Business Practice Manual for Outage Management

Version 31

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BPM Owner: RajaShekar Thappetaobula

BPM Owner's Title: Director, Operations Engineering Services

Revision History

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29	1485	04/30/2023	Strategic Reliability Reserves
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Version	PRR	Date	Description
24	1252	07/01/2020	Language to clarify 24 hour outage rule
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Version	PRR	Date	Description
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9	660	6/1/2013	PRR 660 5.2.1 Reporting Generator Regulation Outages
8	607	11/21/2012	PRR 607 Revision to include: 4.1Coordinating Maintenance Outages of RA Resources
7	547	4/30/2012	PRR 547 Revision to 7.3.3.3 All references to reliability demand response resources will be removed from the BPM for Outage Management in compliance with the February 16, 2012 order in FERC Docket No. ER12-3616.
6	522	3/13/2012	PRR 522 Revision to include: 4.2.1.2 Sharing Outage Information with Natural Gas Suppliers PRR 524

Version	PRR	Date	Description
			Revision to include: 7.3.4 Non Resource Specific RA resources Outage Reporting
5	453	9/26/2011	PRR 453 Revision to include 7.3.3 Reliability Demand Response Resource (RDRR) outages and derates shall be managed and reported to SLIC in the same manner as generator resources. Tariff effective April 1, 2012.
4	428	6/15/2011	PRR 428 Revision to include Seven Day Requirement for Planned Transmission Outage Requests.
3	156	8/10/2010	PRR 156 Revision due to Proxy Demand Resource 7.3.2 Outage reporting for Proxy Demand resources.
2	87	1/1/2010	PRR 87 Revisions due to Standard Capacity Product. 7.3.1 Resource Adequacy Resources with Pmax Between 1.0 MW and 10 MW

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1. Introduction

Welcome to the ISO *BPM for Outage Management*.

In the Introduction section you will find the following information:

- The purpose of ISO BPMs
- What you can expect from this ISO BPM
- Other ISO BPMs or documents, as well as external documents, that provide related or additional information

Please note that the business processes described in this BPM are also covered in several ISO Operating Procedures. In the event of a conflict between this BPM and the ISO Operating Procedures listed in Section 1.3, the Operating Procedures take precedence.

1.1 Purpose of California ISO Business Practice Manuals

The Business Practice Manuals (BPMs) developed by the ISO are intended to contain implementation details consistent with and supported by the ISO Tariff. This includes: instructions, rules, procedures, examples, and guidelines for the administration, operations, planning, real time operations and accounting requirements of the ISO and the markets. Exhibit 1-1 lists the ISO BPMs.

Exhibit 1-1: ISO BPMs

Title
BPM for Candidate CRR Holder Registration
BPM for BPM Change Management
BPM for Compliance Monitoring
BPM for Congestion Revenue Rights
BPM for Credit Management and Market Clearing
BPM for Definitions & Acronyms
BPM for Direct Telemetry
BPM for Distributed Generation for Deliverability

Title
BPM for Energy Imbalance Market
BPM for Generator Interconnection and Deliverability Allocation Procedures
BPM for Generator Interconnection Procedures
BPM for Generator Management
BPM for Managing Full Network Model
BPM for Market Instruments
BPM for Market Operations
BPM for Metering
BPM for Outage Management
BPM for Reliability Requirements
BPM for Rules of Conduct Administration
BPM for Scheduling Coordinator Certification and Termination
BPM for Settlements and Billing
BPM for Transmission Planning Process

1.2 Purpose of this Business Practice Manual

The BPM for Outage Management covers the business processes used by the ISO to coordinate the scheduling of generation and transmission outages within the jurisdiction established in the ISO Tariff, other than outages managed by the ISO in its function as a Reliability Coordinator which is covered in the Business Practice Manual for Reliability Coordinator Services. The BPM describes the roles and responsibilities of the ISO, its Transmission Owners, Transmission Operators, Scheduling Coordinators, and all other non-ISO members within the ISO's Balancing Area that serve as Transmission Operators or Generator Operators, to coordinate and respond to transmission and generation outages.

In addition, this BPM includes the following:

- Transmission Owner or Operator responsibilities and obligations to report outages to the ISO
- Generator Owner or Generator Operator responsibilities and obligations to report outages to the ISO
- The ISO's responsibilities and obligations to process outage requests
- The ISO's outage coordination processes

The provisions of this BPM are intended to be consistent with the ISO Tariff. If the provisions of this BPM conflict with the ISO Tariff, the ISO is bound to operate in accordance with the ISO Tariff. Any provision of the ISO Tariff that may have been summarized or repeated in this BPM is only to aid understanding. Even though every effort will be made by the ISO to update the information contained in this BPM and to notify Market Participants of changes, it is the responsibility of each Market Participant to ensure that they are using the most recent version of this BPM and to comply with all applicable provisions of the ISO Tariff.

A reference in this BPM to the ISO Tariff, a given agreement, any other BPM, external document, or instrument, is intended to refer to the ISO Tariff, that agreement, BPM, external document, or instrument as modified, amended, supplemented, or restated.

The captions and headings in this BPM are intended solely to facilitate reference and not to have any bearing on the meaning of any of the terms and conditions of this BPM.

1.3 References

The definition of acronyms and words beginning with capitalized letters in this BPM, are given in the *BPM for Definitions & Acronyms*.

Other reference information related to this BPM includes:

- ISO Operating Procedures
    - Link to operating procedures: http://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx
        - Refer to 3000 series for outage coordination
        - Refer to 4000 series for emergency operations
        - Refer to 5000 series for communication and administration
        - Refer to 6000 series for bulk reportable paths

- BPM for Market Operations
- Link to BPM for Market Operations
  https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Market%20Operations
- Information regarding Outage Management System user guide
- http://www.caiso.com/market/Pages/OutageManagement/Default.aspx
- Applicable Reliability Coordinator outage coordination documents and procedures.

2. Objectives, Roles, Scope, & Participants

In the *Objectives, Roles, Scope, & Participants* section you will find the following information:

- Objectives of the ISO Outage Management business processes
- Roles of the ISO and participants in the processes
- High level overview and scope of the Outage Management related business processes
- Participants in the Outage Management Processes
- The ISO entities involved in the processes

Relevant Tariff Sections 9.1, Coordination and Approval for Outages, 9.2, Responsibility for Authorized Work on Facilities, and 9.3 Coordination of Outages and Maintenance.

2.1 Objective

The objective of the ISO business processes related to Outage Management is to enable the ISO to coordinate transmission and generation Outages as far in advance as possible to meet both the ISO tariff and Reliability Coordinator outage coordination requirements, and to allow the ISO to:

- Maintain System Reliability
- Maximize Schedule feasibility relative to Congestion and meeting Demand
- Reflect Outage information in the ISO Markets as soon as possible to allow Market Participants to effectively plan for the operation of their resources

2.2 ISO Role

The ISO's role in the Outage Management business processes, as outlined in the ISO Tariff, is to coordinate Outage schedules for maintenance, the repair of generation units, and the construction of new Generating Units, sections of ISO Controlled Grid, and Interconnections. This BPM describes the processes the ISO uses to perform this Outage scheduling coordination role.

2.3 Facility Owner Role

The Facility Owners of the Generating Units, sections of the ISO Controlled Grid and Interconnections that are subject to processes covered in this BPM, remain solely and directly responsible for the performance of all maintenance work, whether on energized or de-energized facilities, including all activities related to providing a safe working environment.

In addition, the Facility Owners are responsible to schedule facility Outages and report Outage information consistent with the business practices and requirements included in the ISO Tariff, in this BPM, in the Reliability Coordinator's Outage Coordination Process, and specified in more detail in the ISO Operating Procedures (See Section 1.3, References).

The Facility Owner may elect to have an agent perform some or all of the activities required to meet their responsibilities related to Outage Management. However, the Facility Owner remains responsible for the successful completion of these activities. See Section 9, Communication of Outage Maintenance Information, of this BPM for a discussion of the requirement for a Facility Owner to establish a single point of contact.

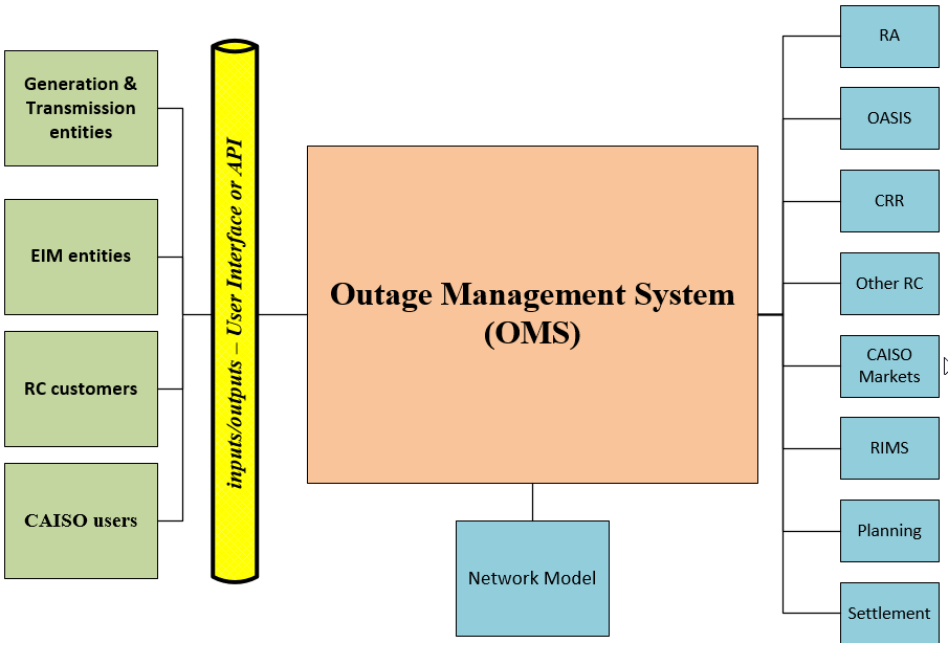
2.4 High Level Process Overview

This section provides a high level overview of the ISO's outage coordination process for the operations horizon, which includes the Long-Range, Short-Range, and Real-Time outage processes.

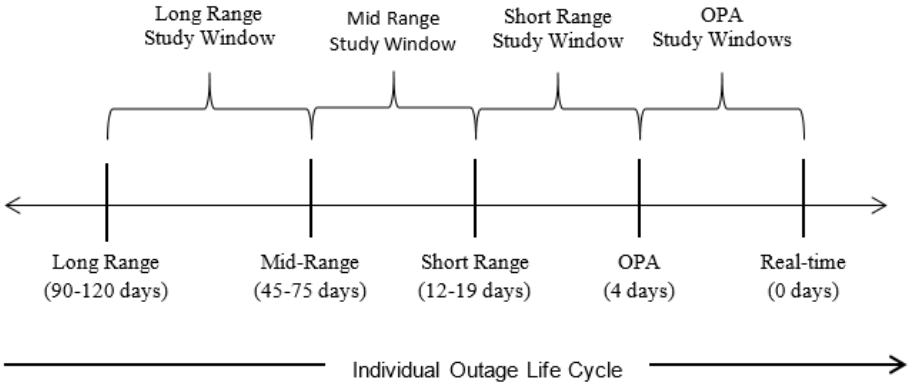
The ISO is responsible for processing outage requests related to all scheduled maintenance on all transmission facilities and generation facilities within the balancing authority area. The ISO performs regional transmission and generation outage coordination for the operations horizon in order to identify proposed transmission and generation outages that would create unacceptable system conditions and works with the facility owners, and the Reliability Coordinator as needed, to create mitigation steps to be taken in anticipation of such proposed outages.

This BPM describes the ISO's transmission and generation outage coordination process, which includes outage scheduling, outage analysis, and outage reporting. The exhibit below presents a high level overview of outage coordination processes and interaction of the ISO Outage Management System (OMS) with other applications.

The ISO OMS is a secure software system that enables parties to interact with the ISO to electronically complete the various transactions included in the Outage Management business processes. The OMS includes a web client version for use by an individual and an Application Program Interface (API) version for use in computer-to-computer data transfers.



The OMS application is considered the primary interface for submission of outage information to the Long-Range, Short-Range, and Real Time outage processes that comprise the operations horizon, and serves as the conduit for the ISO CRR, RA, and RIMS processes.



- **Long-Range Outage Planning**

  - Per tariff section 9.3.6.1, each Participating TO provides the ISO, by no later than July 1st of each year, with a schedule of proposed CRR Transmission Maintenance Outages it plans, as of the date the schedule is submitted, to take in the following year. A Participating TO is permitted to request a CRR Transmission Maintenance Outage that is not included on its schedule but should not do so if the Participating TO knew, at the time it submitted its schedule, that it intended to request that outage.

