
	OPERATING PROCEDURE	Procedure No.	E-509
		Version No.	2.6
		Effective Date	12/2/09
Restricted Maintenance Operations		Distribution Restriction: NONE	

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Purpose

Describes the criteria for the implementation or declaration of Restricted Maintenance Operations and the operational restrictions imposed under Restricted Maintenance Operations.


Restricted Maintenance Operations do not apply to:

- Non-participating Generators, or
 - Non-RMR units with a capacity of less than 10 MW or
 - Non-RA units with a capacity of less than 10 MW.
-

1. Declaration of Restricted Maintenance Operations

When it is believed that the loss of major system elements could place the CAISO in a marginal condition with respect to reserves and/or reliability, take the following actions:

Step	CAISO Shift Supervisor Action
1	Declare Restricted Maintenance Operations.
Step	Grid Resource Coordinator Action
2	Issue a Restricted Maintenance Operation notice to the PTO Control Centers and to Market Participants using the AWE Messaging System. The notice indicates: <ul style="list-style-type: none"> • Which hours of the day the Restricted Maintenance Operations parameters are in effect. • The region affected. • Whether the Restricted Maintenance Operations includes Generation, transmission, or both.
• Step	CAISO System Operator Action
3	<ul style="list-style-type: none"> • Notify the System Operations Coordinator (SOC) per E-507.

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2. Restricted Maintenance Operations

During Restricted Maintenance Operations, work or adjustments may be performed to the power transmission system, system Generation, or associated computer control systems but only after receiving the express permission of the CAISO immediately before disabling equipment or starting work.

CAISO permission may be granted on the condition that additional measures are taken to mitigate threats to reliable operations, including but not limited to:


- Continuous communication with work crews
- Work practices which limit chances of inadvertent operations
- Work practices that limit or mitigate the impacts of inadvertent operations

Note: Restricted Maintenance Operations apply to the PTO Control Centers and Market Participants for the hours identified in the notice. See individual sections below for specific applications. When necessary, Restricted Maintenance Operations are applied for the shortest duration to meet the reliability concern.

2.1. CAISO Balancing Area - Regional Application

Restricted Maintenance Operations may be implemented on a CAISO Balancing Area regional or local basis. Such regional application may occur when major transmission paths are curtailed for an extended period, affecting the import capability into a region, and/or generating resources in that region are marginal to cover requirements. Under these circumstances, take the following steps:

Step	CAISO Shift Supervisor Action	
1	If...	Then...
	Generating or Transmission resource are restricted and/or insufficient to meet requirements,	Implement Restricted Maintenance Operations for affected region and only for the duration that the condition is expected to exist.

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2.2. Cancel Outages

The CAISO maintains the discretion to cancel all or selected work to preserve overall system reliability.


- Restricted Maintenance Operations apply to all prescheduled Outages and/or any planned maintenance.
- Permission to proceed with the prescheduled or planned work must first be obtained from the CAISO, regardless of whether prior approvals were required or obtained from the CAISO, and regardless of whether Outages are required to perform work (e.g., hot-washing, Generating Unit brush maintenance, hot line orders, etc.).

Prior to Real Time:

Step	CAISO Outage Coordinator Action	
1	If... System conditions change, or are otherwise not as expected when the Outage was pre-approved in the Outage Management process,	Then... Consider canceling or postponing the Outage.

In Real Time:

Step	CAISO System Operator Action	
1	If... A Restricted Maintenance Operation is declared,	Then... Field requests to perform work from the SC or Generator Owner and determine if requested work should be allowed in accordance with section 2.3.

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- 2.3. Allowable Work** Routine work that may result in an inadvertent loss of a resource is allowed if:
- This action does not result in an unmanageable loss of Operating Reserves,
 - In the judgment of the CAISO this action does not jeopardize overall system reliability, or
 - In the judgment of the CAISO the routine work if not allowed as scheduled or planned presents a greater risk to the system reliability.

Step	Action
1	Refer to Attachment A, Allowable Transmission Maintenance Activities During Restricted Maintenance Operations , for details on types of transmission maintenance activities typically allowed during Restricted Maintenance Operations.

Note: There is no guarantee that work listed in Attachment A will be allowed, only that the activities listed represent work determined to pose minimal threat to system reliability, a risk which can be adequately mitigated, or may present a greater risk to the system reliability if not allowed as scheduled or planned. Transmission maintenance may be allowed on additional equipment not listed in Attachment A if CAISO personnel determine the maintenance activities present a minimal threat to system reliability or present a risk which can be adequately mitigated, or would present a greater risk to the system reliability if not allowed as scheduled or planned. This list will be expanded as additional transmission maintenance studies are completed or as experience dictates.

