supports the flexible approach and the explicit retention of the LRA’s role in terms of load forecasting. PPC agrees that providing LRAs flexibility to most accurately forecast their particular loads and resources is the best practice. Most stakeholders support reporting adjustments to consider the consequences of the adjustments. CDWR and NCPA support the CAISO’s proposal to continue giving LSEs flexibility to treat load adjustments using methods that best represent the needs of their respective situation.

The CPUC believes LSEs should not be required to submit their load forecasts directly to the ISO and recommends that the CAISO continue to defer to the CEC. PG&E, Six Cities, and SDG&E support utilizing the CEC hourly load forecasts for California LSEs and agree that ISO should be able to review forecast load which exceeds a set threshold.

WRA-NRDC-NEC-WGG-UCE support the proposal to require the provision of hourly data and support allowing adjustments to month-ahead forecasts, but do not agree with the proposal to limit adjustments to “quantifiable and demonstrated load migrations” only. SVP urges the ISO to have efficient reporting requirements of LSEs in the load forecasting process and urge that the forecasting requirements to be consistent with other ISO activities. ORA expresses concern that allowing each LSE to develop its own load forecasts without a standardized methodology will lead to inconsistent evaluations of capacity need and, subsequently, to capacity leaning and thus recommends that the ISO provide an option for smaller LSEs to defer their load forecasting to the Utility Distribution Company in whose territory they operate.

**Stakeholder comments on Reliability Assessment: Planning Reserve Margin**

Calpine, CDWR, CLECA, WPFT, UOCS, WRA-NRDC-NEC-WGG-UCE, NV Energy, XES, SDG&E, and Six Cities all expressed support establishing PRM using a probabilistic methodology and believe the 1-in-10 LOLE used in other regions is reasonable. The CPUC believes that although stochastic reliability assessments are a best practice, there are LRAs that prefer to perform those studies on their own behalf. UAMPS recommends using a simplistic/deterministic PRM approach until a probabilistic

LOLE, 1-in-10 approach can be finished and finalized for the expanded ISO. SVP expressed concerns about the complex process of the LOLE study.

BPA is opposed to the 1-in-10 LOLE methodology because it has an energy limited system due to the limited storage capability of Columbia River Basin dams, and the methodology does not align with the annual variability of a hydro generation fleet. ORA opposes excluding expected unserved energy (EUE) or other metrics that address the value of load losses because these metrics that assess value of load losses are critical for determining the costs and benefits of various reliability levels.

PacifiCorp supports the need to establish a minimum PRM for an expanded BAA as a means to ensure reliable operation. PacifiCorp and Six Cities support the use of a single annual PRM level. CLECA recommends including significant load shape changes and shifting of peak loads as triggers for updating the PRM. Both SDG&E and PG&E agree that the ISO should conduct a study when an external BAA decides to join the existing BAA.

#### **Stakeholder comments on Reliability Assessment: Uniform counting rules**

AWEA, INCU, NV Energy, ORA, SVP, and WPTF support adopting the ELCC methodology. LSA believes the exceedance methodology works well and does not support the use of ELCC. CPUC, Calpine, and WPFT believe that it is unreasonable for ISO to develop its own method prior to 2018 because the CPUC will be adopting an ELCC methodology in 2018. CPUC Staff recommend that CAISO adopt the CPUC's current rules when there is no other LRA in the (future) regional ISO that has adopted conflicting rules. SDG&E supports a transition to ELCC in 2018.

INCU, ORA, CDWR, NCPA, and Six Cities express concern over the loss of LRA authority and do not support the ISO developing uniform counting methodologies. BPA understands the desire to standardize resource counting and the complications inherent in not doing so, but opposes implementing uniform resource counting rules because it is at odds with the flexibility the ISO's current tariff affords LRAs. BPA is also concerned about the ISO's proposed approach for determining a RA Resource's Pmax because testing Pmax for their hydropower projects would be more difficult than running tests for thermal units. CLECA repeats its request for delineating a clear process that would be used in the event of a counting discrepancy between the regional ISO and the LRA. PacifiCorp believes that a regional organization must be flexible and allow LSEs to incorporate any changes acknowledged or approved by an LRA in the RA plans for new entrants. UOCS believes a detailed comparison would have to be made comparing the treatment of all resources including renewables, DSM, interruptible load, hydro, purchases and sales, QFs, and non-owned reserves.

#### **Stakeholder comments on Maximum Import Capability**

CDWR, ICNU, PacifiCorp, SCE, SCL, UOCS, and WRA-NRDC-NEC-WGG-UCE support the ISO's proposal to limit allocations of MIC capability to particular sub-regions that would be defined by the Regional TAC Options. NCPA agrees with the concept of the MIC proposal, so long as existing arrangements continue to be respected as described in Step 1. Six Cities does not support the ISO's TAC sub-regional proposal, however if that is the direction determined for TAC they would support the split allocation of MIC proposal. SDG&E and PG&E do not support the ISO's proposal to allocate the MIC based on sub-regions. PG&E believes the allocation of RA Import Allocation Rights should be based on the current methodology of the load-ratio share of the expanded ISO. SVP believes there may be challenges in allocating MIC based on existing commitments.

