Purpose

Defines the criteria, required process, and procedures that must be followed to facilitate Trial Operations and testing of generation resources prior to approval for commercial operation.

1. Responsibilities

<table>
<thead>
<tr>
<th>CAISO New Resource Implementation (NRI)</th>
<th>Ensure a nondiscriminatory operations testing process. Coordinate resource implementation activities and maintain documents submitted by the Interconnection Customer (IC).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interconnection Customer</td>
<td>Develop plans for Trial Operations and Coordinate with Scheduling Coordinator to submit planned test energy schedules to the CAISO for approval through webOMS.</td>
</tr>
</tbody>
</table>
2. Scope/Applicability

2.1. Background

In order to participate in CAISO markets, pre-commercial resources must make arrangements with the CAISO for executing Trial Operation, which may include, but is not limited to delivery of test energy. Trial Operation is defined in the CAISO Tariff as: “The period during which Interconnection Customer is engaged in on-site test operations and commissioning of a Generation Unit prior to Commercial Operation.” The CAISO must be able to plan for the Trial Operation outside of the normal market scheduling processes. The CAISO will not approve a unit testing request unless sufficient transmission capacity is
available to support the test energy. If the CAISO, through operations engineering studies, determines that transmission capacity is not sufficient, testing will have to be rescheduled.

2.2. Scope/ Applicability

This operating procedure applies to all resources in Trial Operation which have been approved by the CAISO for Initial Synchronization and have not achieved Commercial Operations designation. During this period, the Scheduling Coordinator (SC) shall maintain outage cards to reflect the availability of the resource for capacity approved for Commercial Operation.

Note: The CAISO Generation Desk or CAISO Transmission Desk for pseudo-tie resources and Dynamic Schedules will issue a Test Energy ED if the MW amount being tested is ≥ 10 MW. Resources testing < 10 MW must still be coordinated with the CAISO, but the unit will not be issued an ED.

3. Procedure Detail

3.1. Prerequisites

<table>
<thead>
<tr>
<th>Scheduling Coordinator (SC), Interconnection Customer</th>
</tr>
</thead>
<tbody>
<tr>
<td>A minimum of ten (10) calendar days prior to the first planned synchronization date:</td>
</tr>
<tr>
<td>1. <strong>Ensure</strong> that NRI bucket prerequisites have been met. This must be completed prior to submitting the NRI request to synchronize.</td>
</tr>
<tr>
<td><em>Note</em>: For a list of Prerequisites, please refer to the New Resource Implementation Checklist Bucket Deadline.</td>
</tr>
<tr>
<td><em>Note</em>: It is the Scheduling Coordinator’s responsibility to consider the timing of Full Network Model builds, Master File freezes and time requirements for submission and approval of Generator Resource Data Templates (GRDTs) and Scheduling Coordinator association. The CAISO encourages new resources to engage the services of a Scheduling Coordinator as early as possible to assist the Interconnection Customer in ensuring CAISO Tariff compliance.</td>
</tr>
<tr>
<td>2. The Sync Approval email from the NRI group shall be sent to the IC and SC prior to the SC starting the test energy outage plan.</td>
</tr>
</tbody>
</table>
3.2. Submit Planned Trial Operation Schedule

Perform the following steps to develop and submit a Trial Operation schedule:

**Scheduling Coordinator (SC), Interconnection Customer**

1. At least ten (10) calendar days prior to the first planned resource synchronization date,
   - **To submit a request for Initial Sync:**
     - Select the “Sync” Request in the RIMS User Interface.

**CAISO New Resource Implementation (NRI)**

1. Sync Approval email notification will be sent to the IC and SC and will indicate that the Test Energy CSV file is available in the project folder in RIMS for the IC to download and send to the SC.

**Scheduling Coordinator (SC)**

1. Submit an outage request through webOMS, using the Nature of Work of NEW_GENERATOR_TEST_ENERGY.

   **Note:** This outage request or card should set the resource availability to 0 MW, from the time of the initial sync until the assumed COD. The SC is responsible for updating this information if the COD changes and until final COD. This card will act as a “Parent” card for the resource during the pre-commercial process to ensure that correct availability for the resource is reflected during times when the resource is not actively performing online testing.