  - Per tariff section 9.3.6.2, each Participating Generator and Participating TO provides the ISO, by no later than October 15th each year, with a proposed maintenance schedule of all Maintenance Outages it wishes to take the following year. These submissions bridge the gap between the planning and operations horizons.

  - Per tariff section 9.3.6.3, each Participating Generator and Participating TO must amend their maintenance plan by notifying the ISO through the ISO's outage management system of any known changes to a scheduled outage on a Generating Unit or Transmission Facility no later than the start of the Look Ahead Period, which is one full calendar month in advance of the Reliability Coordinator's Long Range outage submission requirement, and will be between 28 and 31 days depending on the month.

- To meet Reliability Coordinator outage submission requirements, the ISO runs daily feasibility outage analysis on a monthly rolling basis and:
  - Implements market constraints
  - Calculates ETC's for scheduling imports
  - Validates congestion due to outages

a. Outages meeting the Long-Range submission deadline are classified as ISO Planned outages.

- Outages feed into the ISO CRR process discussed in section 8 of this BPM.
- Provisionally approved Outages are sent to the Reliability Coordinator.

➢ **Mid-Range Outage Planning**

a. Each Participating Generator and Participating TO amends their maintenance plan by notifying the ISO through the ISO's outage management system of any known changes to a Generating Unit or Transmission Facility in accordance with the Reliability Coordinator's Mid-Range outage submission requirement

b. Outages meeting the Mid-Range submission deadlines are classified as ISO Planned outages

➢ **Short-Range Outage Planning**

- Each Participating Generator and Participating TO amends their maintenance plan by notifying the ISO through the ISO's outage management system of any known changes to a Generating Unit or Transmission Facility 5 full business days in advance of the Reliability Coordinator's Short-Range outage submission requirement.

a. To meet Reliability Coordinator outage submission requirements, the ISO runs daily feasibility outage analysis on a weekly rolling basis and:
   i. Implements market constraints
   ii. Calculates ETC's for scheduling imports
   iii. Performs RA impact analysis (the Reliability Requirements BPM discusses this in detail).
   iv. Validates congestion due to outages

b. Approved Outages are sent to the Reliability Coordinator

c. Outages meeting the Short-Range submission deadlines are classified as ISO Planned outages

d. Outages that do not meet the Short-Range submission deadline are classified as:

v. ISO Planned if submitted more than 8 days in advance of the outage start day and approved by the ISO. Such an outage, however, is unlikely to receive Reliability Coordinator approval in time to proceed as planned.
vi. ISO Forced if submitted 8 days or less in advance of the outage start day.

All Transmission System Equipment Outages that could significantly affect CRR's must be submitted 30 days prior to the month the outage is to begin.

NOTE: Refer to Section 8 for "Significant Facilities" definition.

- **Real-Time Outage Horizon**

  - To meet the Reliability Coordinator's outage submission requirements, the ISO runs daily feasibility outage analysis on a 4 day rolling basis for Maintenance Outages submitted up to one calendar day prior to the Reliability Coordinator's OPA lockdown time.

    - Outage plans are updated and analysis performed for Outages submitted from D+3 through real-time.

  - In analyzing Real-Time outages, the ISO:

    - Implements market constraints
    - Calculates ETC's for scheduling imports
    - Evaluates reliability impacts on exported market cases and bids

  - Approved Outages are sent to the Reliability Coordinator.
  - Outages are designated as ISO Forced Outages.

2.5 Application to Parties

The *BPM for Outage Management* applies to the ISO and the following parties:

- All Generators with a Participating Generating Agreement
- All Participating Transmission Owners
- Scheduling Coordinators/ Participating Generators
- All EIM Entities
- Connected Entities, to the extent the agreement between the Connected Entity and ISO to provide outage reporting.
- Participating Transmission Operators

2.6 ISO Operations Planning and Real-Time Operations

As outlined in the ISO Tariff, the ISO coordinates and processes all Maintenance Outage requests as described in this BPM.

The type of scheduled work and Outages that the ISO coordinates and approves is shown in the following list. (This list is not an exhaustive list of work that requires ISO approval.)

- Balancing Authority Area Interconnections work
    - All outages that affect interconnected systems will be coordinated between Interconnected Transmission Operators.
- All work on facilities forming the ISO Controlled Grid, including associated control or protective equipment
    - All outages affecting ISO PTO equipment and Generators with a participating generator agreement.
- All reportable Outages or partial curtailments of Participating Generators with a rated capacity greater than 1MW
- All reportable Outages of Reliability Must Run Generating Units
- EMS work that disables any portion of the ISO Grid monitoring, control or protective equipment including EMS equipment and communication circuits
- EMS work that affects Generator AGC or RIG equipment or communication circuits
- Ancillary Service certification testing and compliance testing
- Interconnections with responsible entities outside the ISO Balancing Authority Area

2.7 ISO Control Center

The ISO Control Center is responsible for the Real-Time aspects of Outage Management as described in detail in the ISO Operating Procedure (See Section 1.3, References) and briefly discussed below. In general, the ISO Control Center handles:

- Reviews requests for Final Approval to initiate an Outage and provides Final Approval after appropriate review of the Outage is completed as described in Section 8.4 of this BPM
- Reviews requests for changes to Approved Maintenance Outages
- Manages Forced Outages of Generating Units and Transmission Facilities

3. Outage Types, Outage States, and Natures of Work

In the *Outage Types, Outage States, and Natures of Work* section you will find the following information:

- Description of the ISO Outage Types
- Description of the ISO Outage States and Outage state transitions
- Description of ISO Natures of Work for Transmission Outages
- Description of ISO Natures of Work for Generation Outages
- Description of ISO Mapping of Outages to Reliability Coordinator Outage Types

3.1 Outage Types

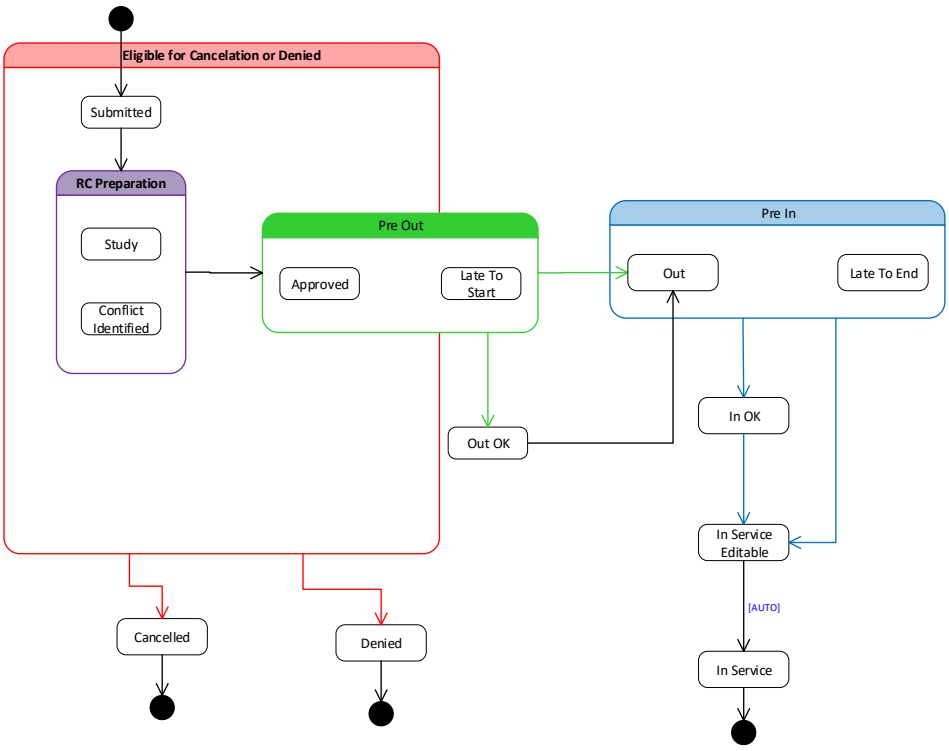
ISO supports two outage types defined as follows:

- Planned Outage - A period of time during which a Generation or Transmission Operator (i) takes its transmission facilities out of service for the purposes of carrying out routine planned maintenance, or for the purposes of new construction work or for work on de-energized and live transmission facilities (e.g., relay maintenance or insulator washing) and associated equipment; or (ii) limits the capability of, or takes out of service, its Generating Unit or System Unit for the purposes of carrying out routine planned maintenance, or for the purposes of new construction work.
- Forced Outage - An Outage for which sufficient notice cannot be given to allow the Outage to be factored into the Day-Ahead Market or RTM bidding processes

3.2 Outage States

The status of an outage changes from the time it is requested, through evaluation and processing, and during the outage period until completion and the equipment returns to service. These changes in status are reflected in the following chart of outage states.

CAISO BA Planned and Forced Outage State Diagram



State	Description
RC Conflict	An outage in “RC conflict” means the RC identified a conflict and will work with the concerned parties to resolve the issue.
Approved	An outage is “approved” when it is accepted by ISO.
Cancelled	An outage is “cancelled” when the outage requester submits a change request with a cancel action.
Denied	An outage is “denied” when it is not accepted by the ISO.
IN OK	An outage becomes “in OK” via a manual transition by the outage requester/ISO operator to indicate that an outage is about to be completed
IN Service Editable	An outage becomes “in service editable” either via an automatic transition by the system or a manual transition by the outage requester to indicate the actual end time of an outage
IN Service	An outage becomes “in service” after 24 hours in the “in service editable” state.
Late to End	An outage is “late to end” when the outage requestor has not submitted an “in OK” request before the scheduled end time.
Late to Start	An outage is “late to start” when the outage requester has not acted before the scheduled start time.
OUT	An outage becomes “out” when the outage requester provides the actual start time of the outage
OUT OK	An outage becomes “out OK” either via a manual transition by the outage requester/ISO operator or automatically via the OMS system to indicate that an outage is ready to start
Submitted	An outage is “submitted” when the outage request passes all validation rules.
Study	An outage is in the “study” state when ISO staff are studying an outage.

3.3 Nature of Work Attributes for Transmission Outages

Users are required to select an appropriate nature of work attribute while submitting an outage card.

Category	Purpose
Out of Service	Transmission equipment out of service or interrupting a transmission flow path

Category	Purpose
Energized Work	Transmission equipment work while facilities are energized
Relay Work	Protective equipment taken out of service
Special Setup	Transmission work that requires unique system setup and modeling
Test Program	Transmission facility/equipment testing (equipment may or may not be energized)
Equipment De-rate	Work that will cause a derate of transmission facility/equipment
Equipment Abnormal	Work that requires switching or placing system equipment in abnormal positions
Path Limitation	Work that will limit capacity on a transmission path
Communications	Work on system communication equipment
Out of Service with Special Setup	Transmission work that requires equipment to be out of service while also requiring unique system setup and modeling.
RIMS Outage	Participant projects that are new, replacement, or decommissioning of equipment scheduled to be energized
RIMS Testing	Request to test new or replaced equipment before energizing

3.4 Nature of Work Attributes for Generation Outages

Users are required to select an appropriate nature of work attribute while submitting an outage card. The user should select the most appropriate nature of work in the event that more than one category may apply. Users must also provide a short written description that includes

specific details related to the outage being submitted and which supports how the selected nature of work category is appropriate.

