
 <b>California ISO</b>	<b>Reliability Coordinator Procedure</b>	<b>Procedure No.</b>	RC0320
		<b>Version No.</b>	1.0
		<b>Effective Date</b>	7/01/2019
<b>Outage Review and Coordination</b>		<b>Distribution Restriction: None</b>	

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## Purpose

Provide guidelines on reviewing planned outages and RC Operational Planning Analysis (OPA) results for the next day; and communicating and coordinating any changes with BAs, TOPs and neighboring RCs to ensure that planned operations for the next day will respect SOLs and IROLs.

## 1. Responsibilities

- Reliability Coordinator Operator
- Transmission Operator
- Balancing Authority

## 2. Scope/Applicability

This procedure addresses the outage review and coordination process performed by the RC Operator after the completion of the CAISO RC OPA process<sup>1</sup>, in preparation for next-day operations. The outage coordination process for the Operations Planning time Horizon in accordance with relevant requirements in NERC IRO-017 is addressed in *CAISO RC Outage Coordination Process*.

## 3. Procedure Detail

### 3.1. Planned Transmission and Generation Outage Review


Each night, in collaboration with each BA and TOP in the RC Area, the RC operator will verify that outages listed in the Outage Management System [OMS]<sup>2</sup> for the next day represent the work that is *actually* planned. This includes BAs and TOPs that do not have outages in OMS, to ensure that there are no urgent or forced outages that have been overlooked for the next day. For BAs and TOPs that delegate these responsibilities, a verification by the delegate is sufficient.

Next-day outage verification is critical to ensure that any unanticipated changes to planned outages, the status of BES facilities, RAS's, and non-BES facilities that impact the BES are accounted for in the RC OPA for the next day, and planned operations respect SOLs or IROLs<sup>3</sup>. This verification may be completed electronically without a phone call between the RC operator and each entity.

<sup>1</sup> The CAISO RC OPA process is described in CAISO RC0620-Operations Planning Analysis (Next Day)


<sup>2</sup> CAISO Outage Management System (webOMS)

<sup>3</sup> IRO-008-2 R1, R2

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**Balancing Authority (for Generation Outages) or  
Transmission Operator (for Transmission Outages) Actions**

- **Identify** *outages* planned for the next day (D+1). As specified in CAISO document *RC0630 - Outage Coordination Process*, the following types of outages, 30 minutes or more in duration, that meet any of the following criteria are expected to be in CAISO OMS:
  - BES transmission and/or generation facilities outages as defined by NERC,
  - BES generation derates of an individual unit or aggregate plant capacity by greater than 50 MW,
  - BES/non-BES necessary for voltage control,
  - BES Remedial Action Scheme (RAS), non-RAS automatic schemes, or protection systems when functionality is affected (i.e., when normal fault clearing zones are impacted) or Contingency definitions are impacted,
  - BES generating unit Automatic Voltage Regulators (AVR), BES Power System Stabilizers (PSS) or BES alternative voltage controlling devices,
  - Non-BES transmission or generation Facilities or equipment that are identified by the RC, TOP or BA as having an impact on the reliability of the BES, and
  - Path or Facility TTC limits if part of an operating plan
  - Telemetry Equipment that requires manual EMS or RTCA adjustment or communication channels impacting system protection that result in EMS alarms.
- **Verify** that *outages* listed in *CAISO OMS* represent work that is actually planned for the next day.
  - This may be done either by logging into the CAISO OMS web user interface or reviewing an exported outage list sent by the RC operator.
  - **Note:** *This check is critical especially when an entity manages outages using a different outage management application. Sometimes, due to application issues, certain outages sent to OMS via a web service or Application Programming Interface (API) may not be properly registered in OMS. To ensure the list of outages in OMS represents what is actually planned, this verification must be completed.*
- **Verify** that the following *information* in CAISO OMS is correct:
  - Planned start time,
  - Planned end time,
  - Facility or equipment to be switched in or out,
  - Facility Rating Changes.
- Determine whether there are any other facilities or equipment not in OMS scheduled to be switched out or derated.
- **Notify** the *RC operator*, using the Grid Messaging System (GMS), that the CAISO OMS list is accurate; or call the RC operator by phone if there are discrepancies.
  - If there are no outages planned, notify the RC operator using GMS that no outages are planned.