**Information to verify/provide on NRI Test Energy Template**

- Description of the communications system(s) used to communicate with the applicable control centers during the test.
  - Power Plant Address
  - Power Plant Control Room Phone Number
  - Scheduling Coordinator ID
  - Scheduling Coordinator Contact Phone Number

- A physical description of the Resource, including:
  - Resource ID
  - Resource Name
Operating Procedure

Scheduling Coordinator (SC)
- PTO/Transmission Operator (as identified in the interconnection agreement)
- POD Description
- Type of Generator (combustion turbine, hydraulic turbine, solar, wind, etc.)
- Resource Capacity – PMax (in MW)

Scheduling Coordinator (SC), Interconnection Customer

1. **Submit** the request to the applicable PTO, per their applicable outage procedures, to facilitate the test. (This request is for permission to parallel or synchronize the resource and initiate any associated outages, switching arrangements and/or configuration changes required to facilitate the test energy on transmission equipment controlled by the PTO).
   - **Develop** a test schedule for the resource.
   - **Verify** the information contained in the NRI Test Energy template.
   - **Submit** test energy schedule for the unit being tested to your Scheduling Coordinator.

2. If the request is not approved by the CAISO and/or the PTO:
   - **Determine** a new test date and time, and
   - **Resubmit** the outage request, per step 1 above.

   **Note:** The SC and/or the Generator Operator (GOP) shall continue to communicate the above information to the applicable Participating Transmission Operator (PTO) to which the Resource is connected.

Participating Transmission Owner (PTO)

1. If applicable, **submit** an outage request to the CAISO per Operating Procedure 3210 Transmission Outages.

CAISO Operations Planning

1. **Review** the planned test schedule and make a recommendation to approve or reschedule the planned test.
   - If the planned test needs to be rescheduled:
     - **Include** a discussion of limitations, guidance for correcting deficiencies and/or scheduling for alternate days/times.

2. If there are conflicts between units which have submitted planned test schedules:
   - The outage process will accommodate and prioritize requests on a first come, first served basis, and consider:
     - Outages for resources currently in Commercial Operation
CAISO Operations Planning

- immediacy of the Commercial Operation Date (COD) as contained in the Generator Interconnection Agreement (GIA) are higher priority.
  - GIA may be considered at the CAISO’s discretion.
  - Requests for resources with capacity already in Commercial Operation for Market (COM) may be considered at the CAISO’s discretion.

3. CAISO Operations Planning will work with the involved resources to resolve conflicts and:
   - Approve or deny request for test energy by updating the outage request.
     - If denied or rescheduled, notify NRI@CAISO.com.

Scheduling Coordinator (SC), Interconnection Customer


1. A new resource with approved COM should have a NEW_GENERATOR_TEST_ENERGY Outage card which reflects currently available MW.
2. At least seven (7) calendar days prior to the first planned Trial Operation date (not including the submittal date and the date the test is requested to begin):
   - Update the NEW_GENERATOR_TEST_ENERGY card to reflect current COM value (if any), plus the test MW value.
   - Submit a Unit Testing outage request to the CAISO for the test energy schedule.
3. In addition to the required fields for an outage request, include the following:
   - The expected MW output for each hour of testing.
   - Start and End times of the test.
4. Copy all of the content from the NRI Test Energy template (resource information and the test plan) into the text section of the outage request.
5. Select the attributes for “Unit Testing”.
6. Include any known testing limitations.
   - The Emergency Return Time section of the Unit Testing card should reflect the time it takes to shut down or return the resource to its COM availability anytime during the test.

Note: The Unit Testing card acts as a “Child” card for testing. The Unit Testing outage card provides the CAISO dispatcher the information needed to Exceptionally Dispatch the unit and to make them aware of which resources can be backed down to COM, if needed, due to system conditions that prevent the testing. As such, it is important to note in the Short Description field of the outage card as much detail as possible regarding the unit’s test energy schedule.
Scheduling Coordinator (SC), Interconnection Customer

**Note:** Due to Operations Planning study requirements to determine whether the requested test energy can be accommodated, the duration of each test energy outage request can be no more than 3 consecutive operating days. Testing in excess of 3 consecutive operating days requires an additional test energy outage request for each additional 3 consecutive operating days testing period or fraction thereof.

**Note:** If the scheduled test cannot be performed within this time period, a new outage request must be submitted.

7. The example below demonstrates the actions the SC should take:
   - A new resource with a currently approved COM value of 100 MW wishes to test above its COM value to 125 MW.
     - Open the NEW_GENERATOR_TEST_ENERGY card and
     - Update the resource’s availability by the requested test energy amount of 25 MW. This increases the resource’s availability to 125 MW.
     - Submit a Unit Testing outage card with unit availability set to the total of the currently approved COM, plus the Test Energy MW for the duration of the test period, in this case, 125 MW.
     - After the testing is completed,
       - End the Unit Testing card and
       - Adjust the unit availability back to the previous COM value of 100 MW on the New Generator Test Energy card
   - In the example above, if the PMax contained in the Master File has a value of 200 MW:
     - Approved COM is 100 MW
     - Outage card availability during testing = 125 MW
     - Outage card availability during non-test periods = 100 MW

Participating Transmission Owner (PTO)

1. If applicable:
   - **Submit** an outage request to the CAISO per Operating Procedure 3210 Transmission Outages.
3.3. Conduct Test

Perform the following actions to conduct a test:

### Scheduling Coordinator (SC)

1. **At least 3 calendar days prior to the test date**, if there is a need to change start or end dates, times, test duration, or the approved MW amount,
   - **Submit** an update for the request.
   
