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## Purpose

Provides guidelines for Scheduling Coordinators (SC) and for **Generating Resources**.

## 1. Responsibilities

<b>Scheduling Coordinator (SC)</b>	Will recognize and abide by the authority of the <b>CAISO</b> as the Balancing Authority.
<b>Generating Resource</b>	<p>A <b>Generating Resource</b> may include Generator Operators (a NERC Registered entity), a Generator Owner (GO) that should correlate with the CAISO Tariff defined entity Participating Generator Agreement (PGA).</p> <p>A <b>Generating Resource</b> shall communicate with the <b>CAISO</b> through its assigned SC, if applicable.</p>

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	If communication methods with the Scheduling Coordinator become unavailable, then the <b>Generating Resource</b> shall communicate directly with the <b>CAISO</b> Generation Desk.
<b>CAISO System Operator</b>	Will recognize the responsibility of the <b>Generating Resource</b> to operate in such a manner as to avoid injury to personnel and/or damage to facilities.

## 2. Scope/Applicability

### 2.1. Background


The **California** ISO (**CAISO**) has jurisdiction of all Scheduled or Bid Energy and Ancillary Services relating to the **CAISO** Balancing Area. Close coordination is required between Scheduling Coordinators (SCs), **Generating Resources**, **Participating Resources**, Participating Transmission Owners (PTOs), Utility Distribution Companies (UDCs), and the **CAISO** to assure prudent and reliable operation of the **CAISO** Balancing Area. If there is disagreement between the **CAISO** and the **Generating Resources** relative to the action most appropriate for the reliable operation of the **CAISO** Balancing Area or any sub-region thereof, and due to operating considerations there is insufficient time to reach concurrence, the **CAISO** will be the final authority. Inconsistent or otherwise questionable direction by the **CAISO** will be reviewed after the fact to improve coordination.

During an emergency (as declared by the **CAISO**), the **CAISO** jurisdiction is expanded to include all operations of the **Generating Resources**, which impact or may impact the **CAISO** Balancing Area and all Generating Units are subject to the instructions of the **CAISO** as Balancing Authority.

### 2.2. Scope/ Applicability

Includes expectations of the **Generating Resource** by the **CAISO**, responsible PTOs, and UDCs.

These operational expectations are especially useful during emergency operations, and during periods when communications are disrupted.

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### 3. Procedure Detail

#### 3.1. Reporting Requirements/ Communications

Take the following actions to coordinate the transfer of information:

It is essential that the **CAISO** and **Generating Resources** promptly inform one another of any circumstance that may adversely affect the operation or reliability of the **CAISO** Balancing Area, or the integrity or capability of the **Generating Resource's** facilities, including, but not limited to **the following**:

- Power System Stabilizer (PSS) status.
- Automatic Voltage Regulator (AVR) status.
- Change of status.
- Abnormal temperatures.
- Storms.
- Floods.
- Earthquakes.
- Equipment failures or malfunctions.
- Deviations from the Registered Data or operating characteristics.


#### Generating Resource, CAISO System Operator

1. **Inform** the other as promptly as possible of any incident or situation (including, but not limited to, equipment outages affecting Generation, over-loads, over/under-voltages, or alarm indications) that, in the case of a **Generating Resource**, is reasonably likely to threaten any of the following:
  - The capability of the Generating Unit and facilities.
  - The reliability of the **CAISO** Balancing Area.
  - Schedules.
  - Bids of Energy and/or Ancillary Services.
2. **Notify** the applicable PTO and the **CAISO** as soon as practical, but no later than 30 minutes of a change to the status of automatic voltage regulators (AVRs) or power system stabilizers (PSSs).

#### CAISO System Operator

1. **Communicate** either through the SC or directly with the Generating Station Control Room, as described in Section 3.3 of this procedure.
2. **When** notified of the loss of an automatic Voltage Regulator Control (AVR), and the SC has not notified the PTO,
  - **Notify** the applicable PTO of the status of the device (the TOP will direct the **Generating Resource** to maintain or change either its voltage Schedule or its Reactive Power Schedule as appropriate).

