California Independent System Operator Corporation

July 7, 2014

The Honorable Kimberly D. Bose
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC 20426

Re: California Independent System Operator Corporation
Docket No. ER14-____-000

Outage Management System Replacement

Dear Secretary Bose:

The California Independent System Operator Corporation ("CAISO") hereby submits for filing the attached amendments to its Fifth Replacement FERC Electric Tariff.[1] The proposed amendments enhance the outage management process, change the timeline for scheduling coordinators to submit planned outages, and revamp the outage options available to scheduling coordinators for resource adequacy resources. The CAISO requests that the Commission issue an order no later than September 8, 2014 accepting the amendments proposed in this filing with an effective date of September 22, 2014.

I. EXECUTIVE SUMMARY

Operating the grid reliably and efficiently is one of the CAISO's core responsibilities. The CAISO needs timely and accurate information regarding the availability or outage of transmission facilities and supply resources to effectively and efficiently run its models, optimize market solutions, and reliably operate the grid.

In September, the CAISO will deploy a new outage management system that will improve all facets of outage scheduling, enhance outage management capabilities and improve the accuracy of data used in outage coordination and downstream systems. As opposed to the current outage management system, the new system will allow the CAISO to process both transmission and generation outages within the same application. . The new outage management system also has functionality that will simplify, standardize, and automate outage processes, and reduce the time that the

[1] The CAISO makes this filing pursuant to section 205 of the Federal Power Act, 16 U.S.C. § 825d (2006) and 18 C.F.R. Part 35.

CAISO Outage Coordination office and real-time operators spend manually processing and managing the increasing volume of outage requests.

The CAISO proposes three separate and distinct categories of tariff modifications to: (1) align the tariff requirements for the submission and content of outage requests with new usability features and technological enhancements of the CAISO's outage management system; (2) change the date by which scheduling coordinators for resources must submit planned outage requests from three to seven days prior to the start date of the outage, consistent with the timeline for requesting planned outages of transmission facilities; and (3) restructure the outage options available to resource adequacy resources to encourage earlier submission of outage requests and better accommodate outages without increasing the potential financial impact on resources. The proposed amendments will streamline the outage process for scheduling coordinators and resource operators, improve the efficiency and effectiveness of CAISO outage coordination and management, and enhance market operations.

Among other modifications that fall under the first category, the CAISO proposes to require scheduling coordinators to identify the high level reason for the transmission or generation outage and the scope of work to be performed by selecting a nature-of-work category from a pre-formed list of categories. These "nature of work" categories will replace narrative descriptions of the reasons for the outage and the work to be performed, which often require interpretation and follow up by the CAISO. The nature of work categories will provide downstream systems with the structured data necessary to ensure appropriate outage processing throughout the settlements lifecycle and will facilitate increased automation of outage requests in the future. The CAISO also proposes changes to its tariff to require that scheduling coordinators for resources submit outage information in a more structured and detailed manner to enhance the CAISO's ability to process and model the outages.

The CAISO proposes to require that transmission outage requests provide more structured and detailed outage modeling information at the facility level and/or breaker switch level. The submission of structured transmission data will replace the CAISO's existing manual process and improve the accuracy of the modeling results. The CAISO will then use these more accurate results in the state estimator, contingency analysis, and market application.

The second category of tariff changes relate to the CAISO's proposal to change the due date for resources to request a planned maintenance outage from three days prior to the start of the outage to no less than eight days prior to the start date. The CAISO will classify any request submitted seven days or less in advance of the start date as a forced outage. This change is consistent with the existing timeline for submitting planned outage requests for transmission facilities. Receiving earlier notice of planned outages will afford the CAISO more time to process and analyze the planned

outages and better incorporate the approved outages into its market operations. The CAISO annually handles more than 82,000 requests for transmission and generation outages, and receives approximately 38 percent of the outage requests that impact the CAISO's system modeling less than four days before the outage would commence. The proposed tariff revisions will encourage scheduling coordinators to submit their outage requests earlier without increasing their financial risk. Knowing about resource unavailability earlier, by even a few days, will increase the accuracy of the CAISO's network models and market optimization.

The last category of changes pertain to the outage options available to resource adequacy ("RA") resources. Stakeholders expressed concern that extending the classification of forced outages from three days to seven days would increase the number of outages that will be classified as forced, and this could financially impact RA resources if they are required to provide either replacement or substitute capacity for resource adequacy capacity subject to an outage request during that extended period. To address this concern, the CAISO restructured the outage options by not requiring alternate capacity for outages requested four to seven days in advance of the outage start date and exempting outages requested during that timeframe from standard capacity product availability charges.

The CAISO will provide three outage options that do not require replacement or substitute capacity and are not subject to the standard capacity product tariff provisions. First, the CAISO proposes a new type of outage: an RA maintenance outage without replacement. This outage option replaces the existing short-notice opportunity outage with respect to outages requested no more than 45 days prior to the resource adequacy month and no less than eight days prior to the outage start date. If a scheduling coordinator for an RA resource requests an outage in that timeframe, the CAISO will treat the approved outage as a planned outage. If a scheduling coordinator requests the outage between four and seven days before the outage start date, the CAISO will treat the outage as forced, but the resource will not be subject to standard capacity product incentive availability charges. To ensure that an outage without alternate capacity will not create a reliability risk to the system, the CAISO may be approve the outage only if it (1) meets the threshold approval criterion applicable to all outage request, *i.e.,* the outage is not likely to have a detrimental effect on the efficient use and reliable operation of the grid or connected facilities, and (2) will not result in insufficient RA capacity during the outage period. Because the CAISO will apply stricter approval criteria to outages requested three days or less prior to the outage start date, scheduling coordinators will have the incentive to request outages for resource adequacy resources sooner.

Second, an off-peak opportunity outage is available for outages that resource owners can undertake, without replacement, entirely during off-peak hours and that meet the threshold reliability criterion. To encourage resource owners to request off peak outages earlier, the CAISO will treat outages requested four to seven days before

the outage start date as forced outages, but will not subject the resource to the standard capacity product tariff provisions. The CAISO will treat an off-peak outage requested at least eight days before the outage start date as a planned outage.

Third, the CAISO proposes to redefine the short-notice opportunity outage. Scheduling coordinators must request short-notice outages no more than seven days prior to the outage start date. Because scheduling coordinators will submit short-notice opportunity outage requests closer to real time and the outages will not be covered by replacement or substitute capacity, the CAISO must apply stricter approval criteria. The CAISO proposes to apply two criteria in addition to the criteria applicable to RA maintenance outages without replacement. The duration of short-notice opportunity outage cannot be more than five days. Further, if a scheduling coordinator requests a short-notice opportunity outage three days or less in advance of the start of the outage, the outage must be necessary to undertake repairs that are needed to maintain system or resource reliability and that require immediate attention to prevent equipment damage or failure. These limitations are necessary to encourage scheduling coordinators to comply with the new timeframe for requesting planned outages and ensure that late outage requests do not jeopardize grid reliability. The additional approval criteria will reduce the volume of last minute requests for "convenience" outages without replacement capacity. Often these requests, if the CAISO can accommodate them, occur too late for the CAISO to include in the market optimization runs, thereby impairing the CAISO's ability to accurately model the outages.

The CAISO's revised outage structure will incent scheduling coordinators to request generation outages further in advance of the outage start date and are more consistent with the Commission-approved outage submittal timelines for transmission facilities. Earlier receipt of planned and forced outage information will enable the CAISO to include more up-to-date and accurate outage information in the market runs used to optimize a market solution.

II. BACKGROUND

A. CAISO Outage Management Overview

The CAISO provides resources open and non-discriminatory access to a long-distance, high-voltage transmission grid, comprised of nearly 26,000 circuit-miles of power lines. Operating the grid reliably and efficiently is one of the CAISO's core responsibilities. Every five minutes the CAISO forecasts electrical demand, accounts for operating reserves, and dispatches the lowest cost power plant unit to meet demand, while ensuring sufficient transmission capacity is available to deliver the power. The CAISO needs timely and accurate information regarding the availability or outage of transmission facilities and supply resources to effectively and efficiently run its models, optimize market solutions, and operate the grid in real time.

CAISO Tariff Section 9.3 requires participating generators and participating transmission owners to submit outage requests to the CAISO for approval and gives authority to CAISO Outage Coordination to approve or deny such requests. The CAISO Outage Coordination office evaluates outage requests for reliability impacts, changes to path ratings, necessary changes to network models, and many other considerations that may affect the timing of an outage. CAISO Outage Coordination and Engineering staffs perform studies, run models, and forecast the market impact of the requested outages in conjunction with the then-existing schedule of planned outages for the specified period before it approves or denies the outage request.

The CAISO Outage Coordination office coordinates the following types of scheduled maintenance:

- All outages that affect CAISO balancing authority area interconnections, which must be coordinated with adjacent balancing authority areas;
- All work on participating transmission owner facilities that form the CAISO controlled grid, including associated control or protective equipment;
- All reportable outages or partial curtailments of participating generators with a rated capacity greater than 1 MW;
- All reportable outages of reliability must-run generating units;
- Energy management system work that disables any portion of CAISO grid monitoring, control or protective equipment including communication circuits;
- Energy management system work that affects automatic generation control or remote intelligent gateway equipment or communication circuits; and
- Ancillary service certification testing and compliance testing.

In 2013, the CAISO handled more than 82,000 requests for transmission and generation outages. That compares to 42,000 outage requests in 2004. The CAISO receives approximately 38 percent of the outage requests that impact the CAISO's system modeling less than four days before the outage would commence.

B. Need For A New Outage Management System

Several years ago, the CAISO initiated a project to design a new, more effective outage management system that would address outage application functionality in a modular approach. This project was motivated by the CAISO's desire to replace its scheduling and logging application (frequently referred to as "SLIC") and to respond to the dramatic increase in the number of generation and transmission outage transactions

the CAISO must handle due to new market and regulatory requirements.

The CAISO uses the SLIC application to administer its responsibility to coordinate and log transmission and generation outages. Since deploying SLIC in 2001, the CAISO has experienced a dramatic increase in the number of generation and transmission outage requests. The CAISO's outage management staff and real time operators, as well as market participants using the SLIC application, have raised numerous concerns regarding the volume of the outage requests and the quality of the information they contain. For example, they have identified the following issues: (1) the high-degree of interpretation required to transform pages of free-form narrative describing an outage into actionable data; (2) the lack of mapping due to differences in equipment naming standards and equipment relationships between the CAISO and market participants; (3) the inability to send automated messages to various parties; and (4) the need for a user-friendly interface to quickly manage and submit forced outage and de-rate information. SLIC lacks the automation and usability features necessary for effective and efficient outage processing, which has required the CAISO to rely on manual processes to manage and enter outage data.

C. Features of New Outage Management System

The new outage management system will improve outage management quality, productivity, and data accuracy for use in outage coordination and downstream systems. The capability of the application to manage detailed outage data will improve the accuracy of the CAISO's reliability studies and better enable the CAISO to meet the requirements of the North American Electric Reliability Corporation ("NERC") Outage Standard TOP-003-1 – *Planned Outage Coordination*.

The new outage management system includes usability features that will improve all facets of outage scheduling – from the scheduling coordinator's initial outage request, through the various review and outage processing steps, and during execution of the outage schedule that the CAISO's real time operators monitor. For example, the system will allow participating transmission owners to submit the boundaries of outages as clearance points using structured data, instead of free-form narrative. Receiving clearance points as structured data dramatically reduces the risk of incorrect interpretation, and provides assurance to participants that the exact clearance points they submit are being used in the CAISO markets. Additionally, the system will allow the CAISO to process both transmission and generation outages within the same application, as opposed to the current practice of processing transmission and resource outages in separate systems.

The new outage management system will simplify, standardize, and automate outage processes. The proposed changes will improve the CAISO's efficiency in managing generation and transmission outages and better position the CAISO to handle the growing number of generation and transmission outages that it must manage

and accurately reflect in the full network model. Currently, real-time operators at the CAISO spend a considerable amount of time manually processing and managing outage requests through phone communications. Some of these outage requests are routine and minor, but the current outage management system does not have the capability to distinguish between routine and critical outage requests. The new outage management system will support a streamlined, electronic outage process for non-critical outages while still providing full visibility of all equipment outages. This will reduce unnecessary phone communications and allow the CAISO to focus its full attention on more critical issues and responsibilities.

The new system also streamlines the data flow between the CAISO and market participants and improves data quality. New data transfers, data validations and notifications will improve data communication beginning with the outage planning process and continuing through the settlement cycle. Automation will allow the CAISO to send messages in a more timely manner and greatly increase the quality and consistency of the information the CAISO provides in its communications with market participants.

The new OMS program will allow the CAISO to automate certain business processes and not have to continue relying on manual processes. For example, the new system will provide the ability for scheduling coordinators to use structured data, like sequential drop-down screens and pre-populated templates, to submit detailed reasons for outage requests and ancillary service limitations for resources. Currently, most ancillary service limitations are communicated to the CAISO by narrative descriptions within the outage request. The use of structured data will minimize manual intervention and ensure that the CAISO appropriately considers ancillary service limitations in the day-ahead and real-time markets. Reducing manual workarounds will also increase data quality in downstream systems and models.

D. Stakeholder Process

The CAISO discussed replacement of the outage management system and received input on the new system from stakeholders through the Outage Management System Customer Partnership Group, the Voice of the Customer program, and the stakeholder initiative process.

On June 24, 2013, the CAISO held the initial teleconference with the Outage Management System Customer Partnership Group to discuss the status of the OMS project and present the potential policy changes that might be necessary for project implementation. The CAISO formed this group to discuss technical issues and implementation plans with market participants regarding the design of the outage management system. The CAISO discussed technical and implementation matters with the group on conference calls throughout the stakeholder initiative.

The CAISO also engaged with stakeholders through a new outreach program

called the Voice of the Customer, which was created to get input from customers, ascertain how they use CAISO systems, and collect suggested changes from those users. The first Voice of the Customer effort was a focus group to consider how to make OMS a more useful and effective application. The Voice of the Customer sessions provided feedback regarding usability needs early enough in the OMS project development phase for the CAISO to include them as requirements in the process.

In addition, the CAISO conducted a stakeholder process to develop the outage management system proposal reflected in this filing. The stakeholder process included a number of stakeholder conference calls, opportunities for written stakeholder comments, presentations and whitepapers issued by the CAISO, and revised proposals based on stakeholder comments and the CAISO's own review.

On August 5, 2013, the CAISO issued a straw proposal. The CAISO presented the proposal and discussed it with stakeholders during a web conference on August 12, 2013. Four stakeholders submitted comments on the straw proposal.[2]

Based on the input from stakeholders, the CAISO issued a revised straw proposal on October 18, 2013 and conducted a conference call on that proposal on October 31, 2013. Following the call, stakeholders submitted comments on the revised straw proposal.[3]

On December 3, 2013, the CAISO issued the draft final proposal and held a web conference on December 17, 2013 to discuss the revisions proposed in that whitepaper. In response to stakeholder questions and discussion during the web conference, the CAISO issued an addendum to the draft final proposal on December 27, 2013 to clarify the CAISO's proposal on the outage replacement requirement for resource adequacy resources and describe in greater detail the different types of outages that resource adequacy resources could take, with and without a replacement obligation.[4] Four stakeholders submitted comments on the draft final proposal and addendum.[5]

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[2] Comments on the straw proposal were submitted by NRG Energy, Inc. ("NRG"), Pacific Gas and Electric Company ("PG&E"), Southern California Edison Company ("SCE"), and San Diego Gas & Electric Company ("SDG&E").

[3] Comments on the revised straw proposal were submitted by PG&E, SCE, SDG&E, and the Cities of Anaheim, Azusa, Banning, Colton, Pasadena and Riverside ("Six Cities").

[4] These two whitepapers are provided in this filing for ease of reference. The whitepaper entitled Draft Final Proposal – Outage Management System Replacement (December 3, 2013) is provided as Attachment C to this filing. The second whitepaper entitled Outage Management System Replacement – Addendum to Draft Final Proposal is provided as Attachment D to this filing.

[5] Comments on the draft final proposal were submitted by PG&E, SCE, SDG&E, and Wellhead Electric.

Stakeholders generally supported the goal of the OMS project. Some stakeholders had concerns with specific elements of the proposal as it was developed in the stakeholder process. Those concerns are discussed below.

On February 6, 2014, CAISO management presented the outage management system replacement proposal to its Board. The Board approved the filing of a tariff amendment to implement the proposal.[6]

The stakeholder process included developing the tariff revisions contained in this filing. On March 13, 2014, the CAISO posted draft tariff language. The CAISO received comments from four stakeholders on March 20, 2014 and conducted a conference call to discuss the tariff language and comments with stakeholders on March 26, 2014.[7]

Based on the input from stakeholders, the CAISO posted revised draft tariff language on April 4, 2014. Four stakeholders submitted comments.[8] The CAISO discussed the revisions to the tariff language and the comments on a web conference on April 16, 2014.

III. OUTAGE MANAGEMENT SYSTEM REPLACEMENT

A. Nature-Of-Work Categories

Under current CAISO practices, scheduling coordinators submit requests for outages at transmission facilities and resources using multiple outage request templates, depending on the reason for the outage request.

The new OMS system will only require the use of one outage request template, and allow the user to choose a “nature of work” category for each outage request to describe the type of work to be performed. This will eliminate the need for multiple outage request templates. The new OMS system will also simplify the number of choices required by using pre-defined “nature of work” categories, while giving scheduling coordinators the option to additionally include the outage cause codes used by NERC, frequently referred to as “GADS” cause codes, to facilitate the generator owner’s compliance with NERC reporting requirements.

Proposed Section 9.3.8.1 requires scheduling coordinators to include the nature of work to be performed in outage requests for transmission facilities and resources. As

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6 The materials presented to the CAISO Board regarding the OMS replacement stakeholder initiative are provided as Attachment E to this filing.

7 Comments on the draft tariff language were submitted by NRG, PG&E, SCE, and SDG&E.

8 Comments on the revised draft tariff language were submitted by PG&E, SCE, SDG&E, and Six Cities.

part of the initial information required to create the request, the scheduling coordinator must identify the high level reason for the outage and the scope of work to be performed by selecting a nature-of-work category from a pre-formed list of categories. These "nature of work" reasons will provide downstream systems with the structured data necessary to ensure appropriate outage processing throughout the settlements lifecycle, and will facilitate increased automation of outage requests in the future.

For transmission facilities, nature-of-work categories will include, for example: out of service, energized work, relay work, special setup, test program, equipment de-rate, equipment abnormal, and path limitation. Based on the nature of work selected, the outage management system will provide hierarchal drop-down screens to guide the user through outage creation, and will populate fields or offer additional screens based on the previous selections. Each piece of equipment in the network model will be mapped to the outage management system to enable the user to identify the location and specific equipment involved in the outage activities.

For resources, the nature-of-work categories will include, for example: transmission induced, plant maintenance, ambient due to temperature, ambient not due to temperature, environmental restrictions, unit testing, and metering or telemetry. In many instances, a single nature-of-work category will replace multiple codes used on existing outage cards. For example, multiple codes for the "normal card"[9] will be eliminated and replaced with nature-of-work types, such as transitional limitation, unit cycling, unit supporting startup, and transmission induced. Scheduling coordinators can enter changes to a resource's minimum capacity and ramp rate through the resource outage card template, rather than through a separate change card. Once a scheduling coordinator selects a nature-of-work category, the outage management system will again follow a hierarchal drop-down screen approach, beginning at the market resource or plant level and progressing to a de-aggregated level for an individual unit or specific equipment.

The nature-of-work categories will streamline outage submission and processing time, capture relevant data for outage coordination, and increase consistency in the level of information reported. Using a limited number of nature-of-work categories will make it more intuitive and faster for a user to define the purpose of the outage compared to the current practice of selecting from a multitude of cause codes. Also, it will be easier for the CAISO to identify the reason for the outage in processing the request and avoid interpretation errors.

For these reasons, the proposed modification in Section 9.3.8.1 to require the use of the nature-of-work categories to report outages is just and reasonable.

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[9] The "normal card" is the outage submission card used by generating units to inform the CAISO when they cannot respond to a dispatch due to designed operations, rather than because of a forced outage or de-rate.

B. De-Aggregation Of Resources For Outage Reporting

Under current practices, the operator or scheduling coordinator of a resource submits outage requests to the CAISO at the aggregated project or plant level, without providing more granular information about the individual unit or units that will be subject to the outage. In addition, they report availability as a single value, which makes it difficult for the CAISO to identify the individual unit or units reducing overall availability at the aggregated project or plant level. This issue is magnified when outages at the unit level overlap.

Proposed Section 9.3.3(4) will require that each resource outage request include the required information for the resource at the aggregate project or plant level, as well as at the individual unit level if the outage will cause a unit de-rate of 50 MW or greater. The outage management system will provide a pre-populated template of the structure of each project/plant that will allow the operator or scheduling coordinator to select an individual unit and enter de-aggregated data for that unit.

Proposed Section 9.3.3(4) will require modeling with aggregated plant/project data, in combination with more detailed data for individual resources. This modification will improve the accuracy of the CAISO's real-time contingency analysis and state estimator solutions. Further, it will enable the CAISO to provide more detailed outage modeling data to WECC, which will better support WECC's west-wide model project. The proposed modification is just and reasonable, and should be adopted.

C. Structured And Detailed Modeling Information For Transmission Outages

Currently, the participating transmission owner submits an outage request to explain the outage, identify clearance points, and describe the equipment on which the maintenance work will be performed. There is little uniformity in either the content or format of the information participating transmission owners present. Some outage requests are as long as twenty to thirty pages of narrative, which makes it difficult for the CAISO to identify the crucial information. Other outage requests lack sufficient information for the CAISO to fully understand the outage. The CAISO must frequently interpret the information contained in an outage request, and must often call the participating transmission owner to obtain clarifying or additional information in order to effectively evaluate the scope and impacts of the outage. This is time consuming and inefficient.

The submission of transmission outage switching information is another situation requiring manual intervention. The participating transmission owner submits transmission outage switching detail in free-form narrative. The CAISO then must manually convert the information from narrative writing into applicable database fields and enter the outage information into other CAISO systems, including modeling the

outage for use in day-ahead reliability studies, the state estimator, real time contingency analysis, and market applications. In addition, because the current system only contains components to the station level, it is cumbersome for the CAISO to review past outages on specific components such as transformer banks or buses for research and reporting purposes.

Proposed Section 9.3.3(3) requires that transmission outage requests provide structured and detailed outage modeling information at the facility level and/or breaker switch level. When creating an outage, the participating transmission owner will use the outage management system to select either a pre-modeled facility or individual isolation points associated with the outage. For outages that are not pre-modeled, or outages with other than normal clearance points, the participating transmission owner will model the outage at the appropriate level. The CAISO will present the modeled points to the participating transmission owner for validation, or modification if required. This will ensure that the outage is modeled accurately based on participating transmission owner input and reduce the need for manual interpretation.

To further promote network model accuracy, each outage request will only have a single set of outage augmentation (or configuration), which is associated with the start and end times of the outage. Under proposed Section 9.3.3(3), if the work requires switches to change position during the job, the participating transmission owner will be required to submit separate outages for each configuration.

The requirement in proposed Section 9.3.3(3) that the participating transmission owner of transmission facilities submit structured transmission data will substantially enhance the coordination and modeling of transmission maintenance outages. This requirement will allow the participating transmission owner to provide the actual clearance points for a proposed outage, thereby minimizing the need for the CAISO to interpret narrative-only outage requests. This will improve the accuracy of the modeling results. The structured modeling format will also replace the CAISO's existing manual process and allow the participating transmission owner to enter outage information that can be integrated with downstream systems for use in the state estimator, contingency analysis, and market application results. Accordingly, the proposed modification is just and reasonable, and should be adopted.

D. Ancillary Services Availability Reporting

Current functionality in SLIC allows the scheduling coordinator to enter an outage for a resource and, if applicable, indicate when the resource will be unavailable to supply regulation due to the outage. This functionality, however, does not allow the scheduling coordinator to differentiate between regulation up and regulation down, or to indicate limitations on the resource's availability to provide other ancillary services. The scheduling coordinator uses free-form text to communicate this additional level of information, and a CAISO operator must then manually input the information into the

market systems.

The new outage management system will provide a template for scheduling coordinators to report in a structured format any limitation on the resource's availability to provide each type of ancillary service. For specified nature-of-work types that commonly impact a resource's ability to provide one or more ancillary services, the template will automatically become accessible and contain additional validation rules.

Proposed Section 9.3.3(4) leverages this enhanced functionality by requiring that resource outage requests include any limitations on the resource's ability to provide each type of ancillary services for which it is certified. The scheduling coordinator will input the information required by the CAISO, and the data will be utilized by the market systems.

Providing resources with the ability to report ancillary service limitations as structured data will increase the accuracy of information about resource availability and streamline the outage management process for resource scheduling coordinators and the CAISO. Therefore, the Commission should approve proposed Section 9.3.3(4).

E. Transmission Maintenance Outage Final Approval

Existing Section 9.3.9 requires that the operator for transmission facilities request final approval from the CAISO to begin and end transmission approved maintenance outages. In practice, this results in frequent phone calls throughout the day to the CAISO's real time transmission dispatcher to process numerous requests for final approval of outages before they begin, including outages with low risk to reliability and low impact on the grid. As the number of outage requests and the associated workload have increased in recent years, so has the amount of time CAISO dispatchers spend manually processing and managing outages.