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<b>Balancing Authority (for Generation Outages) or Transmission Operator (for Transmission Outages) Actions</b>
<ul style="list-style-type: none"> <li>• <b>Notify</b> the <i>RC operator</i> if there are any <i>anticipated issues</i> due to weather, gas/fuel, capacity/reserve adequacy, etc.</li> </ul>

<b>Reliability Coordinator Actions</b>
<ul style="list-style-type: none"> <li>• <b>Retrieve</b> transmission and generation <i>outages</i> in OMS scheduled to start the next-day (D+1).</li> <li>• <b>Identify</b> <i>outages</i> that, at a minimum, meet <u>any</u> of the following criteria:           <ul style="list-style-type: none"> <li>○ BES transmission equipment outages, as defined by NERC, to be switched out of service,</li> <li>○ BES generation outages as defined by NERC,</li> <li>○ BES generation derates of an individual unit or aggregate plant capacity by greater than 50 MW,</li> <li>○ BES Remedial Action Scheme (RAS), non-RAS automatic schemes, or protection systems when functionality is affected (i.e., when normal fault clearing zones are impacted) or Contingency definitions are impacted,</li> <li>○ BES generating unit Automatic Voltage Regulators (AVR), BES Power System Stabilizers (PSS) or BES alternative voltage controlling devices,</li> <li>○ Non-BES transmission or generation Facilities or equipment that are identified by the RC, TOP or BA as having an impact on the reliability of the BES, which will be switched out of service, and</li> <li>○ Telemetry Equipment that requires manual EMS or RTCA adjustment or communication channels impacting system protection that result in EMS alarms.</li> </ul> </li> <li>• <b>Confirm</b>, in coordination with the BA and TOP, that <i>outages</i> listed <i>in OMS</i> represent work that is actually planned for the next day.</li> <li>• <b>Verify</b> if there are any <i>anticipated issues</i> due to weather, gas/fuel, capacity/reserve adequacy, etc.</li> <li>• <b>Resolve</b> and <b>Log</b> any major <i>discrepancies</i> discovered during the review that are deemed critical to reliability.</li> </ul>

**3.1.1. Changes to Scheduled Outages**

Any BA/TOP outages for the next-day (D+1) not in OMS or any changes to start or end time for scheduled outages in OMS need to be studied to ensure there are no adverse reliability impacts.

<b>Reliability Coordinator Actions</b>
<ul style="list-style-type: none"> <li>• <b>Ensure</b> the BA/TOP submits <i>new urgent/forced outages</i> or <i>changes</i> to scheduled outages <i>in OMS</i>.</li> </ul>

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Reliability Coordinator Actions
<ul style="list-style-type: none"> <li>• <b>Request</b> a study from RCOE to ensure the changes will not adversely affect reliable operations of the grid.</li> <li>• <b>Ensure</b> that an <i>Operating Plan</i>, Process or Procedure is in place for an identified <i>IROL</i> which may require actions the RC will take or direct others to take (up to and including load shedding)<sup>4</sup>, if the requested changes affect a pre-determined IROL.</li> <li>• <b>Ensure</b> requested changes are <i>adequately coordinated</i> with BAs/TOPs that are impacted or potentially impacted by the requested outages.</li> <li>• <b>Approve</b> the outage change request, if studies indicate that all SOLs and IROLs will be met.</li> <li>• <b>Disapprove</b> the outage change request if the requested <i>changes</i> will <i>cause</i> SOL or IROL <i>exceedances</i> without sufficient mitigation, or if impacted BAs/TOPs do not approve the outage.</li> <li>• <b>Notify</b> the impacted BA/TOP(s) <i>by phone</i> of the status.</li> </ul>

### 3.2. Calls with Neighboring RCs

Each night, the RC operator will call each neighboring RC to discuss anticipated major outages, inter-RC tie outages, path/cut-plane (stability) limitations and system conditions that potentially impact neighboring RC area for the day.


### 3.3. Conduct Regional Conference Calls

At designated times each morning, the RC operator will initiate a conference call with the Pacific Southwest and the Desert Southwest groups to discuss anticipated major outages, path/cut-plane (stability) limitations and system conditions that impact the region for the day. These conference calls are held at the following times:

- 0400 PPT (0500 MPT) – Pacific Southwest, and
- 0430 PPT (0530 MPT) – Desert Southwest.