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Take the following actions to communicate promptly any changes in the Generating Unit Operating Limit (i.e. per unit) to the CAISO:


Scheduling Coordinator (SC)
<ol style="list-style-type: none"> <li>1. <b>Refer</b> to CAISO Operating Procedure <a href="#">3220 Generation Outages</a> for guidance on reporting Outages and de-rates.</li> <li>2. <b>Include</b> the full available Capacity as the Operating Limit of the Unit being scheduled; in all Schedules, (This does not reflect the sum of all of the Energy and Ancillary Service Schedules).   <i>Example: A Unit capable of regulating up to 480 MW may have a current Energy Schedule of 250 MW and an upper regulating Ancillary Service Schedule of 100 MW, the Operating Limit to be included on these Schedules is to be 480 MW (i.e., not 350 MW, which is the sum of accepted Schedules).</i> </li> <li>3. If a Unit is equipped with digital input or other (e.g., “thumb-wheel setters”) types of input devices used to transmit Operating Limits, <ul style="list-style-type: none"> <li>• <b>Set</b> the values to indicate the full Automatic Generation Control (AGC) capability of the Unit within its operating range (High or Low), rather than the value of the existing Schedules.</li> </ul> <p><i>Note: Settlement payments for Ancillary Services may be affected by incorrect communication of Operating Limits, included within the Schedules submitted or by indication from setters.</i></p> </li> <li>4. If the Unit is restricted in its maximum output due to equipment out of service or other reasons, <ul style="list-style-type: none"> <li>• <b>Verify</b> the communicated Operating Limit is reflective of this restriction.</li> </ul> </li> </ol>

### 3.2. Voice Communication with Generating Unit Control Room Operator

Take the following actions, under one of the following reasons, should CAISO not feasibly be able to communicate with the Scheduling Coordinator:

CAISO System Operator
<ol style="list-style-type: none"> <li>1. If there is an emergency, <u>or</u> system integrity is threatened and there is insufficient time to communicate with a Generating Unit through the SC, <u>or</u> it is apparent that communications to an SC is not being conveyed to the Generating Unit in a timely manner, <ul style="list-style-type: none"> <li>• <b>Communicate</b> directly with the Generating Unit Control Room Operator.</li> </ul> </li> <li>2. If communications between the CAISO and a generating station is unavailable, <ul style="list-style-type: none"> <li>• <b>Relay</b> communications through the appropriate PTO Control Center, as available.</li> </ul> </li> </ol>

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<b>Generating Resource</b>
<ol style="list-style-type: none"> <li>1. <b>Ensure</b> only qualified and authorized control room operations personnel are involved in direct communication with the <b>CAISO</b> during emergency communications.</li> <li>2. If the SC or <b>Generating Resource</b> is unable to <b>contact</b> the <b>CAISO</b> after ten minutes of continuous attempts, <ul style="list-style-type: none"> <li>• <b>Contact</b> the responsible PTO Control Center and ask to be “transferred” to the <b>CAISO</b>.</li> <li>• If a “transfer” is infeasible, <ul style="list-style-type: none"> <li>○ <b>Remain</b> in contact with the PTO Control Center for directions (either “relayed” from the <b>CAISO</b>, or directly from the PTO if the <b>CAISO</b> communication is not available).</li> </ul> </li> </ul> </li> <li>3. <b>Continue</b> attempts to contact the <b>CAISO</b>.</li> <li>4. If direct communications between the <b>CAISO</b> and the <b>Generating Resource</b> Operator has occurred, <ul style="list-style-type: none"> <li>• <b>Advise</b> the SC of the content, nature, and time of the communications.</li> </ul> </li> </ol>


<b>CAISO System Operator</b>
<ol style="list-style-type: none"> <li>1. <b>Conduct</b> periodic communication tests, as desired, with the generator control room operator to assure the viability of communication circuits and to maintain familiarity with direct <b>CAISO</b> control room operator communications.</li> </ol>

### 3.3. Normal Operations

Take the following actions to maintain generating station requirements under normal operating conditions:

