



California ISO

Ancillary Services Focus Group


Stakeholder Focus Group

March 31, 2025

Housekeeping reminders

- This call is being recorded for informational and convenience purposes only. Any related transcriptions should not be reprinted without ISO's permission.
- The meeting is structured to stimulate dialogue and engage different perspectives.
- Please keep comments professional and respectful.
- Please try and be brief and refrain from repeating what has already been said so that we can manage the time efficiently.

Instructions for raising your hand to ask a question

- Open the Participant and Chat panels from the bottom right.
- If you are connected to audio through your computer or used the “call me” option, select the raise hand icon  located at the bottom of the participant panel.
 - **-Note:** *3 only works if you dialed into the meeting.
- Please remember to state your name and affiliation before making your comment.
- If you need technical assistance during the meeting, please send a chat to the event producer.
- You may also send your question via chat to either Yelena Kopylov-Alford or to all panelists.

Today's Agenda

Time	Topic	Presenter
1:00 – 1:05	Welcome and introductions	Yelena Kopylov-Alford
1:05 – 1:15	Focus Group Goals, Background, and Issue Identification	Isabella Mahein
1:15 – 2:00	Ancillary Services Certification Process and Performance Verification	David Acevedo
2:00 – 2:30	Resource Performance Compliance	Isabella Mahein
2:30 – 2:40	Break	
2:40 – 3:00	Proposal to address AS Testing Requirements	Isabella Mahein David Acevedo
3:00 – 3:45	Open discussion	All
3:45 – 4:00	Next steps	Yelena Kopylov-Alford

Goals of Today's Focus Group

The Focus Group structure is meant to embrace flexibility to allow organic and robust conversation on a specific topic with the goal of driving towards a solution collaboratively.

Provide background on reason for focus group

- Tariff Section 8.10 Periodic Testing of Units
- CAISO must ensure that AS certified resources can appropriately respond to and provide their certified AS amounts

Provide an overview of the current AS Certification Process

- Discussion on AS performance verification, expectations of AS resources

Provide an overview of resource performance compliance

- Discussion on monitored performance and root causes of resource performance issues

Discuss proposal to address testing requirements for AS certified fleet

- Discussion on alternatives to ISO administered AS performance verifications to ensure all resources certified to provide AS can appropriately respond to and provide their certified AS amounts.

Background and Issue Identification

- Under Tariff Section 8.10, the ISO shall periodically conduct announced tests of resources providing Ancillary Services.
 - The frequency of testing shall be within such time frames as are reasonable under all the circumstances.

Problem Statement: Under current available market mechanisms, the ISO faces challenges ensuring testing of 100% of its resources certified to provide Ancillary Services within such time frames as are reasonable under all the circumstances. This has led to a need to evaluate alternative ways to ensure that AS resources can appropriately respond to and provide their certified AS amounts.

ANCILLARY SERVICES CERTIFICATION PROCESS & PERFORMANCE VERIFICATION

Ancillary Services (AS) Certification Process - Overview

1. Ensure resource telemetry functionality prior to testing
2. Submit request for certification testing as outlined in OP5330
3. Conduct test on scheduled date
4. Submit request to end outage once testing is complete
5. Submit updated Resource Data Template (RDT) with certified test parameters after receiving test results from CAISO

Prerequisites for SPIN/NSPIN/Regulation Certification

- Ensure all relevant telemetry points for the requested certification type are functioning
- Prior to certification for Regulation, Spin, and Non-Spin all resources must perform:
 - Pmin certification
 - Pmax certification
 - Pmax range must be less than or equal to maximum modeled capacity
 - Pmax exceeding the modeled capacity requires Pmax increase project through NRI process
- SPIN/NSPIN/Regulation certifiable range is limited by:
 - Pmin/Pmax certified limits
 - Results of the specific test

Requesting Certification Testing

Follow Steps outlined in Operating Procedure 5330 (OP5330)

- Submit filled **5330A form** to: ASNotifications@caiso.com
- Scheduling email should include:
 - Requested test date and time selected within 10 business days of email submission
 - 1-2 alternative periods in case of conflicts
 - Relevant information or questions

Certification Testing Requirements and Results

- Units must have capacity to run requested tests
- All personnel required to run tests must be available during testing period
- While conducting certification testing, operations staff must:
 - Have prior knowledge of the requirements for manual operation of the resource under test
 - Have the capability to control inputs required for manual operation
 - Have the capability to toggle ISO control points if needed

Results are only provided for completed tests

Results will report resource performance as observed

Pay for Performance Regulation and Regulation Performance Audit

CAISO will conduct assessments on a resource's ability to provide Regulation Up/ Regulation Down when awarded and dispatched.