Reliability Coordinator Actions
<ul style="list-style-type: none"> <li>• <b>Send</b> a <i>reminder</i> via GMS to all parties in the region <i>30 minutes before</i> start of the conference call.</li> <li>• <b>Initiate</b> conference call with the parties at the scheduled time.</li> <li>• <b>Take</b> a roll call.</li> <li>• <b>Request</b> each BA/TOP to discuss: <ul style="list-style-type: none"> <li>○ Path (Stability) limitations/outages affecting area,</li> <li>○ New or modified IROLs,</li> </ul> </li> </ul>

<sup>4</sup> IRO-009-2 R1

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Reliability Coordinator Actions
<ul style="list-style-type: none"> <li>○ Major transmission, generation or RAS outages with potential impacts to neighboring entities,</li> <li>○ Adverse system conditions, and</li> <li>○ Changes to facility limits.</li> <li>● <b>Log</b> a summary of the conference call.</li> </ul>

## 4. Supporting Information

### Operationally Affected Parties

Shared with Public.


### References

NERC Requirements	IRO-002-5 R5; IRO-008-2 R1, R2, R5; IRO-009-2 R1
BA/TOP Operating Procedure	
Other References	CAISO RC Outage Coordination Process CAISO RC Operations Planning Analysis (Next Day)


### Definitions

The following terms capitalized in this Operating Procedure are in accordance with the NERC Glossary, and/or otherwise when used are as defined below:

Term	Description
Remedial Action Schemes (RAS)	<p>A scheme designed to detect predetermined System conditions and automatically take corrective actions that may include, but are not limited to, adjusting or tripping generation (MW and MVar), tripping load, or reconfiguring a System(s). RAS accomplish objectives such as:</p> <ul style="list-style-type: none"> <li>● Meet requirements identified in the NERC Reliability Standards,</li> <li>● Maintain Bulk Electric System (BES) stability,</li> <li>● Maintain acceptable BES voltages,</li> <li>● Maintain acceptable BES power flows, and</li> <li>● Limit the impact of Cascading or extreme events.</li> </ul>

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Term	Description
System Operating Limit (SOL)	<p>The value (such as MW, MVar, amperes, frequency or volts) that satisfies the most limiting of the prescribed operating criteria for a specified system configuration to ensure operation within acceptable reliability criteria. System Operating Limits are based upon certain operating criteria. These include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Facility Ratings (applicable pre- and post-Contingency Equipment Ratings or Facility Ratings),</li> <li>• Transient stability ratings (applicable pre- and post-Contingency stability limits),</li> <li>• Voltage stability ratings (applicable pre- and post-Contingency voltage stability), and</li> <li>• System voltage limits (applicable pre- and post-Contingency voltage limits).</li> </ul>
Interconnection Reliability Operating Limit (IROL)	A System Operating Limit that, if violated, could lead to instability, uncontrolled separation, or Cascading outages that adversely impact the reliability of the Bulk Electric System.
Reliability Coordinator (RC) Area	The collection of generation, transmission, and loads within the boundaries of the Reliability Coordinator. Its boundary coincides with one or more Balancing Authority Areas.
Protection System	<p>Protection System –</p> <ul style="list-style-type: none"> <li>• Protective relays which respond to electrical quantities,</li> <li>• Communications systems necessary for correct operation of protective functions,</li> <li>• Voltage and current sensing devices providing inputs to protective relays,</li> <li>• Station dc supply associated with protective functions (including station batteries, battery chargers, and non-battery-based dc supply), and</li> <li>• Control circuitry associated with protective functions through the trip coil(s) of the circuit breakers or other interrupting devices.</li> </ul>
Operational Planning Analysis (OPA)	<p>An evaluation of projected system conditions to assess anticipated (pre-Contingency) and potential (post-Contingency) conditions for next-day operations. The evaluation shall reflect applicable inputs including, but not limited to:</p> <ul style="list-style-type: none"> <li>• Load forecasts;</li> <li>• Generation output levels;</li> <li>• Interchange;</li> </ul>

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Term	Description
	<ul style="list-style-type: none"> <li>Known Protection System and Special Protection System status or degradation;</li> <li>Transmission outages;</li> <li>Generator outages;</li> <li>Facility Ratings; and</li> <li>Identified phase angle and equipment limitations.</li> </ul> (OPAs may be provided through internal systems or through third-party services.)
RCOE	Reliability Coordinator Operations Engineer
Near-Term Transmission Planning Horizon	The transmission planning period that covers Year One through five.
Non-IROL Stability Limit	A path or cut-plane with transient or voltage stability limitation which is not classified as an IROL.

### Version History

Version	Change	Date
1.0	Approved by Steering Committee.	9/26/18

## 5. Periodic Review Procedure

### Appendix

No references at this time.