XES is concerned about the ISO's latest proposal to limit the initial allocations of MIC to the sub-regions based on what those sub-regions bring to the footprint. PacifiCorp and SDG&E believe the final step 13, nomination of remaining MIC, is problematic and enhancements to the process need to be explored further by the ISO. SDG&E disagrees that a comprehensive MIC redesign could take over one year to complete and believes the redesigned process could be complete within the regional RA framework for process. SDG&E also believes the proposed changes do not improve market efficiencies or the MIC process overall. Calpine opposes any changes to MIC that would impact the deliverability of internal resources. UOCS believes that splitting the initial MIC allocations among sub-regions while allowing remaining unassigned MIC to be obtained by other LSEs is a fair process. PPC does not object to the proposed restriction of the initial allocations to the sub-region, but has concerns about the proposal that MIC be allocated based on a load-ratio share.

BPA, ICNU, PacifiCorp, SCE, and Utah OCS generally supports the ISO's proposal to reflect non-simultaneous peak loads across an expanded BAA. BPA believes that in the case of PacifiCorp, using a single peak for the entire PTO is too broad because different parts of PacifiCorp itself peak at different times. PG&E does not believe changes to the Maximum Import Capability calculation are needed to allow for the expansion of the regional ISO. IID and SDG&E are concerned that the MIC calculation is based on historical values. NCPA appreciates the emphasis on protecting existing contractual rights and pre-existing commitments, and agrees that any changes to the MIC process must retain this essential feature.

BPA believes the proposed MIC methodology will not recognize an LSE's existing OATT transmission rights. BPA is also concerned that existing MIC methodology only allocates import capability based on energy schedules and does not recognize all existing transmission rights and planning reserves provided by generation using such rights. PPC fully supports the goal that existing transmission and commercial rights and arrangements continue in effect after the integration of PacifiCorp as a PTO.



CDWR seeks clarification on how existing inter-ties and their allocation would be impacted by this proposal. Powerex suggests LSEs inform CAISO of executed import RA contracts on a year-ahead basis and that the CAISO evaluates the total quantity of yearly import RA executed on each intertie. SLC believes LSEs should be permitted to provide imports over a longer time period or provide the CAISO other information that would establish the reliable level of imports for purposes of meeting an RA requirement through the MIC process.

### **Stakeholder comments on Import Resources for RA Purposes**

SVP supports allowing RA system capacity requirements, including substitution requirements, to be met with imported resources. UAMPS supports allowing an LSE's RA requirement to be met by a variety of options and combinations. PacifiCorp supports the current construct of the RA tariff that allows an LSE to procure an import resource with available MIC utilizing an unspecified source without a need to show the terms or requirements associated with the resource. BPA believes it is important that resources imported into the ISO BAA are allowed to meet RA requirements. UOCS asserts that a tariff for a Regional ISO must allow utilities to acquire short-term firm purchases to meet RA capacity requirements. XES recommends that external generation be accredited as acceptable for meeting the RA margin for various scenarios. NV Energy proposes that any resource that qualifies as firm enough to satisfy FERC's requirements for a designated network resource should likewise be firm enough for ISO resource adequacy purposes.

Powerex suggests that intertie capacity allocations would be made available preferentially to support year-ahead RA contracts, with intertie capacity allocated to support monthly RA contracts only to the extent that additional intertie capacity remains available after the year-ahead allocation. Powerex also expresses concern about spot market energy purchases qualifying as RA. Six Cities states there should be consideration of the magnitude of RA requirements that could be met with spot market purchases. WAPA believes that because resource IDs under MEEAs represent specific generation units in northern California, they should be allowed to provide system, local and flexible RA following the same rules that are applicable to other hydro generation units in northern California. Calpine does not support modifying ISO's current rules regarding how imports count towards RA requirements. NIPPC is does not support using Firm Liquidated Damages contracts as RA resources or allowing some portion of the RA requirement to have shorter compliance demonstration periods. NCPA believes determinations should be left to the relevant LRAs and questions what uniform default counting criteria should provide with respect to purchases.

WRA-NRDC-NEC-WGG-UCE support developing requirements for determining how "firm" a non-resource specific import should be to count as an RA resource. ICNU

agrees it is important to clearly define “firm monthly commitment” and recommends that Western Systems Power Pool Schedule C transactions be considered a firm system resource for RA purposes. PPC believes the definition of “firm” should be consistent with energy and capacity products sold in the West and considered firm and should apply to all resources used for resource adequacy purposes in the CAISO footprint. SCE agrees there should be discussion around firm energy imports that count for resource adequacy (RA) purposes. SCL believes the CAISO should consider how to provide LSEs the option to document alternative means to qualify import resources for RA purposes and that LRAs should be involved on an equal basis with CAISO for determining eligible “import” resources and defining “firm” resources. ORA supports applying the current ISO RA rules to import capacity and believes standard rules for “firm” commitments should apply equally to all LSEs in an expanded ISO.