- 2.3.1. Re-Submitting Cancelled Outages** To ensure a reliable, well-maintained Bulk Electrical System (BES) certain Outages cancelled due to the declaration of a Restricted Maintenance Operations may qualify for insertion into the Outage Management process in a streamlined fashion.


Step	PTO Outage Coordinator Action					
1	Review cancelled Outages on an individual basis for criticality when pre-scheduled work is cancelled because of Restricted Maintenance Operations.					
2	Re-submit to the CAISO Outage Management department for further review those cancelled Outages deemed critical.					
Step	CAISO Outage Management Action					
3	Review and respond to resubmitted Outages, taking into consideration the possibility of relaxing the timeframe for implementation of requested outages.					
4	<table border="1" style="width: 100%;"> <tr> <th style="background-color: #e0f7fa;">If...</th> <th style="background-color: #e0f7fa;">Then...</th> </tr> <tr> <td>A cancelled Outage does not have a reliability impact or present a greater risk to the system reliability,</td> <td>Consider approving this Outage.</td> </tr> </table>	If...	Then...	A cancelled Outage does not have a reliability impact or present a greater risk to the system reliability,	Consider approving this Outage.	
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**2.3.2. Modify
Requests for
Cancelled
Outages**

Outages postponed due to the issuance of a Restricted Maintenance Operations may be considered for rescheduling outside of the previously pre-scheduled outage hours and/or outside of the hours of Restricted Maintenance Operations. The CAISO attempts to accommodate atypical Outage hours, when practical.

Step	PTO or SC Action					
1	Exercise discretion when submitting deviations to the normal scheduled work hours. The intent is to ensure a reliable system while maximizing required work opportunities.					
2	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #e0ffff;">If...</th> <th style="background-color: #e0ffff;">Then...</th> </tr> </thead> <tbody> <tr> <td>The Outage Requests can proceed through the normal Outage Management process,</td> <td>Do not submit Outage Requests to the CAISO for cancelled Outages.</td> </tr> </tbody> </table>		If...	Then...	The Outage Requests can proceed through the normal Outage Management process,	Do not submit Outage Requests to the CAISO for cancelled Outages.
If...	Then...					
The Outage Requests can proceed through the normal Outage Management process,	Do not submit Outage Requests to the CAISO for cancelled Outages.					
Step	CAISO Outage Coordinator or System Operator Action					
3	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #e0ffff;">If...</th> <th style="background-color: #e0ffff;">Then...</th> </tr> </thead> <tbody> <tr> <td>A modified Outage does not have a reliability impact or present a risk to system reliability,</td> <td>Consider approving this Outage.</td> </tr> </tbody> </table>		If...	Then...	A modified Outage does not have a reliability impact or present a risk to system reliability,	Consider approving this Outage.
If...	Then...					
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2.4. Generating Units The following table describes the different types of Generating Units subject to Restricted Maintenance Operations:

Thermal Generating Units
<ul style="list-style-type: none"> Because thermal Generating Units may require an extended time for start-up or re-start, these Generating Units may be subject to Restricted Maintenance Operations for the entire day for which Restricted Maintenance Operations notice is issued with the understanding that an inadvertent trip will likely cause these units to be unavailable during the peak hours. Much of the intended work can be granted at thermal Generating stations for quick start units (e.g. gas turbine) during the hours that are outside of the hours identified in the notice. However, a blanket release to all thermal-generating stations for work during these outside hours is not prudent, and each request must be considered on a case-by-case basis.
Hydro Generating Units
<ul style="list-style-type: none"> Restricted Maintenance Operations for Hydro Generating Units applies to maintenance that may result in the unit's unavailability for the hours identified in the notice.
Nuclear Generating Units
<ul style="list-style-type: none"> Restricted Maintenance Operations for Nuclear Generating Units does <u>not</u> apply to the indicated equipment listed in Attachments B, SONGS Vital Component List (which also lists equipment that is <u>not</u> exempt from Restricted Maintenance Operations, due to studies of historical experience) and C, Diablo Canyon Vital Component List.

2.5. Transmission Restricted Maintenance Operations only applies to that portion of the CAISO Balancing Area BES that, if limited, causes Operating Reserve deficiencies, or jeopardizes overall system reliability, as determined by the CAISO after evaluating each request individually.

Note: Restricted Maintenance Operations does not apply to facilities with voltage levels less than 115kV unless they are directly associated with resources of greater than 10 MW.

2.6. Computer Systems Restricted Maintenance Operations applies only to the hours identified in the notice and only to those on-line systems necessary for continued operation of SCADA systems or operational control of Generating Units. Work on an off-line backup system is allowable but should be limited to work that could be immediately interrupted in order to bring the backup system on line if the primary system fails. Routine work that may cause a momentary interruption of data will be allowed if, in the judgment of the CAISO Shift Supervisor, the data lost is not critical to System Reliability. Work on non-critical systems will be allowed.