Under the new outage management system, the CAISO proposes to streamline the real-time outage approval process. Under proposed Section 9.3.9.1, the CAISO will establish criteria to determine whether an approved maintenance outage for transmission facilities will require final approval by the CAISO on the start date of the outage before work commences, as is the current practice, or whether the outage can be initiated and completed by the operator without final approval.

A majority of the outages processed for final approval by real-time operators have already been reviewed by outage coordinators and engineers and do not require additional analysis. Assuming that these planned outages proceed on schedule, many will not require a final approval by the CAISO in real time prior to commencing work.

If final approval is not required, the operator may commence the outage as approved and scheduled on the start date and conclude the outage as approved and

scheduled on the end date, and report those actions electronically through the outage management system. This means that in real time, the CAISO will not issue an additional approval unless there is a change to the outage. If the outage does not commence or conclude as scheduled, the operator must request approval to change the approved maintenance outage. The CAISO may manually require final approval for a requested outage as needed based on system conditions at the time.

The CAISO may determine that final approval is required based on the expected impact the outage will have on system conditions and the risk it will present to system reliability. In addition, the Business Practice Manual will identify the outage types that will continue to require final approval. For example, final approval will be necessary for out-of-service equipment that reduces a path rating, outages that require system or local generation resources to be available or online to mitigate flow limits, and maintenance work that impacts protection relays.

If final approval is required, the operator for the facilities must comply with the existing requirements in Section 9.3.9 and contact the CAISO to receive approval to begin the outage and then to end the outage. The operator may request final approval and receive such approval electronically through the outage management system.

The CAISO expects that introduction of final approval required and final approval not required criteria, as well as electronic processing of outages, will greatly reduce the time spent by the control rooms of the participating transmission owners and the CAISO to process routine outages, which will allow operators to regain the time to devote to other reliability related tasks. The modification in Section 9.3.9 to allow qualifying outages to proceed without final approval will streamline the outage process for participating transmission owners and the CAISO. The Commission should approve the modification because it will benefit both operators and the CAISO.

F. Elimination Of Changes To Outage Classification

The nature-of-work outage categories will replace the use of what is commonly referred to as the “make planned” functionality in the SLIC outage scheduling system. Under existing Section 9.3.3(iii), the scheduling coordinator for a generating unit may request an outage classification be changed from forced to planned. The CAISO typically approves a change to an outage classification only in limited circumstances; for example, when a resource must immediately go out of service due to conditions outside of its control, such as a transmission outage on the path that delivers the resource’s energy to the system.

The CAISO has designed the nature-of-work categories in the new outage management system to intake sufficient information at the time of the request, thereby ensuring that the outage will be appropriately classified. In the situation described above, the scheduling coordinator would select the “transmission induced” nature-of-

work category, and downstream systems would then use this information to appropriately process the outage as planned through the settlements lifecycle.

For resource adequacy resources, an outage submitted in the forced timeframe will be classified as forced in the outage management system, but information on the outage card will allow the system to differentiate between a resource adequacy forced outage and a resource adequacy forced outage not subject to the standard capacity product availability provisions (discussed below) and then send that information to downstream CAISO systems for appropriate processing.

These enhancements and the introduction of the nature-of-work outage categories obviate the need for the "make planned" functionality in SLIC. The new OMS system will allow scheduling coordinators to enter sufficient information in their outage requests for the system to automatically and accurately classify each outage as planned or forced. Resource adequacy resources in particular will benefit from these changes because the system will be able to classify the outage and identify for downstream systems and settlements whether the standard capacity product availability provisions apply. The CAISO accordingly proposes to delete Section 9.3.3(iii) because the CAISO no longer needs the "make planned" functionality.

G. Elimination Of Automatic Forced Outage Report

Tariff Section 9.3.10.6 requires an operator of a generating unit to provide a written report about each forced outage that reduces the resource's maximum output capability below a specified amount for at least 15 minutes. The operator must submit the report to the CAISO within two business days of the start of the outage. The report must explain the outage, describe the equipment failure or other cause of the outage, discuss remedial actions taken, and provide the estimated return time. A similar reporting requirement exists in Section 9.3.10.6.1 for the scheduling coordinator of a non-resource-specific system resource that provides resource adequacy capacity.

The CAISO proposes to modify Sections 9.3.10.6 and 9.3.10.6.1 to eliminate the requirements to submit the forced outage report. The CAISO also proposes to delete Section 37.4.3.1 that defines submission of the reports as expected conduct and Section 37.4.3.2 that imposes sanctions on operators for failing to submit the reports.

In response to questions raised through the CAISO's Voice of the Customer phase of the OMS stakeholder process, the CAISO reviewed the reporting requirements and determined that the CAISO no longer needs to receive these automatic reports. If the CAISO seeks to review a particular outage, other provisions in the tariff, namely Sections 9.3.10.6 and 9.3.10.6.1, allow the CAISO to obtain necessary information about that outage from the operator or scheduling coordinator of the resource.

Eliminating an automatic narrative report for every forced outage that measurably

reduces the maximum output capability of a generating unit or non-resource-specific system resource will reduce the workload of resource owners and scheduling coordinators, and streamline the outage management process, without impairing the CAISO's ability to review forced outages when needed. Without an underlying reporting requirement, Sections 37.4.3.1 and 37.4.3.2 are no longer necessary, and the CAISO proposes to delete them.

IV. RESOURCE OUTAGES AND TIMELINES

In conjunction with deploying the new OMS system, the CAISO proposes to change the timelines for resources to request outages and for outages to be classified as planned or forced. The proposal extends the advance notice requirement for resources to request forced outages from three days prior to the start of the outage to seven days prior to the start date. The CAISO will classify outages requested eight days or more prior to the start date as planned. The CAISO will classify outages requested seven days or less prior to the start date as forced.

The CAISO also proposes to change the outage structure to provide resource adequacy resources more outage options and limit application of non-availability charges to forced outages during the extended forced outage period under the standard capacity product provisions of the CAISO tariff.

Stakeholders did not oppose the changed timelines for submitting maintenance outage and forced outage requests. However, they expressed concerns regarding the potential financial impact an extension of the forced outage period from three to seven days prior to the start of the outage could have on resource adequacy resources. Because of the interrelationship between the commitment of resource adequacy resources to be operationally available to the CAISO and the CAISO's outage management provisions and availability incentive mechanism, stakeholders argued that a longer forced outage period will result in more forced outages, thereby placing resource adequacy resources at risk of incurring increased non-availability charges under the CAISO's standard capacity product provisions if they do not provide substitute capacity. The CAISO responded to these concerns by restructuring the outage options for resource adequacy resources and limiting the application of the replacement requirement for maintenance outages and the substitution requirement for forced outages.

A. Background

1. Resource Adequacy Program

The CAISO collaborates with the California Public Utilities Commission ("CPUC") and other local regulatory authorities to develop procurement requirements

that ensure the capacity procured by their respective load serving entities is sufficient and adequate to meet the CAISO's operational needs and maintain grid reliability.

The CPUC adopted the resource adequacy program for its jurisdictional load serving entities to meet two fundamental goals: (1) to provide sufficient resource adequacy capacity to the CAISO when and where needed to support the safe and reliable operation of the CAISO controlled grid in real time; and (2) to provide appropriate incentives for the siting and construction of new resources needed for reliability in the future. The CPUC resource adequacy program requires CPUC-jurisdictional load serving entities to demonstrate, on a one-year forward and monthly basis, that they have procured sufficient capacity to meet the resource adequacy requirement set by CPUC, which consists of a system component calculated based on a load serving entity's system peak load plus a 15 percent planning reserve margin, and a local component, based on the CAISO's local capacity technical analysis.[10]

2. CAISO Resource Adequacy Provisions

The CAISO tariff requires scheduling coordinators for all load serving entities to demonstrate that they have met their applicable resource adequacy requirements. If a local regulatory authority has not adopted explicit resource adequacy provisions, the tariff includes default provisions applicable to scheduling coordinators of those load serving entities.[11]

CAISO Tariff Sections 40.2.2.4 and 40.2.3.4 require scheduling coordinators for load serving entities to submit resource adequacy plans to the CAISO in the year-ahead and month-ahead timeframes to demonstrate that their resource adequacy requirements will be met for that reporting period. Section 40.4.7.1 requires scheduling coordinators for the resources that will provide resource adequacy capacity to submit year-ahead and monthly supply plans to the CAISO that verify their commitment to provide the listed resource adequacy capacity. Under Sections 40.4.7.3 and 40.7, the CAISO validates the resource adequacy plans and supply plans to ensure that the resource adequacy requirements are being met.

Scheduling coordinators for the resources designated as resource adequacy resources have a must-offer obligation and must make their resource adequacy capacity available to the CAISO in accordance with the requirements of Section 40.5 or Section 40.6, as applicable. Once a resource is committed to provide resource adequacy capacity, the CAISO expects that the full amount of that capacity will be available to the CAISO, unless the resource is on a forced equipment outage or de-rate, which diminishes its ability to provide the full amount of its capacity obligation.

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10 For information about the RA program, see http://www.cpuc.ca.gov/PUC/energy/Procurement/RA

11 Section 40 contains the CAISO's resource adequacy tariff provisions.

3. Current Outage Options

Under existing Section 9.3.1.3.3, after suppliers have submitted the monthly supply plans for resource adequacy capacity, the scheduling coordinator for a resource adequacy resource may request a maintenance outage during that month as an RA maintenance outage request with replacement, an off-peak opportunity RA maintenance outage, or a short-notice opportunity RA maintenance outage.

A scheduling coordinator for a resource must request an RA maintenance outage with replacement after it has submitted the monthly supply plan and at least three business days prior to the start of the outage. The request must provide replacement capacity in an amount no less than the resource adequacy capacity designated for the resource for the duration of the scheduled outage. To approve such an outage request, the CAISO Outage Coordination must find that the outage is not likely to have a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid or the facilities of a connected entity.

A scheduling coordinator may request an off-peak opportunity RA maintenance outage ten days prior to the start of month until three business days prior to the end of the month, and at least three business days prior to start of the outage. The outage must begin during off-peak hours, and the resource owner must complete the outage prior to the start of on-peak hours on the next weekday that is not a holiday. There is no requirement for the scheduling coordinator to provide replacement capacity for the unavailable capacity for the duration of the outage.

A scheduling coordinator may request a short-notice opportunity outage under Section 9.3.1.3.3.3 by (1) submitting the request after it has submitted the monthly supply plan (45 days prior to the resource adequacy month) and before the end of the resource adequacy month in which the outage will occur, and (2) providing CAISO Outage Coordination with adequate time to analyze the request before the outage begins. A short-notice opportunity RA maintenance outage request is not otherwise timely under the provisions of Section 9, and the scheduling coordinator is not required to provide replacement capacity for the capacity to be on outage. To approve the outage request, CAISO Outage Coordination must find that system conditions and the overall outage schedule provide an opportunity to de-rate or take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid. To the extent the resource owner does not complete a short-notice opportunity RA maintenance outage during the originally approved outage schedule, the CAISO will treat the portion of the outage that continues from the approved completion time until the time the outage is actually completed as a forced outage.

4. The Replacement Rule – Planned Outages

CAISO Tariff Section 9.3.1.3 establishes a replacement rule applicable to

planned outages at resource adequacy resources.

As the rule applies to load, scheduling coordinators of load serving entities must replace resource adequacy capacity listed in their monthly resource adequacy plans, to the extent required by the CAISO because the capacity is scheduled to be on an approved maintenance outage during the month and will not be operationally available.

As the rule applies to resource adequacy resources, scheduling coordinators of resources providing resource adequacy capacity may include replacement capacity with a request for a maintenance outage during the month the resources are listed to provide resource adequacy service. The offer of equivalent replacement capacity increases the likelihood that the CAISO can accommodate the outage request in the overall system outage plan. Without replacement capacity, the CAISO may approve the outage during off-peak hours or for a time when it will not pose a risk to grid reliability.

5. The Standard Capacity Product – Forced Outages

The standard capacity product is the CAISO's incentive mechanism for resource adequacy resources to make their capacity available to CAISO markets. Under the standard capacity product provisions in Tariff Section 40.9, the CAISO measures the availability of resource adequacy capacity during a pre-defined five-hour period on weekdays, when the coincident peak-load hour typically occurs each day during the month. The CAISO calculates the availability of each resource based on the extent to which the full amount of its resource adequacy capacity is available during the assessment hours and is not on a forced equipment outage or de-rate. Based on the availability calculation for each resource, the CAISO assesses non-availability charges to discourage poor operating performance and makes availability incentive payments to reward high availability.

Under Section 40.9.4.2.1, a scheduling coordinator for a resource adequacy resource may provide substitute capacity for the resource adequacy capacity that is on a forced outage or de-rate in order to mitigate the impact of the forced outage or de-rate on the resource's availability calculation.

As discussed below, the CAISO is proposing changes to the outage options in response to stakeholder concerns that expanding the forced outage timeframe from three days to seven days may affect the availability calculation and assessment of non-availability charges to resource adequacy resources under the CAISO's availability incentive mechanism, *i.e.,* the standard capacity product.

B. Timelines For Outage Requests And Classification Of Outages As Planned Or Forced

Under existing Section 9.3.6.3.1, the scheduling coordinator for a resource may schedule a maintenance outage with 72-hours advance notice. Under Section 9.3.3, in

combination with Section 9.3.6.3.1, if the scheduling coordinator provides notice less than 72-hours in advance of the start of the outage, the CAISO will classify the outage as forced.

The CAISO proposes to change this requirement to seven days, which will correspondingly change the time periods for classifying outages as either planned or forced. This will enhance the CAISO's ability to improve its network model accuracy by providing sufficient time for the CAISO to process and analyze outages.

Under proposed Section 9.3.6.3.1(a), the scheduling coordinator for a participating generator, participating intermittent resource, generating unit, system unit, physical scheduling plant, proxy demand resource, reliability demand response resource, non-generation resource, participating load, or other resource subject to the outage management requirements of Section 9, must submit a request for a maintenance outage or a request to change an approved maintenance outage to the CAISO Outage Coordination office no less than eight days prior to the start date for the outage, subject to the provisions of Sections 9.3.6.4.1, 9.3.6.8, and 9.3.6.9. The timeline for submitting the required advance notice excludes the day the request is submitted and the day the outage is scheduled to commence.

Under proposed Section 9.3.6.3.1(c), the CAISO will classify a request for a maintenance outage at a resource that is submitted seven days or less prior to the start date for the outage as a forced outage. In accordance with proposed Section 9.3.6.3.1(b), the advance reporting requirement does not preclude a scheduling coordinator from submitting a request for a forced outage under Section 9.3.10.3 where immediate corrective action is needed because equipment has failed or is in danger of imminent failure, or the outage is urgently needed to protect personnel. Proposed Section 9.3.6.3.1(d) provides that a request to change an approved maintenance outage submitted seven days or less prior to the start date for the outage will remain classified as a maintenance outage if the CAISO approves it. If the CAISO does not approve the request, the scheduling coordinator for the resource may submit a request for a new forced outage for the schedule change.

These revised timelines align with the existing Commission-approved notice requirements and classification of outages for transmission facilities. On June 6, 2012, the CAISO filed tariff modifications to set an earlier deadline for resource operators and scheduling coordinators to submit requests for planned outages on transmission facilities. The Commission approved the proposed tariff amendments by letter order dated July 25, 2012.[12] As a result of that filing and order, the deadline for submitting transmission maintenance outage requests changed from three days to at least seven

[12] *Cal. Indep. Sys. Operator Corp.*, Docket Nos. ER12-1972-000 and ER12-1972-001 (July 25, 2012).

days prior to the start date of the outage.[13] Requests for transmission outages submitted seven days or less prior to the start date, or any unscheduled outages that commence in that timeframe, are classified as forced outages.

Applying the same outage reporting requirements for transmission facilities and resources will ensure consistency and result in better alignment and coordination of all outages. To the extent the CAISO learns of planned generation limitations at the same time as transmission system outages, the CAISO's modeling and study results will improve, and the CAISO will have more time and better information to identify and address potential areas of reliability risk to the system.

In addition, requiring scheduling coordinators to submit planned outage requests eight days or more in advance of the outage start date will enable the CAISO to include more up-to-date and accurate information about outages in the market runs, which begin three days prior to the operating day and determine an optimal market solution. The CAISO's outage request workload has been steadily increasing. Currently, the CAISO handles more than 82,000 requests annually for transmission and generation outages. The CAISO receives approximately 38 percent of the outage requests that impact the CAISO's system modeling less than four days before the start date for the outage. That translates to over 31,000 outage requests that must be reviewed as quickly as possible within a very short time. The sheer volume and last minute timing of these requests hampers the CAISO's ability to model the outages accurately. To the extent the CAISO receives the outage requests too late to be included in the market runs, the modeling results may omit major resource components that will not be available during the horizon of the analysis. This may lead to a need for price corrections.

Further, the sheer volume of short-notice maintenance outages with a market impact leaves little time for the CAISO to analyze outages, thereby hampering the CAISO's ability to efficiently and effectively coordinate outages. To the extent the CAISO must process outage requests closer to real time, there will likely be fewer and more costly resources available to the CAISO to respond to unanticipated outages. This will result in higher prices and the dispatch of less efficient resources.

Earlier receipt of planned and forced outage information will also lead to a better coordinated outage schedule for the system and facilitate the CAISO's compliance with NERC and WECC requirements. Stakeholders did not object to the seven-day notice period as being unreasonable.

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[13] In response to stakeholder comments, the CAISO modified the tariff provisions to use a consistent nomenclature to refer to planned outages as being requested no less than eight days prior to the start date for the outage and forced outages as being requested seven days or less prior to the start date of the outage.

C. Outage Options for Resource Adequacy Resources

The CAISO's initial proposal in the OMS stakeholder initiative recommended changing the planned and forced outage time periods, but did not contemplate changing the outage options available to resource adequacy resources. During the initiative, however, stakeholders expressed concern that extending the forced outage timeframe from three days to seven days would cover more outage requests, thereby requiring resource adequacy resources to procure additional substitution capacity for outages requested during that period. Other stakeholder comments questioned how the substitution requirements and replacement rule apply to the new timeframes for planned and forced outages, and expressed concerns about the financial consequences those provisions would have.

In response to stakeholder concerns, the CAISO significantly revised the outage structure to reduce the financial impact that changing the outage submittal timeline would have on resource adequacy resources due to the replacement rule and substitution process. The Outage Options Comparison chart in Table 1 below compares the outage structure currently in effect with the changes proposed in this filing.

1. Proposed Outage Options for Resource Adequacy Resources

The CAISO proposes the following outage options for resource adequacy resources: RA maintenance outage with replacement; RA maintenance outage without replacement; off-peak opportunity RA maintenance outage; and short-notice opportunity RA outage.

RA Maintenance Outage With Replacement

Revised Section 9.3.1.3.3.1 provides that, after submission of the initial RA showings at 45 days in advance of the RA month and no less than eight days prior to the start of the outage, a scheduling coordinator for a resource adequacy resource may request a maintenance outage and provide replacement capacity. If the CAISO determines that system conditions and the overall outage schedule allow the resource to be out of service without having a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid, the CAISO will either approve the outage request as a planned outage (if the request occurs at least seven calendar days before the outage start date) or as a forced outage not subject to standard capacity product non-availability charges and availability incentive payments (if the request occurs four-to-seven calendar days in advance of the outage).

If the CAISO denies the request, the scheduling coordinator for the resource adequacy resource may request a different schedule for an RA maintenance outage with replacement or may request that the CAISO accommodate the outage without replacement capacity at another time.

OUTAGE OPTIONS COMPARISON

Outage Type	Current Provisions			Proposed Provisions		
	Submittal Timeline	**Approval Criteria**	**Replacement or Substitution Requirement**	**Submittal Timeline**	**Approval Criteria**	**Replacement or Substitution (SCP) Requirement**
RA Maintenance Outage With Replacement	45 days prior to RA month to 3 business days prior to outage start date	Threshold reliability criterion**	Replacement capacity no less than MW of capacity on outage	No more than 45 days prior to RA month, no less than 8 days prior to outage start date	No change from current	Replacement capacity required, same as current. Planned outage.
				4 to 7 days prior to outage start date	No change from current provisions	Replacement capacity required; forced outage not subject to SCP
RA Maintenance Outage Without Replacement	N/A	N/A	N/A	No more than 45 days prior to RA month, no less than 8 days prior to outage start date	Threshold reliability criterion** RA capacity sufficiency criterion***	Planned outage without replacement requirement
				4 to 7 days prior to outage start date	Same criteria as above	No replacement. Forced outage not subject to SCP
Off-Peak Opportunity Outage	From 10 days prior to RA month to 3 business days prior to month end; and at least 3 business days prior to outage start date	Threshold reliability criterion**	No replacement. Planned outage.	No more than 45 days prior to RA month, no less than 8 days prior to outage start date	Threshold reliability criterion** Outage only during off-peak hours	No replacement. Planned outage

Short-Notice Opportunity Outage	From 45 days prior to the RA month to end of RA month	Threshold reliability criterion**	No replacement. Planned outage.	4 to 7 days prior to outage start date	Threshold reliability criterion** RA capacity sufficiency criterion*** Outage length 5 days or less	No replacement Forced outage not subject to SCP
				3 days or less prior to outage start date	Same criteria as above, and Repairs needed for reliability; require immediate attention to prevent equipment damage or failure	No replacement Forced outage not subject to SCP
Forced Outages – **RA and Non-RA Resources**	3 days or less prior to the outage start date	Threshold reliability criterion**	SCP applies for RA resource outages	7 days or less prior to the outage start date	Same as current provisions	SCP applies to RA resource forced outage, unless classified as forced outage not subject to SCP

** Threshold reliability criterion – Outage not likely to have a detrimental effect on efficient use and reliable operation of the grid or connected facilities.

*** RA capacity sufficiency criterion – Outage will not result in insufficient resource adequacy capacity during the outage period.

RA Maintenance Outage Without Replacement

Proposed Section 9.3.1.3.3.2 provides that, after the initial resource adequacy showings 45 days prior to the month, and up to 8 days before the proposed start date for the outage, a resource may request a planned outage without providing replacement capacity. If the CAISO determines that (i) system conditions and the overall outage schedule allow the resource to be out of service without having a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid, and (ii) the outage

will not result in insufficient resource adequacy capacity during the outage period, the CAISO may approve the request as a planned outage without replacement. If the resource submits the request no more than seven days and no less than four days in advance of the outage start date, and the outage meets the same reliability criteria as (i) and (ii) above, the CAISO may approve the request as a forced outage not subject the standard capacity product provisions in Section 40.9.

The CAISO will not approve a request for an outage without replacement earlier than seven days before the resource adequacy month, when the actual resource adequacy fleet for the month is known. The CAISO may treat the request as pending until such time as the system conditions are sufficiently known so that the CAISO, in its sole discretion, can determine whether it can approve the request.

The CAISO will process requests for planned outages without replacement in the order received; however, the CAISO's analysis of system conditions will include all previous approved outages, including any requests for outages with replacement that the CAISO received after the requests for a planned outage without replacement.

If the CAISO denies the request, the scheduling coordinator for the resource adequacy resource may request a different schedule for an RA maintenance outage with replacement or may request that the CAISO accommodate the outage without replacement capacity at another time.

Off-Peak Opportunity RA Maintenance Outage

Under revised Section 9.3.1.3.3.3, after the initial RA showings 45 days prior to the month, and no less than eight days prior to start of the outage, a resource adequacy resource may request an off-peak opportunity outage for a short-term outage than it can complete entirely during off-peak periods. If the outage meets the applicable requirements and the CAISO determines that system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid, the CAISO may approve the outage as a planned outage. If the resource submits the request no more than seven days and no less than four days in advance of the outage start date, and meets the aforementioned criteria, the CAISO may approve the outage as a forced outage not subject to the standard capacity product non-availability charges and availability incentive payments.

If the CAISO denies a request for an off-peak opportunity RA maintenance outage, the scheduling coordinator for the resource adequacy resource may request an RA maintenance outage with replacement or may request that the CAISO accommodate the outage at another time.

To the extent a resource owner does not complete an approved off-peak

opportunity RA maintenance outage during off-peak hours as approved and scheduled, and the outage extends into on-peak hours, the scheduling coordinator for the resource must submit the portion of the outage that extends into on-peak hours as a new forced outage that will be subject to the standard capacity product provisions in Section 40.9.

Short-Notice Opportunity Outage

Under revised Section 9.3.1.3.3.4, the scheduling coordinator for a resource adequacy resource may submit a request for a short-notice opportunity RA outage without a requirement to provide replacement capacity or substitute capacity for the resource adequacy capacity on the forced outage. The short-notice opportunity RA outage cannot exceed five days in length. The scheduling coordinator must (1) submit the outage request no more than seven days prior to the requested start date for the outage, (2) provide the CAISO adequate time to analyze the request before the outage begins, (3) submit the request before the outage becomes a forced outage, and (4) otherwise comply with the requirements of Section 9.

