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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

California ISO (CAISO)	Ensure a nondiscriminatory operations testing process.
New Resource	Coordinate resource implementation activities and maintain
Implementation (NRI)	documents submitted by the Interconnection Customer (IC).
Interconnection Customer	Develop plans for Trial Operations and Coordinate with Scheduling Coordinator to submit planned test energy schedules to the CAISO for approval through webOMS.



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Scheduling Coordinator (SC)	Coordinate with Resource Owner, PTO and the CAISO as needed to plan, schedule, request outages through webOMS and conduct resource testing.	
	Coordinate with CAISO Real-Time Operations prior to starting and completing testing.	
	For pseudo-tie and new dynamic resources, submit a valid E- Tag before the hour and update it <mark>After-the-Fact (</mark> ATF <mark>)</mark> .	
CAISO Operations Engineering Services	Coordinate the CAISO's review and approval process for resource pre-commercial testing requests.	
Participating Transmission Owner (PTO)	Coordinate the review and approval process for resource pre- commercial testing requests that affect the PTO's transmission equipment.	
CAISO Generation	Work with Scheduling Coordinator.	
Dispatcher	Approve initiation of test energy schedule in Real-Time.	
	Manage Outage Card status.	
	Monitor system for congestion and other issues.	
CAISO Transmission	For pseudo-tie and new dynamic resources:	
Dispatcher	 Work with Scheduling Coordinator and applicable BA(s) Ensure there is an Outage Card with the test schedule in it that matches the energy profile on the E-Tag. Monitor E-Tag submittal Issue an Exceptional Dispatch (ED) in IFM/RTN Perform ATF check-out (for pseudo-tie resources only) 	
Applicable BA(s)	Ensure the pseudo-tie or dynamic resource data point is activated with the CAISO (and any other applicable BA for intermediary BAs) when Trial Operations begins.	

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.

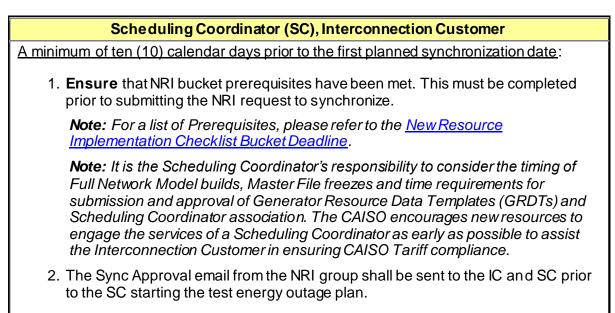
2.2. Scope/ Applicability

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 Dispatcher or CAISO Transmission Dispatcher for pseudo-tie resources and Dynamic Schedules may issue a Test Energy ED if the MW amount being tested is \geq 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

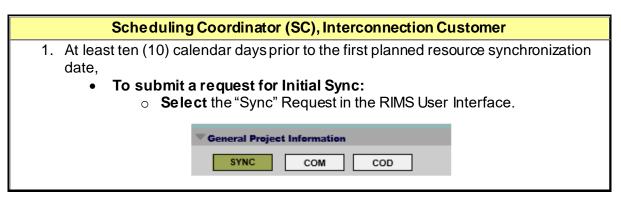




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3.2. Submit Planned Trial Operation Schedule

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



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.

Solo duling Coordinator (SC)		
Scheduling Coordinator (SC)		
 Submit an outage request through webOMS, using the Nature of Work of NEW_GENERATOR_TEST_ENERGY. 		
Note: This outag <mark>e c</mark> ard should set the resource Availability to the MW amount that has been approved for testing by the NRI Group. 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 		



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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 <u>3210 Transmission Outages</u>.

CAISO Operations Planning

- 1. **Review** the planned test schedule <u>and</u> **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 <u>and</u> prioritize requests on a first come, first served basis, <u>and</u> consider:
 - o Outages for resources currently in Commercial Operation



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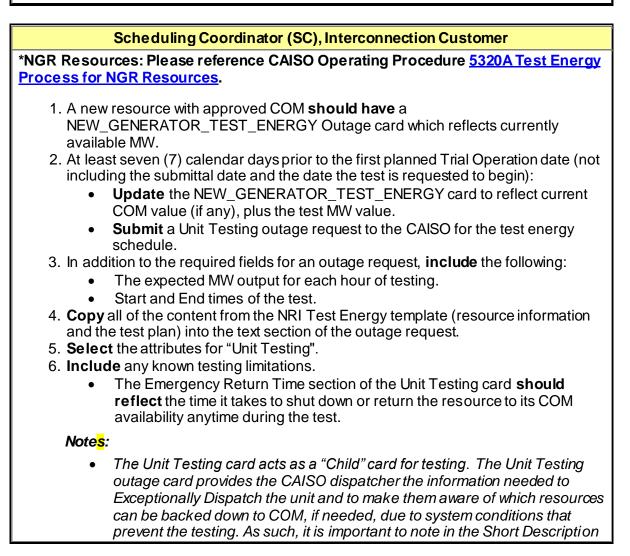
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4.3

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 <u>or</u> deny request for test energy by updating the outage request.
 o If denied or rescheduled, notify <u>NRI@CAISO.com</u>.