   **Note:** If changes are submitted less than 3 calendar days prior to the test date, the testing may need to be rescheduled if the change cannot be accommodated based on system conditions. CAISO Operations Planning Office business hours are Monday through Friday 0730 – 1530 Pacific Prevailing Time.

2. **If within 24 hours of the test date**, there is a need to change start or end dates, times, test duration, or the approved MW amount,
   - **Contact** the CAISO Generation Desk, for pseudo-tie or dynamic resources the CAISO Transmission Desk to **request** permission to change the test plan.
   - Depending on the nature of the request, the test may need to be **rescheduled** based on system conditions.

3. **At least ninety (90) minutes before the start of the test,**
   - **Notify** the CAISO Generation Desk, for pseudo-tie or dynamic resources the CAISO Transmission Desk via phone to **confirm** that the test can start as scheduled and submit an E-Tag using the next Scheduling Coordinator (SC) instructions below.

### Interconnection Customer

1. If the test is proceeding as planned,
   - **Contact** the applicable PTO to **coordinate** any required switching orders on the desired test date.

2. For pseudo-tie or dynamic resources, if the test is proceeding as planned,
   - **Contact** the applicable BA to **coordinate** any required switching orders on the desired test date.

### Scheduling Coordinator (SC), Interconnection Customer

1. If the test must be postponed, or if the test fails while in progress,
   - **Notify** the CAISO and PTO, for pseudo-tie or dynamic resources the applicable BA to **determine** a new test date and time.
   - **Resubmit** test plan via an outage request (**repeat** process as needed starting at **Section 3.2**).
CAISO Generation Desk, for pseudo-tie or dynamic resources the CAISO Transmission Desk

1. **Confirm** whether resource testing can be conducted as scheduled.
2. If “Yes,” do the following:
   - If the requested test MW amount is \( \geq 10 \text{ MW} \),
     - **Create** an Exceptional Dispatch for operations testing of the resource.
3. The ED Reason Code **must** be “SC Requested testing”.
4. **Manage** Outage Card status.

CAISO Transmission Desk

1. **Ensure** there is a manual award for the physical tie side of the pseudo-tie or dynamic resource wheel (usually import side).
2. **Ensure** the applicable BA(s) are ready to **activate** the pseudo-tie or dynamic resource data point in EMS at least ninety (90) minutes before Trial Operations begins.
3. **Coordinate** the activation time of the pseudo-tie or dynamic resource data point in EMS with applicable BA(s) at least ninety (90) minutes before Trial Operations begins.
4. **After the hour** (for pseudo-tie resources only),
   - **Check-out** tie meter Actuals with adjacent BA and
   - **Communicate** to the Scheduling Coordinator (SC) the integrated MWh value.

Scheduling Coordinator (SC)

1. **Submit** a pseudo or dynamic transaction type E-Tag for pseudo-tie or dynamic resources:
   - **Before the hour**, the MWh value in the energy profile should equal the test schedule in the Trial Operations webOMS card. The transmission profile should equal the highest expected MW output for each hour.
   - **When the hour is over**, the E-Tag should be updated to the integrated MWh value.
2. **Conduct** the test according to the approved test energy schedule for the resource.
   - The test should be **monitored** by the Scheduling Coordinator, PTO, the CAISO and for pseudo-tie or dynamic resources the applicable BA(s).
3. **As testing period ends,**
   - **Contact** the CAISO Generation Desk or for pseudo-tie or dynamic resources the CAISO Transmission Desk, to **confirm** the testing is completed.
### Scheduling Coordinator (SC)

4. When the test is over,
   - **End** the Unit Testing outage card without changing availability (for Non-NGR Resources only).

5. **Adjust** the availability in the New Resource Test Energy outage card (if such a card exists) to the correct value. (I.e. either 0 MW or the approved COM MW, as applicable for the resource).

### CAISO Generation Desk

For Non-NGR Resources Only:

1. Once the test has been completed,
   - **Terminate** the outage and
   - **Instruct** the resource to return to its previously determined schedule.