If the scheduling coordinator submits the request no more than seven days and no less than four days prior to the start date of the outage, the CAISO may approve the request as a short-notice opportunity RA outage if it determines that (i) the outage and the request meet the applicable requirements, (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid, and (iii) the outage will not result in insufficient available resource adequacy capacity during the outage period. The approved outage will be a forced outage, but it will not be subject to the standard capacity product provisions in Section 40.9.

If the scheduling coordinator submits the request three days or less prior to the start date of the outage, the CAISO may approve the request as a forced outage if it determines that the outage and request meet the criteria in the preceding paragraph and the repairs are necessary to maintain system or resource reliability and require immediate attention to prevent equipment damage or failure. Again, the approved outage will be a forced outage, but it will not be subject to the standard capacity product provisions in Section 40.9.

To the extent that a resource owner does not complete an approved short-notice opportunity RA outage during the originally approved outage schedule, the scheduling coordinator for the resource must submit the portion of the outage that continues from the approved completion time until the time the outage is actually completed as a new forced outage that will be subject to the standard capacity product provisions in Section 40.9.

2. The Proposed Outage Structure Is Just and Reasonable

The proposed outage structure results from an extensive, iterative stakeholder process in which the CAISO redesigned the outage options to address stakeholder concerns regarding the potential financial impact of the CAISO's proposal on resource adequacy resources, while still meeting the CAISO's reliability needs and incenting scheduling coordinators to submit outage requests earlier. For example, the CAISO created a new RA maintenance outage category that does not require substitution or replacement provided that the scheduling coordinator submits the outage request at least eight days prior to the outage. In addition, short-notice opportunity outages are not subject to the replacement rule or substitution. The CAISO also mitigated the potential financial impact on resource adequacy resources by not subjecting such resources to potential standard capacity product unavailability charges under Section 40.9 if the scheduling coordinator requests (1) an RA maintenance outage without replacement four-to-seven days before the start of the outage or (2) a short-notice opportunity outage seven days or less prior to the start of the outage.

The CAISO has carefully crafted the proposed outage options to encourage scheduling coordinators to request outages earlier without unduly impacting them financially. To achieve this goal and maintain the integrity of the outage management process in light of the significantly increased volume of outage requests, the CAISO proposes to apply progressively stricter approval criteria as scheduling coordinators submit outage requests closer to the outage start time and do not provide replacement or substitution capacity.

The least restrictive approval criteria apply to resource adequacy maintenance outages with replacement and off-peak opportunity outages. The CAISO is not proposing to change the approval criterion for resource adequacy maintenance outages with replacement. CAISO may approve a RA maintenance outage with replacement if it meets the threshold approval criterion, *i.e.,* whether system conditions and the overall outage schedule allow the resource to be out of service without having a detrimental effect on the efficient use and reliable operation of the CAISO controlled grid. The threshold criterion is appropriate because an RA maintenance outage with replacement capacity does not present a risk that the unavailability of the resource will cause a shortfall in resource adequacy capacity.

The CAISO may approve a request for an outage that will occur entirely during off-peak hours if it meets the threshold approval criterion, and the outage will occur only during off-peak hours. This does not reflect a change from the existing tariff provisions for off-peak opportunity outages. Off-peak outages pose less reliability risk than peak outages and, thus, the CAISO does not require any additional approval criteria.

The CAISO will apply stricter approval criteria for the new outage category of RA maintenance outages without replacement. As proposed by the CAISO, the CAISO

may approve a request for RA maintenance outage without replacement capacity if the request meets the threshold reliability criterion and will not result in insufficient available resource adequacy capacity during the outage period. The additional criterion is necessary because a planned outage of a resource adequacy resource without replacement capacity may result in less resource adequacy capacity being available than the CAISO initially forecasted was necessary for the month to meet reliability needs, but CAISO Outage Coordination may determine that there will be sufficient resource adequacy capacity operationally available during the outage period to accommodate the outage.

The re-defined category of short-notice opportunity outage requests occur closest in time to the start date for the outage, do not require replacement or substitution capacity, and are not subject to the standard capacity product provisions. Accordingly, the CAISO proposes to apply the strictest approval criteria to this category of outage request. The proposed criteria for granting the request include two safeguards in addition to the threshold criterion and the requirement that the outage not result in insufficient available resource adequacy capacity during the outage. First, the duration of short-notice opportunity outage cannot be more than five days. Second, if a scheduling coordinator submits a request for a short-notice opportunity outage three days or less in advance of the start of the outage, the outage must be necessary to undertake repairs that are needed to maintain system or resource reliability and that require immediate attention to prevent equipment damage or failure.

Some stakeholders claimed that the additional criteria for approving a short-notice opportunity RA outage are too restrictive. However, these approval criteria are necessary to ensure that a late outage request does jeopardize grid reliability. These additional requirements will reduce the number of outage requests that the CAISO is forced to handle close to real time and thus improve the CAISO's ability to more accurately model the outages in its market optimization runs.

These stakeholders argued that the CAISO should not limit the duration of an outage eligible to be approved as a short-notice opportunity RA outage. Limiting the duration of a short-notice opportunity outage to five days or less is an important feature of the CAISO's proposal. The CAISO must rely on forecasted conditions in assessing whether an outage can proceed without replacement or substitute capacity, and not result in insufficient available resource capacity during the outage period. Accurately forecasting system conditions is more difficult the further out in time one looks. The proposed five-day outage length represents the maximum period of time that the CAISO can reasonably rely on the forecast results to determine that an outage will not result in insufficient resource adequacy capacity being available to the CAISO.[14] Allowing a

[14] Even for RA maintenance outages without replacement, the CAISO will approve a request no earlier than seven days prior to the beginning of the month and may hold off on

longer outage period would increase the risk that (1) the forecast will be inaccurate, (2) a reliability issue may arise, or (3) the CAISO may need to designate backstop capacity pursuant to its capacity procurement mechanism. Scheduling coordinators do not provide substitute or replacement capacity in connection with a short-term notice opportunity outage; so, the CAISO must be prudent.

Some stakeholders also objected to the approval criterion that short-term notice opportunity RA outages be needed for immediate repairs to maintain system or resource reliability. This approval criterion is designed to allow the CAISO to accommodate critical and unforeseen outages of resource adequacy resources that do not allow for much advance notice. The criterion will encourage scheduling coordinators to comply with the new timeframe for requesting planned outages and avoid flooding the CAISO with last minute requests for convenience outages without providing substitute or replacement capacity. Scheduling coordinators should be discouraged from submitting last minute outage requests that (1) are not necessary, (2) they readily could have anticipated or otherwise provided more notice, and (3) do not provide the CAISO with sufficient time to process and analyze.

The CAISO has carefully crafted the criteria for approving short-notice opportunity outages to accommodate brief outages at resource adequacy resources that have an immediate reliability need, while maintaining grid reliability and avoiding backstop procurement. Although the CAISO agreed to significantly modify other aspects of the outage structure to address stakeholder concerns, the additional approval criteria for short-notice opportunity outages are necessary to encourage resources to submit outage requests earlier. Accordingly, the Commission should approve these criteria.

In conclusion, the proposed outage options and approval criteria provide reasonable and necessary limits on approving requests for planned outages of resource adequacy resources close to real time. The outage structure will incent resources to request an outage eight days or more in advance of the outage, consistent with the Commission-approved outage submittal timelines for transmission facilities. This will allow the CAISO to process the large volume of outage requests in a more efficient, effective, and orderly manner. Earlier receipt of planned and forced outage information will also enable the CAISO to include more up-to-date and accurate information about outages in the market runs the CAISO uses to optimize a market solution.

For these reasons, the Commission should approve the proposed outage options and approval criteria without modification.

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approving such outages until system conditions are sufficiently known to make the determination.

V. MISCELLANEOUS AND CONFORMING CHANGES

Implementation of OMS requires additional miscellaneous and conforming changes to the Tariff –

- Sections 9.3.1.3.1.2, 9.3.6.3.2, 9.3.8.1, 9.3.8.2, and 9.3.9 are revised to conform language to modifications in Section 9.3.1.3.3;
- Sections 9.3.1.3.1.2 and 40.9.4.1 are revised to delete language that applies only to a past time period;
- Sections 9.3.2, 9.3.5, 9.3.5.1, 9.3.5.2, 9.3.6, 9.3.6.3.2, 9.3.8.1, 9.3.8.2, 9.3.9, and 9.3.10.6 are revised to clarify whether they apply to operators, scheduling coordinators, or both;
- Sections 9.3.3, first sentence and terms (i) and (ii) and 9.3.8.3 are deleted because they are replaced by the outage provisions in Section 9.3.1.3.3;
- Sections 9.3.5 and 9.3.5.2 are revised to refer to the outage management system for outage reporting and communications;
- Section 40.9 is renamed from “Availability Standards and Payment; Non-Availability Charges” to “Standard Capacity Product,” as it is commonly referenced, and
- Sections 9.3.5, 9.3.5.2, 9.3.6, 9.3.10.6, 9.3.10.6.1, 40.9.2(2) and (5), 40.9.4.1 are revised for minor administrative edits or corrections.

VI. EFFECTIVE DATES AND REQUEST FOR WAIVER

The CAISO respectfully requests that the Commission issue an order by September 8, 2014 that accepts the proposed tariff revisions contained in this filing effective September 22, 2014.

As discussed above, the proposed tariff modification relate to the new outage management system, which the CAISO intends to deploy in September 2014 so that the CAISO will have sufficient time to integrate the program into its downstream systems prior to the expected October 1, 2014 release date of new functionality for the energy imbalance market and proposed modeling enhancements. Granting the requested September 22, 2014, effective date for those revisions will facilitate the CAISO’s implementation of the rest of the tariff revisions effective October 1.

VII. COMMUNICATIONS

Correspondence and other communications regarding this filing should be directed to:

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VIII. SERVICE

The CAISO has served copies of this filing on the California Public Utilities Commission, the California Energy Commission, and all parties with scheduling coordinator agreements under the CAISO tariff. In addition, the CAISO has posted a copy of the filing on the CAISO website.

IX. CONTENTS OF FILING

In addition to this transmittal letter, this filing includes the following attachments:

Attachment A	Clean CAISO tariff sheets incorporating this tariff amendment
Attachment B	Red-lined document showing the revisions contained in this tariff amendment
Attachment C	Draft Final Proposal
Attachment D	Addendum to Draft Final Proposal
Attachment E	Board Memorandum

X. CONCLUSION

For the reasons set forth in this filing, the CAISO respectfully requests that the Commission issue an order by September 8, 2014, that accepts the proposed tariff revisions contained in this filing effective September 22, 2014.

Respectfully submitted,

By: *Is/ Beth Ann Burns*

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Counsel for the California Independent System
Operator Corporation

Dated July 7, 2014

Attachment A – Clean Tariff Sheets

Outage Management System Replacement

California Independent System Operator Corporation

July 7, 2014

9.3.1.3.1.2 RA Resource Pending Maintenance Outage Requests

If a Resource Adequacy Resource requested a planned Maintenance Outage, or change to an Approved Maintenance Outage, more than forty-five days prior to the first day of the resource adequacy month but does not receive approval or denial of the request by the CAISO Outage Coordination Office as of the due date for the Resource Adequacy Plans and Supply Plans, the CAISO Outage Coordination Office, as part of the validation under Sections 9.3.1.3.2.3 and 40.7(b), will determine whether the outage should be approved and, if so, whether it must be replaced in the Resource Adequacy Plan with capacity from another resource that is operationally available in the amount and for the duration of the scheduled outage during the month.

* * *

9.3.1.3.3 Replacement Requirement for RA Resources

To the extent that a resource is committed to provide Resource Adequacy Capacity during a month, the Scheduling Coordinator for the resource may request an RA Maintenance Outage With Replacement, RA Maintenance Outage Without Replacement, Off Peak Opportunity RA Maintenance Outage, or Short-Notice Opportunity RA Outage, or may request to reschedule an Approved Maintenance Outage, for that Resource Adequacy Capacity in accordance with the provisions of this Section. The timelines set forth in this Section for submitting an Outage request and classifying the outage as a Maintenance Outage or a Forced Outage exclude the day that the request is submitted and the day that the outage is scheduled to commence.

9.3.1.3.3.1 RA Maintenance Outage With Replacement

(a) **Replacement Option.** The Scheduling Coordinator of a Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may request that a planned Maintenance Outage be scheduled, or an Approved Maintenance Outage be rescheduled, as an RA Maintenance Outage With Replacement during that month.

(b) **Request.** A request for an RA Maintenance Outage With Replacement must (i) be submitted to the CAISO Outage Coordination Office no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start of the outage,(ii) provide RA Replacement Capacity in an amount no less

than the Resource Adequacy Capacity designated for the resource for the duration of the scheduled outage, and (iii) otherwise comply with the requirements set forth in Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider requests for an RA Maintenance Outage With Replacement in the order the requests are received.

(2) The CAISO Outage Coordination Office may approve the request for an RA Maintenance Outage With Replacement if it determines that (i) the request meets the requirements in Section 9.3.1.3.3.1(b) and (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid.

(3) If the request was submitted no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date for the outage, and it meets the requirements in Section 9.3.1.3.3.1(c)(2) the CAISO Outage Coordination Office may approve the request as an RA Maintenance Outage With Replacement,

(4) If the request was submitted no more than seven days and no less than four days prior to the start date of the outage, and it otherwise meets the requirements in Section 9.3.1.3.3.1(c)(2), the CAISO Outage Coordination Office may approve the request as a Forced Outage. A Forced Outage approved under this Section will not be subject to the standard capacity product provisions in Section 40.9.

(5) If the CAISO Outage Coordination Office denies the request for failing to meet the requirements in Section 9.3.1.3.3.1(c)(2), the Scheduling Coordinator for the Resource Adequacy Resource may request a different schedule for the RA Maintenance Outage With Replacement or may request that the CAISO Outage Coordination Office accommodate the outage without RA Replacement Capacity at another time.

(d) **Resource Adequacy Obligation.** The RA Replacement Capacity for an RA Maintenance Outage With Replacement approved under Section 9.3.1.3.3.1(c)(3) or a Forced Outage approved under Section 9.3.1.3.3.1(c)(4) shall be subject to all of the availability, dispatch, testing, reporting, verification and any other applicable requirements imposed on Resource Adequacy Resources by the CAISO Tariff, including the must-offer obligations in Section 40.6 and the standard capacity product provisions in Section 40.9, for the MW amount and duration of the outage replacement period, which includes the full day of the start date and the full day of the end date of the outage.

9.3.1.3.3.2 RA Maintenance Outage Without Replacement

(a) **Option for No Replacement.** The Scheduling Coordinator for a Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may request that a Maintenance Outage be scheduled, or an Approved Maintenance Outage be rescheduled, as an RA Maintenance Outage Without Replacement, without a requirement to provide RA Replacement Capacity for the unavailable capacity for the duration of the outage.

(b) **Request.** A request for an RA Maintenance Outage Without Replacement must (i) be submitted to the CAISO Outage Coordination Office no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date of the outage, and (ii) otherwise comply with the requirements of Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider requests received for an RA Maintenance Outage Without Replacement in the order the requests were received.

(2) The CAISO Outage Coordination Office may approve a request for an RA Maintenance Outage Without Replacement if it determines that (i) the request meets the requirements in Section 9.3.1.3.3.2(b), (ii) system conditions and the

overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, and (iii) the outage will not result in insufficient available Resource Adequacy Capacity during the outage period. The analysis of system conditions and the overall outage schedule will include Approved Maintenance Outage requests that were received before and after the request for an RA Maintenance Outage Without Replacement.

(3) The CAISO Outage Coordination Office will not approve a request for an RA Maintenance Outage Without Replacement earlier than seven days before the first day of the resource adequacy month, and may hold the request as pending until system conditions are sufficiently known for the CAISO to determine whether the outage meets the requirements in Section 9.3.1.3.3.2(c)(2).

(4) If the request is submitted no more than seven days and no less than four days prior to the start date of the outage, and it otherwise meets the requirements in Section 9.3.1.3.3.2(c)(2), the CAISO Outage Coordination Office may approve the request as a Forced Outage. A Forced Outage approved under this Section will not be subject to the standard capacity product provisions in Section 40.9.

(5) If the CAISO Outage Coordination Office denies a request for an RA Maintenance Outage Without Replacement for failing to meet the requirements in Section 9.3.1.3.3.2(c)(2), the Scheduling Coordinator for the Resource Adequacy Resource may request an RA Maintenance Outage with Replacement or may request that the CAISO Outage Coordination Office accommodate the outage at another time.

9.3.1.3.3.3 Off-Peak Opportunity RA Maintenance Outage

(a) **Option for Off-Peak Outage.** The Scheduling Coordinator for a Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may submit a request for an Off-Peak Opportunity RA Maintenance Outage without a requirement to provide RA Replacement Capacity for the unavailable capacity

for the duration of the outage.

(b) **Request.** A request for an Off-Peak Opportunity RA Maintenance Outage must (i) be submitted to the CAISO Outage Coordination Office no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date for the outage, (ii) schedule the outage to begin during off-peak hours (as specified in the Business Practice Manual) on a weekday, and to be completed prior to on-peak hours (as specified in the Business Practice Manual) the following weekday, or to begin during off-peak hours (as specified in the Business Practice Manual) on Friday, or on Saturday, Sunday, or a holiday, and to be completed prior to on-peak hours (as specified in the Business Practice Manual) on the next weekday and (iii) otherwise comply with the requirements set forth in Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider requests for an Off-Peak Opportunity RA Maintenance Outage in the order the requests were received.

(2) If the request was submitted no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date for the outage, the CAISO Outage Coordination Office may approve the request as an Off-Peak Opportunity RA Maintenance Outage if it determines that (i) the request meets the requirements set forth in Section 9.3.1.3.3.3(b) and (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid.

(3) If the request was submitted no more than seven days and no less than four days prior to the start date of the outage, the CAISO Outage Coordination Office may approve the request as a Forced Outage if it determines that (i) the request otherwise meets the requirements set forth in Section 9.3.1.3.3.3(b) and (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and

reliable operation of the CAISO Controlled Grid. A Forced Outage approved under this Section will not be subject to the standard capacity product provisions in Section 40.9.

(4) If the CAISO Outage Coordination Office denies a request for an Off-Peak Opportunity RA Maintenance Outage for failing to meet the requirements in Section 9.3.1.3.3.3(c)(2), the Scheduling Coordinator for the Resource Adequacy Resource may request an RA Maintenance Outage with Replacement or may request that the CAISO Outage Coordination Office accommodate the outage at another time.

(5) To the extent that an approved Off-Peak Opportunity RA Maintenance Outage is not completed during off-peak hours as scheduled, and extends into on-peak hours, the Scheduling Coordinator for the resource shall submit the portion of the outage that extends into on-peak hours as a new Forced Outage, which shall be subject to the standard capacity product provisions in Section 40.9.

9.3.1.3.3.4 Short-Notice Opportunity RA Outage

(a) **Option for Short-Notice Outage.** The Scheduling Coordinator for a Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may submit a request for a Short-Notice Opportunity RA Outage without a requirement to provide RA Replacement Capacity or RA Substitute Capacity for the Resource Adequacy Capacity that will be on the Forced Outage or de-rate.

(b) A Short-Notice Opportunity RA Outage shall not exceed five days in length. The request for a Short-Notice Opportunity RA Outage must (i) be submitted no more than seven days prior to the requested start date for the outage, (ii) provide the CAISO Outage Coordination Office adequate time to analyze the request before the outage begins (iii) be submitted before the outage has commenced as a Forced Outage, and (iv) otherwise comply with the requirements of Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider Short-Notice Opportunity

RA Outages in the order the requests are received.

(2) If the request was submitted no more than seven days and no less than four days prior to the start date of the outage, the CAISO Outage Coordination Office may approve the request as a Short Notice Opportunity RA Outage if it determines that (i) the outage and the request meet the requirements set forth in Section 9.3.1.3.3.4(b), (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, and (iii) the outage will not result in insufficient available Resource Adequacy Capacity during the outage period. The approved outage will be a Forced Outage but it will not be subject to the standard capacity product provisions in Section 40.9.

(3) If the request was submitted three days or less prior to the start date of the outage, the CAISO Outage Coordination Office may approve the request as a Forced Outage if it determines that (i) the outage and request meet the requirements set forth in Section 9.3.1.3.3.4(b), (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, (iii) the outage will not result in insufficient available Resource Adequacy Capacity during the outage period, and (iv) the repairs are necessary to maintain system or resource reliability and require immediate attention to prevent equipment damage or failure. A Short-Notice Opportunity RA Outage approved under this Section will be a Forced Outage but it will not be subject to the standard capacity product provisions in Section 40.9.

(4) To the extent that an approved Short-Notice Opportunity RA Outage is not completed during the originally approved outage schedule, the Scheduling Coordinator for the resource must submit the portion of the outage that continues from the approved completion time until the time the outage is actually completed

as a new Forced Outage, which will be subject to the standard capacity product provisions in Section 40.9.

* * *

9.3.2 Requirement For Approval

An Operator or Scheduling Coordinator shall not take: (i) facilities that comprise the CAISO Controlled Grid or (ii) Generating Units of Participating Generators out of service for the purposes of planned maintenance or for new construction or other work except as approved by the CAISO Outage Coordination Office; except that final approval may not be required for a Transmission Maintenance Outage as provided in Section 9.3.9.1. The information relating to each Maintenance Outage submitted by a Participating Generator in accordance with Section 9.3.5 or by a Participating TO in accordance with Section 9.3.5 constitutes a request for a long-range Maintenance Outage and is not considered an Approved Maintenance Outage until the CAISO has notified the Participating Generator of such approval pursuant to Section 9.3.6 or the Participating TO pursuant to Section 9.3.6.

* * *

9.3.3 Request Submission and Information

The Operator or Scheduling Coordinator of facilities that comprise the CAISO Controlled Grid or of a Participating Generator, Participating Intermittent Resource, Generating Unit, System Unit, Physical Scheduling Plant, Proxy Demand Resource, Reliability Demand Response Resource, Non-Generation Resource, Participating Load, or other resource subject to the outage management requirements of Section 9, shall use the ISO's outage management system to --

(1) Submit all outage requests under Section 9.

(2) Provide the required information about the outage and work to be performed using the nature of work categories described in the Business Practice Manual.

(3) For transmission outage requests, additionally provide structured and detailed outage modeling information at the facility level and/or the breaker/switch level. If the work to be performed will require a switch position to change during the outage period, the Operator or Scheduling Coordinator must submit a separate outage request for each configuration.

(4) For resource outage requests, additionally provide the required information for the resource at the aggregate project or plant level, and also at the individual unit level for a unit de-rate greater than 50 MW, and any limitations on the resource's availability to provide each type of ancillary service for which it is certified.

* * *

9.3.5 Method Of Communications

The primary method of communication from an Operator or Scheduling Coordinator to the CAISO with regard to maintenance and Outage planning will be the outage management system as described in the Operating Procedure on the CAISO Website and in the applicable Business Practice Manual. Emergency capabilities, to be used only as a back-up if the primary communication method is unavailable, will include:

(a) voice;

(b) fax (last resort); and

(c) electronic (E-mail, FTP file).

9.3.5.1 Confirmation

When fax or electronic communication is utilized in the event the outage management system is unavailable, confirmation from the CAISO must be received by the Operator or Scheduling Coordinator to validate the receipt of the request.

9.3.5.2 Communication of Approval or Rejection

The CAISO shall use the outage management system as the primary method of communicating the approval or rejection of an Outage request or approval of a request to change an Approved Maintenance Outage to the relevant Operator or Scheduling Coordinator.

9.3.5.2.1 Information regarding planned Outages for resources with an Existing QF Contract or an Amended QF Contract shall be provided to the CAISO Outage Coordination Office by the Participating TO or UDC that is a party to the Existing QF Contract or an Amended QF Contract or by a Participating Generator. Information provided will be that obtained by the Participating TO, UDC or a Participating Generator pursuant to the terms of Existing QF Contract or an Amended QF Contract or as requested by the CAISO. Scheduling and approvals of Maintenance Outages for resources with an Existing QF Contract or an Amended QF Contract shall continue to be coordinated as detailed in the applicable contract with the Participating TO or UDC, provided the owner of the Regulatory Must-Take Generation resource has not executed a Participating Generator Agreement or Net Scheduled PGA. If the owner of a resource has executed a Participating Generator Agreement or Net Scheduled PGA, it shall comply with Section 9.3.5 and other provisions applicable to Participating Generators.

* * *

9.3.6 Maintenance Outage Planning

Each Operator or Scheduling Coordinator shall, by not later than October 15 each year, provide the CAISO with a proposed schedule of all Maintenance Outages it wishes to undertake in the following year. The proposed schedule shall include all of the Operator's transmission facilities that comprise the CAISO Controlled Grid and Generating Units subject to a Participating Generator Agreement, Net Scheduled PGA, or Pseudo-Tie Participating Generator Agreement (including its Reliability Must-Run Units). In the case of a Participating TO's transmission facilities, that proposed schedule shall be developed in consultation with the UDCs interconnected with that Participating TO's system and shall take account of each UDC's planned maintenance requirements. The nature of the information to be provided and the detailed Maintenance Outage planning procedure shall be established by the CAISO. This information shall include:

The following information is required for each Generating Unit of a Participating Generator:

(a) the Generating Unit name and Location Code;

(b) the MW capacity unavailable;

(c) the scheduled start and finish date for each Outage; and

(d) where there is a possibility of flexibility, the earliest start date and the latest finish date, along with the actual duration of the Outage once it commences.