Category	Purpose
Annual use limit reached	Annual use-limit reached to be used when a use-limited resource with an annual limitation has reached the annual limitation specified in the use plan data template. This attribute can be used only by use limited resources.
Monthly use limit reached	Monthly use-limit reached to be used when a use-limited resource with a monthly limitation has reached the monthly limitation specified in the use plan data template. This attribute can be used only by use- limited resources.
Other Use Limit reached	Other use-limit reached to be used if unit with a limitation other than annual/monthly reaches its other type of use limitation specified in the use plan data template. These limitations must have a time horizon greater than a month. This attribute can be used only by use- limited resources or reliability demand response resources. A RDRR Availability Limit is reached during their Service Term.
Short term use limit reached	"Short term Use-Limit Reached" to be used if either: 1. A use-limited resource is at risk of prematurely reaching its limitation because the opportunity cost model has been ineffective at managing that limitation through the use of the opportunity cost adder in the resource's bids. A use-limited resource should use this outage once it has a reasonable basis to believe it faces such risk. The following provides examples of appropriate and inappropriate uses of this nature of work. Note: these examples are meant for illustrative purposes only. - **Appropriate**: A use-limited gas resource has used 40% of its calendar year annual use-limitation by the end of February. It has received an opportunity cost adder for the first two months of the year which it is reflecting in its bids but it hasn't been effective in rationing the resource's use limit. It expects to be needed for reliability reasons in the summer months so it submits a short term use limit reached outage card. - **Inappropriate**: A use-limited gas resource has used 5% of its calendar year annual use-limitation by the end of February. It expects to be needed for reliability reasons in the summer months so it submits a short term use limit reached outage card. This is not appropriate because it has only used a small percentage of its use limitation. - **Inappropriate**: A use-limited gas resource has used 25% of its calendar year annual use-limitation by the end of February. It

Category	Purpose
	has received an opportunity cost adder for the first two months of the year but does not reflect the opportunity cost in its bids. It expects to be needed for reliability reasons in the summer months so it submits a short term use limit reached outage card. This is not appropriate because the resource should attempt to use the opportunity cost in its bids first, before relying on the outage card. 2. A PDR, PDR-LSRs or RDRR resource needs to claim a Fatigue break*. 3. Resources with use limitations registered under section 2.1.15.7 of the BPM for Market Operations cannot use this outage card
Transmission Induced	To be used if Transmission equipment outage curtails a generator output, or distribution equipment outage in the case of distribution-connected generator. Consistent with section 1.5.1 of the Appendix M of the CAISO tariff, includes a System Resource's outages that has not established sufficient transmission reservation prior to the Operating Hour, and will not be able to use additional transmission within the Operating Hour, to limit its Dispatch to its available transmission. For resources in the EIM Balancing Authority Areas Only. After T-75 report on unavailability of resources due to management of transmission scheduling limitations resulting from EIM market participant activities in bilateral transactions.
Plant Maintenance	General plant maintenance needed.
Plant Trouble	Plant equipment fails or is in danger of imminent failure resulting in a curtailment of dispatchable capacity. This category also covers curtailments of dispatchable capacity caused by plant equipment or plant configuration element(s) whose purpose is to mitigate risk of harm to the plant and/or interconnected transmission equipment. **This category also covers curtailments related to inverter outages, rack outages, safety management outages, control system failures, electrical component failures, and transformer failures that are not associated with the transmission or distribution system.**
Technical Limitations not in Market Model	Provide notification that resource is unavailable due to technical limitations not captured in the CAISO market model and that result in infeasible dispatches because they are inconsistent with the resource's design capabilities. This category cannot be used as a means to avoid dispatches in order to reduce operating costs or exposure to real-time market settlement. If the limitation is due to a known software defect, the entrant must include software defect number as provided by the CAISO in the description field.

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Category	Purpose
Unit Supporting Startup	Generating unit is supporting the start-up of another generating unit.
Transitional Limitation	Generator is transitioning through critical operational point and is unavailable to accept dispatches.
Ambient Due to Temp	Ambient temperature related unit maximum or minimum availability that is outside the control of the plant operator. For example, high temperature, high humidity, low temperature can affect the efficiency or operation of the unit.

Ambient Not Due to Temp	• Gas-related limitations.
	  ○ SC of the resource provides notification of actual physical limitations to fuel availability due to hourly gas burn limitations issued by the natural gas transmission pipeline operator as described in CAISO Operating Procedure 4120.
	  ○ For resources in the EIM Balancing Authority Areas, this category is to reflect similar physical limitations to fuel availability experienced in their Balancing Authority Areas.
	• Management of water-related limitations for certain hydroelectric units (tariff section 40.9.3.4(d))
	  ○ A hydroelectric generator, other than a resource registered with the CAISO as a run-of-river resource, may use this nature of work to report water-related operational or regulatory limitations if its qualifying capacity is calculated pursuant to a local regulatory authority methodology that calculates qualifying capacity to reflect historical hydrological conditions. Hydroelectric resources using this outage nature of work must register their use of a historical-based capacity methodology prior to using this outage.
	  ○

Ambient due to Fuel insufficiency	For resources subject to Resource Adequacy Requirements under Section 40 of the CAISO Tariff. Provides notification of unavailability due to fuel availability for reasons other than those that would fall in "Ambient Not Due to Temp." For resources in the EIM Balancing Authority Areas Only. Report on unavailability of resource due to fuel availability for reasons other than those that would fall in "Ambient Not Due to Temp" and management of regulatory or environmental short-term (typically daily) use limitations imposed on resources that cannot be captured optimally within the EIM time horizon (i.e., up to 2 hours ahead). To

Category	Purpose
	be submitted by 75 minutes prior to the applicable Trading Hour, and can be released after 75 minutes prior to the applicable Trading Hour to increase availability of capacity to the EIM (i.e., remove PMin re-rates and/or PMax de-rate).
Power System Stabilizer	PSS is out of service or unavailable.
New Generator Test Energy	Scheduling for new generator test energy.
Environmental Restrictions	Restrictions due to environmental regulations specific to a resource that limits the dispatchable capacity of that unit. Also to be used outside extreme event periods for resources that may only operate as necessary to respond to extreme events under the state of California Strategic Reliability Reserve (SRR) Program.
Unit Testing	Unit environmental, permit, return to service equipment testing or performance testing.
RIMS Outage	Participant projects that are new, replacement, or decommissioning of resource scheduled to be energized.
RIMS Testing	Request to test new or replaced resource before energizing.
Metering/ Telemetry	Metering/ telemetry work
RTU/RIG	RTU/RIG work
ICCP	ICCP work
Ramp Rate	Adjust ramp rate value for a resource, value must be between the minimum and maximum values defined for the resource
AVR/Exciter	AVR/exciter is out of service or unavailable
Contingency Reserves Management	**For resources in the EIM Balancing Authority Areas Only**. Report on contingency reserves management to ensure reserves are protected and available to address reliability issues when system conditions change within the trading hour after participants submit EIM resource plans (*i.e.*, after seventy-five minutes prior to the applicable Trading Hour).
MSS_Reservable	Used for a resource within an MSS that is unavailable to the ISO because it is serving local load within the MSS.

* A PDR Fatigue Break is reached when a PDR: (a) has been dispatched more than twenty-four hours in a month, in which case the fatigue break may last for the balance of the month; (b) has

been dispatched on each of the three preceding days, in which case the fatigue break may last for the entire calendar day following the last day of consecutive dispatch; or (c) responded to a dispatch in excess of four hours, in which case the fatigue break may last until the end of the calendar day on which the last hour of the dispatch falls. A RDRR Fatigue Break is reached when the RDRR has exceeded the maximum dispatch parameters in its LRA-approved program.

Note: Please review Reliability Requirements BPM for Resource Adequacy Substitute Capacity rules based on different nature of work attributes defined above. Link to BPM: https://bpmcm.caiso.com/Pages/BPMDetails.aspx?BPM=Reliability Requirements

3.5 Reliability Coordinator Outage Types

For more information on RC outage types, RC outage states and the RC outage coordination processes please refer to the Reliability Coordinator's outage coordination document RC0630.

4. Outage Reporting

4.1 Generation Planned and Forced Outage Reporting

The Scheduling Coordinator for a Participating Generator, Participating Intermittent Resource, Generating Unit, System Unit, Physical Scheduling Plant, Proxy Demand Resource, Proxy Demand Resource-Load Shift 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 new Maintenance Outage or a revision to an Approved Maintenance Outage to ISO for approval when the Scheduling Coordinator seeks to schedule a new Maintenance Outage or revise an Approved Maintenance Outage. Such an Outage request must be submitted to the ISO via the OMS application no less than eight days prior to the start date of the proposed Outage as specified in ISO Tariff Section 9.3.6.3.1. As described in Section 5, Long-Range Planning of Maintenance Outages, Participating Generators are asked to submit their request well in advance, to allow them to be analyzed with other proposed outages in the ISO's long-range planning process and to allow coordination with the Reliability Coordinator's separate outage approval process. Waiting until the tariff-defined deadline jeopardizes the likelihood that the ISO and the Reliability Coordinator will be able to evaluate the outage in time. Although not a tariff requirement, Scheduling Coordinators are advised to submit outage requests with the ISO's long-range and short-range planning processes in mind

For Generators, requests for an Outage must specify the following:

- Generating Unit or System Unit name and Location Code

- MW capacity available
    - Provide limitations to availability 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.
- Scheduled start and finish time/date for the Maintenance Outage
- Nature of work to be performed. OMS nature of work categories are defined in this BPM.
- Provide limitations to availability for each type of certified resource ancillary service.
- Emergency Return; time required to terminate the Outage and restore the Generating Unit to normal capacity
- Note the required system outage boundaries to facilitate the equipment outage.

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.

Planned Outages	EIR (Solar)	Hydro	Others
Resource PMAX < 10 MW	Report all planned outages > 1 MW	Report all planned outages > 1 MW	Report all planned outages > 1 MW
Resource PMAX > 10 MW	Report all planned outages > 1 MW	Report all planned outages > 1 MW	Report all planned outages > 1 MW
Resource PMAX > 50 MW and child resource > 50 MW	Report all planned outages > 1 MW at parent level and report all child units that have a complete outage	Report all planned outages > 1 MW at parent level and report all child units that have a complete outage	Report all planned outages > 1 MW at parent level and report all child units that have a complete outage

Forced Outages	EIR (Solar)	Hydro	Others
Resource PMAX < 10 MW	Only report complete resource outage	Only report complete resource outage	Only report complete resource outage

Resource PMAX > 10 MW	Report any conditions leading to availability deviation of 1 MW or more	Report any conditions leading to availability deviation of 10 MW or more	Report any conditions leading to availability deviation of 10 MW or more
Resource PMAX > 50 MW and child resource > 50 MW	Report any conditions leading to availability deviation of 1 MW or more and report child units that have a complete outage	Report any conditions leading to availability deviation of 1 MW or more and report child units that have a complete outage	Report any conditions leading to availability deviation of 1 MW or more and report child units that have a complete outage

Proxy Demand Resource (PDR), and Proxy Demand Resource-Load Shifting Resources (PDR-LSRs) outages and derates shall be reported through OMS in the same manner as generator resources. Multiple outage types will be supported, including, but not limited to PMAX Derates and Ramp Rate Derates. A Proxy Demand Resource will submit a PMAX derate to indicate that a PDR/PDR-LSR is unavailable. If a PDR/PDR-LSR submits a PMAX derate, the day will be considered an outage event day for the purpose of the baseline calculation. The only PMAX derate permitted for PDR/PDR-LSR is derate to 0 MW's. (i.e., a PDR is either 100% available or 0% available, there are no partial derates for PDRs/PDR-LSRs). A PDR/PDR-LSR will submit a Ramp Rate derate to indicate that a PDR/PDR-LSR (Curtailment Resource) is unavailable to fulfill a previously awarded A/S award. The related PDR- LSRs, Curtailment Resource ID and Consumption Resource ID does not have to be on outage at the same time

ISO Tariff Section 40.9.3.5 requires Resource Adequacy Resources with a PMAX between 1.0 MW and 10 MW to report outages and de-rates as specified in the Business Practice Manual. Such RA resources must submit outages and derates through OMS in the same manner as any other generator resources, per ISO tariff section 9.

Non Resource Specific RA outages and derates shall be managed and reported through OMS in the same manner as generator resources, per ISO tariff section 9, and ISO Procedure 3210 section 3.2 Generation Facility Outages. Transmission interchange schedule changes shall be reported to the ISO Real-Time scheduling desk and balanced as required in ISO procedures 2410, 2510, 2520 and 1610.

Changes in availability of 10 MW or 5% of PMAX (whichever is greater) lasting 15 minutes or longer must be reported to the ISO. These reports are due to the ISO within 60 minutes of discovery, and are required only to include effective time and MW availability. Either the OMS Web-Client or the OMS Real-Time Availability Monitoring (which utilizes the OMS API) may be used to report availability changes.

Non-Generator Resources (NGRs) shall report to the ISO changes in availability lasting 15 minutes or longer that reduce the maximum output or minimum output capability by at least 10 MW or 5% of the absolute value of the maximum or minimum output values registered in the Master File (whichever is greater). In addition, NGRs shall report to the ISO changes in availability lasting 15 minutes or longer that reduce the maximum continuous energy limit or minimum continuous energy limit by at least 5% of the maximum or minimum continuous energy limits registered in the Master File. These reports are due to the ISO within 60 minutes of discovery and are required to include effective time, MW availability, and MWh availability, if applicable.

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4.1.1 Reporting Generator Regulation Outages

When generator regulation becomes unavailable for any reason, submit a generator outage card per Tariff Section 9.3.

- Complete the AS Availability section of the outage card.
- Do not derate the resource availability unless there is an associated unit outage derating all or part of the resource capacity.
- Partial regulation is not considered, if any amount of the awarded regulation is unavailable, submittal of a regulation card will derate the entire amount of regulation awarded to the resource for the duration of the outage

4.2 Transmission Outage reporting

Each Participating Transmission Owner must submit a new Maintenance Outage or a revision to an Approved Maintenance Outage to ISO for approval when the Transmission Owner seeks to schedule a new Maintenance Outage or revise an Approved Maintenance Outage. Such an Outage request must be submitted to the ISO via the OMS application no less than eight days prior to the start date of the proposed Outage for Transmission facilities, as specified in ISO Tariff Section 9.3.6.3.1. Outages submitted no less than eight days prior to start date can expect to receive a response by three business days prior to the outage start date. Note: The determination of prior notice excludes the date of submission and the date of the outage. Transmission Outages effecting CRR revenue adequacy must be submitted no later than 30 days prior to the calendar

month of the Outage of a Transmission Outage as specified in ISO Tariff Section 9.3.6.3.2. As previously described in Section 3, Long-Range Planning of Maintenance Outages.