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Sched	duling Coordinator (SC), Interconnection Customer
	f the outage card as much detail as possible regarding the unit's test y schedule.
reques energy days. additic	Operations Planning study requirements to determine whether the sted test energy can be accommodated, the duration of each test y outage request can be no more than three (3) consecutive operating Testing in excess of three (3) consecutive operating days requires an onal test energy outage request for each additional three (3) cutive operating days testing period or fraction thereof.
	cheduled test cannot be performed within this time period, a new e request must be submitted.
A new	 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.

Participating Transmission Owner (PTO)

1. If applicable:

Submit an outage request to the CAISO, per Operating Procedure 3210 Transmission Outages.



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3.3. Conduct Test

Perform the following actions to conduct a test:

Scheduling Coordinator (SC)
 At least three (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 <mark>three (3)</mark> 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.
 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 Dispatcher for pseudo-tie or dynamic resources, the CAISO Transmission Dispatcher 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. At least ninety (90) minutes before the start of the test, Notify the CAISO Generation Dispatcher for pseudo-tie or dynamic resources, the CAISO Transmission Dispatcher for pseudo-tie or dynamic system conditions. At least ninety (90) minutes before the start of the test, Notify the CAISO Generation Dispatcher for pseudo-tie or dynamic resources, the CAISO Transmission Dispatcher 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 <u>Section 3.2</u>).



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CAISO Generation <mark>Dispatcher</mark>, for pseudo-tie or dynamic resources the CAISO Transmission <mark>Dispatcher</mark>

- 1. Confirm whether resource testing can be conducted as scheduled.
- 2. If "Yes," do the following:
 - If the requested test MW amount is ≥ 10 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 Dispatcher

- 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 Dispatcher, or for pseudo-tie or dynamic resources the CAISO Transmission Dispatcher, to **confirm** the testing is completed.



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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 Dispatcher

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 <u>Section 3.4</u>, Step 1.
- 3. If the resource will have COM capacity after this test,
 - **Refer** to <u>Section 3.4</u>, Step 1.



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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:

Scheduling Coordinator (SC)

- 1. If additional test energy scheduling is required,
 - Submit test plans via an outage request.
 - **Repeat** process as needed, starting at <u>Section 3.2</u> and <u>Section 3.3</u> for Scheduling Coordinator).
- 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.

4. Supporting Information

Resource Performance Issues

If a resource fails to preform adequately in accordance with Section 3 of this operating procedure or fails to respond within 10 minutes of a verbal Operating Instruction from the CAISO Generation Dispatcher, the CAISO may block the resource from further trial operations and testing of generation.

Note: This block will remain in place until a representative of the Participating Generator and the Scheduling Coordinator completes the "Resource performance expectations of dispatch and operating instructions" training, which is available at the CAISO's Learning Center (California ISO - Learning center (caiso.com)). Upon completion, an affidavit to provide attestations under penalty of perjury from the individual(s) that completed the course shall be provided. The resource may be asked to provide additional evidence of repairs or corrective actions to ensure the resource will perform adequately. CAISO Queue Management staff will contact the Interconnection Customer and Scheduling Coordinator to alert them of this occurrence and provide further instruction on the training/documentation needed within two (2) business days of the block being issued.

Following receipt of such evidence, Operations Management will review if such actions are sufficient to release the resource or if more information is needed within two (2) business days.

Contact: QueueManagement@caiso.com



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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	Appendix V - Standard Large Generator Interconnection Agreement – Article 6.
CAISO Operating Procedure	3210 Transmission Outages
NERC Requirements	INT-006-5 Evaluation of Interchange Transactions
	INT-009-3 Implementation of Interchange.
WECC Criterion	
Other References	Dynamic (and pseudo-tie) Transfers page (Please use the link here: <u>http://www.caiso.com/participate/Pages/DynamicTransfers/Default</u> .aspx)

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:

COD	Commercial Operation Date
СОМ	Commercial Operation for Market
GIA	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. [T]



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4.3

IC	Interconnection Customer
MPAI	Market Participant Asset Implementation
POD	Point of Delivery
Resource ID	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.
NGR Resource	A resource designated as a Non-Generator Resource
Non-NGR Resource	A resource that is not designated as a Non-Generator Resource

Version History

Version	Change	Date
3.3	Changed Interchange Scheduler to Transmission Desk. Minor format and grammar updates.	7/03/19
4.0	Periodic Review – Updates include: Section 1: Added to ISO Transmission Desk responsibilities. Section 3.1: Updated minimum to 10 calendar days prior to first planned sync date. Section 3.2: Updated Initial Sync process step and NRI action for Sync Approval email. Section 3.3: Removed the need of manual market award for "both" sides, as ZPTG Export pseudo-tie resources no longer need to be manually awarded with ITS patch 6.3.9 enhancement. Minor grammar and format changes.	1/31/20
4.1	Referenced dynamic type schedules in all applicable sections. Removed and corrected some "step" references. Updated references to WebOMS.	7/24/20
4.2	Periodic Review: Updated to CAISO where applicable. Updated NERC Requirements, including removal of INT-004 due to retirement. Removed version history prior to five years and minor edits in Section 5 for procedures consistency.	2/01/23
4.3	Responsibilities: Defined first instance of CAISO and ATF. Section 2.2: Minor edit to Note. Section 3.2: Updated Note under Scheduling Coordinator Item #1. Section 4: Added sub section for Resource Performance Issues. Updated from Generation or Transmission "Desk" to "Dispatcher". Minor formatting and grammar edits. Removed history prior to five years.	10/10/24



5. Periodic Review Procedure

Energy Process

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