The following information is required for each transmission facility:

(a) the identification of the facility and location;

(b) the nature of the proposed Maintenance Outage;

(c) the preferred start and finish date for each Maintenance Outage; and

(d) where there is a possibility of flexibility, the earliest start date and the latest finish date, along with the actual duration of the Outage once it commences.

Either the CAISO, pursuant to Section 9.3.7, or an Operator or Scheduling Coordinator, subject to Section 9.3.6.11, may at any time request a change to an Approved Maintenance Outage. An Operator or Scheduling Coordinator may, as provided in Section 9.3.6.3, schedule with the CAISO Outage Coordination Office a Maintenance Outage on its system, subject to the conditions of Sections 9.3.6.4.1, 9.3.6.8, and 9.3.6.9.

* * *

9.3.6.3.1 Resource Maintenance Outages

(a) The Scheduling Coordinator for a Participating Generator, Participating Intermittent Resource, Generating Unit, System Unit, Physical Scheduling Plant, Proxy Demand Resource, Reliability Demand Response Resource, Non-Generation Resource, Participating Load, or other resource subject to the outage management requirements of Section 9, shall submit a request for a Maintenance Outage or a request to change an Approved Maintenance Outage to the CAISO Outage Coordination Office no less than eight days prior to the start date for the Outage, subject to the provisions of Sections 9.3.6.4.1, 9.3.6.8, and 9.3.6.9. The timeline for submitting the required advance notice is

calculated excluding the day the request is submitted and the day the Outage is scheduled to commence.

(b) The requirement in Section 9.3.6.3.1(a) does not preclude submission of a request for a Forced Outage under Section 9.3.10.3 where immediate corrective action is needed because equipment has failed in service, is in danger of imminent failure, or is urgently needed to protect personnel.

(c) A request for a Maintenance Outage that is submitted seven days or less prior to the start date for the Outage shall be classified as a Forced Outage.

(d) A request to change an Approved Maintenance Outage that is submitted seven days or less prior to the start date for the Outage, if approved, will remain classified as a Maintenance Outage. If the request is not approved, the Scheduling Coordinator for the resource may submit a request for a new Forced Outage for the schedule change.

9.3.6.3.2 Transmission Maintenance Outages

An Operator or Scheduling Coordinator shall submit a request for a Maintenance Outage or a request to change an Approved Maintenance Outage for transmission facilities on its system in advance of the start date for the Outage, as follows:

1. An Operator or Scheduling Coordinator may, upon thirty (30) days notice in advance of the first day of the month the Outage is proposed to be scheduled (or within the notice period in the Operating Procedures posted on the CAISO Website), schedule with the CAISO Outage Coordination Office a CRR Transmission Maintenance Outage for transmission facilities on its system, subject to the conditions of Sections 9.3.6.4.1, 9.3.6.8, 9.3.6.9, and 36.4.3.

2. An Operator or Scheduling Coordinator shall submit a request for a Planned Transmission Maintenance Outage or a request to change an Approved Maintenance Outage to the CAISO Outage Coordination Office no less than eight days prior to the start date for the Outage, subject to the provisions of Sections 9.3.6.3.2, 9.3.6.4.1, 9.3.6.8, and 9.3.6.9. The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence. This requirement does not preclude submission of a request for a forced outage under Section 9.3.10.3 where immediate corrective action is needed because equipment has failed in service, is in danger of imminent failure, or is urgently needed to protect personnel.

3. If an Operator or Scheduling Coordinator submits a request for a Planned Transmission Maintenance Outage or a request to change an Approved Maintenance Outage seven days or less prior to the start date for the Outage, the CAISO Outage Coordination Office may, at its discretion, reject the request as untimely, or approve the request as an Unplanned Transmission Maintenance Outage provided that the CAISO Outage Coordination Office has adequate time to analyze the request before the Outage begins and the analysis determines that (i) the Outage is necessary for reliability, (ii) system conditions and the overall Outage schedule provide an opportunity to take the facilities out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid and without disrupting efficient market operations, and (iii) the Outage has not already commenced as a Forced Outage. The CAISO Outage Coordination Office will consider Unplanned Transmission Maintenance Outages in the order the requests are received.

* * *

9.3.8.1 Data Required

The Scheduling Coordinator for a Generating Unit owned or controlled by a Participating Generator shall submit to the CAISO pursuant to Sections 9.3.4 and 9.3.5.2.1 its request to

confirm the schedule of a planned Maintenance Outage or to change the schedule of a planned Maintenance Outage. Such request must be made to the CAISO Outage Coordination Office by no less than eight days prior to the starting date of the proposed Outage (or as specified on the CAISO Website). Likewise, all Operators or Scheduling Coordinators for transmission facilities shall submit a formal request to confirm or change an Approved Maintenance Outage with respect to any CAISO Controlled Grid facility to the CAISO Outage Coordination Office in accordance with Sections 9.3.6.3.2, 9.3.8.2 and 9.3.8.3. The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence.

Such schedule confirmation request shall specify the following:

(a) the Generating Unit or System Unit name and Location Code, or the identification of the transmission system element(s) to be maintained including location;

(b) the nature of work to be performed;

(c) the date and time the Outage is to begin;

(d) the date and time the Outage is to be completed;

(e) the time required to terminate the Outage and restore the Generating Unit to normal capacity or the transmission system to normal operation;

(f) identification of primary and alternate telephone numbers for the Operator's single point of contact; and

(g) in the case of a request for a change to an Approved Maintenance Outage, the date and time of the original Approved Maintenance Outage.

9.3.8.2 Eight-Day Prior Notification

Any request by a Participating Generator to confirm or change an Approved Maintenance Outage must be submitted no less than eight days prior to the starting date of the Approved Maintenance Outage (or as posted on the CAISO Website). The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence. Any request by an Operator or Scheduling Coordinator of transmission

facilities to confirm or change an Approved Maintenance Outage seven (7) days or less in advance of the start date for the Outage is subject to Section 9.3.6.3.2.

9.3.8.3 [Not Used]

* * *

9.3.9 Final Approval, Delay And Withholding

On the day on which an Approved Maintenance Outage is scheduled to commence, the Operator or Scheduling Coordinator shall contact the CAISO Control Center for final approval of the Maintenance Outage, except as provided in Section 9.3.9.1. No Maintenance Outage shall commence without such final approval (including the time of release, in hours and minutes) being obtained from the CAISO Control Center whose decision shall be final. The CAISO Outage Coordination Office may delay its approval of a scheduled Maintenance Outage for a Participating Generator if sufficient or complete information is not received by the CAISO Outage Coordination Office within the time frames set forth in Section 9.3.8.1. The CAISO Control Center shall have the authority to withhold a Final Approval for an Approved Maintenance Outage for reasons of System Reliability, security or system status of the CAISO Controlled Grid or market impact. The CAISO Control Center shall immediately notify the relevant Operator or Scheduling Coordinator of its intention to withhold the Final Approval. The Generator Maintenance Outage or CAISO Controlled Grid facility Maintenance Outage will then be rescheduled pursuant to this CAISO Tariff.

9.3.9.1 Transmission Maintenance Outage Final Approval

As part of the approval process, the CAISO will determine whether an Approved Maintenance Outage for facilities that comprise the CAISO Controlled Grid will require Final Approval on the start date before the outage begins or may be initiated and completed without Final Approval. The determination will be based on the outage types identified in the Business Practice Manual and the expected impact of the outage on system conditions and the risk to system reliability, The CAISO will provide its determination to the Operator or Scheduling Coordinator of the transmission facilities through the outage management system.

(1) If Final Approval is required, the Operator or Scheduling Coordinator shall comply with the requirements in Section 9.3.9. The Final Approval may be requested and received through the outage management system.

(2) If Final Approval is not required, the Operator or Scheduling Coordinator may commence the outage as scheduled on the start date and conclude the outage as scheduled on the end date, and report those actions through the outage management system. If the outage does not commence or conclude as scheduled, the Operator or Scheduling Coordinator must request approval to change an Approved Maintenance Outage.

* * *

9.3.10.6 Review of Forced Outages. With respect to Forced Outages of Generating Units that result in a reduction in maximum output capability that lasts fifteen (15) minutes or longer of 40 MW or more below the value registered in the Master File and ten (10) percent of the value registered in the Master File, Operators, and where applicable, Eligible Customers, Scheduling Coordinators, UDCs and MSS Operators promptly shall provide information requested by the CAISO to enable the CAISO to review the changes made to the maximum output capability or Forced Outages submitted by the Operator or Scheduling Coordinator and to prepare reports on Forced Outages. If the CAISO determines that any Forced Outage may have been the result of gaming or other questionable behavior by the Operator, the CAISO shall submit a report describing the basis for its determination to the FERC. The CAISO shall consider the following factors when evaluating the Forced Outage to determine if the Forced Outage was the result of gaming or other questionable behavior by the Operator: 1) if the Forced Outage coincided with certain market conditions such that the Forced Outage may have influenced market prices or the cost of payments associated with Exceptional Dispatches; 2) if the Forced Outage coincided with a change in the Bids submitted for any units or resources controlled by the Operator or the Operator's Scheduling Coordinator; 3) if the CAISO had recently rejected a request for an Outage for, or to Shut-Down, the Generating Unit experiencing the Forced Outage; 4) if the timing or content of the notice of the Forced Outage provided to the CAISO was inconsistent with

subsequent reports of or the actual cause of the Outage; 5) if the Forced Outage or the duration of the Forced Outage was inconsistent with the history or past performance of that Generating Unit or similar Generating Units; 6) if the Forced Outage created or exacerbated Congestion; 7) if the Forced Outage was extended with little or no notice; 8) if the Operator had other alternatives to resolve the problems leading to the Forced Outage; 9) if the Operator took reasonable action to minimize the duration of the Forced Outage; or 10) if the Operator failed to provide any information or access to the generating facility requested by the CAISO within a reasonable time.

9.3.10.6.1 Outage Reporting By NRS-RA Resources

The Scheduling Coordinator for a non-Resource-Specific System Resource that provides Resource Adequacy Capacity shall report to the CAISO through the outage management system any Forced Outage of a Generating Unit or Forced Outage or Constraint of transmission facilities external to the CAISO Balancing Authority Area that directly results in the inability of the resource to deliver all or a portion of the Resource Adequacy Capacity identified in the resource's Supply Plan to the CAISO Balancing Authority Area. The Scheduling Coordinator for a non-Resource-Specific System Resource that provides Resource Adequacy Capacity is required to provide to the CAISO notice of the Forced Outage or Constraint within sixty (60) minutes after becoming aware of the circumstance The Scheduling Coordinator for a non-Resource-Specific System Resource that provides Resource Adequacy Capacity shall promptly provide information requested by the CAISO to enable the CAISO to review the Forced Outage or Constraint and its impact on the ability of the resource to deliver Resource Adequacy Capacity to the CAISO Balancing Authority Area.

DMM shall identify and notify the Commission's Office of Enforcement staff of instances in which the reporting of the Forced Outage or Constraint may require investigation. DMM is to make a non-public referral to the Commission in all instances where DMM has reason to believe that the reporting of the Forced Outage or Constraint constitutes a Market Violation other than those Market Violations identified in Section 11.1.13 of Appendix P. While DMM need not be able to prove that a Market Violation has occurred, DMM is to provide sufficient credible information to warrant further investigation by the Commission. Once DMM has obtained sufficient credible

information to warrant referral to the Commission, DMM is to immediately refer the matter to the Commission and desist from independent action related to the alleged Market Violation. This does not preclude DMM from continuing to monitor for any repeated instances of the activity by the same or other entities, which would constitute new Market Violations. DMM is to respond to requests from the Commission for any additional information in connection with the alleged Market Violation it has referred.

* * *

37.4.3 [Not Used]

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40.9. Standard Capacity Product

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40.9.2 Exemptions

The following exemptions apply to the CAISO's Availability Standards program of this Section 40.9:

(1) Resources with a PMax less than one (1.0) MW will not be used to determine Availability Standards, will not be subject to Non-Availability Charges or Availability Incentive Payments, and will not be subject to the additional Outage reporting requirements of this Section 40.9.

(2) Capacity under a resource specific power supply contract that existed prior to June 28, 2009 and Resource Adequacy Capacity that was procured under a contract that was either executed or submitted to the applicable Local Regulatory Authority for approval prior to June 28, 2009, and is associated with specific Generating Units or System Resources, will not be subject to Non-Availability Charges or Availability Incentive Payments. Such contracted Resource

Adequacy Capacity, except for non-Resource-Specific System Resources, will be included in the development of Availability Standards and will be subject to any Outage reporting requirements necessary for this purpose. The exemption will apply only for the initial term of the contract and to the MW capacity quantity and Resource Adequacy Resources specified in the contract prior to June 28, 2009. The exemption shall terminate upon the conclusion of the initial contract term. Exempt contracts may be re-assigned or undergo novation on or after June 28, 2009, but the exemption shall not apply for any extended contract term, increased capacity quantity or additional resource(s) beyond those specified in the contract prior to June 28, 2009, except as provided in Section 40.9.2(7) or 40.9.2(8). Scheduling Coordinators for Resource Adequacy Resources subject to these contracts will be required to certify the start date of the contract, the expiration date, the Resource ID(s), and the amount of Resource Adequacy Capacity associated with each Resource ID included in the contract. For Resource Adequacy Resources whose Qualifying Capacity value is determined by historical output, the capacity under a resource specific power supply contract or Resource Adequacy Capacity that was procured under a contract that was either executed or submitted to the applicable Local Regulatory Authority for approval that meets the requirements in this subsection (2) will not be subject to Non-Availability Charges or Availability Incentive Payments, except that the deadline date for either type of contract shall be August 22, 2010 instead of June 28, 2009.

(3) For a contract entered into prior to June 28, 2009 that provides for the amount of Resource Adequacy Capacity to increase during the original term of the contract, based on a ratio of the Resource Adequacy Resource's output or due to an addition of capacity, the exemption provided in subsection (2) of this Section 40.9.2 will apply to the additional capacity allowed under the contract; provided that the capacity increase (i) is expressly contained in the provisions of the

contract, (ii) occurs during the primary term of the contract; and (iii) does not result from contract extensions or other amendments to the original terms and conditions of the contract, except as provided in Section 40.9.2(7) or 40.9.2(8). Scheduling Coordinators for Resource Adequacy Resources subject to contracts that provide for such capacity increases or additions must include in their certification, in addition to the requirements of subsection (2) of this Section 40.9.2, (i) the citation to any contract provisions that might entitle them to increased exempt Resource Adequacy Capacity from the contracted resources during the primary term of the contract; (ii) the amount of additional capacity to which they might be entitled; and (iii) the actual effective date of the capacity increase. If the actual amount of capacity and/or the actual effective date of the capacity increase is not known at the time of the initial certification, the Scheduling Coordinator shall provide a supplemental certification(s) when this information becomes known. For Resource Adequacy Resources whose Qualifying Capacity value is determined by historical output the exemption provided in subsection (2) of this Section 40.9.2 will apply to an increase in the capacity under a resource specific power supply contract or Resource Adequacy Capacity that was procured under a contract that was either executed or submitted to the applicable Local Regulatory Authority for approval that meets the requirements in this subsection (3), except that the deadline date for either type of contract to be exempt shall be August 22, 2010 instead of June 28, 2009.

(4) Demand response resources will not be used to determine Availability Standards, will not be subject to Non-Availability Charges or Availability Incentive Payments, and will not be subject to the additional Outage reporting requirements of this Section 40.9.

(5) Resource Adequacy Capacity provided through contracts for Energy from non-specified resources delivered within the CAISO Balancing Authority Area will not be used to determine Availability Standards, will not be subject to Non-Availability

Charges or Availability Incentive Payments, and will not be subject to the additional Outage reporting requirements of this Section 40.9.

(6) Resource Adequacy Resources of a Modified Reserve Sharing LSE or a Load following MSS will be used to determine the Availability Standards and will be subject to any Outage reporting requirements necessary for this purpose. Non-Local Capacity Area Resource Adequacy Resources of a Modified Reserve Sharing LSE or a Load following MSS will not be subject to Non-Availability Charges or Availability Incentive Payments, but those entities shall remain responsible for any other applicable deficiency payments under this CAISO Tariff or the applicable MSS Agreement.

(7) Scheduling Coordinators for resources with Existing QF Contracts or Amended QF Contracts that are Resource Adequacy Resources shall be exempt from the Outage reporting requirements of Section 40.9 if the resource previously provided Resource Adequacy Capacity under an Existing QF Contract that was exempt from the application of Non-Availability Charges and Availability Incentive Payments pursuant to Section 40.9.2(2) or 40.9.2(3). This exemption from the Outage reporting requirements of Section 40.9 shall end for each resource when the Existing QF Contract or Amended QF Contract terminates or it is no longer eligible for exemption under Section 40.9.2(2) or 40.9.2(3), or if requested by the Scheduling Coordinator for the resource, whichever is earlier.

(8) Scheduling Coordinators for resources with Existing QF Contracts or Amended QF Contracts that are Resource Adequacy Resources shall be exempt from the Outage reporting requirements of Section 40.9, and will not be subject to Non-Availability Charges or Availability Incentive Payments, if the QF resource previously provided Resource Adequacy Capacity pursuant to an Existing QF Contract that was executed prior to the August 22, 2010 deadline for exemption under Section 40.9.2(2), and remained in effect pursuant to California Public Utilities Commission Decision 07-09-040 that extended the term of expiring

contracts until such time as the new contracts resulting from that decision are available. This exemption from the Outage reporting requirements of Section 40.9, and the Availability Incentive Payments and Non-Availability Charges, shall end for each resource when its Existing QF Contract or Amended QF Contract terminates or if requested by the Scheduling Coordinator for the resource, whichever is earlier.

(9) An RA Maintenance Outage With Replacement, RA Maintenance Outage Without Replacement, Off-Peak Opportunity RA Outage, or Short-Notice Opportunity RA Outage that was submitted no more than seven days and no less than four days prior to the requested start date for the outage and that was approved as a Forced Outage under Section 9.3.1.3.3.1(c)(4), 9.3.1.3.3.2(c)(4), 9.3.1.3.3.3(c)(3), or 9.3.1.3.3.4(c)(2), and a Short-Notice Opportunity RA Outage that was submitted three days or less prior to the requested start date for the outage and that was approved as Forced Outage under Section 9.3.1.3.3.4(c)(3), shall not be –

(a) subject to the Outage reporting requirements of Section 40.9;

(b) included in the availability determination under Section 40.9.4;

(c) subject to the substitution option under Section 40.9.4.2.1; and

(d) subject to Non-Availability Charges and Availability Incentive Payments under Section 40.9.6.

Exclusions from the Availability Standards and Outage reporting requirements established in this Section 40.9 are for this Section 40.9 alone and do not affect any other obligation arising under the CAISO Tariff.

* * *

40.9.4.1 Availability Standard

The CAISO shall calculate and publish the monthly Availability Standards for each Resource Adequacy Compliance Year by July 1 of the preceding calendar year. The monthly Availability Standards applicable to Resource Adequacy Resources subject to this Section 40.9.4 will be based on the historical availability of Resource Adequacy Resources during the Availability Assessment Hours over the previous three years. Each monthly Availability Standard will be calculated as the sum of the available Resource Adequacy Capacity of the included Resource Adequacy Resources across all the Availability Assessment Hours of the month, divided by the sum of the designated Resource Adequacy Capacity for the same set of hours and resources, and multiplied by 100 to obtain a number between zero (0) and one hundred percent (100%). For the purpose of determining the available Resource Adequacy Capacity in each month, the CAISO will use the Outage information reported in SLIC and, when available, the Outage reports submitted pursuant to Section 40.9.5. To ensure consistency between the calculation of the monthly Availability Standard and the calculation of each resource's monthly availability, the data utilized for both calculations will be in accordance with the provisions of Sections 40.9.4.2. All Resource Adequacy Resources except for the following will be included in the calculation of the Availability Standards:

(1) Resource Adequacy Resources exempted in Section 40.9.2;

(2) Non-Resource-Specific System Resources; and

(3) Resources between one (1) MW and ten (10) MW subject to the reporting requirements of Section 40.9.5, until such time that the CAISO has received the outage reports and can begin to utilize the data.

* * *

APPENDIX A

MASTER DEFINITIONS

* * *

- Off-Peak Opportunity RA Maintenance Outage

A Maintenance Outage at a Resource Adequacy Resource that is approved by the CAISO Outage Coordination Office to be initiated and completed during off-peak hours (as specified in

the Business Practice Manual) without RA Replacement Capacity for the Resource Adequacy Capacity on the outage or de-rate.

* * *

- RA Maintenance Outage With Replacement

A Maintenance Outage, or change to an Approved Maintenance Outage, at a Resource Adequacy Resource that the CAISO Outage Coordination Office receives no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start of the outage and that includes RA Replacement Capacity for the Resource Adequacy Capacity on the outage or de-rate.

* * *

- RA Maintenance Outage Without Replacement

A Maintenance Outage, or change to an Approved Maintenance Outage at a Resource Adequacy Resource that the CAISO Outage Coordination Office receives no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start of the outage without RA Replacement Capacity for the Resource Adequacy Capacity on the outage or de-rate.

* * *

- RA Replacement Capacity

Specified RA Replacement Capacity, Non-Specified RA Replacement Capacity, or capacity that is not Resource Adequacy Capacity, CPM Capacity, or capacity under an RMR contract, that replaces Resource Adequacy Capacity that is not operationally available to the CAISO due to a Maintenance Outage, an RA Maintenance Outage With Replacement or a Forced Outage approved under Section 9.3.1.3.3.1(c)(4).

* * *

- Short-Notice Opportunity RA Maintenance Outage

A Forced Outage at a Resource Adequacy Resource accommodated by the CAISO on short notice without RA Replacement Capacity or RA Substitute Capacity for the Resource Adequacy Capacity on the outage or de-rate.

Attachment B – Marked Tariff Sheets

Outage Management System Replacement

California Independent System Operator Corporation

July 7, 2014

9.3.1.3.1.2 RA Resource Pending Maintenance Outage Requests

If a Resource Adequacy Resource requested a planned Maintenance Outage, or change to an Approved Maintenance Outage, more than forty-five days ~~in advance~~prior to the first day of the resource adequacy month but does not receive approval or denial of the request by the CAISO Outage Coordination Office as of the due date for the Resource Adequacy Plans and Supply Plans, the CAISO Outage Coordination Office, as part of the validation under Sections 9.3.1.3.2.3 and 40.7(b), will determine whether the outage should be approved and, if so, whether it must be replaced in the Resource Adequacy Plan with capacity from another resource that is operationally available in the amount and for the duration of the scheduled outage during the month.

~~Notwithstanding this provision, for the resource adequacy month of January 2013, if a Resource Adequacy Resource requested a planned Maintenance Outage, or change to an Approved Maintenance Outage, more than forty-two days in advance of the resource adequacy month but does not receive approval or denial of the request by the CAISO Outage Coordination Office as of the due date for the Resource Adequacy Plans and Supply Plans, the CAISO Outage Coordination Office, as part of the validation under Sections 9.3.1.3.2.3 and 40.7(b), will determine whether the outage should be approved and, if so, whether it must be replaced in the Resource Adequacy Plan with capacity from another resource that is operationally available in the amount and for the duration of the scheduled outage during the month.~~

* * *

9.3.1.3.3 Replacement Requirement for RA Resources

To the extent that a resource is committed to provide Resource Adequacy Capacity during a month, the Scheduling Coordinator for the resource may request an RA Maintenance Outage With Replacement, RA Maintenance Outage Without Replacement, Off Peak Opportunity RA Maintenance Outage, or Short-Notice Opportunity RA Outage, or may request to reschedule an Approved Maintenance Outage, for that Resource Adequacy Capacity in accordance with the provisions of this Section. The timelines set forth in this Section for submitting an Outage request and classifying the outage as a Maintenance Outage or a Forced Outage exclude the day that the request is submitted and the day that the outage is scheduled to commence.

9.3.1.3.3.1 RA Maintenance Outage ~~Requests~~ With Replacement

(a) **Replacement Option.** ~~After the monthly Supply Plan has been submitted, t~~The ~~Operator~~ Scheduling Coordinator of a Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may request that a planned Maintenance Outage be scheduled, or an Approved Maintenance Outage be rescheduled, as an RA Maintenance Outage With Replacement during that month.

(b) **Request.** A request for an RA Maintenance Outage With Replacement must (i) be submitted to the CAISO Outage Coordination Office no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days~~at least three Business Days~~ prior to the start of the outage,(ii) provide RA Replacement Capacity in an amount no less than the Resource Adequacy Capacity designated for the resource for the duration of the scheduled outage, and (iii) otherwise comply with the requirements set forth in Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider requests for an RA Maintenance Outage With Replacement in the order the requests are received.