<b>Scheduling Coordinator (SC), Generating Resource</b>
<ol style="list-style-type: none"> <li>1. <b>Maintain</b> the capability for constant communication with the <b>CAISO</b>.</li> <li>2. <b>Adhere</b> to all Schedules.</li> <li>3. <b>Maintain</b> normal frequency and voltage.</li> <li>4. <b>Maintain</b> capability of providing immediate response to abnormal frequency.</li> <li>5. <b>Set</b> governors to provide a five percent droop characteristic and to remain fully responsive to frequency excursions greater than 0.036 Hz.</li> <li>6. <b>Set</b> load limit devices (i.e., Unit/governor blocks) at a point to enable a full available load (i.e., without substantial operator intervention) of each Unit to allow for maximum governor action upon the occurrence of low frequency.</li> <li>7. <b>Maintain</b> <b>Automatic Voltage Regulators and</b> Power System Stabilizers in service.</li> </ol>

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### 3.4. Emergency Operations – Low Frequency

Take the following actions for notification **during low** frequency **event**:

<b>Generating Resource</b>
<ol style="list-style-type: none"> <li><b>1. Inform</b> the respective SC of any frequency excursion.</li> <li><b>2. Follow</b> dispatch instructions as provided.</li> </ol>

<b>Scheduling Coordinator (SC)</b>
<ol style="list-style-type: none"> <li><b>1. Contact</b> the CAISO Generation Desk to determine if a change in Schedules and/or services will be required.</li> </ol>

<b>Generating Resource</b>
<ol style="list-style-type: none"> <li>If the Unit was on AGC prior to the frequency excursion, <ul style="list-style-type: none"> <li><b>Return</b> to AGC.</li> </ul> </li> <li>If unable to reset AGC (due to low frequency or other problem), <ul style="list-style-type: none"> <li><b>Raise</b> load until Unit AGC will reset or until Unit reaches full available load without exceeding 60.0 Hz.</li> </ul> </li> <li>If the frequency decays further to 57.0 Hz, with no immediate recovery, <ul style="list-style-type: none"> <li><b>Separate</b> the Unit(s) from the system and, if feasible, attempt to carry auxiliary Load.</li> </ul> </li> <li><b>Prepare</b> to restart the Unit(s) and/or prepare to resynchronize to the system.</li> <li><b>Contact</b> the CAISO Generation Desk to provide start-up power requirements (if any) and for further instructions.</li> <li><b>Refer</b> to CAISO Operating Procedure <a href="#">4510 Load Management Programs and Underfrequency Load Shedding</a>.</li> </ol>


### 3.5. Electric Grid Shutdown

Take the following actions if a total or partial electric grid shutdown occurs, as evidenced by zero voltage on the facilities Interconnecting with the CAISO Balancing Area:

<b>Generating Resource</b>
<ol style="list-style-type: none"> <li><b>1. Advise</b> the respective SC of this zero voltage condition.</li> </ol>

<b>Scheduling Coordinator (SC)</b>
<ol style="list-style-type: none"> <li>If the Generator has reported experiencing zero voltage at its Interconnection, <ul style="list-style-type: none"> <li><b>Advise</b> the Generating Unit to make contact as previously detailed in <a href="#">Section 3.3</a>.</li> </ul> </li> </ol>

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<b>Generating Resource</b>
<ol style="list-style-type: none"> <li>1. If communication cannot be established with the respective SC, <ul style="list-style-type: none"> <li>• <b>Contact</b> the CAISO Generation Dispatcher directly.</li> </ul> </li> <li>2. If unable to contact the CAISO, <ul style="list-style-type: none"> <li>• <b>Proceed</b> as previously detailed in Section 3.3.</li> </ul> </li> <li>3. <b>Prepare</b> for Start-Up, <u>and initiate</u> a Start-Up as soon as auxiliary power requirements can be met.</li> </ol>

<b>Blackstart Resource Owner, Generating Resource</b>
<ol style="list-style-type: none"> <li>1. <b>Start</b> all Blackstart capable Generating Units <u>and</u></li> <li>2. <b>Supply</b> auxiliary power to the other Generating Units at the same Generating site.</li> </ol>

