Memorandum

To: ISO Board of Governors

From: Keith Casey, Vice President, Market and Infrastructure Development

Date: March 19, 2015

Re: **Decision on reliability services proposal phase 1**

This memorandum requires Board action.

EXECUTIVE SUMMARY

California's resource planners are preparing for unprecedented changes to the bulk electric system resulting from the significant and growing amount of variable energy and other resources that have, and will continue, to change the ISO's operational needs. Although the current reliability framework has provided for reliable operation of the grid, there is an acknowledged gap in this framework to address changing reliability needs. To address these needs, Management has undertaken the reliability services initiative to further evolve the ISO's resource adequacy rules. The changes proposed are designed to ensure that sufficient resources with the right capabilities are available and offered into the ISO market to meet local, flexible, and system needs.

The reliability services initiative is a two-phase, multi-year effort to address the ISO's rules and processes surrounding resource adequacy (RA) resources. Management is bringing the first phase of the initiative to the board for a decision. The first phase focuses on RA rules and processes that enhance and streamline the current processes to meet the needs of an increasingly dynamic grid. These changes include: (1) enhancements to further integrate preferred resources into the grid; (2) a new availability incentive mechanism to encourage greater availability from RA resources including demand response and use-limited resources; and finally, (3) revisions to RA outage rules to streamline ISO processes and provide a platform for flexible RA outage rules.

The proposed new availability incentive mechanism significantly changes how RA resources are treated and assessed as available. The new outage rules will require significant implementation work, affect contracting, and involve coordination with the CPUC. Therefore, Management proposes to stage the FERC filing and the implementation of the planned outage rule proposal over the next two years.

The second phase of the reliability services initiative will begin in the first half of 2015. The scope of that phase will include enhanced flexible RA requirements and flexible RA planned outage rules. The ISO will conduct and use transparent flexible capacity needs studies to propose comprehensive flexible RA requirements to replace the interim requirements established last year. This will include an assessment of the ability of intertie resources to provide a portion of the ISO's flexible capacity needs and the need for a downward flexible product. The ISO's studies will look more closely at the need to address operational concerns associated with over-generation, including a review of the associated minimum operating level run times that come with many resources, and the need for ramping capabilities for time intervals less than three hours.

Management proposes the following motion:

> ***Moved, that the ISO Board of Governors approves the phase 1 of the reliability services proposal, as described in the memorandum dated March 19, 2015; and***
>
> ***Moved, that the ISO Board of Governors authorizes Management to make all necessary and appropriate filings with the Federal Energy Regulatory Commission to implement the proposed tariff change.***

DISCUSSION AND ANALYSIS

Background

In August 2014, FERC approved the ISO's proposal for a flexible RA requirement, compliance categories, and associated must-offers for the 2015 RA compliance year. The ISO created flexible RA to accommodate the increasing amount of variable energy resources on the ISO grid. Though a good interim measure, RA products alone are not enough to ensure grid reliability through this period of robust change. Additional rules are needed to integrate flexible RA into the energy market and to streamline processes in advance of adding the additional complexity that comes from the addition of flexible RA requirements.

The current RA availability mechanism does not assess flexible RA availability or fully assess use-limited and preferred resource availability. Therefore, Management proposes a new availability incentive mechanism that will address these deficiencies as well as create a new price for the charge and payment.

Similarly, the ISO's default eligibility criteria, must-offer requirements, and outage rules were not set up to accommodate the increase in preferred resources and flexible RA requirements. Therefore, Management also proposes enhancements and changes to these rules.

Objectives

Management's objective under this initiative is to create a lasting framework to ensure sufficient resources with the right capabilities are available and offered into the ISO

market to meet local, flexible, and system operational needs. Eligibility requirements and must offer obligations should reflect the ISO's reliability need and be consistent as possible across resource types. Likewise, RA resources' compliance with the must-offer obligations should be similar, while still accounting for individual resource adequacy counting methodologies and obligations. Finally, outage rules should be simple and based on a defined reliability purpose.

Management proposes default eligibility criteria and must offer obligations to further integrate preferred resources into the grid

As newer technologies produce and deliver energy onto the grid, the ISO must enhance or establish default qualifying capacity minimum eligibility criteria for system, local, and flexible RA capacity. This will allow a more diverse set of resource types to provide RA capacity. Management proposes default qualifying capacity minimum eligibility criteria for distributed energy resources, non-generator resources, and enhancements for proxy demand resources, as well as the must-offer rules where required for each of these resource types. The current must-offer rules can be improved by applying them in a more standardized manner, and making them more universally accessible, across all resource types, including use-limited resources. Management also proposes clarifications to the must-offer obligations for distributed generation facilities and non-generating resources.