(2) The CAISO Outage Coordination Office may approve the request for an RA Maintenance Outage With Replacement if it determines that (i) the ~~outage~~request ~~includes the required RA Replacement Capacity and~~ meets the ~~criteria~~requirements ~~set forth~~ in ~~this~~ Section 9.3.1.3.3.1(b) and ~~Section 9.3.6.4.1.that~~(ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid.

(3) If the request was submitted no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date for the outage, and it meets the requirements in Section 9.3.1.3.3.1(c)(2) the CAISO Outage Coordination Office may approve the request as an RA Maintenance Outage With Replacement.

(4) If the request was submitted no more than seven days and no less than four days prior to the start date of the outage, and it otherwise meets the requirements in Section 9.3.1.3.3.1(c)(2), the CAISO Outage Coordination Office may approve the request as a Forced Outage. A Forced Outage approved under this Section will not be subject to the standard capacity product provisions in Section 40.9.

(5) If the CAISO Outage Coordination Office denies the request for failing to meet the requirements in Section 9.3.1.3.3.1(c)(2), the Scheduling Coordinator for the Resource Adequacy Resource may request a different schedule for the RA Maintenance Outage With Replacement or may request that the CAISO Outage Coordination Office accommodate the outage without RA Replacement Capacity at another time.

(d) **Resource Adequacy Obligation.** The RA Replacement Capacity for an RA Maintenance Outage With Replacement approved under Section 9.3.1.3.3.1(c)(3) or a Forced Outage approved under Section 9.3.1.3.3.1(c)(4) shall be subject to all of the availability, dispatch, testing, reporting, verification and any other applicable requirements imposed on Resource Adequacy Resources by the CAISO Tariff, including the must-offer obligations in Section 40.6 and the standard capacity product provisions in Section 40.9, for the MW amount and duration of the outage replacement period, which includes the full day of the start date and the full day of the end date of the outage.

~~The CAISO Outage Coordination Office may deny a request for an RA Maintenance Outage With Replacement that is not timely submitted and/or does not provide the required RA Replacement Capacity for the outage, or may treat it as a request for a Short-Notice Opportunity RA Maintenance Outage under Section 9.3.1.3.3.3.~~

9.3.1.3.3.2 RA Maintenance Outage Without Replacement

(a) **Option for No Replacement.** The Scheduling Coordinator for a Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may request that a Maintenance Outage be scheduled, or an Approved

Maintenance Outage be rescheduled, as an RA Maintenance Outage Without Replacement, without a requirement to provide RA Replacement Capacity for the unavailable capacity for the duration of the outage.

(b) **Request.** A request for an RA Maintenance Outage Without Replacement must (i) be submitted to the CAISO Outage Coordination Office no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date of the outage, and (ii) otherwise comply with the requirements of Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider requests received for an RA Maintenance Outage Without Replacement in the order the requests were received.

(2) The CAISO Outage Coordination Office may approve a request for an RA Maintenance Outage Without Replacement if it determines that (i) the request meets the requirements in Section 9.3.1.3.3.2(b), (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, and (iii) the outage will not result in insufficient available Resource Adequacy Capacity during the outage period. The analysis of system conditions and the overall outage schedule will include Approved Maintenance Outage requests that were received before and after the request for an RA Maintenance Outage Without Replacement.

(3) The CAISO Outage Coordination Office will not approve a request for an RA Maintenance Outage Without Replacement earlier than seven days before the first day of the resource adequacy month, and may hold the request as pending until system conditions are sufficiently known for the CAISO to determine whether the outage meets the requirements in Section 9.3.1.3.3.2(c)(2).

(4) If the request is submitted no more than seven days and no less than four days

prior to the start date of the outage, and it otherwise meets the requirements in Section 9.3.1.3.3.2(c)(2), the CAISO Outage Coordination Office may approve the request as a Forced- Outage. A Forced Outage approved under this Section will not be subject to the standard capacity product provisions in Section 40.9.

(5) If the CAISO Outage Coordination Office denies a request for an RA Maintenance Outage Without Replacement for failing to meet the requirements in Section 9.3.1.3.3.2(c)(2), the Scheduling Coordinator for the Resource Adequacy Resource may request an RA Maintenance Outage with Replacement or may request that the CAISO Outage Coordination Office accommodate the outage at another time.

9.3.1.3.3.~~2~~3 Off-Peak Opportunity RA Maintenance Outage~~s~~

(a) **Option for Off-Peak Outage.** The ~~Operator of~~Scheduling Coordinator for a ~~r~~Resource Adequacy Resource designated as Resource Adequacy Capacity during the resource adequacy month may submit a request for an Off-Peak Opportunity RA Maintenance Outage ~~from ten days prior to the start of month until three business days prior to the end of the month,~~ without a requirement to provide RA Replacement Capacity for the unavailable capacity for the duration of the outage.

(b) **Request.** A request for an Off-Peak Opportunity RA Maintenance Outage must (i) be submitted to the CAISO Outage Coordination Office ~~at least three Business Days~~ no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date for the outage, (ii) schedule the outage to begin during off-peak hours (as specified in the Business Practice Manual) on a weekday, and to be completed prior to on-peak hours (as specified in the Business Practice Manual) the following weekday, or to begin during off-peak hours (as specified in the Business Practice Manual) on Friday, or on Saturday, Sunday, or a holiday, and to be completed prior to on-peak hours (as specified in the Business Practice Manual) on the next weekday~~,~~ and (iii) otherwise comply with the requirements set forth in Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider requests for an Off-Peak Opportunity RA Maintenance Outage in the order the requests were received.

(2) If the request was submitted no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start date for the outage, ~~T~~the CAISO Outage Coordination Office may approve the request as an Off-Peak Opportunity RA Maintenance Outage if it determines that (i) the request meets the requirements set forth in Section 9.3.1.3.3.3(b) and ~~(i) that~~(ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid~~, and (ii) it otherwise meets the criteria set forth in Section 9~~.

(3) If the request was submitted no more than seven days and no less than four days prior to the start date of the outage, the CAISO Outage Coordination Office may approve the request as a Forced Outage if it determines that (i) the request otherwise meets the requirements set forth in Section 9.3.1.3.3.3(b) and (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid. A Forced Outage approved under this Section will not be subject to the standard capacity product provisions in Section 40.9.

(4) If the CAISO Outage Coordination Office denies a request for an Off-Peak Opportunity RA Maintenance Outage for failing to meet the requirements in Section 9.3.1.3.3.3(c)(2), the Scheduling Coordinator for the Resource Adequacy Resource may request an RA Maintenance Outage with Replacement or may request that the CAISO Outage Coordination Office accommodate the outage at another time.

(5) To the extent that an approved Off-Peak Opportunity RA Maintenance Outage is

not completed during off-peak hours as scheduled, and extends into on-peak hours, the Scheduling Coordinator for the resource shall submit the portion of the outage that extends into on-peak hours ~~will be treated~~ as a new Forced Outage, which shall be subject to the standard capacity product provisions in Section 40.9.

9.3.1.3.3.~~3~~4 Short-Notice Opportunity RA ~~Maintenance~~ Outage~~s~~

(a) **Option for Short-Notice Outage.** ~~After the due date for the monthly Resource Adequacy Plans and Supply Plans and until the end of the resource adequacy month, t~~The ~~Operator of~~Scheduling Coordinator for a ~~r~~Resource Adequacy Resource designated as Resource Adequacy ~~Resource~~Capacity during the resource adequacy month may submit a request for a ~~planned Maintenance Outage or a request to change an Approved Maintenance Outage that is not timely under the provisions of Section 9 and/or does not provide~~Short-Notice Opportunity RA Outage without a requirement to provide ~~providing~~ RA ~~r~~Replacement ~~c~~Capacity or RA Substitute Capacity for the Resource Adequacy Capacity that will be on the Forced Outage or de-rate.

(b) ~~The CAISO Outage Coordination Office may, at its discretion, deny the request, or approve the request as a~~A Short-Notice Opportunity RA ~~Maintenance~~ Outage~~,~~ shall not exceed five days in length. The request for a Short-Notice Opportunity RA Outage must (i) be submitted no more than seven days prior to the requested start date for the outage, (ii) provide~~d that~~ the CAISO Outage Coordination Office ~~has~~ adequate time to analyze the request before the outage begins ~~and the analysis determines that (i) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, and~~ (ii) be submitted before the outage has ~~not already~~ commenced as a Forced Outage~~.~~, and (iv) otherwise comply with the requirements of Section 9.

(c) **Approval.**

(1) The CAISO Outage Coordination Office will consider Short-Notice Opportunity

RA ~~Maintenance~~ Outages in the order the requests are received.

(2) If the request was submitted no more than seven days and no less than four days prior to the start date of the outage, the CAISO Outage Coordination Office may approve the request as a Short Notice Opportunity RA Outage if it determines that (i) the outage and the request meet the requirements set forth in Section 9.3.1.3.3.4(b), (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, and (iii) the outage will not result in insufficient available Resource Adequacy Capacity during the outage period. The approved outage will be a Forced Outage but it will not be subject to the standard capacity product provisions in Section 40.9.

(3) If the request was submitted three days or less prior to the start date of the outage, the CAISO Outage Coordination Office may approve the request as a Forced Outage if it determines that (i) the outage and request meet the requirements set forth in Section 9.3.1.3.3.4(b), (ii) system conditions and the overall outage schedule provide an opportunity to take the resource out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid, (iii) the outage will not result in insufficient available Resource Adequacy Capacity during the outage period, and (iv) the repairs are necessary to maintain system or resource reliability and require immediate attention to prevent equipment damage or failure. A Short-Notice Opportunity RA Outage approved under this Section will be a Forced Outage but it will not be subject to the standard capacity product provisions in Section 40.9.

(4) To the extent that an approved Short-Notice Opportunity RA ~~Maintenance~~ Outage is not completed during the originally approved outage schedule, the Scheduling Coordinator for the resource must submit the portion of the outage that continues from the approved completion time until the time the outage is

actually completed ~~will be treated~~ as a new Forced Outage, which will be subject to the standard capacity product provisions in Section 40.9.

* * *

9.3.2 Requirement For Approval

An Operator or Scheduling Coordinator shall not take: (i) facilities that comprise the CAISO Controlled Grid or (ii) Generating Units of Participating Generators out of service for the purposes of planned maintenance or for new construction or other work except as approved by the CAISO Outage Coordination Office; except that final approval may not be required for a Transmission Maintenance Outage as provided in Section 9.3.9.1. The information relating to each Maintenance Outage submitted by a Participating Generator in accordance with Section 9.3.5 or by a Participating TO in accordance with Section 9.3.5 constitutes a request for a long-range Maintenance Outage and is not considered an Approved Maintenance Outage until the CAISO has notified the Participating Generator of such approval pursuant to Section 9.3.6 or the Participating TO pursuant to Section 9.3.6.

* * *

9.3.3 Request~~s For Generation Outages In Real-Time Operation~~ Submission and Information

The Operator or Scheduling Coordinator of facilities that comprise the CAISO Controlled Grid or of a Participating Generator, Participating Intermittent Resource, Generating Unit, System Unit, Physical Scheduling Plant, Proxy Demand Resource, Reliability Demand Response Resource, Non-Generation Resource, Participating Load, or other resource subject to the outage management requirements of Section 9, shall use the ISO's outage management system to --

(1) Submit all outage requests under Section 9.

(2) Provide the required information about the outage and work to be performed using the nature of work categories described in the Business Practice Manual.

(3) For transmission outage requests, additionally provide structured and detailed outage modeling information at the facility level and/or the breaker/switch level. If the work to be performed will require a switch position to change during the outage period, the Operator or Scheduling Coordinator must submit a separate outage request for each configuration.

(4) For resource outage requests, additionally provide the required information for the resource at the aggregate project or plant level, and also at the individual unit level for a unit de-rate greater than 50 MW, and any limitations on the resource's availability to provide each type of ancillary service for which it is certified.

~~Requests for Outages of Generating Units of Participating Generators in Real-Time operation shall be made by the Operator to the CAISO Control Center. The CAISO will not approve any Outage request made within seventy-two (72) hours of the requested Outage start time unless: (i) the requested Outage could not have been reasonably foreseen and scheduled through the Outage coordination process provided in Section 9.3, (ii) the requested Outage will not compromise CAISO Controlled Grid reliability and (iii) with respect to requests to convert from a Forced Outage to a Maintenance Outage for Resource Adequacy Resources subject to the Availability Standards of Section 40.9, the CAISO determines, in its reasonable discretion, that the Outage does not require the CAISO to implement backstop procurement measures to replace the capacity at the time of the Outage request.~~

* * *

9.3.5 Method Of Communications

The primary method of communication from an Operator or Scheduling Coordinator to the CAISO with regard to maintenance and Outage planning will be the outage management system as described in the Operating Procedure on the CAISO Website and in the applicable Business Practice Manual. Emergency capabilities, to be used only as a back-up if the primary communication method is unavailable, will include:

(a) voice;

(b) fax (last resort); and

(c) electronic (E-mail, FTP file~~, etc.~~).

9.3.5.1 Confirmation

When fax or electronic communication is utilized in the event the outage management system is unavailable, confirmation from the CAISO must be received by the Operator or Scheduling Coordinator to validate the receipt of the request.

9.3.5.2 Communication of Approval or Rejection

The CAISO shall use the outage management system as the primary ~~same~~ method~~s in~~ of communicating the approval or rejection of an Outage request or approval of a request to change an Approved Maintenance Outage to the relevant Operator or Scheduling Coordinator.

9.3.5.2.1 Information regarding planned Outages for resources with an Existing QF Contract or an Amended QF Contract shall be provided to the CAISO Outage Coordination Office by the Participating TO or UDC that is a party to the Existing QF Contract or an Amended QF Contract or by a Participating Generator. Information provided will be that obtained by the Participating TO, UDC or a Participating Generator pursuant to the terms of Existing QF Contract or an Amended QF Contract or as requested by the CAISO. Scheduling and approvals of Maintenance Outages for resources with an Existing QF Contract or an Amended QF Contract shall continue to be coordinated as detailed in the applicable contract with the Participating TO or UDC, provided the owner of the Regulatory Must-Take Generation resource has not executed a Participating Generator Agreement or Net Scheduled PGA. If the owner of a resource has executed a Participating Generator Agreement or Net Scheduled PGA, it shall comply with Section 9.3.5 and other provisions applicable to Participating Generators.

* * *

9.3.6 Maintenance Outage Planning

Each Operator or Scheduling Coordinator shall, by not later than October 15 each year, provide the CAISO with a proposed schedule of all Maintenance Outages it wishes to undertake in the following year. The proposed schedule shall include all of the Operator's transmission facilities that comprise the CAISO Controlled Grid and Generating Units subject to a Participating

Generator Agreement, Net Scheduled PGA, or Pseudo-Tie Participating Generator Agreement (including its Reliability Must-Run Units). In the case of a Participating TO's transmission facilities, that proposed schedule shall be developed in consultation with the UDCs interconnected with that Participating TO's system and shall take account of each UDC's planned maintenance requirements. The nature of the information to be provided and the detailed Maintenance Outage planning procedure shall be established by the CAISO. This information shall include:

The following information is required for each Generating Unit of a Participating Generator:

(a) the Generating Unit name and Location Code;

(b) the MW capacity unavailable;

(c) the scheduled start and finish date for each Outage; and

(d) where there is a possibility of flexibility, the earliest start date and the latest finish date, along with the actual duration of the Outage once it commences.

The following information is required for each transmission facility:

(a) the identification of the facility and location;

(b) the nature of the proposed Maintenance Outage;

(c) the preferred start and finish date for each Maintenance Outage; and

(d) where there is a possibility of flexibility, the earliest start date and the latest finish date, along with the actual duration of the Outage once it commences.

Either the CAISO, pursuant to Section 9.3.7, or an Operator or Scheduling Coordinator, subject to Section 9.3.6.11, may at any time request a change to an Approved Maintenance Outage. An Operator or Scheduling Coordinator may, as provided in Section 9.3.6.3, schedule with the CAISO Outage Coordination Office a Maintenance Outage on its system, subject to the conditions of Sections 9.3.6.4.1, 9.3.6.8, and 9.3.6.9.

* * *

9.3.6.3.1 Resource Maintenance Outages~~72 Hours Ahead for Generating Units~~

~~An Operator may, upon seventy-two (72) hours advance notice (or within the notice period in the Operating Procedures posted on the CAISO Website), schedule with the CAISO Outage Coordination Office a Maintenance Outage for a Generating Unit, subject to the conditions of Sections 9.3.6.4.1, 9.3.6.8 and 9.3.6.9.~~

(a) The Scheduling Coordinator for a Participating Generator, Participating Intermittent Resource, Generating Unit, System Unit, Physical Scheduling Plant, Proxy Demand Resource, Reliability Demand Response Resource, Non-Generation Resource, Participating Load, or other resource subject to the outage management requirements of Section 9, shall submit a request for a Maintenance Outage or a request to change an Approved Maintenance Outage to the CAISO Outage Coordination Office no less than eight days prior to the start date for the Outage, subject to the provisions of Sections 9.3.6.4.1, 9.3.6.8, and 9.3.6.9. The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence.

(b) The requirement in Section 9.3.6.3.1(a) does not preclude submission of a request for a Forced Outage under Section 9.3.10.3 where immediate corrective action is needed because equipment has failed in service, is in danger of imminent failure, or is urgently needed to protect personnel.

(c) A request for a Maintenance Outage that is submitted seven days or less prior to the start date for the Outage shall be classified as a Forced Outage.

(d) A request to change an Approved Maintenance Outage that is submitted seven days or less prior to the start date for the Outage, if approved, will remain classified as a Maintenance Outage. If the request is not approved, the Scheduling Coordinator for the resource may submit a request for a new Forced Outage for the schedule change.

9.3.6.3.2 Transmission Maintenance Outages

An Operator or Scheduling Coordinator~~Participating TO~~ shall submit a request for a Maintenance Outage or a request to change an Approved Maintenance Outage for transmission facilities on its system in advance of the start date for the Outage, as follows:

1. An Operator or Scheduling Coordinator may, upon thirty (30) days notice in advance of the first day of the month the Outage is proposed to be scheduled (or within the notice period in the Operating Procedures posted on the CAISO Website), schedule with the CAISO Outage Coordination Office a CRR Transmission Maintenance Outage for transmission facilities on its system, subject to the conditions of Sections 9.3.6.4.1, 9.3.6.8, 9.3.6.9, and 36.4.3.

2. An Operator or Scheduling Coordinator~~Participating TO~~ shall submit a request for a Planned Transmission Maintenance Outage or a request to change an Approved Maintenance Outage to the CAISO Outage Coordination Office no less than eight~~at least seven~~ days prior to~~in advance of~~ the start date for the Outage, subject to the provisions of Sections 9.3.6.3.2, 9.3.6.4.1, 9.3.6.8, and 9.3.6.9. The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence. This requirement does not preclude submission of a request for a forced outage under Section 9.3.10.3 where immediate corrective action is needed because equipment has failed in service, is in danger of imminent failure, or is urgently needed to protect personnel.

3. If an Operator or Scheduling Coordinator~~Participating TO~~ submits a request for a Planned Transmission Maintenance Outage or a request to change an Approved Maintenance Outage ~~less than~~ seven days or less ~~in advance of~~prior to the start date for the Outage, the CAISO Outage Coordination Office may, at its discretion, reject the request as untimely, or approve the request as an Unplanned Transmission Maintenance Outage provided that the CAISO Outage Coordination Office has adequate time to analyze the request before the Outage begins and the analysis determines that (i) the Outage is necessary for reliability, (ii) system conditions and the overall Outage schedule provide an opportunity to take the facilities out of service without a detrimental effect on the efficient use and reliable operation of the CAISO Controlled Grid and without disrupting

efficient market operations, and (iii) the Outage has not already commenced as a Forced Outage. The CAISO Outage Coordination Office will consider Unplanned Transmission Maintenance Outages in the order the requests are received.

* * *

9.3.8.1 Data Required

The Scheduling Coordinator for~~Operator of~~ a Generating Unit owned or controlled by a Participating Generator shall submit to the CAISO pursuant to Sections 9.3.4 and 9.3.5.2.1 its request to confirm the schedule of a planned Maintenance Outage or to change the schedule of a planned Maintenance Outage. Such request must be made to the CAISO Outage Coordination Office by no ~~later than 11:30 a.m. three (3) working~~less than eight days prior to the starting date of the proposed Outage (or as specified on the CAISO Website). Likewise, all Operators or Scheduling Coordinators for transmission facilities~~Participating TOs~~ shall submit a formal request to confirm or change an Approved Maintenance Outage with respect to any CAISO Controlled Grid facility to the CAISO Outage Coordination Office in accordance with Sections 9.3.6.3.2, 9.3.8.2 and 9.3.8.3. The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence. Such schedule confirmation request shall specify the following:

(a) the Generating Unit or System Unit name and Location Code, or the identification of the transmission system element(s) to be maintained including location;

(b) the nature of work~~the maintenance~~ to be performed;

(c) the date and time the Outage is to begin;

(d) the date and time the Outage is to be completed;

(e) the time required to terminate the Outage and restore the Generating Unit to normal capacity or the transmission system to normal operation;

(f) identification of primary and alternate telephone numbers for the Operator's single point of contact; and

(g) in the case of a request for a change to an Approved Maintenance Outage, the date and time of the original Approved Maintenance Outage.

9.3.8.2 ~~Three (3)~~ Eight~~-~~Day Prior Notification

Any request by a Participating Generator to confirm or change an Approved Maintenance Outage must be submitted no ~~later than 11:30 a.m. at least three (3) working~~less than eight days prior to the starting date of the Approved Maintenance Outage (or as posted on the CAISO Website). The timeline for submitting the required advance notice is calculated excluding the day the request is submitted and the day the Outage is scheduled to commence. Any request by an Operator or Scheduling Coordinator of transmission facilities~~Participating TO~~ to confirm or change an Approved Maintenance Outage ~~less than~~ seven (7) days or less in advance of the start date for the Outage is subject to Section 9.3.6.3.2.

9.3.8.3 ~~One (1) Day Prior Notification~~[Not Used]

~~Any request by a Participating Generator to confirm or change the schedule for an Approved Maintenance Outage requiring only one (1) day notice (as detailed on the CAISO Website) must be submitted no later than 11:30 am at least one (1) day prior to the starting date of the Outage (or as specified on the CAISO Website). Any request by a Participating TO to confirm or change an Approved Maintenance Outage less than seven (7) days in advance of the start date for the Outage is subject to Section 9.3.6.3.2.~~

* * *

9.3.9 Final Approval, Delay And Withholding

On the day on which an Approved Maintenance Outage is scheduled to commence, the Operator or Scheduling Coordinator shall contact the CAISO Control Center for final approval of the Maintenance Outage, except as provided in Section 9.3.9.1. No Maintenance Outage shall commence without such final approval (including the time of release, in hours and minutes) being obtained from the CAISO Control Center whose decision shall be final. The CAISO Outage Coordination Office may delay its approval of a scheduled Maintenance Outage for a Participating Generator if sufficient or complete information is not received by the CAISO Outage Coordination Office within the time frames set forth in Section 9.3.8.1. The CAISO Control Center shall have

the authority to withhold a Final Approval for an Approved Maintenance Outage for reasons of System Reliability, security or system status of the CAISO Controlled Grid or market impact. The CAISO Control Center shall immediately notify the relevant Operator or Scheduling Coordinator of its intention to withhold the Final Approval. The Generator Maintenance Outage or CAISO Controlled Grid facility Maintenance Outage will then be rescheduled pursuant to this CAISO Tariff.

9.3.9.1 Transmission Maintenance Outage Final Approval

As part of the approval process, the CAISO will determine whether an Approved Maintenance Outage for facilities that comprise the CAISO Controlled Grid will require Final Approval on the start date before the outage begins or may be initiated and completed without Final Approval. The determination will be based on the outage types identified in the Business Practice Manual and the expected impact of the outage on system conditions and the risk to system reliability. The CAISO will provide its determination to the Operator or Scheduling Coordinator of the transmission facilities through the outage management system.

(1) If Final Approval is required, the Operator or Scheduling Coordinator shall comply with the requirements in Section 9.3.9. The Final Approval may be requested and received through the outage management system.

(2) If Final Approval is not required, the Operator or Scheduling Coordinator may commence the outage as scheduled on the start date and conclude the outage as scheduled on the end date, and report those actions through the outage management system. If the outage does not commence or conclude as scheduled, the Operator or Scheduling Coordinator must request approval to change an Approved Maintenance Outage.