Transmission outage requests are to provide structured and detailed outage modeling information. When work to be performed requires a switch position to change during the outage period, the Participating Transmission Owner must submit a separate outage request for each configuration, as specified in ISO Tariff Section 9.3.3 Participating Transmission Owners are asked to submit their request well in advance, to allow them to be analyzed with other proposed outages in the ISO's long-range planning process.

For Outages of the ISO Controlled Grid or Interconnections, the request must specify the following:

- Equipment identification and location of the transmission system element(s) to be maintained
- Nature of work to be performed. OMS nature of work categories are defined in this BPM.
- Scheduled start and finish time/date for the Maintenance Outage
- Emergency return time required to terminate the maintenance and restore the transmission system to normal operation
- When equipment is to be taken out of service, provide structured and detailed outage modeling information at the facility level and/or the breaker/switch level within the OMS outage card to facilitate the equipment outage
    - Modeling should be accurate and complete, including any applicable system reconfiguration required to support the outage
    - Modeling and setup should be provided clearly and succinctly
    - One-At-a Time (OAT) breaker outages with duration less than 30 minutes should be submitted in accordance with ISO operating procedures.
- Impacts to generation resources as required to support the transmission equipment outage.
- For communication or protection outages, provide detailed description of impacts to RAS/SPS/UVLS, system protection, or Generation resources as well any required transmission topology changes and flow restrictions.
    - Description of such impacts, as well as expected transmission topology changes, should be provided clearly and succinctly
    - Utilize the "Affects RAS/SPS" feature in OMS when no redundant RAS/SPS/UVLS will remain in service.

- For protection outages, state if adequate redundant protection is to remain in-service and provide a description of the redundant protection
    - When protection is inadequate for a transmission facility requiring the equipment to be removed from service, submit an Outage request for the affected transmission equipment.
    - When removing Bus Differential protection with no backup in service, provide bus fault impedances and remote clearing times

- Special transmission system conditions to be imposed during the outage (e.g. wind/temperature adjusted ratings lower than ratings provided in the ISO Transmission Registry).

4.3 EIM Outage Reporting

ISO's role in the Outage Management business process for EIM is to provide an outage management system to allow the EIM Entity Scheduling Coordinator to submit notice of EIM Entity approved transmission and generation outages for the EIM Entity BAA.

ISO implements transmission and generation outages approved by the EIM Entity through the Day-Ahead Market process and informs the EIM Entity Scheduling Coordinator of any anticipated overloads through that process. The EIM Entity is responsible for performing engineering studies, modeling, and approving Outages on transmission and generation facilities within the EIM Entity Balancing Authority Area. The EIM Entity then submits the approved outages into the ISO outage management system. ISO does not evaluate or approve any outages submitted by the EIM Entity.

4.4 RIMS Outage Reporting

The ISO Resource Interconnection Management System (RIMS) helps track and manage the status of transmission and generation projects within the ISO-controlled grid. ISO participants are expected to submit generation and transmission projects, including but not limited to new equipment and replacement of existing equipment, through the RIMS process such that the implementation of those projects can be accomplished in a reliable fashion that allows for study and development of operating plans as needed to support the project implementation.
Beyond adhering to the RIMS process, ISO Participants are expected to submit planned RIMS test outages as stated in the 3000 series operating procedure shown in Section 1.3 of this BPM, no later than the Short-Range planning process deadline specified in this BPM. For additional information on the RIMS process and associated timelines and obligations, please review the Managing Full Network Model BPM.

5. Long-Range Planning of Maintenance Outages

In the *Long-Range Planning of Maintenance Outages* section you will find the following information:

- An overview of the ISO Long-Range Outage process for both Generators and ISO Controlled Grid and Interconnection Outages.
- Responsibilities of Participating Generators and Participating TOs in relation to the Long-Range Planning process.
    - Long-Range submission deadlines
    - Long-Range outage requirements
- ISO responsibilities in relation to the Long-Range Planning process.
- General practices for resolving Long-Range outage conflicts.

5.1 Long-Range Planning Process Overview

In alignment with the Reliability Coordinator's Long-Range outage coordination process, the ISO's Long-Range Planning process is optional. The outage study process involves outage assessments and studies completed on a rolling monthly basis for each operating day, no less than 3 months in advance of each operating day, to develop a coordinated Long-Range plan of integrated generation and transmission maintenance outages that incorporates the most up to date scheduling and load forecasting data. The rolling one month window, submission deadlines, and approval requirements of the ISO's Long-Range planning process are predicated on the necessity to meet the Reliability Coordinator's Long-Range outage coordination requirements.

The ISO's integrated Long-Range process uses load forecasts, Outage schedule requests submitted by Participating Generators and Participating TOs, previously Approved Maintenance Outages and other outage information to determine which of the requested Outages can be performed while maintaining adequate System Reliability. This process looks at generation and transmission Outages simultaneously to consider their effects on transmission ratings or capabilities and resources. The ISO's Long-Range process incorporates Maintenance Outages submitted through the annual maintenance plans provided by participants no later than October 15th of the prior year, as well as changes to the annual plans submitted prior to the monthly rolling Long-Range submission deadline

Outages processed through the Long-Range planning process are preliminarily assessed for reliability and either confirmed or coordinated for reschedule prior to the Reliability Coordinator's Long-Range submission deadline.

Outages confirmed through the Long-Range study process feed into the ISO Short-Range study processes where they are studied for final approval, and are also considered in the ISO CRR process.

5.2 Long-Range Outage Submission Deadlines

5.2.1 General Requirements

In order to be considered in the Long-Range Outage process, each Participating Generator and Participating Transmission Owner is expected to provide the ISO with planned Long-Range Outages prior to the first day of the month one full calendar month in advance of the Reliability Coordinator's Long-Range submission deadline. These submissions should include modifications and additions to the annual maintenance plan submitted by participants to the ISO by October 15th of the prior year.

- Early submission is highly encouraged as outages processed through the ISO Long-Range process are evaluated on a "First Come First Served" priority basis determined by the priority date in the ISO outage management system. This approach is applied for the purpose of addressing conditions where outages submitted in the ISO Long-Range Outage process may conflict with other internal ISO outages, and for conditions where ISO outage plans may conflict with external outage plans of neighboring utilities or Balancing Areas.

Outage requests and related modifications and additions not submitted to the ISO prior to the RC Long-Range submission deadline will not be considered in the Long-Range outage processes and will remain pending until studied in the ISO Mid-Range process (reference Section 6).

Outages submitted to the ISO with incomplete or insufficient information may not be considered in the Long-Range outage process. For such outages, ISO will notify the Participating Generator or Participating Transmission Owner regarding the missing information so the outage information can be modified and resubmitted to the ISO for evaluation through the appropriate outage study process based on the submission deadlines defined in this BPM and the time of update of the outage information.

Outages meeting the Long-Range submission requirements of this BPM are considered ISO Planned outages since they meet the ISO Tariff submission requirement for Planned outages.

The requirement to submit an outage schedule by July 1st of each year applies only to CRR Transmission Maintenance Outages, which are defined in tariff section 36.4.3.2. These are outages that: (1) affect power flow in the CRR DC FNM; (2) cannot be initiated and completed within a twenty-four hour period; and (3) meet at least one of the following three conditions –

a. affect transmission lines rate above 200 kV;
b. are part of a flow limit defined in an ISO operating procedure; or
c. are on a transmission element that was out of service in the last three (3) years and for which the CAISO determined a special flow limit was needed for real-time operation.

5.2.2 Reschedule and Scope Modifications

For situations when Outages submitted through the Long-Range outage process need to be rescheduled, such outages should be rescheduled based on the practices established in this BPM such that the outages are processed as Planned outages when possible and/or appropriate.

For modifications to unconfirmed Long-Range outage requests:

- Requested additions to, or changes to, previously submitted Long-Range Outage Requests that are still in the Study outage state in the ISO outage management system are required to be submitted prior to the first day of the month one full calendar month in advance of the Reliability Coordinator's Long-Range submission deadline in order for the change and associated Outage to be considered in the Long-Range outage process.
    - Unconfirmed Long-Range Outage requests for which significant changes are received on or after the Reliability Coordinator's Long-Range submission deadline will not be evaluated in the ISO Long-Range process and will remain in the Study outage state until evaluated in the ISO Mid-Range outage process (reference Section 6).

For modifications to previously confirmed Long-Range outage requests:

- If an outage is rescheduled by the equipment operator and the new scheduled outage start or end dates fall outside of the previously confirmed outage dates, or if a generation resource's availability amount is decreased beyond the previously confirmed submission:

- The update will be considered as a new outage request and the Outage will be transitioned back to the Study outage state pending further review through the appropriate planning process based on new outage request and the submission deadlines defined in this BPM.
- The outage will not be considered in the ISO Long-Range outage process if the update was submitted on or after the first day of the month one full calendar month in advance of the Reliability Coordinator's Long-Range submission deadline for the new request.

- The priority of the original request is lost and will be established based on the new request.

- If a previously confirmed Long-Range Outage has a significant change after the RC Long Range deadline then the following will apply::

    - The Outage will be transitioned back to the Study outage state and the change and associated outage will no longer be considered as part of the ISO Long-Range outage process.

    - The modified Outage will remain pending until evaluated through the ISO next outage study process on a "First Come First Served" priority basis (reference Section 6).

A significant change is considered a change, including but not limited to scope or modeling, significant enough to require study to verify system reliability, as determined by ISO Operations Planning Engineers.

5.3 Long-Range Outage Submission Requirements

Outage submission requirements for both generation and transmission outages submitted to the Long-Range Outage process should be submitted with the same requirements specified in Sections 4.1 and 4.2, respectively. The ISO may request additional information or seek clarification from any Participating Generator or Participating Transmission Owner regarding the information submitted with a proposed Outage.

In addition to the requirements of Sections 4.1 and 4.2, the following should be provided for both Generation and Transmission Outage requests submitted in the Long-Range planning process:

- For Outages where there is a possibility of some flexibility in when the Outage can be scheduled, submit the preferred start and end dates in the required fields and in the outage text box state the earliest start date and the latest finish date, along with the required duration of the outage

- Select the "OC Long Term Planning" attribute in the ISO outage management system outage request screen

5.4 ISO Long-Range Responsibilities

Under the ISO Long-Range planning process, the ISO performs preliminary assessments of the Maintenance Outages submitted for each operating day to determine if any outage request or combination of Maintenance Outage requests relating to the ISO Controlled Grid and Interconnection facilities, Generating Units or System Units may cause the ISO to violate the Applicable Reliability Criteria. This review takes into consideration factors including, but not limited to, the following:

- Forecast peak Demand conditions
- Other Maintenance Outages, previously Approved Maintenance Outages, and anticipated unit Outages
- Potential to cause Congestion
- Impacts on the transfer capability of system facilities or interconnections
- Impacts on the Market

The ISO will perform preliminary assessment of Long-Range Outage Requests submitted within the timeline specified in this BPM, and confirm, request reschedule, or disapprove the status of such requests by updating the outage state in the ISO outage management system prior to the Reliability Coordinator's Long-Range outage submission deadline.

- Refer to Section 3 of this BPM for the description of the ISO OMS outage states.
- If the outages are submitted to the ISO with incomplete or insufficient information, the ISO will notify the Participating Generator or Participating Transmission Owner regarding the missing information so the outage information can be modified and resubmitted to the ISO for evaluation through the appropriate outage study process based on the submission deadlines defined in this BPM and the time of update of the outage information.
- If the ISO rejects a proposed outage, it will issue a rejection notice that identifies ISO's reliability, security and/or market concerns that are the basis for the rejection and suggests possible remedies or schedule revisions which might mitigate any such concerns.

5.5 Long-Range Outage Conflicts

In addition to internal outage coordination and studies, per Tariff Section 9.3.10.7, ISO coordinates the exchange of proposed ISO Controlled Grid Maintenance Outages, as appropriate with the Operators of adjacent Balancing Authority Areas, and uses the procedures and processes for maintenance outage scheduling and posting that are developed with each adjacent Balancing Authority Area.

If the ISO determines that any of the proposed Maintenance Outages, or combination of outages, are forecast to cause the ISO to violate the Applicable Reliability Criteria, ISO notifies the relevant requestor(s) of the violation and works to resolve identified conflict(s). The Participating Generator or participating TO then must revise the proposed Maintenance Outage(s) and resubmit the revised Outage to the ISO pursuant to this BPM.