<b>CAISO System Operator</b>
<ol style="list-style-type: none"> <li>1. <b>Refer</b> to CAISO Operating Procedure <a href="#">4610 System Restoration</a> (not available for public distribution).</li> <li>2. <b>Direct</b> (as necessary) Generating Units with Blackstart capability to be started to supply Start-Up power at other stations, or for nuclear Generating Unit reactor safety (see CAISO Operating Procedure <a href="#">3350 Offsite Power Requirements and Restoration for Nuclear Power Plants</a>).</li> </ol>

## 4. Supporting Information

### Operationally Affected Parties

Shared with the Public.


### 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	
CAISO Operating Procedure	<a href="#">3220 Generation Outages</a> <a href="#">3350 Nuclear Plant Interface Coordination</a> <a href="#">4510 Load Management Programs and Underfrequency Load Shedding</a>

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NERC Requirements	
WECC Criterion	VAR-002: R2, R3 (Regulatory References - New)
Other References	<b>CA</b> ISO Technical Standard - Monitoring and Communications Requirements for Generating Units Providing Only Energy and Supplemental Energy.  Participating Generator Agreement PG&E Dispatching Instructions SDG&E Standard Operating Procedures SCE System Standard Operating Procedures

## Definitions


Unless the context otherwise indicates, any word or expression defined in the Master Definitions Supplement to the CAISO 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:

<b>Automatic Generation Control (AGC)</b>	An SC that allows the <b>CA</b> ISO to remotely control their Generating Stations within a specified range of operation.
<b>Blackstart Generating Unit</b>	Generating Unit that is capable of self-starting without a source of off-site electricity.
<b>Quick-Start Generating Unit</b>	Generating Unit that (taking into account personnel and fuel availability, etc.) can be started (locally or remotely), synchronized to the system and available for loading in ten minutes or less.
<b>Reactive Power</b>	Generation or other equipment needed to maintain acceptable voltage levels on the <b>CA</b> ISO Controlled Grid and to meet reactive Capacity requirements at points of interconnection on the <b>CA</b> ISO Controlled Grid.

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### Version History

Version	Change	Date
4.0	Reformatted for new prototype	5/01/2011
4.1	Policy section split up into Background and Responsibilities sections, and some content from Purpose has been moved to Scope/Applicability.	6/13/2011
4.2	<ul style="list-style-type: none"> <li>• Updated the role names used in this procedure to their new role names.</li> <li>• Minor grammar and format changes.</li> <li>• Updated ISO facility references.</li> <li>• Changed all references of CAISO to ISO.</li> <li>• Replaced term “directive” with “instruction” pursuant to IRO-001-04.</li> <li>• Replaced CAISO with ISO except when in reference to the tariff.</li> <li>• Removed references to Folsom or Alhambra.</li> </ul>	3/24/2017
4.3	Removed reference of 5310A from Appendix section, as it was retired on 12/21/18. Removed Peak RC from Operationally Affected Parties. Format and grammar updates.	10/24/2019
5.0	Periodic review <ul style="list-style-type: none"> <li>• Updated Purpose and Responsible parties with GOP replacing PG throughout. This is to be consistent with OP 5110 using the NERC definition versus tariff name.</li> <li>• Removed Step 8 from 3.3.</li> <li>• Removed reference for PG to contact other ISO control room with new phone system this doesn't apply.</li> <li>• Updated Link in 3.1 to link Generation Outages 3220.</li> <li>• Minor format and grammar updates.</li> </ul>	8/28/2020
5.1	Replaced Generator Operator and GOP with Generating Resources throughout. Removed actions required of Generating resources in low frequency event (Section 3.4). Updated all references of “ISO” to “CAISO.” Minor format and grammar updates.	12/17/2020

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## 5. Periodic Review Procedure

### Review Criteria & Incorporation of Changes

There are no specific criteria for reviewing or changing this document, follow instructions in **CAISO Operating** Procedure 5510.

### Frequency

Every three (3) Years.

## Appendix

No references at this time.