* * *

9.3.10.6 Review of Forced Outages. With respect to Forced Outages of Generating Units that result in a reduction in maximum output capability that lasts fifteen (15) minutes or longer of 40 MW or more below the value registered in the Master File and ten (10) percent of the value registered in the Master File, ~~the Operator shall provide to the CAISO an explanation of the~~

~~Forced Outage and the estimated return time, within two (2) Business Days after the Operator initially notifies the CAISO pursuant to Section 9.3.10.3.1 of the change in maximum output capability. The explanation shall include a description of the equipment failure or other cause and a description of all remedial actions taken by the Operator. Upon request of the CAISO,~~ Operators, and where applicable, Eligible Customers, Scheduling Coordinators, UDCs and MSS Operators promptly shall provide information requested by the CAISO to enable the CAISO to review the changes made to the maximum output capability or ~~to provide further information relative to the explanation of the~~ Forced Outages submitted by the Operator or Scheduling Coordinator and to prepare reports on Forced Outages. If the CAISO determines that any Forced Outage may have been the result of gaming or other questionable behavior by the Operator, the CAISO shall submit a report describing the basis for its determination to the FERC. The CAISO shall consider the following factors when evaluating the Forced Outage to determine if the Forced Outage was the result of gaming or other questionable behavior by the Operator: 1) if the Forced Outage coincided with certain market conditions such that the Forced Outage may have influenced market prices or the cost of payments associated with Exceptional Dispatches; 2) if the Forced Outage coincided with a change in the Bids submitted for any units or resources controlled by the Operator or the Operator's Scheduling Coordinator; 3) if the CAISO had recently rejected a request for an Outage for, or to Shut-Down, the Generating Unit experiencing the Forced Outage; 4) if the timing or content of the notice of the Forced Outage provided to the CAISO was inconsistent with subsequent reports of or the actual cause of the Outage; 5) if the Forced Outage or the duration of the Forced Outage was inconsistent with the history or past performance of that Generating Unit or similar Generating Units; 6) if the Forced Outage created or exacerbated Congestion; 7) if the Forced Outage was extended with little or no notice; 8) if the Operator had other alternatives to resolve the problems leading to the Forced Outage; 9) if the Operator took reasonable action to minimize the duration of the Forced Outage; or 10) if the Operator ~~failed to provide the CAISO an explanation of the Forced Outage within two (2) Business Days or~~ failed to provide any ~~additional~~ information or access to the generating facility requested by the CAISO within a reasonable time.

9.3.10.6.1 Outage Reporting By NRS-RA Resources

The Scheduling Coordinator for a non-Resource-Specific System Resource that provides Resource Adequacy Capacity shall report to the CAISO through the outage management system any Forced Outage of a Generating Unit or Forced Outage or Constraint of transmission facilities external to the CAISO Balancing Authority Area that directly results in the inability of the resource to deliver all or a portion of the Resource Adequacy Capacity identified in the resource's Supply Plan to the CAISO Balancing Authority Area. The Scheduling Coordinator for a non-Resource-Specific System Resource that provides Resource Adequacy Capacity is required to provide to the CAISO notice of the Forced Outage or Constraint within sixty (60) minutes after becoming aware of the circumstance ~~and an explanation of the Forced Outage or Constraint within two (2) Business Days after providing the notice. The explanation shall include the following: a description of the Forced Outage affecting the Generating Unit intended to be the source of the Resource Adequacy Capacity and the estimated return time of the unit; a description of the Forced Outage or Constraint of transmission facilities external to the CAISO Balancing Area Authority; and the impact of such circumstance on the resource's ability to deliver Resource Adequacy Capacity to the CAISO Balancing Authority Area. Upon request of the CAISO, t~~The Scheduling Coordinator for a non-Resource-Specific System Resource that provides Resource Adequacy Capacity shall promptly provide ~~additional~~ information requested by the CAISO to enable the CAISO to review the Forced Outage or Constraint and its impact on the ability of the resource to deliver Resource Adequacy Capacity to the CAISO Balancing Authority Area. DMM shall identify and notify the Commission's Office of Enforcement staff of instances in which the reporting of the Forced Outage or Constraint may require investigation. DMM is to make a non-public referral to the Commission in all instances where DMM has reason to believe that the reporting of the Forced Outage or Constraint constitutes a Market Violation other than those Market Violations identified in Section 11.1.13 of Appendix P. While DMM need not be able to prove that a Market Violation has occurred, DMM is to provide sufficient credible information to warrant further investigation by the Commission. Once DMM has obtained sufficient credible information to warrant referral to the Commission, DMM is to immediately refer the matter to the

Commission and desist from independent action related to the alleged Market Violation. This does not preclude DMM from continuing to monitor for any repeated instances of the activity by the same or other entities, which would constitute new Market Violations. DMM is to respond to requests from the Commission for any additional information in connection with the alleged Market Violation it has referred.

* * *

37.4.3 ~~Explanation Of Forced Outages~~[Not Used]

~~37.4.3.1 Expected Conduct~~

~~As required by Section 9.3.10.6, a Market Participant must provide a detailed explanation of a Forced Outage within two (2) Business Days after the Operator initially notifies the CAISO pursuant to Section 9.3.10.3.1 of the change in maximum output capability. To enable the CAISO to review the explanation submitted by the Operator and to prepare a report on the Forced Outage, the CAISO may request that the Market Participant submit additional information regarding the Forced Outage. An Operator must provide information requested by the CAISO within four (4) Business Days of the CAISO's request for the submission of additional information regarding the Forced Outage.~~

~~37.4.3.2 Sanctions~~

~~The Sanction for failing to provide an explanation of Forced Outage within the deadline established in Section 37.4.3.1 and Section 9.3.10.6 shall be $500 per day for each day the explanation is late. The Sanction for failing to provide a response to a request for additional information regarding the Forced Outage within the deadline established in the request for additional information shall be as specified in Section 37.6.1.~~

* * *

40.9. ~~Availability Standards And Payment; Non-Availability Charges~~Standard Capacity Product

* * *

40.9.2 Exemptions

The following exemptions apply to the CAISO's Availability Standards program of this Section 40.9:

(1) Resources with a PMax less than one (1.0) MW will not be used to determine Availability Standards, will not be subject to Non-Availability Charges or Availability Incentive Payments, and will not be subject to the additional Outage reporting requirements of this Section 40.9.

(2) Capacity under a resource specific power supply contract that existed prior to June 28, 2009 and Resource Adequacy Capacity that was procured under a contract that was either executed or submitted to the applicable Local Regulatory Authority for approval prior to June 28, 2009, and is associated with specific Generating Units or System Resources, will not be subject to Non-Availability Charges or Availability Incentive Payments. Such contracted Resource Adequacy Capacity, except for non--Resource-Specific System Resources, will be included in the development of Availability Standards and will be subject to any Outage reporting requirements necessary for this purpose. The exemption will apply only for the initial term of the contract and to the MW capacity quantity and Resource Adequacy Resources specified in the contract prior to June 28, 2009. The exemption shall terminate upon the conclusion of the initial contract term. Exempt contracts may be re-assigned or undergo novation on or after June 28, 2009, but the exemption shall not apply for any extended contract term, increased capacity quantity or additional resource(s) beyond those specified in the contract prior to June 28, 2009, except as provided in Section 40.9.2(7) or 40.9.2(8). Scheduling Coordinators for Resource Adequacy Resources subject to these contracts will be required to certify the start date of the contract, the expiration date, the Resource ID(s), and the amount of Resource Adequacy Capacity associated with each Resource ID included in the contract. For

Resource Adequacy Resources whose Qualifying Capacity value is determined by historical output, the capacity under a resource specific power supply contract or Resource Adequacy Capacity that was procured under a contract that was either executed or submitted to the applicable Local Regulatory Authority for approval that meets the requirements in this subsection (2) will not be subject to Non-Availability Charges or Availability Incentive Payments, except that the deadline date for either type of contract shall be August 22, 2010 instead of June 28, 2009.

(3) For a contract entered into prior to June 28, 2009 that provides for the amount of Resource Adequacy Capacity to increase during the original term of the contract, based on a ratio of the Resource Adequacy Resource's output or due to an addition of capacity, the exemption provided in subsection (2) of this Section 40.9.2 will apply to the additional capacity allowed under the contract; provided that the capacity increase (i) is expressly contained in the provisions of the contract, (ii) occurs during the primary term of the contract; and (iii) does not result from contract extensions or other amendments to the original terms and conditions of the contract, except as provided in Section 40.9.2(7) or 40.9.2(8). Scheduling Coordinators for Resource Adequacy Resources subject to contracts that provide for such capacity increases or additions must include in their certification, in addition to the requirements of subsection (2) of this Section 40.9.2, (i) the citation to any contract provisions that might entitle them to increased exempt Resource Adequacy Capacity from the contracted resources during the primary term of the contract; (ii) the amount of additional capacity to which they might be entitled; and (iii) the actual effective date of the capacity increase. If the actual amount of capacity and/or the actual effective date of the capacity increase is not known at the time of the initial certification, the Scheduling Coordinator shall provide a supplemental certification(s) when this information becomes known. For Resource Adequacy Resources whose

Qualifying Capacity value is determined by historical output the exemption provided in subsection (2) of this Section 40.9.2 will apply to an increase in the capacity under a resource specific power supply contract or Resource Adequacy Capacity that was procured under a contract that was either executed or submitted to the applicable Local Regulatory Authority for approval that meets the requirements in this subsection (3), except that the deadline date for either type of contract to be exempt shall be August 22, 2010 instead of June 28, 2009.

(4) Demand response resources will not be used to determine Availability Standards, will not be subject to Non-Availability Charges or Availability Incentive Payments, and will not be subject to the additional Outage reporting requirements of this Section 40.9.

(5) Resource Adequacy Capacity provided through contracts for Energy from non-specified resources delivered within the CAISO Balancing Authority Area will not be used to determine Availability Standards, will not be subject to Non-Availability Charges or Availability Incentive Payments, and will not be subject to the additional Outage reporting requirements of this Section 40.9.

(6) Resource Adequacy Resources of a Modified Reserve Sharing LSE or a Load following MSS will be used to determine the Availability Standards and will be subject to any Outage reporting requirements necessary for this purpose. Non-Local Capacity Area Resource Adequacy Resources of a Modified Reserve Sharing LSE or a Load following MSS will not be subject to Non-Availability Charges or Availability Incentive Payments, but those entities shall remain responsible for any other applicable deficiency payments under this CAISO Tariff or the applicable MSS Agreement.

(7) Scheduling Coordinators for resources with Existing QF Contracts or Amended QF Contracts that are Resource Adequacy Resources shall be exempt from the Outage reporting requirements of Section 40.9 if the resource previously provided Resource Adequacy Capacity under an Existing QF Contract that was

exempt from the application of Non-Availability Charges and Availability Incentive Payments pursuant to Section 40.9.2(2) or 40.9.2(3). This exemption from the Outage reporting requirements of Section 40.9 shall end for each resource when the Existing QF Contract or Amended QF Contract terminates or it is no longer eligible for exemption under Section 40.9.2(2) or 40.9.2(3), or if requested by the Scheduling Coordinator for the resource, whichever is earlier.

(8) Scheduling Coordinators for resources with Existing QF Contracts or Amended QF Contracts that are Resource Adequacy Resources shall be exempt from the Outage reporting requirements of Section 40.9, and will not be subject to Non-Availability Charges or Availability Incentive Payments, if the QF resource previously provided Resource Adequacy Capacity pursuant to an Existing QF Contract that was executed prior to the August 22, 2010 deadline for exemption under Section 40.9.2(2), and remained in effect pursuant to California Public Utilities Commission Decision 07-09-040 that extended the term of expiring contracts until such time as the new contracts resulting from that decision are available. This exemption from the Outage reporting requirements of Section 40.9, and the Availability Incentive Payments and Non-Availability Charges, shall end for each resource when its Existing QF Contract or Amended QF Contract terminates or if requested by the Scheduling Coordinator for the resource, whichever is earlier.

(9) An RA Maintenance Outage With Replacement, RA Maintenance Outage Without Replacement, Off-Peak Opportunity RA Outage, or Short-Notice Opportunity RA Outage that was submitted no more than seven days and no less than four days prior to the requested start date for the outage and that was approved as a Forced Outage under Section 9.3.1.3.3.1(c)(4), 9.3.1.3.3.2(c)(4), 9.3.1.3.3.3(c)(3), or 9.3.1.3.3.4(c)(2), and a Short-Notice Opportunity RA Outage that was submitted three days or less prior to the requested start date for the

outage and that was approved as Forced Outage under Section 9.3.1.3.3.4(c)(3), shall not be –

(a) subject to the Outage reporting requirements of Section 40.9;

(b) included in the availability determination under Section 40.9.4;

(c) subject to the substitution option under Section 40.9.4.2.1; and

(d) subject to Non-Availability Charges and Availability Incentive Payments under Section 40.9.6.

Exclusions from the Availability Standards and Outage reporting requirements established in this Section 40.9 are for this Section 40.9 alone and do not affect any other obligation arising under the CAISO Tariff.

* * *

40.9.4.1 Availability Standard

The CAISO shall calculate and publish the monthly Availability Standards for each Resource Adequacy Compliance Year ~~2010 no later than forty five (45) days after a FERC order approving this section and~~ by July 1 of the preceding calendar year. ~~prior to each Resource Adequacy Compliance Year thereafter. For Resource Adequacy Compliance Year 2010, t~~The monthly Availability Standards applicable to Resource Adequacy Resources subject to this Section 40.9.4 will be based on the historical availability of Resource Adequacy Resources during the Availability Assessment Hours ~~of the corresponding months during the period from June 2006 through December 2008. For subsequent years, the monthly Availability Standards will be based on historical availability for the Availability Assessment Hours~~ over the previous three years. Each monthly Availability Standard will be calculated as the sum of the available Resource Adequacy Capacity of the included Resource Adequacy Resources across all the Availability Assessment Hours of the month, divided by the sum of the designated Resource Adequacy Capacity for the same set of hours and resources, and multiplied by 100 to obtain a number between zero (0) and one hundred percent (100%). For the purpose of determining the available Resource Adequacy

Capacity in each month, the CAISO will use the Outage information reported in SLIC and, when available, the Outage reports submitted pursuant to Section 40.9.5. To ensure consistency between the calculation of the monthly Availability Standard and the calculation of each resource's monthly availability, the data utilized for both calculations will be in accordance with the provisions of Sections 40.9.4.2. All Resource Adequacy Resources except for the following will be included in the calculation of the Availability Standards:

(1) Resource Adequacy Resources exempted in Section 40.9.2;

(2) Non-Resource-Specific System Resources; and

(3) Resources between one (1) MW and ten (10) MW subject to the reporting requirements of Section 40.9.5, until such time that the CAISO has received the outage reports and can begin to utilize the data; and

(4) Use-Limited Resources for Compliance Year 2010 and 2011.

* * *

APPENDIX A

MASTER DEFINITIONS

* * *

- Off-Peak Opportunity RA Maintenance Outage

A Maintenance Outage for at a Resource Adequacy Resource that is approved by the CAISO Outage Coordination Office to be initiated and completed during off-peak hours (as specified in the Business Practice Manual) without RA Replacement Capacity for the Resource Adequacy Capacity on the outage or de-rate.

* * *

- RA Maintenance Outage With Replacement

A Maintenance Outage, or change to an Approved Maintenance Outage, at a Resource Adequacy Resource that the CAISO Outage Coordination Office receives no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start of the outage after the due date for the Resource

~~Adequacy Plans and Supply Plans for the resource adequacy month~~ and that includes RA Replacement Capacity for the Resource Adequacy Capacity on the outage or de-rate.

* * *

- RA Maintenance Outage Without Replacement

A Maintenance Outage, or change to an Approved Maintenance Outage at a Resource Adequacy Resource that the CAISO Outage Coordination Office receives no more than forty-five days prior to the first day of the resource adequacy month for which the outage is requested and no less than eight days prior to the start of the outage without RA Replacement Capacity for the Resource Adequacy Capacity on the outage or de-rate.

* * *

- RA Replacement Capacity

Specified RA Replacement Capacity, Non-Specified RA Replacement Capacity, or capacity that is not Resource Adequacy Capacity, CPM Capacity, or capacity under an RMR contract, that replaces Resource Adequacy Capacity that is not operationally available to the CAISO due to a Maintenance Outage, an RA Maintenance Outage With Replacement or a Forced Outage approved under Section 9.3.1.3.3.1(c)(4).

* * *

- Short-Notice Opportunity RA Maintenance Outage

A ~~Maintenance~~ Forced Outage~~, or change to an Approved Maintenance Outage, for~~ at a Resource Adequacy Resource ~~that does not qualify as an RA Maintenance Outage With Replacement or Off-Peak Opportunity RA Maintenance Outage, but that the CAISO Outage Coordination Office can~~ accommodated by the CAISO on short notice without RA Replacement Capacity or RA Substitute Capacity for the Resource Adequacy Capacity on the outage or de-rate.

Attachment C – Draft Final Proposal

Outage Management System Replacement

California Independent System Operator Corporation

July 7, 2014

Draft Final Proposal

Outage Management System Replacement

December 3, 2013

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1. Executive Summary

The ISO is conducting this stakeholder process to discuss proposed changes and enhancements to outage coordination that will be achievable through the Outage Management System (OMS) Replacement Project. At a high level, the project includes:

- Usability features that will improve all facets of outage scheduling from the participant's initial outage request, through the various review and outage processing states, and to its reliable execution monitored from the real time control floor.
- Process simplifications, standardizations and automation to drive efficiency in managing generation and transmission outages, better positioning the ISO to support the growing number of generation and transmission resources in our network model.
- New technology capabilities that will provide OMS reliability, high availability, flexibility and scalability to keep pace with market and system changes.
- New data transfers, data validations and notifications that will improve data communication from the new resource planning process through the complete Settlement cycle that that will reduce manual workarounds and increase data quality corporate-wide.

Operations, market participants, participating transmission owners, and WECC agree that a more usable system for managing outages is required. According to a root cause analysis for the mitigation of price correction, the volume and complexity of outages has increased an average of 9% per year over the last four years. The Voice of the Customer feedback from external participants, including WECC, identified important usability factors that are in scope for the new OMS.

From a technology standpoint, this project will refresh the existing outage systems qualities, maintainability, and supportability. The existing Scheduling and Logging for ISO of California (SLIC) and the internally developed Outage Management System (OMS), used for managing generation and transmission outages respectively, will be decommissioned upon conclusion of this effort. Completion of this effort will also position the ISO to adopt the Integrated Outage Optimization Coordination process which balances short-term outage requests on an economic and reliability basis.

2. Introduction

2.1 Purpose

The purpose of the OMS Replacement project is to update the ISO's outage management system and practices with improvements identified through years of experience, and to modernize the supporting technologies through a single outage management system. The purpose of this document is to capture and present a design approach or straw proposal for the new OMS. This proposal details how the Business Requirements Specification (BRS) posted on June 28, 2013 at http://www.caiso.com/informed/Pages/StakeholderProcesses/OutageManagementSystemProject.aspx will be developed into an OMS design, and outlines the key changes proposed in the new OMS.

3. Business Impacts

3.1 Background of Business Issues

The ISO has experienced a dramatic increase in the number of generation and transmission outage transactions due to new market and regulatory requirements. ISO outage management and application users, and real time operations, have raised numerous concerns related to processing the volume of the outage requests received and the quality of the information they contain.

Outage management and application users have identified specific application areas of concern:

- High-degree of human interpretation required to transform free-form text into actionable data
- Lack of mapping needed due to differences in equipment naming standards and equipment relationships
- Lack of automation requiring heavy manual processing and data entry
- Continued expansion of market products (e.g., Modeling at switch level, Multi Stage Generation, Non Generation Resources) expected to increase the number and complexity of both generation and transmission outage processing.

Real Time Operations users have also identified specific application areas of concern:

- Lack of automation and application performance
- Need for user friendly interface for the ability to quickly manage and submit forced outage de-rate information
- Need for automated communication of messages to various parties
- Multiple ISO applications are being used to manage outage data which is inefficient and increases risk of error.

The OMS Project Objectives

The OMS project is designed to meet the following goals/objectives:

- Meet the requirements of the North American Electric Reliability Corporation (NERC) Outage Standard TOP-003-1 – *Planned Outage Coordination*
- Improve outage management quality, productivity, and data accuracy for the OMS and downstream systems
- Increase efficiency between systems when there are component re-rates.
- Accelerate market application reporting
- Provide a high-degree of user functionality through increased system automation and equipment identification mapping
- Automate identified manual processes (i.e., require fewer business resources through increased system automation)
- Avoid costly application maintenance through solid system design
- Generate intuitive reporting
- Increase efficiency by using a single system to process and manage all outages.
- Provide system architecture and framework flexibility

Benefits of a New OMS

General

- Increases outage processing automation; e.g., reduces manual processes.
- Increases accuracy, ease of use and report functionality.
- Integrates disparate ISO systems

Transmission

- Eliminates the use of multiple ISO systems to manage transmission outages.
- Removes user ambiguity, removes a high degree of manual workflow, and consolidates today's OMS and SLIC's transmission outage functionality into one base application with additional functionality.
- Systematically captures transmission line re-rates, which will be passed to network models and market applications for processing.
- Introduces additional market impact functionality including automation of Nomograms, Flowgates and Contingencies.

One-Line Diagrams (possible future release if required)

- Provides a visual diagram representing sub-stations (buses, lines, breakers, switches, etc.) that will allow a user to visualize the equipment affected in the given outage.
- Significantly reduces manual interpretation and removes time consuming data searches.

Generation

- Eliminates the SLIC generation functionality and incorporates it into the OMS, thus providing a single application that will process an outage in its entirety.
- Introduces additional generation automation including the data transfer A/S Availability and Minimum Online capacity (MOC) requirements.
- New functionality will exist for resource owners to communicate outage data to the ISO.

4. Process Improvements

In early 2013, a cross-department ISO team performed a re-review of the ISO outage process that included customer feedback from previous scoping efforts. The team was challenged to evaluate the entire outage process, from outage submittal to outage completion, and develop streamlined processes and author clear requirements for the new system. The following outlines the improvements identified and detailed in the OMS Business Requirements Specification.

In addition, the ISO utilized a new outreach program called the "Voice of the Customer" to get input from our customers and ascertain how they use our systems and to collect strong user-based requirements. The first Voice of the Customer effort was a focus group specifically on how to make OMS a more useful and effective application. As a result of the Voice of the Customer effort, the ISO received valuable feedback with regard to the usability requirements early enough in the development phase to include them as requirements in the process.

This section is a high-level listing of the improvements identified to streamline the data entry, data search and data filter functions in OMS, where many of these improvements proposed came directly from the Voice of the Customer effort. The ISO will be discussing this section in more detail in future Customer Partnership workshops.

4.1 **Reduction of Manual Processes**

A primary tenet of the OMS project is to streamline the data flow between the ISO and its participants. At present, there are a significant number of manual processes performed by both ISO and participants. This is especially evident in the processing of participating transmission owners outages. At present, transmission outage switching detail is received in free-text form, and is re-input into the ISO systems that control the Network Model representations. This is a manual process called 'Augmentation', where the switching detail is converted from free form text into discrete database fields by ISO Outage Coordination personnel. There are

numerous issues with this approach including the potential for misinterpretation, inconsistency and potential human error.

The OMS project endeavors to implement the following specific improvements to the augmentation process:

- The OMS system will be designed to provide the ability for Transmission Owners to provide outage data in a structured format and for the ISO to map equipment data based on facility name. This data will directly interface with the Network Model, thus improving the completeness and accuracy of outage data.
- To assist Transmission Owners in the modeling of their transmission outages, OMS will have an intuitive User Interface, and an API to interface to their systems automatically. One-line diagrams may be implemented in the future if required.
- For outage work that requires different pieces of equipment out of service at different times, each timeframe with a different augmentation shall be required to have an individual outage card. This will promote more accurate modeling.
- OMS will provide the ability to quickly duplicate an outage, streamlining the effort of recreating outages.
- OMS will identify conflicting switch positions and provide the user a means to correct the switch position.
- OMS will store and display an outage priority date/time stamp that will assist in the tracking and prioritization of outages.
- For generation outages, all types of outage requests will be able to be submitted on the same outage card instead of the multiple types currently used in the SLIC application.

4.2 Increased Automation

Another primary goal of the OMS replacement project is to incorporate the use of automation over manual processing where possible. Automation efficiencies have been identified in the requirements as follows:

- **Automated Notifications**. Automated notifications are expected to greatly increase the quality and consistency of information between the ISO and its external participants as well as internally between ISO departments. Business rules that explicitly outline who, what and why notifications should be sent were developed with the vision that notifications need to be timely and meaningful. As business and system processes change, the OMS notification "engine" will be flexible and configurable to keep pace. Automated notifications may include:
  - Outlook integrated Automated Emails (See OMS-GOM-BRQ063)
  - OMS User system messaging (See OMS-GOM-BRQ061)
  - Automated messaging to other systems (WECC Net Messages, Market Messages (MNS))
  - Outage Processing Reminders
  - Warnings when changes occur to an outage associated in a group (OMS-GOM-BRQ017)
  - Information Only or Acknowledgment Required Pop Up Outage Notifications (See OMS-GOM-BRQ056)
  - Concise and clear System and Error notifications (See OMS-GOM-BRQ052)

- **Outage Processing Automation.** Business process automation can occur in well-defined instances where the inputs can be confirmed automatically and the resulting business action can be consistently applied. In the BRS, numerous business process automation opportunities were defined. These include:
  - Certain data elements in an outage may trigger further action.
    - For example, if a Nature of Work item is selected that is known to commonly impact AS Availability (e.g., RIG Outages), the AS Availability template will be automatically presented to the user.
  - Selected outage states may automatically transition to a new state based upon a business rule (OMS-GOM-BRQ018 and OMS-GOM-BRQ025).

- Example: An outage that is scheduled to start within five minutes and is still in the "Approved" state will automatically transition to "Late to Start." This transition serves as a warning that an outage is scheduled to begin and has not yet been requested. This time period is configurable.