### Interconnection Customer

1. **Contact** the applicable PTO, for pseudo-tie or dynamic resources the applicable BA(s), per their applicable outage procedures, to **terminate** the testing.

### Scheduling Coordinator (SC)

1. After the testing is completed,
   - **End** the Unit Testing card (for Non-NGR Resources only) and
   - **Adjust** the unit availability back to the previous COM value (if any) or 0 MW, on the NEW_GENERATOR_TEST_ENERGY card.

   **Note:** Follow the NRI process for declaring COM. After confirmation is received from NRI, then the NEW_GENERATOR_TEST_ENERGY parent card availability can be adjusted to a new COM MW availability.

2. If the resource will have adjusted COM capacity after this test,
   - **Refer to** Section 3.4, Step 1.

3. If the resource will have COM capacity after this test,
   - **Refer to** Section 3.4, Step 1.
3.4. COM Outage Management

If the resource has pending or current commercial operation for market (COM) MW capacity and additional test energy schedules, perform the following steps to manage the outage cards:

<table>
<thead>
<tr>
<th>Scheduling Coordinator (SC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. If additional test energy scheduling is required,</td>
</tr>
<tr>
<td>- Submit test plans via an outage request</td>
</tr>
<tr>
<td>- Repeat process as needed starting at Section 3.2 and Section 3.3 for Scheduling Coordinator).</td>
</tr>
<tr>
<td>2. Repeat this procedure as needed through the Trial Operation period until all of the requirements under the NRI process have been completed and Commercial Operation Date (COD) designation is established.</td>
</tr>
</tbody>
</table>

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:

<table>
<thead>
<tr>
<th>CAISO Tariff</th>
<th>Appendix V - Standard Large Generator Interconnection Agreement – Article 6.</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAISO Operating Procedure</td>
<td>3210 Transmission Outages</td>
</tr>
<tr>
<td>WECC Criterion</td>
<td></td>
</tr>
<tr>
<td>Other References</td>
<td>Dynamic (and pseudo-tie) Transfers page (Please use the link here: <a href="http://www.caiso.com/participate/Pages/DynamicTransfers/Default.aspx">http://www.caiso.com/participate/Pages/DynamicTransfers/Default.aspx</a> )</td>
</tr>
</tbody>
</table>
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:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>COD</td>
<td>Commercial Operation Date</td>
</tr>
<tr>
<td>COM</td>
<td>Commercial Operation for Market</td>
</tr>
<tr>
<td>GIA</td>
<td>Generator Interconnection Agreement - The form of Interconnection Agreement applicable to an Interconnection Request pertaining to a Generating Facility processed under the interconnection procedures set forth in Appendix Y. For a Large Generating Facility, a pro forma version of the Interconnection Agreement is set forth in Appendix CC. For a Small Generating Facility, a pro forma version of the Interconnection Agreement is set forth in Appendix T.</td>
</tr>
<tr>
<td>IC</td>
<td>Interconnection Customer</td>
</tr>
<tr>
<td>MPAI</td>
<td>Market Participant Asset Implementation</td>
</tr>
<tr>
<td>POD</td>
<td>Point of Delivery</td>
</tr>
<tr>
<td>Resource ID</td>
<td>Identification characters assigned by the CAISO to Generating Units, Loads, Participating Loads, System Units, Proxy Demand Resources, System Resources, pseudo-tie resources, dynamic resources, and Physical Scheduling Plants.</td>
</tr>
<tr>
<td>NGR Resource</td>
<td>A resource designated as a Non-Generator Resource</td>
</tr>
<tr>
<td>Non-NGR Resource</td>
<td>A resource that is not designated as a Non-Generator Resource</td>
</tr>
</tbody>
</table>

Version History

<table>
<thead>
<tr>
<th>Version</th>
<th>Change</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>Updated Section 3.2, Step 10:&lt;br&gt;• Added a note for NGR Resources to reference attachment 5320A.&lt;br&gt;Updated Section 3.3, Step 9:&lt;br&gt;• Clarified this step as applicable to Non-NGR Resources only.&lt;br&gt;Updated Section 3.3, Step 11:&lt;br&gt;• Clarified this step as applicable to Non-NGR Resources only.&lt;br&gt;Updated Section 3.3, Step 13:&lt;br&gt;• Clarified that part of this step is applicable to Non-NGRs only.&lt;br&gt;Added two new definitions to the definition table.</td>
<td>4/07/17</td>
</tr>
</tbody>
</table>
### 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

5320A Test Energy Process for NGR Resources

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