Management also proposes new must-offer requirements related to bid insertion, ancillary service participation, and residual unit commitment bidding from RA resources. These new requirements are linked to the use-limited definition proposed in the commitment cost enhancements phase two initiative, which is being separately presented to the Board for decision. The new must offer requirements exempt certain resource types that are no longer considered use-limited, but cannot automatically be accommodated under the full must-offer requirements without additional policy and review.

A new availability incentive mechanism will increase incentives for RA capacity to participate in the ISO market

Management proposes a new availability incentive mechanism for RA capacity to participate in the ISO market. The proposed incentive mechanism assesses whether RA resources are offered into the ISO market consistent with their must-offer obligation. The mechanism compares how the resource was supposed to bid into the energy market under its RA obligation to how the resource actually bid into the energy market. Management believes this framework will be adaptable to future flexible RA requirements and provides a foundation for use-limited and preferred resources to be assessed equitably to other resource types.

The ISO proposes three main design features for the new availability incentive mechanism:

- Calculate availability based on a resource's offers into the energy market,
- Assess this bid-based availability against a fixed availability percentage threshold where resources that perform under the availability threshold will be charged a penalty, and resources that perform over the availability threshold will be paid, and
- Establish availability charges and incentive payments using a new availability incentive price of $3.79/kW-month to more equitably calculate monthly resource availability penalties and payments across resources. This includes decreasing capacity exemptions from the availability mechanism and accounting for differences in the number of days a resource is committed as RA capacity.

Management proposes a two-month advisory period for the availability incentive mechanism that will begin with the implementation date. The advisory period will allow time for market participants and the ISO to make any final adjustments needed to accommodate the new mechanism before actual settlements occur.

Connection to commitment cost enhancement - phase two initiative

Management proposes that the availability incentive mechanism assess in each must-offer hour whether use-limited resources are offered into the energy market. To efficiently dispatch use limited resources, Management is developing an opportunity cost methodology in phase three of the commitment cost enhancements initiative that will allow use-limited resources greater control over the start-up and run times using economic bidding. Until the opportunity cost methodology is implemented, the ISO will allow use-limited resources to put in an outage that will exempt the resource from the availability incentive mechanism. Resources may only use this outage to manage use-limitations and not to reflect a mechanical forced outage.

New rules for providing additional capacity during forced outages will increase reliability and decrease market participant costs

Management proposes to enhance forced outage rules to incent maximum participation from resources and reduce transaction costs for all parties.

RA resources are expected to be available during the entire month. The availability incentive mechanism provides incentives for scheduling coordinators to undertake actions to reduce the occurrences of forced outages in a month. However, the ISO will penalize the resource if outages exceed the expected level, should a forced outage occur. To allow scheduling coordinators the ability to manage resource non-availability penalties, the ISO has developed substitution rules that allow capacity from resources to "substitute" for RA capacity that has experienced a forced outage.

Today, there are many rules in place regarding the timing and rules related to substitute capacity. Management proposes to eliminate any rule that is unnecessary from a reliability perspective, which will result in a more streamlined substitution process. This

will provide for a wider range of resources to be quickly substituted for capacity that incurs a forced outage.

New rules for providing capacity during planned outages will serve as a platform for future flexible planned outage rules, increase transparency, and increase incentives for suppliers to notify the ISO about outages sooner

Prior to each month, the ISO performs an evaluation of RA resources included in load serving entities' RA plans and resource planned outage requests to ensure that sufficient resources will be available throughout the month. In the event that a planned outage results in a resource insufficiency, the ISO requires that the resource be replaced with another resource. The current monthly RA evaluation process is complex from the perspectives of both the ISO and market participants. After experience with the ISO's planned outage ("replacement") rules the ISO notes there is significant confusion and dissatisfaction among stakeholders. Some of these issues stem from the timing of when additional capacity is required, the distinction between whether the supplier or the LSE must provide the additional capacity, and which entity ultimately takes on the availability and procurement risk. Furthermore, the integration of flexible RA into the replacement and substitution rules will increase this complexity, potentially to the point that the rules could become unworkable from an internal processing standpoint.