Pay for Performance Regulation (PFPR) - Quarterly

- Designed to identify if a resource falls below the minimum performance threshold for accuracy
- Resources will be audited for accuracy in providing dispatched regulation
- Regulation accuracy of at least 25% is required for a passing result
- Incremental interval assessments are available in CMRI
- Check **Market Operations BPM Section 4.6.1** for more details
- All other performance checks at this time are weighed against capacity

Regulation Performance Audit - Monthly

- Resources will be audited in their ability to provide the capacity dispatched
- Audits are performed if a setpoint ramp occurs between 50-90% or 50-10% of the resource's range
- A minimum of 5 valid assessments are required to determine if the resource passed or failed for a given product
- A pass/fail letter is only generated if the minimum number of assessments is met

Staff must be trained on how to manage resources in the event that normal market applications/flags are not functional.

AS Performance Verification (RTCD Performance Audit, Unannounced AS Tests)

CAISO will conduct assessments on a resource's ability to provide SPIN/Non-Spin when awarded and dispatched.

Real Time Contingency Dispatch (RTCD)

- Individual resource performance is reviewed

Unannounced AS Tests

- Conducted by CAISO to determine a resource's capability to provide awarded capacity
- Conducted when a resource receives a AS award for a given period and system conditions allow for testing

Staff must be trained on how to manage resources in the event that normal market applications/flags are not functional.

AS Performance Verification (RTCD Performance Audit, Unannounced AS Tests)

Requirements

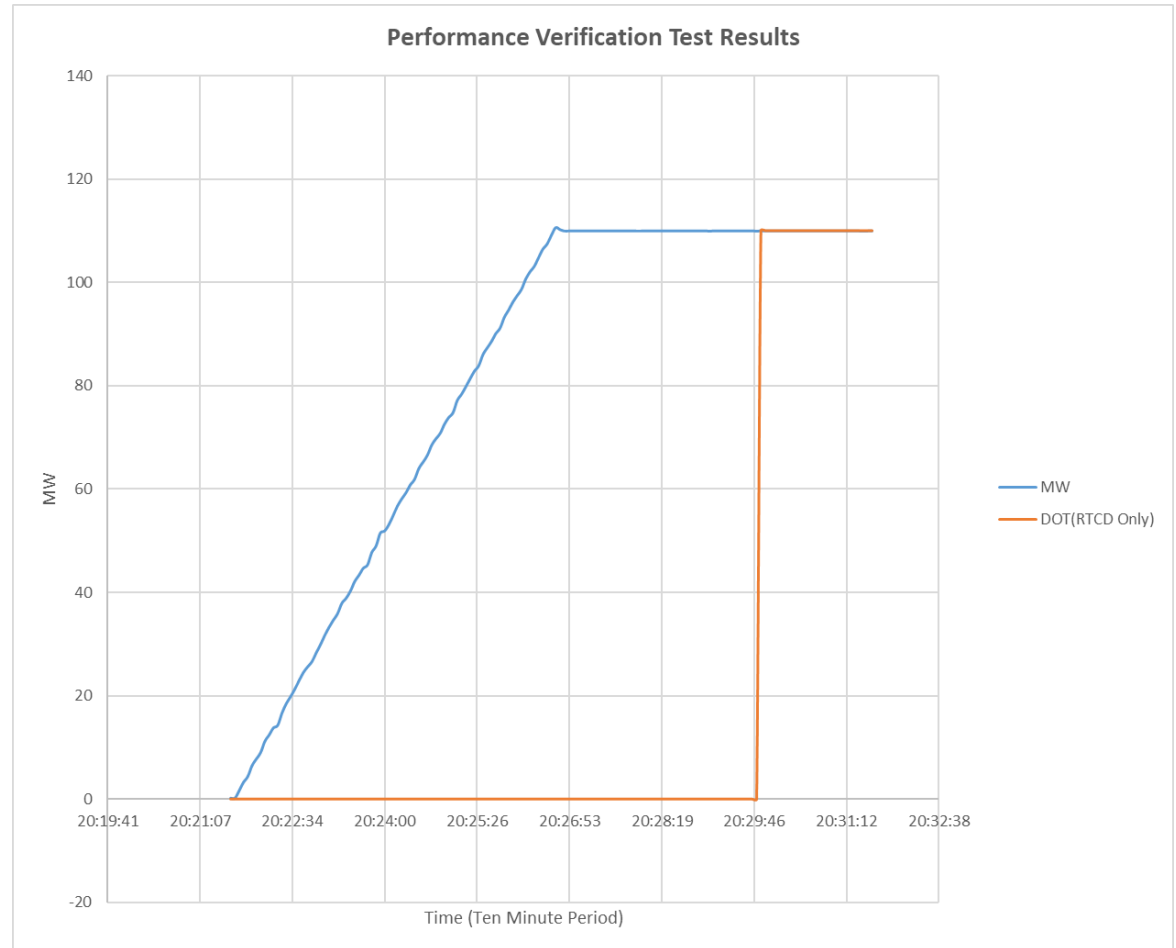
- 90% of target dispatch must be reached and maintained within 10 minutes of start time
- Minimum 1 MW dispatch required for assessment