The following describe general practices for resolution of outage scheduling conflicts identified in the Long-Range Outage Management process:

- If conflicts occur between ISO internal outage requests, the last outage to be submitted to the ISO outage management system should be the first outage requested to be rescheduled
- If conflicts occur with an external utility or Balancing Area outage, the ISO will coordinate the conflict with the Reliability Coordinator to resolve the conflict in accordance with the Reliability Coordinator's conflict resolution process
- The ISO may disapprove outage requests for reliability reasons if outage conflicts cannot be resolved, or outages are not rescheduled or canceled by the participant in sufficient time

Under extenuating circumstances, conditions may warrant rescheduling a priority received outage to giving priority to a later received outage. Such decisions will be made with prioritizing the reliability of the system. Additionally, real time system conditions will be given priority over planned outages when conflict occurs as a result of unforeseen real time operating conditions or changes to planned outages.

6. Mid-Range Planning of Maintenance Outages

The *Mid-Range* study window process will be **optional** for TOPs and BAs. Non-Informational requests submitted per the requirements below will be included in the study.

Submission Timeline:

The *Mid-Range Study* window will begin on the 15th of the month approximately forty-five (45) days prior to the start of the month being studied. For the example below, outages occurring in April must be submitted prior to 0001 on February 15th in order to be included in the *Mid-Range Study*. (This will be March 15th for outages occurring in May and so on.)

For more information on RC outage types, RC outage states and the RC outage coordination processes please refer to the Reliability Coordinator's outage coordination document RC0630.

7. Short-Range Planning of Maintenance Outages

In the *Short-Range Planning of Maintenance Outages* section you will find the following information:

- An overview of the ISO Short-Range Outage process for both Generators and ISO Controlled Grid and Interconnection Outages.
- Responsibilities of Participating Generators and Participating TOs in relation to the Short-Range Planning process.
    - Short-Range submission deadlines
    - Short-Range outage requirements
- ISO responsibilities in relation to the Short-Range Planning process.
- General practices for resolving Short-Range outage conflicts.

7.1 Short-Range Planning Process Overview

In alignment with the Reliability Coordinator's s Short-Range Outage Coordination Process, the ISO's Short-Range Planning process involves daily outage studies completed on a rolling weekly basis for each operating day, no less than one week in advance of each operating day, to develop a coordinated Short-Range plan of integrated generation and transmission Maintenance Outages that incorporates the most up to date scheduling and load forecasting data. The rolling one week window, submission deadlines, and approval requirements of the ISO's Short-Range planning process are predicated on the necessity to meet the Reliability Coordinator's Short-Range outage coordination requirements.

The ISO's integrated Short-Range process uses load forecasts, Outage schedule requests submitted by Participating Generators and Participating TOs, previously Approved Maintenance Outages and other outage information to determine which of the requested Outages can be

performed while maintaining adequate System Reliability. This process looks at generation and transmission Outages simultaneously to consider their effects on transmission ratings or capabilities and resources.

Outages processed through the Short-Range planning process are studied for reliability and either confirmed or coordinated for reschedule prior to the Reliability Coordinator's Short-Range submission deadline. Outages confirmed through the Short-Range study process feed into the ISO Real Time processes.

7.2 Short-Range Outage Submission Deadlines

7.2.1 General Requirements

In order to be considered in the Short-Range Outage process, each Participating Generator and Participating Transmission Owner is expected to provide the ISO with planned Short-Range Outages no less than 5 full business days in advance of the Reliability Coordinator's Short-Range submission deadline.

- Early submission is highly encouraged as outages processed through the ISO Short-Range process are evaluated on a "First Come First Served" priority basis determined by the assigned priority date in the ISO outage management system. This approach is applied for the purpose of addressing conditions where outages submitted in the ISO Short-Range outage process may conflict with other internal ISO outages, and for conditions where ISO outage plans may conflict with external outage plans of neighboring utilities or Balancing Areas.

Outages submitted to the ISO less than 5 full business days prior to the Reliability Coordinator's Short-Range submission deadline will not be considered in the Short-Range outage process but may be processed as unplanned Short-Range outages if the Reliability Coordinator's conditions for an urgent outage can be met, as specified in the Reliability Coordinators outage coordination plan.

- For unplanned Short-Range outages:
    - Outage requests and modifications should be submitted as soon as possible.
    - The outage must meet the conditions for an urgent outage as specified in the Reliability Coordinator's outage coordination procedure.
    - Written justification must be provided in the ISO outage management system to substantiate the need to process an outage as an urgent outage request that could

not be processed through a planned outage submission in the Short-Range horizon. Lack of planning by the equipment owner is not a substantial reason for an outage to be considered urgent.

- If valid justification is not provided the Outage will need to be rescheduled to meet the planned Short-Range submission deadlines.
- Approval by the ISO does not imply or provide any guarantee of approval of such outages by the Reliability Coordinator.
- Per tariff section 9.3.10.3(a), if an operator has identified a situation that likely will result in a forced outage within 24 hours and, in the case of a Generating Unit or Resource-Specific System Resource, involves a reduction in current availability of more than 10 MW, then the operator must notify the CAISO Control Center directly of such anticipated forced outage as soon as feasible.
- Per tariff section 9.3.10.3(b), in the case of an Eligible Intermittent Resource with a Pmax above 10 MW and an anticipated forced outage within the 24 hours involving a reduction in current availability of more than 1 MW, the resource must notify the CAISO Control Center directly of such anticipated forced outage as soon as feasible.
- If prior notice of a forced outage is not possible.
    - For transmission facilities, the operator must notify the ISO through the Outage Management System within 30 minutes of the outage occurring. When reporting the issue to the Outage Management System, the transmission operator must include when the outage began.
    - For any change in the current maximum output capability of at least 10 MW or 5% of the Pmax registered in Master File, whichever is greater, Generating Units and Resource-Specific System Resources must notify the ISO through the Outage Management System within 60 minutes of discovering the change in capability. When reporting the issue to the Outage Management System, the resource must include the discovery time of the issue.
    - If an Eligible Intermittent Resource with a Pmax above 10 MW has a change in its current capability of 1 MW or greater, then the resource must notify the ISO through the Outage Management System within 60 minutes of discovering the change in capability. When reporting the issue to the Outage Management System, the resource must include the discovery time of the issue.

Outages meeting the Short-Range submission requirements of this BPM are considered ISO Planned outages since they meet the ISO Tariff submission requirement for Planned outages. Unplanned outages submitted after the Short-Range deadline are classified Planned or Forced as follows:

- Unplanned Short-Range outages submitted more than 8 days prior to the planned outage start date will also be classified as ISO Planned outages.
- Unplanned Short-Range outages submitted less than or equal to 8 days prior to the planned outage start date will be classified as ISO Forced outages.

The ISO may disapprove or request reschedule of a requested Maintenance Outage in the Short-Range process if sufficient or complete information is not received by ISO within the time frames set forth in this BPM. For such outages, ISO will notify the Participating Generator or Participating Transmission Owner regarding the missing information so the outage information can be modified and resubmitted to the ISO for evaluation through the appropriate outage study process based on the submission deadlines defined in this BPM and the time of update of the outage information.

7.2.2 Reschedule and Scope Modifications

For situations when Outages confirmed through either the Long-Range , Mid-Range or Short-Range outage processes need to be rescheduled, such outages should be rescheduled based on the practices established in this BPM such that the outages are processed as Planned outages when possible and/or appropriate.

For modifications to unconfirmed Short-Range outage requests:

- Requested additions to, or changes to, previously submitted Short-Range Outage Requests that are still in the Study outage state in the ISO outage management system are required to be submitted no less than 5 full business days in advance of the Reliability Coordinator's Short-Range submission deadline in order for the Outage and associated change to be considered in the ISO Short-Range outage process.
    - Unconfirmed Short-Range Outage Requests for which significant changes are submitted less than 5 full business days prior to the Reliability Coordinator's Short-Range submission deadline will not be evaluated as planned Short-Range Outages. Such outages may be processed as unplanned Short-Range outages per Section 6.2.1, if applicable, or may need to be rescheduled to meet planned outage submission deadlines.

For modifications to previously confirmed Short-Range outage requests:

- If an outage is rescheduled by the equipment operator and the new scheduled outage start or end dates fall outside of the previously confirmed outage dates, or if a generation resource's availability amount is decreased beyond the previously confirmed submission:

- The update will be considered as a new outage request and the Outage will be transitioned back to the Study outage state pending further review through the appropriate planning process based on new outage request and the submission deadlines defined in this BPM
- The outage will not be considered in the ISO Short-Range outage process if the update was submitted less than 5 full business days in advance of the Reliability Coordinator's Short-Range submission deadline for the new request, but may be processed as an unplanned Short Range outage per Section 6.2.1, if applicable, or may need to be rescheduled to meet planned outage submission deadlines.

- The priority of the original request is lost and will be established based on the new request.

- If a previously confirmed Short-Range outage has a significant change submitted less than 5 full business days in advance of the Reliability Coordinator's Short-Range submission deadline:

    - The modified outage will not be considered in the Short-Range outage process but may be processed as an unplanned Short Range Outage per Section 6.2.1, if applicable, or may need to be rescheduled to meet planned outage submission deadlines.

A significant change is considered a change, including but not limited to scope or modeling, significant enough to require study to verify system reliability, as determined by ISO Operations Planning Engineers.

7.3 Short-Range Outage Submission Requirements

Outage submission requirements for both generation and transmission outages submitted to the Short-Range Outage process should be submitted with the same requirements specified in Sections 4.1 and 4.2, respectively. The ISO may request additional information or seek clarification from any Participating Generator or Participating Transmission Owner regarding the information submitted with a proposed Outage.

7.4 ISO Short-Range Responsibilities

Under the ISO Short-Range planning process, the ISO performs intermediate assessments of the Maintenance Outages submitted for each operating day to determine if any outage request or combination of Maintenance Outage requests relating to ISO Controlled Grid and Interconnection facilities, Generating Units or System Units may cause ISO to violate the Applicable Reliability Criteria. This review takes into consideration factors including, but not limited to, the following:

- Forecast peak Demand conditions
- Other Maintenance Outages, previously Approved Maintenance Outages, and anticipated unit Outages
- Potential to cause Congestion
- Impacts on the transfer capability of system facilities or Interconnections
- Impacts on the Market

ISO will perform preliminary assessment of Short-Range outage requests submitted within the timeline specified in this BPM, and confirm, request reschedule, or disapprove the status of such requests by updating the outage state in the ISO outage management system prior to the Reliability Coordinator's Short-Range outage submission deadline.

- Refer to Section 3 of this BPM for the description of the ISO OMS outage states.
- If outages are submitted to the ISO with incomplete or insufficient information the ISO will notify the Participating Generator or Participating Transmission Owner regarding the missing information so the outage information can be modified and resubmitted to the ISO for evaluation through the appropriate outage study process based on the submission deadlines defined in this BPM.
- If the ISO rejects a proposed outage, it will issue a rejection notice that identifies ISO's reliability, security and/or market concerns that are the basis for the rejection and suggests possible remedies or schedule revisions which might mitigate any such concerns

7.5 Short-Range Outage Conflicts

In addition to internal outage coordination and studies, per Tariff Section 9.3.10.7, ISO coordinates the exchange of proposed ISO Controlled Grid Maintenance Outages, as appropriate with the Operators of adjacent Balancing Authority Areas, and uses the procedures and processes for maintenance outage scheduling and posting that are developed with each adjacent Balancing Authority Area.

If the ISO determines that any of the proposed Maintenance Outages, or combination of outages, are forecast to cause ISO to violate the Applicable Reliability Criteria, ISO notifies the relevant requestor(s) of the violation and works to resolve identified conflict(s). The Participating Generator

or participating TO then must revise the proposed Maintenance Outage(s) and resubmit the revised Outage to the ISO pursuant to this BPM.

The following describe general practices for resolution of outage scheduling conflicts identified in the Short-Range Outage Management process:

- If conflicts occur between ISO internal outage requests, the last outage to be submitted to the ISO outage management system should be the first outage requested to be rescheduled
- If conflicts occur with an external utility or Balancing Area outage, the ISO will coordinate and resolve the conflict in accordance with the Reliability Coordinator's conflict resolution process
- The ISO may disapprove outage requests for reliability reasons if outage conflicts cannot be resolved, or outages are not rescheduled or canceled by the participant in sufficient time

Under extenuating circumstances, conditions may warrant rescheduling a priority received outage to giving priority to a later received outage. Such decisions will be made with prioritizing the reliability of the system. Additionally, real time system conditions will be given priority over planned outages when conflict occurs as a result of unforeseen real time operating conditions or changes to planned outages.