4.3 Enhanced Usability Features

- If a data input rule is violated, the system will reject the request and notify the submitter why the request was rejected.
- Data validations are proposed to ensure all required data is input completely and accurately.
- OMS will clearly identify mandatory versus optional fields as well as pre-populate default values that can be modified by the user where applicable
- OMS will provide outage templates and saved user display settings for column order, sort preferences and other settings (See OMS-GOM-BRQ040).
- Search and filtering tools will include in-line filters, summary, expanded summary and detailed views, and progressive drill downs fields (where a selected item narrows the possibilities of the next data) (See OMS-GOM-BRQ042 and OMS-GOM-BRQ044)
- OMS will also have advanced filters for more complex queries.
- Status bar and progress bars will be available for any complex and potentially long processing data requests.
- The Tab order will logically move through the outage data needed to create an outage in an efficient and timely manner.

5. Process Changes with Tariff Impact

The following section details where new requirements defined in the Business Requirements Specification (BRS) posted on June 28, 2013 directly impact the ISO Tariff and change the way outage scheduling is performed at the ISO. Upon Board of Governor approval to proceed with the new OMS Replacement Project, the ISO will draft new Tariff language to be filed at FERC for approval and will prepare BPM language and submit it through the change management process to reflect these changes.

5.1 Nature of Work

In an effort to streamline processes, capture relevant data, and provide additional automation and functionality, a new concept called Nature of Work will be introduced with OMS. Nature of Work types will replace several of the current system's resource outage types, resulting in one outage card "type" with multiple Nature of Work items to select from. This is further detailed below.

Nature of Work will be selected when creating an outage card to identify the high level scope of work or reason for the outage card, similar to the use of GADS Cause Codes in the current SLIC system. Based on the Nature of Work selection, additional templates may become available to the user to streamline the outage creation and validate input. Nature of Work types will be different for resource and transmission outages as described below. GADS Cause Codes will remain in OMS, but will become an optional field.

Transmission Nature of Work Types

When creating a transmission outage, the ISO proposes providing hierarchal drop-downs that will guide the user through the outage creation, with fields being populated or becoming available based on the previous selections. Each piece of equipment in the network model will be mapped to the OMS so that the user can select a specific substation (e.g. Station A), type of equipment (e.g. line, bank, bus), and specific equipment

name (e.g. Bus #1) that filters based on previous selections. More than one piece of equipment can be identified on each outage card to accurately report work that impacts more than one component.

A Nature of Work type will be related to each individual piece of equipment on the transmission outage card. More than one Nature of Work type can be selected for each outage card. Example provided in section 5.3.

The following Transmission Nature of Work types are being proposed:

- Out of Service
- Energized Work
- Relay Work
- Special Setup
- Test Program
- Equipment Derate
- Equipment Abnormal
- Path Limitation

Communication outage cards will also be supported, with Nature of Work types relevant to the different scopes of communication work.

Resource Nature of Work types

Resource outage templates will also follow a hierarchal drop-down approach, with the highest level being the market resource, or plant, level. Each associated child resource will populate the outage and give the user the ability to report at the child level (see section 5.2 for additional de-aggregation details).
A Nature of Work type will be selected and, based on the selection, additional fields or templates may become available. More than one Nature of Work type can be selected for each outage card.

The following resource Nature of Work types are being proposed:

- Environmental Restrictions
- Transmission Induced
- Plant Maintenance
- Plant Trouble
- Ambient Due to Temperature
- Ambient Not Due to Temperature
- Power System Stabilizer (PSS)
- AVR/Exciter
- Unit Testing
- Metering/Telemetry
- RTU/RIG
- ICCP
- Transitional Limitation
- Unit Cycling
- Unit Supporting Startup

The Ambient Derate outage card types will be removed and replaced with relevant Nature of Work types, including choices to indicate if the outage is due to temperature or not due to temperature

Pmin Re-rate and Ramp Rate Re-rate cards will also be removed, with entry for these values made available on the resource outage card template.

Currently, Normal Card codes fall into three general categories. To simplify resource reporting, the following Nature of Work types are proposed to be used in place of the current Normal Card SLIC Cause Codes:

- "Transitional Limitation" will replace the following:
  - 10000 – Warming Steam Driven Auxiliary Equipment
  - 10002 – Warming Additional Combustion Turbine
  - 10003 – Transition to/from Start-up or Bypass System
  - 10004 – Hold Due to Thermal Stress

- "Unit Cycling" will replace the following:
  - 10007 – Avoiding Equipment Cycling
  - 10009 (partial) – Resource Adequacy Resources Availability
    - To be used if a resource is being dispatched in real time beyond their DA Awards and must shut down to meet minimum down time requirements prior to starting up to meet their next day's DA Awards
    - For any other use of this code, the standard outage process shall be followed

- "Unit Supporting Startup" will replace the following:
  - 10005 – Unit in Startup

- "Transmission Induced" will replace the following:
  - 10008 (partial) – Dynamic System Resource Derate
    - To be used for a derate to a Dynamic System Resource or pseudo-tie resource due to transmission constraints
    - For any other use of this code, the standard outage process shall be followed

- "Ambient Not Due to Temperature"
  - 10010 – QF CHP Host Load Required Derate

- The following codes will no longer need to be accounted for:
  - 10001 – Changing Fuel Source
    - There are no longer any resources in the system that require this functionality
    - If a new resource required this functionality, it would fall under "Transitional Limitation"
  - 10006 - A/S Deliverability Operational Limit
    - New OMS functionality will have a mechanism for reporting A/S Availability for a resource

An additional current function that will be replaced with Nature of Work types is "Make Planned."
Currently, an outage can be changed from Forced to Planned using this functionality. This is typically used for resources that are out of service due to conditions outside of their control, such as a transmission outage resulting in interruption of the path that delivers the resource's energy to the system. The Make Planned functionality will be removed and participants will now select the Nature of Work type to reflect the reason for their outage.

Under the new functionality, an outage submitted in the forced timeframe will be identified as Forced on the outage card. Forced outages that are not subject to SCP penalties will be identified based on information found on the outage card and be identified to downstream CAISO systems for appropriate SCP processing.

Additional details concerning Nature of Work will be determined through OMS Customer Partnership Group sessions.

5.2 De-Aggregation of Resources for Outage Reporting

Modeling accuracy with only aggregated resource data does not provide the level of detail required for accurate Real Time Contingency Analysis and State Estimator solutions. In addition, WECC requires detailed outage modeling to support the west-wide model. The ISO is the only entity in the WECC that does not provide this level of granularity. Currently, resource outages are submitted to the ISO at the aggregated project or plant level with no granularity to the individual child resources. Also, availability is reported in a single value, making it difficult to identify which individual resource is contributing to the reduced availability. This issue is magnified in cases of overlapping outages.

> For example, a 300MW aggregated resource consisting of two CTs and one steam plant has submitted an outage card with an ongoing plant level ambient derate of 10MW, reducing its plant level availability to 290MW. While this ambient derate is in effect, the resource has real time trouble, requiring CT #1 to be removed from service. An additional short term outage card is submitted with a derate of 100MW. The total derate of the plant is now 110MW, resulting in total availability of 190MW.

Using the example above, the new OMS, like today, will require two outage cards. The market systems will continue to utilize the overall availability value of 190MW. The network model will now accurately reflect CT #1 out of service and an overall plant availability of 190MW.

To reduce participant impact, outage cards will continue to be managed and submitted at the aggregate or market resource level. The new OMS system will provide a pre-populated template, which will include the parent-child resource structure based on the plant level resource selected within each card. The participant will enter relevant de-aggregated data and identify each child resource availability value.

Market information will continue to be reported manually by the participant at the market resource level. This includes energy availability, ancillary service availability, Pmin re-rates, and ramp rate re-rates. Aggregate and PSP resources will continue to report at the parent resource level to provide accurate dispatchable availability values. MSG resources will report these values at the configuration level.

For further details refer to OMS-GEN-BRQ018 and OMS-GEN-BRQ025

5.3 Structured PTO Outage Data

Currently, the PTOs submit outages with clearance points and other transmission elements to the CAISO using mostly free text. Some outages are as long as twenty to thirty pages that must be read to identify critical information, risking accuracy and reliability. Other outages are submitted without enough information for the CAISO to fully understand the scope and impacts of the outage. Much of the outage information has to be interpreted by CAISO personnel, often requiring clarifying phone calls. Then outage information is manually entered into other CAISO systems, including modeling of the outage for use in Day Ahead Reliability Studies, the State Estimator, Real Time Contingency Analysis, and Market Applications. The use of structured transmission data will address two primary areas for improvement. The first is more structured and detailed modeling information, the second is more clear indication of equipment impacted by outages.

Requirement for CAISO Reliability Analysis

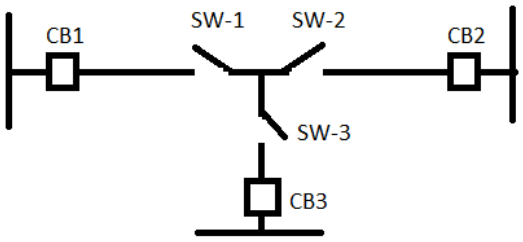
The CAISO performs a reliability analysis to ensure that in the pre-contingency state, no transmission facilities are expected to carry power flow above the normal continuous facility rating. In addition, NERC and WECC reliability standards require the CAISO to perform an N-1 contingency analysis, ensuring that no N-1

contingencies will create an overload above the emergency ratings of the facilities. To accurately perform these analyses, the power flow model reflects the following:

1. Each piece of equipment that could change the way power flows
2. Each piece of equipment that could change the way "N-1" contingencies impact the system

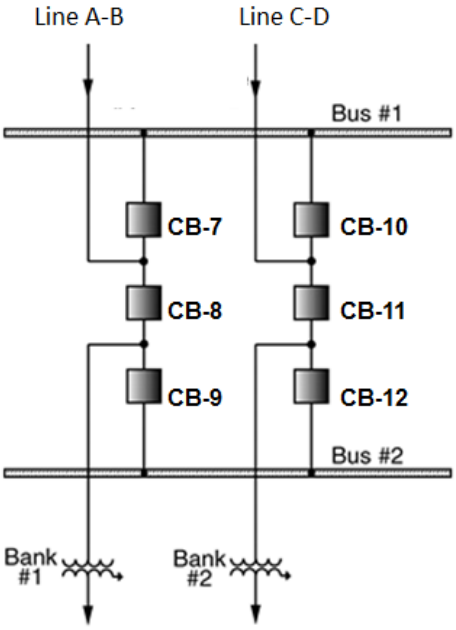
The above information is essential in performing reliability analyses to meet normal operational planning requirement under NERC and WECC standards.

Below is an example of a three-terminal line. Opening switch SW-3 would provide a different power flow as opposed to opening the entire line, which is commonly done by opening Breaker CB1, CB2, and CB3.



Below is an example of a breaker and a half scheme. Open-ending Line A-B at the remote station (leaving CB7 and CB8 closed) will be different then opening Line A-B, commonly done by opening Breaker CB7 and CB8, because the N-1 response to a fault at Bank #2 will create a very different system response:

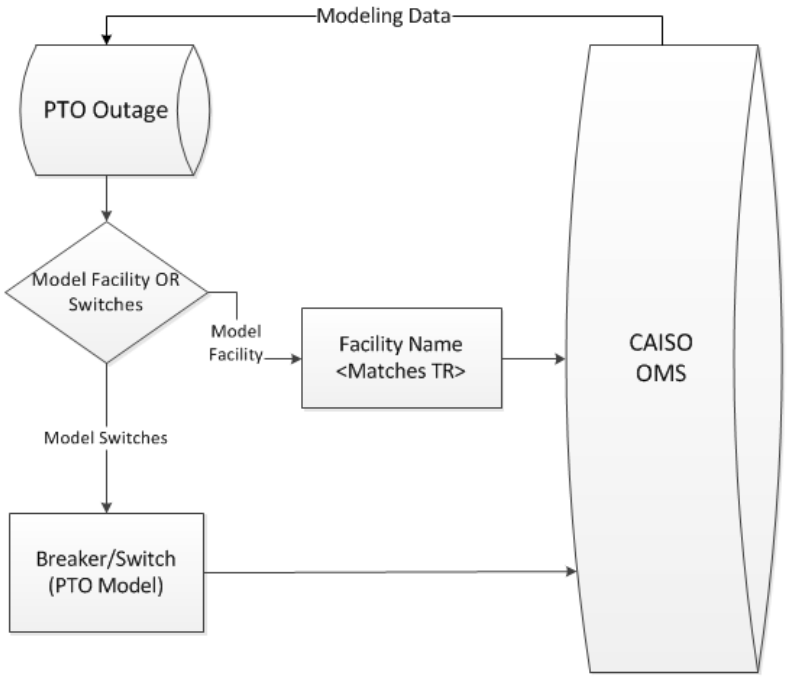
- If CB7 and CB 8 are closed there is a contiguous path between Line C-D to Bank#1 following the N-1 loss of Bank #2.
- If CB7 and CB8 are open, both Line C-D and Bank #1 will be open-ended following the N-1. In this situation, the N-1 fault at Bank #2 will leave all equipment at the bus open-ended and not carrying any power flow.



Due to the possible variations as described above, it is very important for the CAISO to understand what the exact requested outages are. For this reason the CAISO, is requesting that actual breaker positions (and switch positions, if applicable) are submitted along with the outage request.

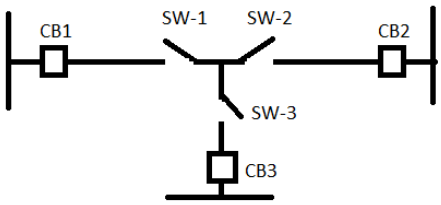
To address the first concern of structured and detailed outage modeling information, the CAISO will use the Transmission Registry (TR) names, and perform a mapping process of each PTO's network model to the ISO's network model at the facility (bus, bank, line, etc.) and at the switch level. The CAISO will start with contingency modeling definitions that are already utilized and will work with the PTOs to validate and pre-model any additional facilities' normal isolation points to increase efficiency during the outage creation process.

When creating an outage, the PTO will select either the pre-modeled facility or individual isolation points associated with the outage. For outages that are not pre-modeled or outages with other than normal isolation points, the PTO will model their outage at the appropriate facility level, which could include switches. The modeled points will be presented to the PTO for validation or modification if required. This will ensure that the outage is modeled accurately based on the PTO input and reduce the need for manual interpretation. The structured modeling format will allow for direct integration with downstream systems needed for accurate State Estimator, Contingency Analysis, and Market Application results. See diagram below.



Outage Submission Examples – Option 1

In the three-terminal line example as follows:

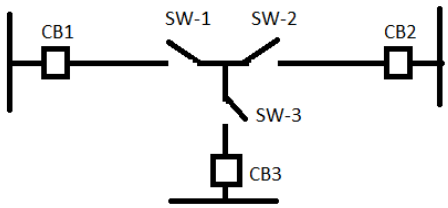


A PTO may do one of the following:

- If the entire three-terminal line will be out of service, the PTO may submit one line outage for the whole three-terminal line using its line name as defined in the CAISO TR:
    - ISO OMS will then assume that CB1, CB2, CB3 will be opened as isolation points during the outage.
    - ISO OMS will also record the opening of CB1, CB2, and CB3 as part of the outage. These records will be made available to the PTO. If there are any changes needed, the PTO may provide updated switch/breaker positions.
    - All reliability analyses and the Day Ahead market will be ran with CB1, CB2, and CB3 open for the duration of the outage
- If one of the line segments will be out of service, the PTO may submit one line-segment outage for the line segment that will be out using its line segment as defined in the CAISO TR. For example, if segment 3 will be out:
    - ISO OMS will then assume that CB3 and SW-3 will be opened as isolation points during the outage.
    - ISO OMS will also record the opening of CB3 and SW-3 as part of the outage. These records will be made available to the PTO. If there are any changes needed, the PTO may provide updated switch/breaker positions.
    - All reliability analyses and the Day Ahead market will be ran with CB3 and SW-3 open for the duration of the outage

Outage Submission Examples – Option 2

In the three-terminal line example as follows:



The PTO may submit any combination of breakers and switches and designate the correct positions for each to reflect the state of the system during the outage. The PTO will use their network model names to submit to the CAISO. For example:

- If the entire three-terminal line will be out of service the PTO might submit CB1, CB2, and CB3 in the open position as part of the outage.
- If one of the line segments will be out of service, the PTO may submit breaker and switch positions to indicate that. For example, if segment 3 will be out of service the PTO might submit CB3 and SW-3 in the open position as part of the outage.

The second area of improvement is to clearly and consistently identify equipment associated with an outage. Currently, free text is used in the outage card short description to identify the specific equipment that work will be conducted on. This is sometimes incomplete and doesn't always give a clear indication of the type of work being performed, requiring the user to search outage notes for critical information. In addition, because the current system only contains components to the station level, it is cumbersome to research past outages on specific components such as transformer banks or buses for research and reporting.

The new OMS will contain each bank, bus, and line in a structured format with a mechanism to identify the type of work being done on each (Nature of Work). It will also allow for the association of more than one piece of equipment to be identified on one outage card, making it easier to see the full scope of work for jobs that impact more than one component. This level of detail will clearly identify relevant transmission outage data in a summary view to remove ambiguity and provide more efficient referencing.

For example, an outage is submitted for a job at Substation A that removes Bus #1, Bank #1 and Line #1 from service.

Current SLIC:
The resource name will be either Substation A or Line #1, depending on which component is selected at time of outage creation. The remaining equipment will be identified in either the short description or the main text of the outage card. The summary view of this outage might look something like this:

BA Code	Outage ID	Resource Name	Short Description	
PTO – A	ID # 12345	Station A	Equipment out of service at Station A for...	

This view does not give the user an overall picture of the scope of work without opening the outage card and reading all of the free text. It is also not possible to perform a search to find outages on Bank #1, Bus #1, or Line #1 without searching for all work done at Station A and opening and reading the free text in each.

New OMS:
The resource names will be Bus #1, Bank #1, and Line #1, with Nature of Work associated with each one. The summary view of this outage might look something like this:

BA Code	Outage ID	Resource Name	Nature of Work	Short Description
PTO – A	ID # 12345	Station A Bus #1	Out of Service	Equipment out of service..
		Station A Bank #1	Out of Service	
		Line #1	Out of Service	

This view gives the user an overall picture of the scope of the work. Each component is identified in the summary view, as well as the “Out of Service” Nature of Work type for each component. This structure also makes it possible to perform a search to find work on any one of the three pieces of equipment included on the outage.

To further promote network model accuracy, each outage request will only have a single set of outage augmentation (or configuration), which is associated with the start and end times of the outage. For work that requires switches to change position during the job, the outage submitter will submit separate outages for each configuration.

Technical details regarding UI and API requirements will be discussed through the Customer Partnership Group sessions.

5.4 PTO Outage Processing Efficiencies

Currently, PTOs request a final approval to begin and end transmission work from the CAISO real time transmission dispatcher prior to commencing the outage. This results in numerous phone calls throughout the day to process numerous outages, including outages with low risk and low impact. As the number of outages and workload increase, dispatchers are spending more and more time manually processing and managing outages, taking their attention away from other responsibilities. The CAISO proposes a new process to streamline real time outage processing.

To facilitate this new process, outages submitted to the CAISO will be separated into two categories, dependent upon the expected impact to the system. Based upon CAISO configurable business rules and PTO input, outages are categorized as either Final Approval Required (FAR) or Final Approval Not Required (FAN).

- Final Approval Not Required (FAN) – For an outage that has been previously approved, work may be started at the planned time without requesting a final approval
- Final Approval Required (FAR) – For an outage that has been previously approved, a final approval must be obtained (electronically or verbally) from the CAISO before commencing work

A majority of the outages that are processed by real time operators have been through the standard outage lifecycle. This includes review by outage coordinators and engineers at both companies. Assuming that these planned outages are going to proceed as planned in real time, many of them will not require a final approval by the CAISO in real time prior to commencing work. The PTO will report the start and end times of the outages electronically to directly update the OMS outage card. These outages will be designated as Final Approval Not Required (FAN). This means that in real time, the ISO does not need to issue an additional approval unless there is a change to the outage.

For some outages, the CAISO real time operator may have additional responsibilities at the start and end of an outage. These outages will be designated Final Approval Required (FAR) and the PTO will contact the CAISO to receive approval to begin and end the outage. The final approval can be requested and given electronically through the OMS system. The current proposed Transmission FAR outages are:

- 500kV work
- Equipment out of service that impacts a path rating
- Outages with generation requirements
- Outages with flow limits associated
- Work that impacts relays

The ISO will prominently display if an outage is designated as FAR or FAN on each outage card.

For the small percentage of outages that are initiated in real time, outages will be electronically submitted by the PTO. Business processes will be established around communication requirements for these types of outages during workshops with PTOs.

PTO Outage Coordination groups are currently submitting and managing outages through electronic submissions to the CAISO in the pre-real time timeframe. Electronic processing in this timeframe has resulted in a reduction of manual work for PTO's and the CAISO, as well as the ability to electronically update outages without having to resend the entire outage manually. The CAISO would like to extend these efficiencies to real time.

The CAISO expects that the introduction of Final Approval Required and Final Approval Not Required criteria, as well as electronic processing of outages, will greatly reduce the volume of phone calls between control rooms concerning routine outages, allowing operators to regain the time to devote to other reliability related tasks. The CAISO continues to encourage the use of phone communication when necessary; however, the CAISO would like to encourage the use of electronic processing when possible.

As today, per CAISO Business Practice Manual for Outage Management and Operating Procedure 3210, the PTOs will be responsible for maintaining their scheduled outage start and end times accurate at all times. All changes to transmission outages must be approved by the ISO.

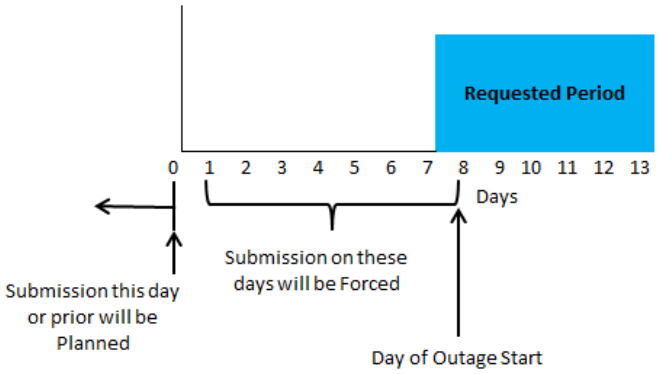
Generation real time outage processing will remain the same as it currently is in SLIC.

5.5 Planned Resource Outage Submittal Timeline

In an effort to increase network model accuracy and provide sufficient time for outage processing and analysis, the ISO is proposing to align the resource outage submittal timeline with the transmission outage timeline of seven calendar days.

Receiving resource outage data seven days in advance is critical to providing the ISO with the ability to analyze transmission and generation outages together, thereby improving study results and providing additional time to identify and resolve potential areas of conflict. To be considered Planned, an outage request must be submitted to the CAISO no later than Seven Days prior to the start date of the proposed Outage. The determination of seven day prior notice excludes the date of submission and the date of the outage.

Any resource outages that are submitted after the deadline will be considered forced.



Opportunity Outage Submittal

If system conditions permit, a resource may be granted an ISO approved Short Notice Opportunity Outage in the seven day forced timeframe. If approved, it will not be subject to SCP penalties. Short Notice Opportunity Outages will no longer be evaluated prior to the forced timeframe.

Off-Peak Opportunity Outages will continue to be accepted and evaluated consistent with today's current business practices.

RA Unit Substitution

In response to stakeholder comments, the CAISO proposes to change the RA unit substitution requirements that would otherwise apply to the seven-day forced outage period. The changes will reduce implementation complexity and eliminate the potential financial impact of SCP during calendar days 4–7 of the new forced outage period. Under this proposal, a resource will be subject to SCP if an outage is submitted within three calendar days of the start date of the outage, not to include the date of the request and the date of the outage, rather than the current three business day rule. SCP will not apply to forced outages requested 4-7 calendar days in advance of the outage. All other SCP rules remain the same as today.

Outages submitted 4-7 calendar days prior to the outage start date will be classified as forced outages but the resource will permitted to replace the unavailable capacity under the current RA Replacement Rules.

In addition, Many-to-Many SCP Substitution functionality will give Market Participants the capability to use one substitute unit to cover multiple forced RA outages. Please refer to the ISO Release Schedule for information on when the Many-to-Many SCP Substitution functionality will be available.

5.6 Accounting for "Partial Forced" Resource Outages

Partial forced functionality will be postponed to a future phase due to stakeholder concerns and complexity of implementation. An automated process for partial forced will be considered as part of a future phase of the OMS Project.

A change to a Planned outage in the forced timeframe will require a new Forced outage card only if the request is denied due to reliability concerns.

5.7 Elimination of the Forced Outage Report

The ISO proposes to eliminate the requirement to submit a Forced Outage Report Based on the ISO's review of its process and input obtained through the Voice of the Customer, the ISO has determined that Forced Outage Report is no longer necessary and can be eliminated. The elimination of this report will reduce the workload for scheduling coordinators and streamline the outage management process.