### **Stakeholder comments on Allocation of RA Requirements to LRAs/LSEs**

PacifiCorp, UOCS, WRA-NRDC-NEC-WGG-UCE support option 1, which allocates RA requirements directly to LSEs. CLECA, NIPPC, and UAMPS support option 2, which retains a role for the LRA. WAPA prefers that the CAISO maintain the current practice of providing the flexibility to assign the Local RA and Flexible RA to either LRAs or LSEs according to the LRAs’ instruction. NV Energy advocates for an allocation solution that ensures entities serving their own load are responsible for their share of resource adequacy contribution. SCL prefers to establish its own RA requirements. ORA requests further clarification from the ISO on its preferred approach for managing allocations for single jurisdiction LSEs. XES views RA requirements as a State jurisdictional issue.

### **Stakeholder comments on RA Unit Substitution Rules for Internal and External Resources**

CDWR, BPA, ICNU, NIPPC, NCPA, NV Energy, ORA, PacifiCorp, SDG&E, Six Cities, UAMPS, UOCS, WPTF, WRA, and XES support the concept of allowing external resources to substitute for internal resources on outage. CDWR further believes that non-resource specific imports should also be eligible to provide substitution. PacifiCorp believes its current ability to serve its customers utilizing a least-cost approach would be unduly burdened by the current unit substitution rules. PacifiCorp believes that the ISO needs to further understand the ability of PacifiCorp and other entities outside of California to deliver electricity across its transmission system utilizing multiple resources and its import capability into each of its load areas. PG&E believes substitution of internal Resource Adequacy resources with external resources should be allowed if the associated must offer obligations of the resources are the same.

Calpine opposes the proposal and believes that the CAISO generally should not allow substitution of internal with external resources. Calpine is concerned that non-dynamic external resources can never completely substitute for internal resources because they are not dispatchable with the same granularity and are not generally capable of providing regulation. Calpine also believes requiring a MIC allocation for the external substitute resource is reasonable. Six Cities believes the CAISO should be able to confirm that a Scheduling Coordinator designating an external resource to substitute for an internal RA resource on outage has the MIC allowance necessary to support deliverability of the substitute resource.

Calpine and WRA-NRDC-NEC-WGG-UCE do not object to the substitution of internal resources with pseudo-tied resources. WPFT supports substitution of internal resources with pseudo-tied resources as long as the substitute resource meets the same must-offer obligation as the resource on outage.

Six Cities, PacifiCorp, and Calpine believe that substitute resources should be required to comply with the must-offer obligations applicable to the resource for which it is substituting. NCPA believes the CAISO should remove the condition that the substituting external resource must have “similar operating characteristics” as the outage resource. NIPPC, ICNU, ORA, and WRA-NRDC-NEC-WGG-UCE support the three conditions for allowing substitution of an external resources. BPA is concerned about the ISO’s proposal for a “like for like” RA resource substitution requirement. CDWR, NCPA, NQC and SVP do not believe one of the conditions of allowing external resource to substitute for internal RA should be that the external resources has similar operating characteristics of the outage resource. BPA understands that some level of similarity between a replacement resource and the outage resource is necessary, but that the two resources do not need to have identical characteristics. SCE supports substitution rules utilizing a “similar operating characteristics” condition.

SCE suggests that CAISO implement something similar to the Local Capacity Area Resource Substitution Pre-Qualification (40.9.4.2.1)(c)(1) that occurs as part of year ahead planning that will pre-determine by clearly defining and codifying “similar operating characteristics”. SDG&E believes DMM has oversight to penalize SCs that bid into the ISO markets but ultimately do not deliver the energy when called.

### **Stakeholder comments on other Regional RA issues**

BPA and NCPA are concerned about the development and implementation of the RA structure before the formal expansion of the ISO. INCU believes that tariff safeguards are essential to ensure stakeholder support for RSO formation and new PTO integration. PPC believes the ISO should set the cutoff date at a particular date prior to the related RA process for the upcoming year in which new PTO planned to join the ISO

BAA. SDG&E believes the ISO must insert an activation date within this proposal to ensure the process is not interrupted for all other LSEs.

PacifiCorp believes if the ISO identifies any shortfalls after considering all of the RA capacity provided, the ISO should provide LSEs an opportunity to cure the shortfall. UAMPS believes there should be an additional step in the process where the deficient LSE meeting the LRA's criteria can have the chance to explain to the ISO the methodology that was used developing and determining the LSE's RA forecast. WPFT strongly supports the CAISO having backstop authority for system, local, and flexible deficiencies and supports minimum leaning.