8. Real Time Outage Horizon

In the *Real-Time Outage Horizon* section you will find the following information:

- An overview of the ISO Real-Time Outage Horizon process for both Generators and ISO Controlled Grid and Interconnection Outages.
- Responsibilities of Participating Generators and Participating TOs in relation to the Real-Time Outage Horizon process.
  - Real-Time submission deadlines
  - Real-Time outage requirements
- ISO responsibilities in relation to the Real-Time Outage Horizon process.
- General practices for resolving Real-Time Horizon outage conflicts.

8.1 Real-Time Outage Horizon Overview

The ISO's Real Time Outage Horizon looks ahead over a daily rolling 3 day period from each operating day to develop a final coordinated plan of integrated generation and transmission Maintenance Outages that incorporates the most up to date scheduling and load forecasting data.

The rolling 3 day window of the ISO's Real-Time Outage Horizon incorporates planned outages processed through the Long and Short Range planning processes, as well as urgent unplanned Short-Range outages submitted after the Short-Range outage submission deadline of Section 6. In addition, the ISO's Real-Time Outage Horizon processes new urgent outage submissions and outage modifications submitted in the Real-Time Outage Horizon.

The ISO's integrated Real-Time Horizon outage process uses load forecasts, Outage schedule requests submitted by Participating Generators and Participating TOs, previously Approved Maintenance Outages, and other outage information to determine which Outages can be performed while maintaining adequate System Reliability. This process looks at generation and transmission Outages simultaneously to consider their effects on transmission ratings or capabilities and resources.

New Outages and outage changes processed through the Real-Time planning process are studied for reliability and either confirmed or coordinated for reschedule as soon as possible. Outages submitted in the Real-Time Outage Horizon should be submitted as soon as possible for inclusion in the ISO's Operational Planning Analysis (OPA) which includes D+3, D+2 and D+1 security analysis, and for real-time reliability assessment.

8.2 Real-Time Outage Submission Deadlines

8.2.1 General Requirements

Outages submitted in the Real-Time Outage Horizon are generally considered either unplanned or real-time Outages:

- Unplanned Outages include urgent outage submissions to the ISO OMS after the Short-Range outage submission deadline defined in Section 6, through one calendar day prior to the Reliability Coordinator's OPA lockdown time. These outages should be submitted with as much advanced notice as possible and must meet the conditions outlined in section 6.2.1.

Real-Time Outages include outage submissions submitted to the ISO OMS less than one calendar day prior to the Reliability Coordinator's OPA lockdown time, through real-time forced outages. These outages are generally referred to in the RC outage coordination procedure as Forced Operational, Urgent or Opportunity. These outages should be submitted as soon as possible for reliability analysis, including direct communication with the ISO Control Center.

- Early submission is highly encouraged as outages processed through the ISO Real-Time process are evaluated on a "First Come First Served" priority basis determined by the assigned priority date in the ISO outage management system. This approach is applied for the purpose of addressing conditions where outages submitted in the ISO Real-Time outage process may conflict with other internal ISO outages, and for conditions where ISO outage plans may conflict with external outage plans of neighboring utilities or Balancing Areas.

Outages submitted in the Real-Time Outage Horizon defined in this BPM are considered ISO Forced outages since they do not meet the ISO Tariff submission requirement for Planned outages.

The ISO may disapprove unplanned Maintenance Outage requests submitted in the Real-Time Outage Horizon if sufficient or complete information is not received by the ISO within the time frames set forth in this BPM. For such outages, ISO will notify the Participating Generator or Participating Transmission Owner regarding the missing information so the outage information can be modified and resubmitted to the ISO for evaluation through the appropriate outage study process based on the submission deadlines defined in this BPM and the time of update of the outage information.

8.2.2 Reschedule, Scope Modifications, and Extensions

Reschedule of outages into the Real-Time Outage Horizon should be limited except where necessary to address Urgent outage needs as well as Forced Emergency or Forced Automatic outage conditions.

- Non-urgent outages should be scheduled based on the practices established in this BPM such that the outages are processed as Planned outages when possible and appropriate.

- For situations when Outages previously confirmed through the Long-Range, Mid-Range, Short-Range, or Real-Time outage processes need to be rescheduled, such outages should be rescheduled based on the practices established in this BPM such that the outages are processed as Planned outages when possible and/or appropriate.

For modifications to unconfirmed and confirmed Real-Time outage requests:

- Requested additions to, or changes to, previously submitted Real-Time Outage Requests should be submitted as soon as possible and no less than one full calendar day in advance of the Reliability Coordinator's OPA lockdown time.

- Modifications to real-time forced outages should be communicated to the ISO Control Center as soon as possible.

- If the confirmed outage is rescheduled by the equipment operator and the new scheduled outage falls outside of the original requested outage dates, or if a generation resource's availability amount is decreased beyond the previously confirmed submission:

- The priority of the original request is lost and the reschedule will be considered as a new outage request. Priority will be established based on the new request.

If a Participating Generator or Participating Transmission Owner wishes to continue to perform maintenance work beyond the date and time specified in an Approved Maintenance Outage, the Owner may submit a request to ISO to extend the Approved Maintenance Outage. Following review of the request for an extension, ISO Control Center personnel can approve an extension to an outage.

All planned CAISO generation outages will be prevented from being extended once the outage starts and beyond the EOD of the planned end date. All planned CAISO generation outages will be prevented from increasing the MW derate on the outage, once the outage starts, beyond the maximum curtailment for the trade date.

WebOMS will allow users to submit overlapping outages for the following nature of work:

- 'Ambient Due to Temp'- Only forced outages are allowed
- 'Ambient Not Due to Temp'- Only forced outages are allowed
- 'Ambient Due to Fuel Insufficiency'- Both planned and forced outages are allowed
- 'RIMS Testing'- Both planned and forced outages are allowed

For all planned CAISO generation outages that involve extending or increasing the scheduled duration of an Outage or MW amount of capacity on Outage, respectively, submit a new Outage request to cover the extension or increase in the extent of the Outage.

Approved Maintenance Outage under conditions specified in the ISO Operating Procedures (See Section 1.3, References) which are summarized below:

- ISO is notified at least two hours before the facilities subject to the Outage are scheduled to return to service
- The extension is not expected to increase Congestion.
- No other planned Outages or derates are affected by the extension

If a request for an extension is not approved, the portion of the Outage that extends beyond the completion date and time of the Approved Maintenance Outage is considered a Forced Outage.

8.3 Real-Time Outage Submission Requirements

Outage submission requirements for both generation and transmission outages submitted in the Real-Time Outage Horizon should be submitted with the same requirements specified in Sections 4.1 and 4.2, respectively. The ISO may request additional information or seek clarification from any Participating Generator or Participating Transmission Owner regarding the information submitted with a proposed Outage.

8.4 ISO Real-Time Responsibilities

Under the ISO Real-Time Outage Horizon processes, the ISO performs final assessments of the Maintenance Outages submitted for each operating day to determine if any outage request or combination of Maintenance Outage requests relating to ISO Controlled Grid and Interconnection facilities, Generating Units or System Units may cause ISO to violate the Applicable Reliability Criteria. This review takes into consideration factors including, but not limited to, the following:

- Forecast peak Demand conditions
- Other Maintenance Outages, previously Approved Maintenance Outages, and anticipated unit Outages
- Potential to cause Congestion
- Impacts on the transfer capability of system facilities or Interconnections
- Impacts on the Market
- Reliability impacts on exported market cases and bids

The ISO will perform assessment of Real-Time outage requests submitted within the timeline specified in this BPM, and confirm, request reschedule, or disapprove the status of such requests by updating the outage state in the ISO outage management system prior to the Reliability Coordinator's OPA lockdown for outages received greater than one day prior to the Reliability

Coordinator's OPA lockdown time, and as soon as possible for all other real-time forced outage notifications.

- Refer to Section 3 of this BPM for the description of the ISO outage management system outage states.

- If outages are submitted to the ISO with incomplete or insufficient information the ISO will notify the Participating Generator or Participating Transmission Owner regarding the missing information so the outage information can be modified and resubmitted to the ISO for evaluation through the appropriate outage study process based on the submission deadlines defined in this BPM.

- If the ISO rejects a proposed outage, it will issue a rejection notice that identifies ISO's reliability, security and/or market concerns that are the basis for the rejection and suggests possible remedies or schedule revisions which might mitigate any such concern

8.5 Real-Time Outage Conflicts

In addition to internal outage coordination and studies, per Tariff Section 9.3.10.7, ISO coordinates the exchange of proposed ISO Controlled Grid Maintenance Outages, as appropriate with the Operators of adjacent Balancing Authority Areas, and uses the procedures and processes for maintenance outage scheduling and posting that are developed with each adjacent Balancing Authority Area.

If the ISO determines that any of the proposed Maintenance Outages, or combination of outages, are forecast to cause ISO to violate the Applicable Reliability Criteria, ISO notifies the relevant requestor(s) of the violation and works to resolve identified conflict(s). The Participating Generator or participating TO then must revise the proposed Maintenance Outage(s) and resubmit the revised Outage to the ISO pursuant to this BPM.

The following describe general practices for resolution of outage scheduling conflicts identified in the Real-Time Outage Management process (excluding Forced Emergency or Forced Automatic outages):

- If conflicts occur between ISO internal outage requests, the last outage to be submitted to the ISO outage management system should be the first outage requested to be rescheduled

- If conflicts occur with an external utility or Balancing Area outage, the ISO will coordinate the conflict with the Reliability Coordinator to resolve the conflict in accordance with the Reliability Coordinator's conflict resolution process

- The ISO may disapprove outage requests for reliability reasons if outage conflicts cannot be resolved, or outages are not rescheduled or canceled by the participant in sufficient time

Under extenuating circumstances, conditions may warrant rescheduling a priority received outage to giving priority to a later received outage. Such decisions will be made with prioritizing the reliability of the system. Additionally, real time system conditions will be given priority over planned outages when conflict occurs as a result of unforeseen real time operating conditions or changes to planned outages.

8.6 ISO Final Approval

A Participating Generator must not initiate an Outage without receiving Final Approval of the Outage as described in this section. On the day when an Approved Maintenance Outage is scheduled to commence, the Participating Generator must contact ISO Control Center to request Final Approval (final approval granted is displayed in the outage management system as "Out OK") of the Approved Maintenance Outage. The request must include the approved starting time and return time for the Outage. The process for securing such Final Approval is described in more detail in the ISO Operating Procedure (See Section 1.3, References).

The operator or scheduling coordinator of transmission facilities that comprise the ISO controlled grid must not initiate an Outage without receiving Final Approval of the Outage, unless the ISO determined that final approval is not required. During the approval process, the ISO will designate each transmission maintenance outage types as either Final Approval Required ("FAR") or Final Approval Not Required ("FAN"). The determination will be based on the outage categories listed below and the expected impact of the outage on system conditions and the risk to system reliability.

Transmission Maintenance Outages in following categories will be automatically designated as FAR:

- Outage with data defined in the Market Impacts portion of the outage

- Equipment with voltage of 500kv or higher

- NoW of Relay is selected

- Outage is included in a group

All other Transmission Maintenance Outages will be designated as FAN. If the Outage is not automatically set to FAR, that designation can be manually entered by the ISO Outage Coordination. If the CAISO Outage Management System designates the outage type as FAR, it cannot be manually changed to FAN.

Where a Maintenance Outage requires separate approval from the Reliability Coordinator, the Operator may not request final approval of the Maintenance Outage unless the Reliability Coordinator separately has approved the requested Maintenance Outage.

8.6.1 Withholding of ISO Approval & Rescheduling of Outage

The ISO Control Center has the authority to withhold Final Approval for an Approved Maintenance Outage for reasons of System Reliability. In that event, ISO Control Center will immediately notify the Operator of its intention to withhold Final Approval for the Approved Maintenance Outage. The Maintenance Outage that did not receive Final Approval must be rescheduled by the Participating Generator or Participating Transmission Owner using the procedures outlined in this BPM.

8.7 Real-Time Outage Changes and Cancellations

8.7.1 Participant Changes to Planned Maintenance Outages

A Participating Generator or Participating TO may cancel a previously approved planned Maintenance Outage or submit a request to change a previously approved planned Maintenance Outage at any time. Requests for such changes must include the information specified in this BPM and be submitted in accordance with the timing requirements of this BPM.

However, if a Participating Transmission Owner cancels an Approved Maintenance Outage after 5:00 a.m. of the day prior to the day upon which the Outage is scheduled to commence and ISO determines that the change was not required to preserve System Reliability, ISO may disregard the availability of the affected facilities in determining the availability of transmission capacity in the Day-Ahead Market. ISO, however, notifies Market Participants and reflects the availability of transmission capacity as promptly as practicable.