To address these issues, Management proposes to simplify the process by changing the RA process timeline and moving the outage coordination obligation entirely onto the supplier. In addition, Management proposes other changes that will decrease over-procurement and simplify the entire planned outage process. Specifically, among other changes, Management proposes to cap the monthly local RA requirement at the system requirement, and allow suppliers to release planned outage capacity as RA capacity if an outage is canceled or moved.

POSITIONS OF THE PARTIES

Most parties either support or do not oppose the fundamental RA availability mechanism design that assesses availability based on RA resource offers into the ISO market. Two parties (NRG and SCE) object to the assessment of economic bidding for flexible RA resources within the mechanism. PG&E and the ISO Department of Market Monitoring believe that the RA availability mechanism price, which is set at 60 percent of the capacity procurement mechanism (CPM) soft-offer cap price, is too low and should be set at 100 percent of the CPM soft-offer cap price. They argue that this would better incent resources to provide substitute capacity during forced outages. Management believes that the proposed price at 60 percent of the CPM soft-offer cap price strikes the right balance for incenting resources to meet their RA must-offer obligations while not being too high as to inefficiently increase RA contracting prices due to exorbitant risks of forced outage penalties. Furthermore, placing a high penalty price could also discourage resources from providing RA capacity due to the significant financial risk of a high penalty price. The CPM soft offer cap is a cap and therefore set at an extremely high price, which is significantly higher than current RA contract prices.

The availability incentive mechanism is intended to incent routine resource maintenance so that resources do not go on lengthy forced outages above the amount already planned for within the ISO's planning reserve margin. Therefore, Management contends there is no reliability need to set the availability incentive mechanism price so high that it distorts RA bilateral prices and ensures 100% substitution during forced outages.

Several parties oppose or question Management's proposal to exempt combined heat and power, wind, and solar resources from the availability incentive mechanism. The amount a combined heat and power resource can sell as RA from year to year is dependent on the output from the plant. In addition, these resources' contracts typically include penalties for non-performance. Therefore, these resources already have a strong incentive to perform and would be double penalized if not exempted from the proposed availability incentive mechanism.

Management also believes it is appropriate to exempt wind and solar resources from the availability incentive mechanism. Under the ISO's real-time market structure, wind and solar resources under the proposed availability incentive methodology would be assessed using the resources' forecasts as a baseline for comparison. In other words, absent the exemption, these resources could be rewarded for performing less than other resources. Finally, unlike conventional generation, the amount of RA capacity wind and solar resources may sell each year is based on historical output. Therefore, wind and solar have an added incentive to meet or exceed the ISO's must-offer obligation for RA resources.

Management proposes a minor adjustment to the local resource adequacy requirement. This change is necessary to accommodate the proposed planned outage rules. In the monthly and annual RA process, the ISO proposes to cap a load serving entity's local capacity RA requirement at that load serving entity's system RA requirement. This will not impact the current local capacity technical study methodology used to determine the load serving entity local capacity requirements each year. Certain stakeholders including PG&E, Calpine, and WPTF oppose this change as they feel it could negatively impact reliability in local areas during off-peak months.

Currently, during some months of the year, a load serving entity may be required to demonstrate local capacity in excess of its monthly peak demand and reserve margin. This occurs because the local requirement is determined for August and applied to all months in order to assure local reliability. Since the inception of the local capacity technical study, peak load requirements have become increasingly different from month to month. The impact of this is that there is a potential for the monthly local requirement to be greater than the monthly system requirement. Management believes that it is reasonable to require the total commitment of RA capacity up to a load serving entity's peak demand and reserve margin requirements. In months where the peak demand and reserve margin requirement is less than the local requirement, the ISO would still receive local resource adequacy commitment up to the updated forecasted peak demand and reserve margin for that month. Therefore, all committed capacity would be local capacity for these load-serving entities. There is no reliability reason why the ISO

should require additional local capacity beyond the peak demand and reserve margin requirements.

Attached is a detailed stakeholder comment matrix. The Market Surveillance Committee has provided a draft opinion on Management's proposal and will be voting on the opinion at its March 23, 2015 meeting.

CONCLUSION

Management requests that the Board approve the proposed reliability services design changes as described in this memorandum. The proposed changes provide significant reliability and process benefits that will further the ISO's ability to effectively integrate large amounts of renewable resources to meet state policy goals.