RTCD

- *Performance Audit Start Time*: the later time is selected from ADS record of RTCD instruction
 - CREATE_DATE or
 - UPDATE_DATE

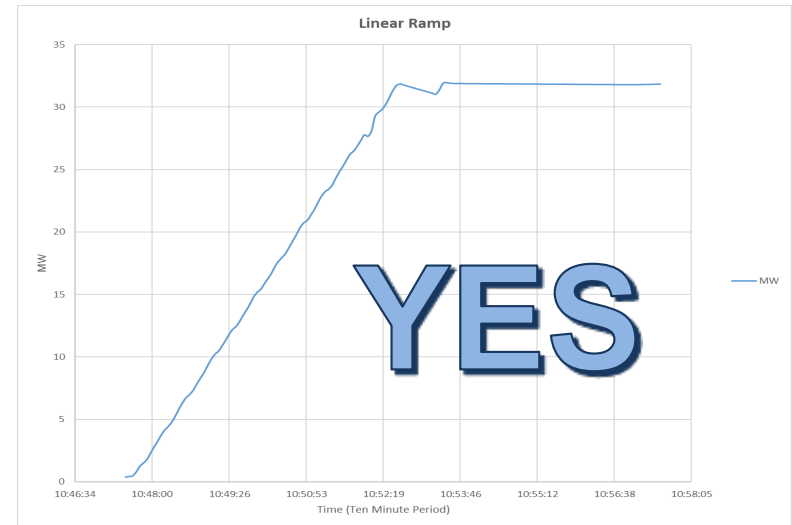
Unannounced AS Tests

- *Phone Call*: if triggered by phone call, start time is as soon as call is over
- *ASTEST Market Tool*: ADS record of DOT instruction with MW change is used as reference for test start time with a minus five (-5) minute offset (follow normal market operations)



Linear Ramp and Response Time

- SPIN/NSPIN/Regulation
 - Must always ramp linearly
- SPIN/NSPIN
 - Resource should respond appropriately to market instructions within 10 minutes
 - Instructions may come in via:
 - ADS
 - CAISO Generation Desk call
- Regulation
 - Setpoints may be sent every 4 seconds



Control Points Required for Regulation Up/Down

Digital Control Points

UCTL – Unit Remote/Local Status

UASW – Unit Authority Switch

UCON – Unit Connectivity

UAGC – Unit Automatic Generation Control (AGC)

Analog Control Points

UOHL – High Operating Limit

UOLL – Low Operating Limit

CTLFDBK – Control Feedback (Feedback of ISO setpoint)