8.7.2 Outages Cancelled/Disapproved by the ISO

Tariff Sections 9.3.6.10, Cancellation of Approved Maintenance Outage and 9.3.7, Maintenance Outage Requests by the ISO.

The ISO may, by providing notice no later than 0500 hours of the day prior to the day upon which the Outage is scheduled to commence, direct the Operator to cancel an Approved Maintenance Outage, when necessary to preserve or maintain System Reliability. If such cancellation occurs after the 0500 hours deadline, ISO may be liable to compensate the applicable Participating Transmission Owner or Participating Generator, pursuant to the provisions of ISO Tariff Section 9.3.7.3 for the direct and verifiable costs incurred by that Participating Transmission Owner or Participating Generator as a result ISO's cancellation of an Approved Maintenance Outage. The Operator, acting in accordance with Good Utility Practice, must comply with ISO's direction. ISO will give notice of any such direction to Market Participants prior to the deadline for submission of Bids in the DAM for the day on which the Outage was to have commenced.

8.7.3 Outages Submitted by the ISO

ISO may at any time request that an unscheduled Maintenance Outage or change to an Approved Maintenance Outage be scheduled and taken by a Participating Generator or Participating Transmission Owner. For such situations, the ISO provides its rationale for scheduling any such Outages.

9. Planned Outage Scheduling of Transmission Equipment Significant to Congestion Revenue Rights

The ISO proposes to define outages to "Significant Facilities" as having a significant effect upon CRR revenue adequacy when the outage impacts the normal energy transfer capability or flow between points on the ISO Controlled Grid. "Significant Facilities" include only Transmission facilities of the ISO Controlled Grid:

2. Rated above 200 kV (except for ISO-approved exceptions), or
3. that are part of any defined flow limit as described in a ISO operating procedure (except for ISO-approved exceptions), or that were out of service in the last three years and for which the ISO determined a special flow limit was needed for real-time operation.

A list of the transmission facilities is provided in the Operating Procedures. The list will be initially created in collaboration with the respective PTOs and will be reviewed by the ISO in collaboration with the PTOs on an annual basis or as needed (determined by the ISO) and revised as appropriate; provided however, that the ISO will ultimately determine the equipment included in the list.

The ISO will apply the "30-day rule" for scheduling planned outages of Significant Facilities. Under the 30-day rule, requests for planned outages of Significant Facilities must be submitted to ISO Outage Coordination at least 30 days prior to the start of the calendar month for which the outage is planned to begin. If the 30th day falls on a non ISO business day then the Planned Outage Request is due on or before the last business day, 30 days prior to the month the outage is to begin. This rule is intended to provide good outage data far enough in advance to allow the ISO to reflect them in the network model used for releasing CRRs and thereby minimize impacts to the revenue adequacy of CRRs.

The ISO emphasizes that the 30-day rule is not intended to prevent needed maintenance on significant facilities in circumstances where the 30-day rule cannot be followed without adversely affecting the grid reliability. Accordingly, the following exceptions to the 30-day rule will be used to approve outages without classifying them as forced:

1. Outages that can be initiated and completed within a twenty-four hour period.
2. Outages previously approved by ISO that are moved within the same calendar month either by the ISO or by request of the PTO.
3. ISO approved allowable transmission maintenance activities during restricted maintenance operations as covered in ISO operating procedure.
4. The most current list of specific Significant Transmission Equipment will be covered in ISO Operating Procedure 3210.

The ISO will review the history of these types of exceptions annually to determine whether they are effective in promoting adequate information for CRR purposes, and whether use of these exceptions should continue to be classified as planned.

With regards to outages that cannot be initiated and completed within a 24-hour period, there are additional factors to consider. Section 36.4.3.2 states the 24-hour rule as being that a CRR Transmission Maintenance Outage is, in part, an outage that "cannot be initiated and completed within a twenty-four (24) hour period." The key consideration is whether, at 30 days prior to the start of the month, the transmission operator had a good-faith belief that the work could have been completed in less than 24 hours. If so, then the outage would not be a CRR Transmission Maintenance Outage that must be reported 30 or more days before the start of the month. If a transmission operator plans to take a series of outages that affect the same transmission element and in total exceed 24 hours but that individually are less than 24 hours, then the CAISO requests that the transmission operator report that series of outages at least 30 days before the start of the month. This is because that series of outages can have the same (or greater) impact on the CRR process as a single 24-hour outage that does meet the requirements of section 36.4.3.2.

9.1 Review of Requested Outages & Priorities

ISO OCO reviews Maintenance Outages submitted to determine if anyone or a combination of Maintenance Outage requests relating to ISO Controlled Grid and Interconnection facilities, Generating Units or System Units may cause ISO to violate the Applicable Reliability Criteria. This review takes into consideration factors including, but not limited to, the following:

- Forecast peak Demand conditions
- Other Maintenance Outages, previously Approved Maintenance Outages, and anticipated unit Outages
- Potential to cause Congestion
    - CRR consideration
- Impacts on the transfer capability of Interconnections

10. Communication of Outage Information to ISO

In the *Communication of Outage Information to ISO* section you will find the following:

- A description of the need for a single point of contact for communication purposes
- A description of methods of communication to be used as a part of the Outage Management business processes

Relevant Tariff Sections 9.3.4, Single Point of Contact and 9.3.5, Method of Communication.

10.1 Single Point of Contact

All communications concerning an Outage request or a request to confirm or change an Approved Maintenance Outage must occur between ISO and the designated single point of contact for each Participating Generator or Participating Transmission Owner. The Participating Generator or Participating Transmission Owner must provide in its initial request and any subsequent changes to its Master File, the identification of the single point of contact who is responsible for all Outage Management related activities. This identification is confirmed in all communications with ISO in relation to Outage requests, including any request to ISO for confirmation, change or Final Approval of an Outage.

10.2 Method of Communication and Confirmation

The Outage Management System (OMS) is the primary method of communicating Outage related information. OMS provides an automated mechanism for parties to communicate all aspects of Outage information.

If the OMS is not operational, emergency capabilities are used to communicate with ISO. These emergency capabilities include Electronic format (such as E-mail) and Voice communication.
Under emergency conditions when OMS is inoperable, forms included in the ISO Operating Procedure (See Section 1.3, References) are used to facilitate communication with the ISO. Under these conditions, ISO confirms receipt of requests and provides notice of rejection, approval, and other communications using the same format as the requester.

10.2.1 Voice Communication with Control Center Personnel

As discussed in this BPM, some Outage Management related communications by or with ISO Control Center personnel are conducted on the telephone. These communications are described in detail in ISO Operating Procedures (See Section 1.3, References). Examples of communications with Control Center personnel that must be conducted over the phone are:

- Requests for Final Approval of Generation Outages are made directly via phone to Control Center personnel

- Requests for Final Approval of ISO Controlled Grid and Interconnections are made directly via phone to Control Center personnel

10.3 Sharing Outage Information with Natural Gas Suppliers

The ISO must coordinate outages and derates of natural gas supply equipment along with all ISO Grid equipment to assure reliable system operations. In accordance with ISO Tariff section 20.4(c)(iv), the ISO has the authority to provide confidential transmission and generator outage information to natural gas utilities, under suitable contractual limits and protection concerning the disclosure and use of confidential or proprietary information consistent with the form non-disclosure agreement attached as Appendix A.

10.3.1 Publication of Outage Information on OASIS

The ISO publishes Transmission Outages on the ISO Website. A daily snapshot of Generation Outages, both Planned and Unplanned is published on the ISO website each day at 0830.

11. Coordinating Maintenance Outages of RA Resources

In performing outage coordination management under Section 9, and section 9.3.1.3, the CAISO may take into consideration the status of a Generating Unit as a Resource Adequacy Resource and may deny, reschedule or cancel a Generation or Transmission Maintenance Outage if the outage is likely to cause any reliability issues or RA capacity shortages.

11.1 RA Maintenance Outages Requested before Supply Plan Submission

Please refer to Tariff Section 9.3.1.3.1

11.2 RA Maintenance Outages Requested after Supply Plan Submission

11.3 Please refer to ISO Tariff Section 9.3.1.3.2Exceptions to Requirement to Provide RA Substitute Capacity

The CAISO does not automatically cancel or deny an Outage pursuant to Section 9.3.1.3.1 or Section 9.3.1.3.2 if the Maintenance Outage is: (a) an Off-Peak Opportunity RA Maintenance Outage approved Pursuant to Section 9.3.1.3.6; (b) caused by an Outage on transmission facilities in the CAISO Controlled Grid; or (c) on RA Capacity that is solely Flexible RA Capacity.

11.4 Cancellation or Denial of Maintenance Outages for reasons other than Lack of RA Substitute Capacity

Notwithstanding provision of RA Substitute Capacity, the CAISO may deny, reschedule or cancel a Maintenance Outage on a RA Resource if it determines that the Outage is 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.

11.5 Obligations of RA Substitute Capacity

RA Substitute Capacity provided pursuant to Section 9.3.1.3.1 or Section 9.3.1.3.2 is 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 RAAIM provisions in Section 40.9, for the MW amount and duration of the outage substitution period, which includes the full day of the start date and the full day of the end date of the outage.

11.6 Off-Peak Opportunity RA Maintenance Outage

ISO Tariff Section 9.3.1.3.6

An Off-Peak Opportunity RA Maintenance Outage may be approved by the ISO to be initiated and completed during off-peak hours without RA Substitute Capacity for the resource adequacy capacity on the outage.

A request for an Off-Peak Opportunity RA Maintenance Outage must meet the following conditions:

1. Outage must be submitted to the CAISO 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
2. Schedule the outage to begin during off-peak hours on a weekday, and to be completed prior to on-peak hours the following weekday, or to begin during off-peak hours on Friday, or on Saturday, Sunday, or a holiday, and to be completed prior to on-peak hours on the next weekday. Outages scheduled for Solar PV resources to follow the timings below:

    a. November (date of DST switch) – March (day prior to DST change) - after 6pm PPT
    b. March (date of DST switch) - November (day prior to DST change) – after 8pm PPT with below exceptions;
        i. (Except May 1 – August 31) – after 9pm PPT

The ISO will consider requests for an Off-Peak Opportunity RA Maintenance Outage in the order the requests were received.

If the ISO Outage Coordination denies a request for an Off-Peak Opportunity RA Maintenance Outage for failing to meet the requirements in Section 9.3.1.3.6(c)(2), the Scheduling Coordinator

for the Resource Adequacy Resource may request an RA Maintenance Outage or may request that the ISO accommodate the outage at another time.

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 must submit the portion of the outage that extends into on-peak hours as a new Forced Outage.

Off Peak Hours

Weekday hours from HE 23 to HE 06 and all day Saturdays, Sundays, and WECC holidays.

a. New Year's Day
b. Martin Luther King Day
c. President's Day
d. Good Friday
e. Memorial Day
f. Independence Day
g. Labor Day
h. Veteran's Day
i. Thanksgiving Day
j. Friday after Thanksgiving
k. Christmas Eve
l. Christmas Day

11.7 Short-Notice Opportunity RA Outage

ISO Tariff Section 9.3.1.3.7

A Short-Notice Opportunity RA Outage is a Forced Outage on a Resource Adequacy Resource that can be accommodated on short notice without RA Substitute Capacity for the resource adequacy capacity on the outage.

A Short Notice Opportunity RA Outage must be requested no more than seven days prior to the outage start date. The duration of a Short-Notice Opportunity RA Outage cannot be more than five days. Short-Notice Opportunity RA Outages requested three days or less in advance of the start of 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. A Short Notice Opportunity RA Outage cannot have already commenced as a Forced Outage. Short Notice Opportunity RA Outages do not require RA Substitute Capacity and are not subject to resource adequacy availability incentive mechanism (RAAIM) tariff provisions.

The request for a Short-Notice Opportunity RA Outage must provide the ISO adequate time to analyze the request before the outage begins and be submitted before the outage commenced as a Forced Outage.

A Short-Notice Opportunity RA Outage approved in this timeframe will be a Forced Outage but it

will not be subject to the RAAIM provisions in Section 40.9.

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 RAAIM provisions in Section 40.9. The following table summarizes the submittal timeline and approval criteria for RA resource that go on Maintenance Outage.

11.8 Outage approval criteria for RA resources

Planned Outage approval in the long range or short range Outage process for generation resources is dependent upon resource satisfying any Resource Adequacy Substitute Capacity (RASC) assignment. If resource has a RASC assignment and generator chooses not to Substitute the RA unit then ISO will deny an approved Outage.