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3. Exceptions to Restricted Maintenance Operations

3.1. Restricted Maintenance Operations Exceptions


As appropriate to the urgency of the needed Outage or work to be performed, an appeal to the CAISO Shift Supervisor may be made. The decision of the CAISO Shift Supervisor is final. However, on rare occasions (time and system conditions permitting), the Shift Supervisor may defer the decision until after discussion with the CAISO Director of Grid Operations and/or other CAISO senior Operations management.

Restricted Maintenance Operations do not apply to:

- Non-participating Generators, or
 - Non-RMR units with a capacity of less than 10 MW or
 - Non-RA units with capacity of less than 10 MW.
-

3.2. Emergency Exceptions

Conducting maintenance <i>without</i> contacting the CAISO is allowed only when an emergency does not allow time for contact
<ul style="list-style-type: none"> • Exception: Restricted Maintenance Operations is allowable without contacting the CAISO only if an emergency condition exists that does not allow time for contacting the CAISO, and only if such emergency condition, if left unattended, would endanger the safety of personnel, threaten property damage, or jeopardize the continued operation of the system. <u>In all other cases, approval for any exceptions must be obtained from the real time personnel of the CAISO prior to any switching or disabling of facilities and starting work.</u>
Conducting maintenance <i>after</i> contacting the CAISO is allowed on a case-by-case basis
<ul style="list-style-type: none"> • Little latitude is available during Restricted Maintenance Operations for allowing Outages that affect generating resources. However, contact with the CAISO real time personnel is encouraged to request approval for higher priority Outages or maintenance, as necessary. • Exceptions to these guidelines may be granted on a case-by-case basis by contacting the CAISO. This is especially pertinent and useful for monitoring work at thermal generating stations during the off-peak hours of a Restricted Maintenance Operations.

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Supporting Information

Operationally Affected Parties • N/A Posted on the Internet

References Resources studied in the development of this procedure and that may have an effect upon some steps taken herein include but are not limited to:


• CAISO Tariff	5.2 Coordinating Maintenance Outages of SUDC Facilities
• CAISO Operating Procedure	T-113, Scheduled and Forced Outages

Policy During Restricted Maintenance Operations, work or adjustments may be performed to the power transmission system, system Generation, or associated computer control systems, after receiving express approval from the CAISO. This approval must be obtained immediately prior to disabling equipment or commencing work. The CAISO may, as a condition of approval, request measures to mitigate the threat to overall system reliability associated with the planned work.

Definitions Unless the context otherwise indicates, any word or expression defined in the Master Definitions Supplement to the ISO Tariff shall have that meaning when capitalized in this Operating Procedure.


The following additional terms are capitalized in this Operating Procedure when used as defined below:

BES	Bulk Electric System
Restricted Maintenance Operations	<p>Restricted Maintenance Operations denotes a precautionary restriction, issued by the CAISO to limit or mitigate the threat posed to system reliability associated with routine work or maintenance in an effort to preclude an avoidable loss of resources. This restriction is issued only when forecast or actual system conditions indicate that although Operating Reserves may be adequate, there is very little margin for an inadvertent and/or otherwise avoidable loss of resources (i.e., either Generation or transmission affecting generating resources, operating reserve requirements, or import capabilities). Such conditions may exist throughout the Balancing Area, or may occur regionally.</p> <p>During these near-marginal days any loss of ability to monitor and/or control those resources may have a greater than normal adverse impact on the reliability of the electric system.</p>

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Version History

Version	Change	By	Date
	Drafted		3/12/99
1.3	Periodic Check		4/28/00
1.3	Reformat		5/10/00
1.4	Deleted Responsibilities section- covered in Outage Coordination Procedures Other minor corrections throughout		6/23/00
2.0	Changes to incorporate new Restricted Maintenance Operations and allowable maintenance activities during such periods.		3/08/02
2.1	Annual review, no changes		8/13/03
2.2	Annual review, minor changes		12/20/04
2.3	Annual review, minor changes		6/21/05
2.4	Annual review		7/17/07
2.5	Annual review		12/3/08
2.6	Annual review & update (minor changes)		12/2/09

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Technical Review

Reviewed By Content Expert	Signature	Date
Ops Support		12/2/09
System Ops		12/2/09
Market Ops		3/13/02
Regional Transmission		3/12/02
Outage Management		3/05/02
Scheduling		3/11/02

Approval

Approved By	Signature	Date
Director of Scheduling and Outage Management		3/14/02
Director of Grid Operations		3/13/02

* Signed 2002 version only, all changes to subsequent versions have been minor

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Appendix

Attachment A: [Allowable Transmission Maintenance Activities During Restricted Maintenance Operations](#)

Attachment B: [SONGS Vital Component List](#)

Attachment C: [Diablo Canyon Vital Component List](#)