5.8 A/S Availability Reporting

Current "Regulation Outage" functionality in SLIC allows for the scheduling coordinator of a resource to identify when that resource is not available to supply Regulation due to an outage. This limited functionality does not allow for the scheduling coordinator to differentiate between Regulation Up or Down, or to identify if there are limitations on other Ancillary Service commodities. Free text must be used to communicate this additional level of information and an ISO operator must manually provide the input to the Market systems about the limitations.

The new OMS will provide an A/S Availability template for scheduling coordinators to report limitations in a structured format for each ancillary service type. The data will be automatically utilized by the market systems with no need for ISO interpretation or manual intervention. For specified Nature of Work types that commonly impact a resource's ability to provide one or more Ancillary Services, this template will automatically become available and contain additional validation rules. This will reduce the amount of manual interpretation and allow the scheduling coordinators to clearly identify their resource's ancillary service limitations.

6. Next Steps

6.1 Plan for Stakeholder Engagement

The following are the "next steps" in the Stakeholder process toward presenting this proposal to the ISO Board of Governors.

Item	Date
Post Revised Straw Proposal (*This document*)	October 18, 2013
Stakeholder WebConference Call	October 31, 2013
Stakeholder Comments on Straw Proposal Due	November 7, 2013
Post Draft Final Proposal	December 3, 2013
Stakeholder WebConference Call	December 10, 2013
Stakeholder Comments on Final Proposal Due	December 17, 2013
Board of Governors	February 2013

Note that additional Customer Focus Groups will also be scheduled to collect further input on the user interface and system-to-system interactions. Exact dates and times to be announced through an ISO Market Notice.

Attachment D – Addendum to Draft Final Proposal

Outage Management System Replacement

California Independent System Operator Corporation

July 7, 2014

Outage Management System Replacement

Addendum to Draft Final Proposal

December 27, 2013

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I. Introduction

On December 3, 2013 the ISO issued the Draft Final Proposal for the Outage Management System Replacement stakeholder initiative. The Draft Final Proposal was discussed with stakeholders during a conference call on December 17, 2013. During the conference call the ISO realized that there was confusion around the policy and tariff for replacement of resource adequacy resources which request outages after the monthly RA showings, Short Notice Opportunity Outages, Off-Peak Opportunity Outages, and how these processes will be modified by the changes to the Outage Management System. This brief Addendum to the Draft Final Proposal clarifies how the ISO will treat these situations.

II. Background

Starting with 2013 Resource Adequacy year, the ISO instituted a new policy requiring generators seeking to schedule planned outages of RA resources after the monthly RA showings to provide replacement RA capacity for the period of the outage. Two exceptions to this replacement requirement were created. One was the Off-Peak Opportunity Outage, which was for brief maintenance outages which could be conducted completely during an off-peak period. This was designed to allow generators to perform required minor monthly maintenance without requiring replacement if the outage could be confined to off-peak periods. The second exception to replacement was the Short Notice Opportunity Outage, which was developed to provide an opportunity for generators needing a maintenance outage to work with the ISO Outage Management Group to schedule the outage when system conditions and the overall outage schedule could accommodate the additional outage and the generator would not be required to provide replacement RA capacity. The expectation was that because these would be requests made shortly before the proposed outage start date the ISO would have a good idea of other potential outages, system conditions and forecast conditions so they could be approved without causing reliability issues.

The tariff language required RA resources requesting a planned outage after the monthly RA showing to include replacement capacity with its request, but allowed the ISO, in its discretion, to treat the request as a request for Short Notice Opportunity Outage and not require replacement.

III. Scope of Addendum and Plan for Stakeholder Engagement

This addendum is not new policy, but simply a clarification of the existing policy and Draft Final Proposal. These issues were discussed with stakeholders during the December 17, 2013 conference call. Stakeholder comments on the Draft Final Proposal and the conference call were initially due December 23, but stakeholders requested this be delayed until January 3, 2014 and the ISO agreed. In order not to delay the proposed Fall 2014 implementation of the OMS replacement, the proposal must be presented to the ISO Board of Governors at the February meeting. Thus, the ISO cannot delay any further the comments on the Draft Final

Proposal and this Addendum. Comments on this Addendum should be submitted along with comments on the Draft Final Proposal by January 3, 2014.

IV. ISO Clarification on RA Replacement for Scheduled Outages

Starting in the Fall of 2012 for the 2013 Resource Adequacy year, the ISO implemented changes to outage management which required, under certain circumstances, the replacement of RA capacity for RA resources on outages. These changes imposed obligations both on the load serving entities (LSEs) when they submitted their monthly RA showings, and subsequent to the submission of those showings on the generators providing RA capacity.

RA resources are expected to be available during the RA month. LSEs in their monthly RA showings are expected to include only resources which are not on outage during the month. If LSEs include in their RA showings resources which are on outage, they may be requested to provide replacement capacity if the overall amount of RA resources expected to be available during the outage drops below the monthly RA requirement. Similarly, after the monthly RA showings, all RA resources are expected to be available, and planned outages are accepted only with replacement, or under two special conditions: Short Notice Opportunity Outages and Off Peak Opportunity Outages. These limited exceptions were developed to ensure that resources could take short outages for regular maintenance in off-peak periods when the outage would not impact the reliability of the grid, and to encourage resources to work with the ISO on finding times for other outages that would not impact reliability.

Today:

After the monthly showings, at T-45 days, resources may submit requests for planned outages during the month; these requests must include replacement capacity. These will be evaluated by the ISO, and if conditions allow, they will be approved. If no replacement capacity is provided, the ISO, in its discretion, may approve the outage as a short notice opportunity outage. The two exceptions to the general replacement requirement are:

- Off-Peak Opportunity Outage: this is an outage which can be conducted completely during off-peak hours. This type of outage is typically for a peaking plant which must conduct a small amount of monthly maintenance, but can do so entirely on a weekend or overnight (off-peak) so that its non-availability during the outage will not affect reliability.

- Short Notice Opportunity Outage: these are outages which, in the discretion of the ISO, can be accommodated without impacting reliability and without requiring replacement capacity. The short notice refers to these requests being close to the outage time so that the ISO has a very good idea of what the system conditions and other outages will be so that it can determine that there is no reliability issue. The criteria for these outages is system conditions, not the monthly RA requirement which is used for evaluating the replacement requirements for LSE RA in their monthly showings.

Some resources today submit requests for maintenance outages after the monthly showings, but well in advance of the outage, without replacement capacity. As indicated above, the ISO, in its discretion, can consider these as requests for short notice opportunity outages. In practice today, these requests are put into pending status until such time as the ISO has adequate information about the system conditions to approve or deny the requests.

Proposed RA Outage Requests:

Under this proposal, generators will be able to submit requests for planned outages during the RA month after the initial monthly RA showings, which is 45 days before the month. The outages may take the following forms:

Outage with Replacement: After the initial RA showings, at T-45 days, and up to 4 days before the proposed start date for the outage, a resource may request a maintenance outage and provide replacement capacity. If the outage does not raise reliability issues, the ISO will approve the outage request as a planned outage (if it is before 7 calendar days in advance of the outage start date) or as a forced outage not subject to the application of standard capacity product ("SCP") non-availability charges and availability incentive payments (if it is between 7-4 calendar days in advance of the outage).

Planned Outage without Replacement: After the initial RA showings, at T-45 days, and up to 8 calendar days before the proposed start date for the outage, a resource may request a planned outage without providing replacement. If, in the ISO's discretion, the request can be approved without raising a reliability issue, and still ensuring that the ISO has the sufficient RA capacity to meet the monthly RA requirement, the request may be approved as a planned outage without replacement. Requests received between days 7 through 0 before the outage may be treated as a request for a Short Notice Opportunity Outage.

- The ISO will not approve any such request for an outage without replacement earlier than seven days before the RA month (T-7), when the actual RA fleet for the month is known. The ISO may treat the request as pending until such time as the system conditions are sufficiently well known that the ISO, in its sole discretion, can determine whether the request can be approved.
- Requests for planned outages without replacement will be processed in the order received; however the ISO's analysis of system conditions will include all previous approved outages, including any requests for outages with replacement that the ISO received after the requests for a planned outage without replacement.
- The ISO will inform the resource as soon as possible if the request cannot be approved; if it is clear that the request cannot be accommodated the ISO will not wait until T-7 to inform the generator that the request cannot be accommodated and is denied.

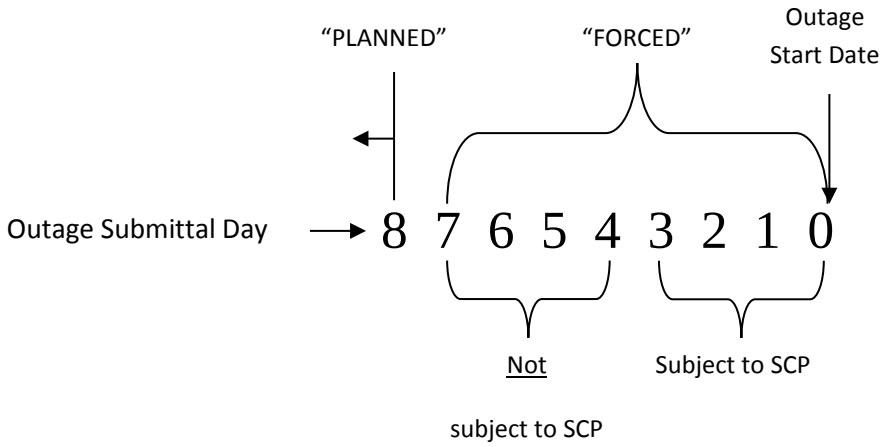
Short Notice Opportunity Outage: A request for a Short Notice Opportunity Outage can be made by the RA resources within the 7 day forced outage period. The ISO, at its discretion, may approve the outage request as a Short Notice Opportunity Outage not requiring replacement if it can be accommodated without creating any reliability issues based on system conditions, forecasts, and the overall outage schedule. These outages will be treated as forced outage not subject to SCP non-availability charges and availability incentive payments.

Off-Peak Opportunity Outage: After the initial RA showings, at T-45 days, and up to 4 days before the proposed start of the outage, a resource may request an Off-Peak Opportunity Outage for a short-term outage than can be completed entirely during off-peak periods. If the outage does not raise reliability issues, the ISO may approve the outage as a planned outage (if the request is submitted more than 7 calendar days in advance of the outage start date) or as a forced outage not subject to SCP non-availability charges and availability incentive payments (if the request is submitted between 7-4 calendar days in advance of the start date of the outage).

If the ISO denies the request for an outage and the generator takes the outage, the outage will be treated as a forced outage, and any potential capacity availability penalties under the SCP would apply. If a resource outage is submitted without replacement, but the ISO determines that replacement is required, the outage request will be denied if replacement is not provided. If a request for an outage without replacement is denied, the generator may request the outage as an outage with replacement and it will be evaluated again. Further, if the ISO is unable to accommodate a request for Short Notice Opportunity Outage at the time requested, the ISO may, at its sole discretion, suggest another time for the outage when it could be accommodated. The generator is under no obligation to accept the ISO's proposed time.

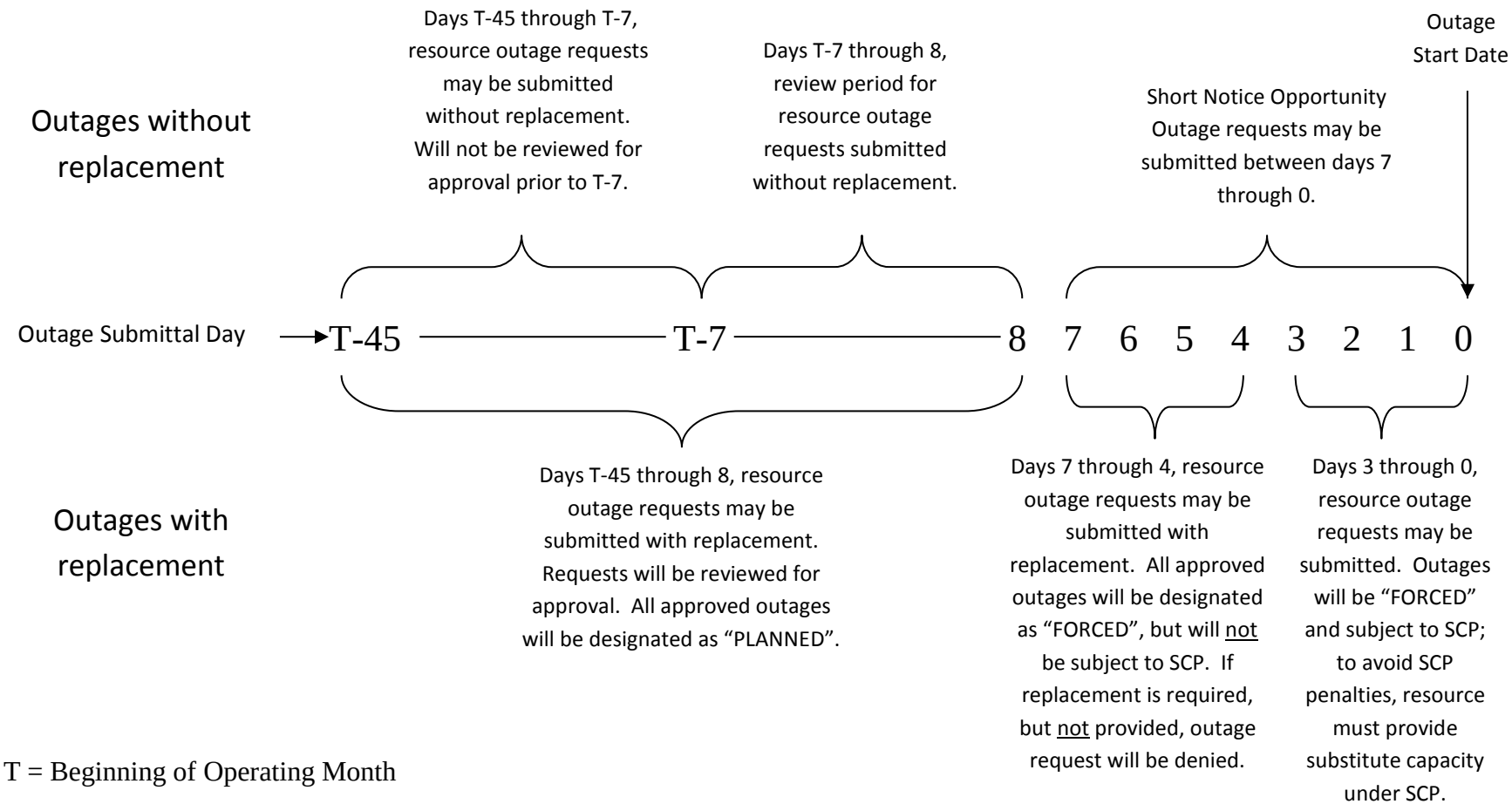
The following diagrams indicate the time line for the outages described above:

Planned and Forced Outage Submission Timeline



- All outages will retain their original designation throughout the outage lifecycle ("PLANNED" or "FORCED"), which is determined at the time of outage submittal.

Outage Submission Timeline



T = Beginning of Operating Month

V. Next Steps

The ISO requests stakeholders submit written comments on this Addendum at the same time they submit their comments on the Draft Final Proposal. These comments should be submitted by January 3, 2014.

Attachment E – Board Memorandum

Outage Management System Replacement

California Independent System Operator Corporation

July 7, 2014

Memorandum

To: ISO Board of Governors

From: Eric Schmitt – Vice President, Operations

Date: January 30, 2014

Re: **Decision on Outage Management System Proposal**

This memorandum requires Board action.

EXECUTIVE SUMMARY

As part of the California Independent System Operator Corporation's effort to support the state's renewable policy goals, and to accommodate an aging infrastructure, Management proposes improvements to its outage management system to address a significant increase of resource and transmission outage requests. A lack of automation, coupled with manual processing of outage data, has created a strain on the existing outage management systems. With new market enhancements and a continued rise in outage requests on the horizon, identifying ways to more effectively manage these transactions has become increasingly critical.

In July 2013, the Board approved Management's outage management system replacement project proposal. As part of this effort, Management has worked extensively with internal discussion groups and external participants to identify ways to improve the outage process. Utilizing this feedback, we have identified multiple opportunities to reduce manual processing and increase the accuracy of the outage data used to determine the viability of resource and transmission outage requests. These changes will position the ISO to effectively and efficiently manage the increasing number of outage transactions, while still maintaining the highest level of market and grid reliability. The proposed tariff changes are outlined below:

1. Provide customers with the ability to submit detailed reasons for outage requests;
2. Require customers to submit detailed resource outage data;
3. Provide participating transmission owners with the ability to submit transmission outage requests in structured data formats;
4. Extend electronic outage processing efficiencies to real-time operations;
5. Align the timeline for resource outage requests to the timeline for transmission outage requests;

6. Eliminate unnecessary reporting requirements; and
7. Provide customers with the ability to submit ancillary service limitations as structured data.

Management recommends the following motion:

> ***Moved, that the ISO Board of Governors approves the outage management system proposal, as described in the memorandum dated January 30, 2014, 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

The ISO's current outage management systems and processes were designed under much different market and regulatory requirements than today. New ISO market systems and reliability study tools have since been developed to incorporate significant amounts of structured data that were not utilized until recently. Additionally, the ISO has experienced a dramatic increase in the number of resource and transmission outage requests. In 2004, the ISO processed 42,000 new outage requests, compared with over 82,000 new outage requests processed in 2013. ISO System Operations has raised numerous concerns regarding the increase in outage requests and the lack of automation necessary to accurately process these requests, while at the same time continuing to maintain bulk electric system reliability. Management's proposal is aimed at providing external participants and internal users with an outage management system that is capable of handling new market and regulatory requirements, as well as a continued increase in outage requests.

The proposal includes several key elements that are described briefly in the following paragraphs:

Provide customers with the ability to submit detailed reasons for outage requests: Customers will have the ability to submit detailed reasons for outage requests in the form of structured data (data that resides in a fixed field within a record or file). The introduction of detailed reasons will allow the ISO to process all outage requests with a single outage request template, eliminating the need for multiple outage request templates. The ISO will use this structured data to increase automation in the processing of outage requests. Additionally, downstream ISO systems will use this structured data to ensure appropriate outage processing throughout the settlements lifecycle.

Require customers to submit detailed resource outage data: Currently, resource outage requests are submitted without the sufficient detail necessary for accurate ISO reliability studies. Additionally, the Western Electricity Coordinating Council requires

detailed resource outage data to support the west-wide model. The ISO will ensure steps are taken to minimize the impact to customers due to this change, including providing pre-populated outage request templates at the time of outage submission.

Provide participating transmission owners with the ability to submit transmission outage requests in structured data formats: Outage requests in the current outage management system are unable to support structured data formats, therefore relying on free-form text to specify isolation points[1] for the work being performed. The ISO translates this free-form text into usable structured data, which the ISO market and reliability study tools consume. However, the practical reality is that the participating transmission owners that submit outage requests have the best understanding of the correct isolation points to be used when processing the requests. The current practice of the ISO converting free-form text into structured data introduces possible interpretation error into the equation. Receiving isolation points as structured data dramatically reduces the risk of incorrect interpretation, and provides assurance to participants that the exact isolation points they submit are being used in the ISO markets.

Extend electronic outage processing efficiencies to real-time operations: An increase in outage requests and associated workload has created additional manual work for real-time operators, who spend considerable time manually processing and managing these requests through phone communications. Some of these outage requests are routine and innocuous, but the current outage management systems do not have the capability to distinguish between routine and critical outage requests. Management proposes to utilize functionality that would distinguish routine outage requests from critical outage requests, and create automated rules based on these distinctions. These distinctions and rules would allow for electronic processing of outage requests in real-time operations, thereby reducing unnecessary phone communications that may divert attention from reliability related responsibilities.

Align resource and transmission outage request timelines: Current tariff language states that resource outage requests will be considered forced if submitted within three business days of the outage start. This timeline is not consistent with transmission outage requests, which are considered forced if submitted within seven calendar days of the outage start. Aligning these timelines provides the ISO with the amount of time necessary to analyze resource and transmission outages together to properly understand the full impact of all outages on the bulk electric system. In addition to aligning resource and transmission outage request timelines, Management proposes limited modifications to the existing rules and calculations for the resource adequacy program. These modifications will ensure that resources are not unduly penalized due to proposed changes in the resource outage request timeline, and ensure the application of standard capacity product will continue to align with the calculation of the availability standard, availability incentive payments and non-availability charges.

[1] Isolation points (or clearance points) are exact, physical locations on the electrical grid where equipment is de-energized. These are used by ISO market systems and reliability study tools.

Eliminate unnecessary reporting requirements: Management proposes to eliminate the requirement for customers to submit forced outage reports. These reports have been identified as unnecessary, and the elimination of them will reduce the workload for customers and streamline the outage management process.

Provide customers with the ability to submit ancillary service limitations as structured data: Customers will now have the ability to use structured data to submit ancillary service limitations for resources. Currently, these limitations are communicated to the ISO through the use of free-form text in the outage request. This data will be utilized by ISO market systems to ensure ancillary service limitations are appropriately considered in the day ahead and real-time markets.

POSITIONS OF THE PARTIES

Beginning in April 2013, the ISO conducted several rounds of stakeholder meetings on these topics, including a new collaborative effort called "Voice of the Customer". Information gathered from these efforts was used to compile a straw proposal, a revised straw proposal, a draft final proposal, and a draft final addendum where stakeholders were able to provide comments. The proposal was modified in response to comments received from stakeholders. A summary of stakeholder comments and Management's response to the concerns raised is provided as Attachment A.

Overall, stakeholders are supportive of both the objectives of this proposal and the elements contained within it. Stakeholders widely acknowledge that the proposal offers significant benefits and improvements to the overall outage management process.

However, despite broad support, some stakeholders still have concerns. San Diego Gas & Electric supports the submission of transmission outage requests in the form of structured data, but is concerned that this initiative may inappropriately shift responsibilities from the ISO to SDG&E, in addition to causing a substantial increase in costs. The ISO understands there may be additional costs associated with the implementation of this element, but we believe this change will improve efficiency and accuracy. Additionally, the ISO believes it is in the best interest of grid reliability, and the ISO market, for participants to submit outage requests as structured data, as the participating transmission owners have the best understanding of the correct isolation points in their outage requests. Furthermore, this proposal provides assurance to participants that the exact isolation points they submit in the outage request are being used in the ISO market and reliability study tools.

With respect to extending electronic outage processing efficiencies to real-time operations, SDG&E and Southern California Edison express concerns. SDG&E supports the goal of eliminating redundancies and improving overall efficiencies, but does not feel the ISO has demonstrated how this element of the proposal will accomplish those intended goals. Also, SDG&E's existing real-time format does not support additional responsibilities for outage data management, which is currently handled via phone communications. SCE states strong opposition to this element of the

proposal, and expresses concern that it may degrade SCE's core obligations of safety, reliability, and situational awareness. The ISO understands these concerns and seeks to clarify the intent and proposed implementation of this proposal. The ISO believes that using electronic processing, prioritizing tasks, and reserving phone communications for critical matters improves safety and reliability. The intent of this element is to increase efficiency, reliability and situational awareness by providing real-time personnel with the ability to prioritize tasks according to levels of criticality. The ISO believes this can be achieved by reducing the amount of unnecessary phone communications related to non-critical matters. The ISO appreciates the concerns from stakeholders regarding this element, and continues to encourage the use of oral communications for outage processing whenever it is deemed necessary by the participant.

Stakeholders are not opposed to aligning the resource and transmission outage request timelines, but many request the ISO to clearly denote when outage requests are, and are not, subject to standard capacity product non-availability charges. The ISO agrees that it is important to clearly indicate this information within the outage request, and we will continue to work with stakeholders to ensure proper implementation of this element of the proposal.

The Six Cities[2] expressed confusion over the counting method used for resource and transmission outage requests, and urges the ISO to take steps to conform the counting method applied to resource and transmission outage timelines to the counting method applied in other provisions of the tariff. The ISO understands the counting method proposed for resource outage timelines may be confusing, and will consider changing it in the future, after full impacts to the tariff and other processes have been thoroughly vetted.

Wellhead Electric proposes that the function of resource adequacy replacement be handled within the new outage management system, but this will need to be explored under a separate initiative as this is outside the scope of the current proposal.

CONCLUSION

Management recommends that the Board approve the outage management system proposal discussed in this memorandum. These changes are generally supported by stakeholders and were refined to address many of their comments and concerns. Management will continue to monitor the effectiveness of the proposed enhancements and believes that these changes will position the ISO to effectively and efficiently manage the increasing number of outage transactions, while still maintaining the highest level of market and grid reliability.

[2] Cities of Anaheim, Azusa, Banning, Colton, Pasadena, and Riverside, California ("Six Cities")

Board of Governors **February 6, 2014** **Decision on outage management system proposal**

Motion

Moved, that the ISO Board of Governors approves the outage management system proposal, as described in the memorandum dated January 30, 2014; 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.

Moved: Olsen **Second: Bhagwat**

Board Action: **Passed**	Vote Count: **5-0-0**
Bhagwat	Y
Foster	Y
Galiteva	Y
Maullin	Y
Olsen	Y

Motion Number: 2014-02-G2