	Submittal Timeline	Approval Criteria	Substitution Obligation
RA Maintenance Outage	No less than eight days prior to outage start date	Outage not likely to have a detrimental effect on reliable operation of the grid or facilities of a connected entity	Substitution capacity no less than MW of capacity on outage
Off-Peak Opportunity Outage	No more than 45 days prior to RA month and no less than eight days prior to outage start date	Outage not likely to have a detrimental effect on reliable operation of the grid or facilities of a connected entity; and outage scheduled during off-peak hours	No
Short-Notice Opportunity Outage	7 days or less prior to the outage start date	Outage not likely to have a detrimental effect on reliable operation of the grid or facilities of a connected entity; and outage will not result in insufficient RA capacity during outage period	Forced outage not subject to RAAIM
Forced Outages	7 days or less prior to the outage start date	Outage not likely to have a detrimental effect on efficient use and reliable operation of the grid or facilities of a connected entity	Forced outage subject to RAAIM depending on nature of work

11.9 Approved Planned Outages Rescheduled at the ISO Request

If the ISO requests to reschedule an approved generating resource RA outage, the ISO will endeavor to reschedule the outage during a time when the outage can be accommodated without Substitution.

Appendix A

ISO NON-DISCLOSURE AND USE OF INFORMATION AGREEMENT
FOR SHARING OF GENERATION AND ELECTRIC TRANSMISSION OUTAGE INFORMATION WITH A NATURAL GAS UTILITY

This Non-Disclosure and Use of Information Agreement for Sharing of Generation and Electric Transmission Outage Information with a Natural Gas Utility ("Agreement") is made and entered into as of this _____ day of _____, 20__, by and between the California Independent System **Formatted:** Font: 12 pt, Bold**Formatted:** Font: 12 pt, Bold**Formatted:** Font: Not Bold**Formatted:** Subtitle**Formatted:** Font: 12 pt, Not Bold*10* Operator Corporation ("ISO") and _____ ("Receiving Party") (individually the ISO and Receiving Party are each a "Party" and collectively "Parties").

WHEREAS, pursuant to ISO tariff Section 20.4(c)(iv), the Receiving Party seeks to obtain certain confidential or proprietary information from the ISO (i) regarding Maintenance Outages or Forced Outages of natural gas-fired generation resources or of elements of the ISO-Controlled Grid, or (ii) necessary for day-to-day coordination and longer-term planning of gas transmission and pipeline outages (collectively, "Outage Information"); and

WHEREAS, pursuant to ISO tariff Section 20.4(c)(iv), the ISO is willing to provide such Outage Information to the Receiving Party, under suitable contractual limits and protections concerning the disclosure and use of confidential or proprietary information.

NOW, THEREFORE, in consideration of the mutual covenants in this Agreement, the ISO and the Receiving Party agree as follows:

1. Purpose, Scope and Definition. The purpose of this Agreement is to permit the ISO to share Outage Information that constitutes Confidential Information with the Receiving Party, in order to maintain reliable operation of the ISO Balancing Authority Area as set forth in ISO tariff Section 20.4(c)(iv). Confidential Information under this Agreement consists of (i) all written materials, including electronic materials, marked "Confidential," "Proprietary," or with words of similar import provided to the Receiving Party pursuant to this Agreement, (ii) all observations or equipment (including computer screens) and oral disclosures related to the ISO's systems, operations, and activities that are indicated as such at the time of observation or disclosure, respectively, and (iii) portions of documents, records, and other material forms or representations, including any electronic materials, which the Receiving Party may create, including but not limited to handwritten notes or summaries, that contain or are derived from the Confidential Information described in sections (i) and (ii) of this paragraph.

2. Non-Disclosure. Subject to Paragraph 4 below, the Receiving Party shall keep Confidential Information in strict confidence and shall not disclose such information or otherwise make it available, in any form or manner, to any other person or entity, including but not limited to, generating or marketing affiliates (a "third party") other than its employees or consultants, without the prior written consent of the ISO. Notwithstanding any other provision of this Agreement, disclosure of Confidential Information by the Receiving Party, including to its employees and consultants, shall be subject to and limited by FERC's Standards of Conduct requirements. The Receiving Party will cause each of its employees and consultants who will have access to Confidential Information to acknowledge that they have read this Agreement and agree to abide by all of its terms regarding use and disclosure of Confidential Information by execution of Exhibit A. It is the ongoing responsibility of the Receiving Party to ensure that (i) each Exhibit A is accurate, (ii) each Exhibit A permits access only to a current employee or consultant of the Receiving Party, and (iii) each new Exhibit A and any notice of cancellation of an Exhibit A is immediately submitted to the ISO. The Receiving Party shall immediately report to the ISO any breach of this Agreement.

3. Use of Confidential Information.

(a) The Receiving Party shall use Confidential Information received hereunder only for the purposes identified herein, including using Confidential Information, subject to the restrictions on disclosure, to manage, coordinate, plan, forecast, and/or *11* schedule outages, maintenance, repairs, and/or curtailment of its gas transmission pipeline and storage system.

(b) It is understood and agreed to by the Receiving Party that Confidential Information constitutes confidential and/or proprietary information of the ISO. The Receiving Party shall maintain Confidential Information in strict confidence and shall not disclose, duplicate, or otherwise reproduce Confidential Information (other than for back-up purposes), directly or indirectly, in whole or part. Further, the Receiving Party understands that California Public Utilities Code Section 352.7 may apply to the terms of this Agreement. Nothing in this Agreement, however, shall be deemed to constitute an agreement, admission, or waiver that California Public Utilities Code Section 352.7 applies.

4. Exceptions to Non-Disclosure. Notwithstanding Paragraph 2 above, a party to this Agreement shall not have breached any obligation under this Agreement if Confidential Information is disclosed to a third party when Confidential Information:

(a) was in the public domain at the time of such disclosure or is subsequently made available to the public consistent with the terms of this Agreement; or

(b) had been received by the Receiving Party at the time of disclosure through other means without restriction on its use, or had been independently developed by the Receiving Party as shown through documentation; or

(c) is subsequently disclosed to the Receiving Party by a third party without restriction on use and without breach of any agreement or legal duty; or

(d) subject to the provisions of Paragraph 5, is used or disclosed pursuant to statutory duty or an order, subpoena or other lawful process issued by a court or other governmental authority of competent jurisdiction.

5. Notice of Pending Third-Party Disclosure.

(a) In the event that a court or other governmental authority of competent jurisdiction issues an order, subpoena, or other lawful process requiring the disclosure of Confidential Information, the Receiving Party shall notify the ISO immediately upon receipt thereof to facilitate the ISO's efforts to prevent such disclosure, or otherwise preserve the confidentiality of the Confidential Information.

(b) The Receiving Party shall not be in violation of this Agreement if it complies with an order of a court or governmental authority, or a public records law or regulation, requiring disclosure of the Confidential Information, after the ISO either has unsuccessfully sought to maintain the confidentiality of such information as provided herein, has notified the Receiving Party in writing that it will take no action to maintain such confidentiality, or has failed to act within a reasonable period of time.

6. Term. This Agreement shall remain in effect unless and until either Party provides ten (10) days prior written notice to the other Party. Termination shall not extinguish any claim, liability, or cause of action under this Agreement existing at the time of termination.
7. Provisions Surviving Termination. The provisions of Paragraphs 2, 3, 4, and 5 shall survive the termination of this Agreement for a period of ten (10) years. The provisions of *12*

Paragraph 8 shall continue after termination until satisfied.
8. Return or Destruction of Confidential Information. Upon termination of this Agreement, all Confidential Information in the possession or control of the Receiving Party, including its employees and consultants, shall be returned to the ISO, including all copies of such information in any form whatsoever, unless otherwise instructed in writing by the ISO. However, if the Confidential Information is retained in the computer backup system of the Receiving Party, the Confidential Information will be destroyed in accordance with the regular ongoing records retention process of the Receiving Party, or the Confidential Information will be retained under applicable law, court order, stock market regulation, or competent authority of any governmental body. In lieu of return, the Receiving Party may certify to the ISO in writing that all such information, in any form whatsoever, has been destroyed. Notwithstanding the foregoing, non-destruction of any operating or outage plans of the Receiving Party that contain, incorporate, or reflect Confidential Information shall not be deemed to violate this Agreement, provided that the Confidential Information contained therein is not disclosed or used in violation of the other terms of this Agreement.
9. Notices.
(a) Representatives and Addresses. All notices, requests, demands, and other communications required or permitted under this Agreement shall be in writing, unless otherwise agreed to by the parties, and shall be delivered in person or sent by certified mail, postage prepaid, by overnight delivery, by electronic mail, or electronic facsimile transmission. In the case of electronic mail or electronic facsimile transmission, an original shall be sent immediately thereafter by postage prepaid mail. All communications shall be properly addressed as follows:
Receiving Party:
Name of Entity: _____
Name of Representative (person/position):
_____
Address: _____
Telephone: _____
Facsimile: _____
Email: _____
ISO: _____
(person/position)
California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Telephone: (916) ___-____
Facsimile: (916) ___-____
E-mail: _____
With a copy to:
Legal Department
California Independent System Operator Corporation
250 Outcropping Way
Folsom, CA 95630
Telephone: (916) 608-SCP021
Facsimile: (916) 608-7296
(b) Changed Representatives and Addresses. A party hereto may from time to time change its representative or address for *13* the purpose of notices to that party by a similar notice specifying a new representative or address, but no such change shall be deemed to have been made until such notice is actually received by the party being so notified.
(c) Effective Date of Notices. All notices and other communications required or permitted under this Agreement that are addressed as provided in this Paragraph 9 shall be effective upon delivery if delivered personally, by overnight delivery, by electronic mail, or by facsimile transmission; if delivered by overnight delivery, such notices shall be effective three (3) days following deposit in the United States mail, postage prepaid.
10. Complete Agreement; No Other Rights.
(a) This Agreement contains the complete and exclusive agreement of the parties with respect to the subject matter thereof, and supersedes all discussions, negotiations, representations, warranties, commitments, offers, contracts, and writings prior to the date of this Agreement, with respect to its subject matter. No change to this Agreement shall be effective unless agreed to in writing by the parties hereto. Any conflict between the language of this Agreement and any mark, stamp, annotation, or other language identifying something received hereunder as Confidential Information shall be resolved in favor of this Agreement.

(b) This Agreement is not intended to create any right in or obligation of any party or third party other than those expressly stated herein.

(c) Nothing in this Agreement sets a precedent, nor creates any right or obligation, with respect to any future access, disclosure, or production of Confidential Information.

11. No Warranties or Representations. Any Confidential Information disclosed by the ISO under this Agreement carries no warranty or representation of any kind, either express or implied. The Receiving Party shall not be entitled to rely on the accuracy, completeness, or quality of Confidential Information, even for the purpose stated in Paragraph 1.
12. Injunctive Relief. The Receiving Party agrees that, in addition to whatever other remedies may be available to the ISO under applicable law, the ISO shall be entitled to obtain injunctive relief with respect to any actual or threatened violation of this Agreement by the Receiving Party or any third party. The Receiving Party agrees that it shall bear all costs and expenses, including reasonable attorneys' fees that may be incurred by the ISO in enforcing the provisions of this paragraph, only if the ISO prevails in the litigation.
14. Governing Law. This Agreement is made in the State of California and shall be governed by and interpreted in accordance with its laws.
15. Assignment. This Agreement shall be binding upon the parties, their successors, and assigns. The Receiving Party shall not assign this Agreement without the ISO's prior written consent.
16. Construction of Agreement. Ambiguities or uncertainties in the wording of this Agreement shall not be construed for or against any party, but shall be construed in the manner that most accurately reflects the parties' intent as of the date they executed this Agreement. 17. Signature Authority. Each person signing below warrants that he or she has been duly authorized by the party for whom he or she signs to execute this Agreement on behalf of that party. *14* 18. Counterparts. This Agreement may be executed in two or more counterparts, all of which shall be considered one and the same Agreement.
19. Consistency with Federal Laws and Regulations. Nothing in this Agreement shall compel any person or federal entity to (1) violate federal statutes or regulations, or (2) in the case of a federal agency, to exceed its statutory authority, as defined by any applicable federal statutes, regulations, or orders lawfully promulgated thereunder. If any provision of this Agreement is inconsistent with any obligation imposed on any person or federal entity by federal law or regulation to that extent, it shall be inapplicable to that person or federal entity. No person or federal entity shall incur any liability by failing to comply with a provision of this Agreement that is inapplicable to it by reason of being inconsistent with any federal statutes, regulations, or orders lawfully promulgated thereunder; provided, however, that such person or federal entity shall use its best efforts to comply with the Agreement to the extent that applicable federal laws, regulations, and orders lawfully promulgated thereunder permit it to do so.
IN WITNESS WHEREOF, the parties have executed this Agreement as of the date set forth above.
CALIFORNIA INDEPENDENT SYSTEM OPERATOR CORPORATION
By:_____
Name:_____
Title:_____
Date:_____
RECEIVING PARTY:
_____
[Company Name]_____
By:_____
Name:_____
Title:_____
Date:_____