UPMW – Point of Delivery MW

Non-Generating Resources/Hybrids

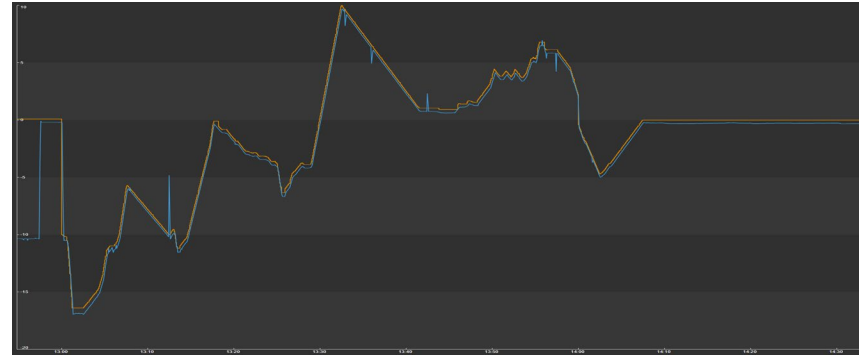
SOC – State of Charge (MWh)

MXEnergy – Max Energy (MWh)

AGC Setpoint will not update if these points are not working correctly. All operations staff managing resource must have knowledge of updating points if automatic systems fail (Flags/Settings).

Manual AGC Activation

- Resources with regulation awards must have telemetry points functioning to indicate that resource is available for AGC control.
- **Resource operators** must have the knowledge to manually enable operation of AGC status points to place the unit into the correct control mode.



Recent Changes

Changes implemented in the last year to perform more testing and to ensure all resources providing AS will perform as expected.

- Gen Desk Support Center (GDSC) – On call support/Unannounced AS Testing
- Improved Data Analysis
- Offering Pre-COD ADS testing

GDSC – Unannounced AS Testing

The GDSC was implemented to help support the generation desk during peak business hours.

- Functions:
 - Facilitate making updates to generation or status changes for resources with failed telemetry
 - Unannounced tests via market tool
- Hours of operation: Monday-Friday 8:00-16:30 except holidays

Pre-COD ADS Testing (Pilot Program)

- The Pre-Commercial ADS Resource Test consists of six 5-minute dispatch instructions, delivered through the Automated Dispatch System (ADS).
- The resource under test is expected to respond to these dispatches as accurately and promptly as possible.
- The total test duration is approximately 30 minutes.
- At this time we are accepting requests to attempt this testing. Requests can be submitted to EDAS@caiso.com

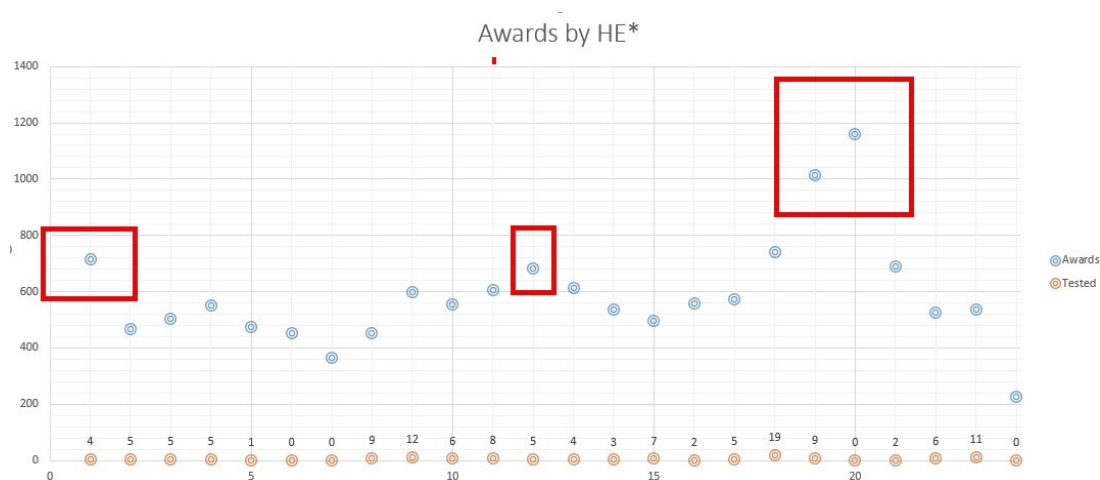
Analysis

Identifiers for resources that need to be tested:

- recent failed tests
- no recent testing
- new certifications

Test Opportunities:

- System conditions and awards do not always overlap to allow for testing
- Resources are generally awarded at peak times and this does not allow for testing
- Some resources get awards for SPIN/NSPIN but also have Regulation awards for the same period so they cannot be tested.



RESOURCE PERFORMANCE COMPLIANCE

Complying with Dispatch and Operating Instructions

The ISO Tariff requires compliance with dispatch and operating instructions. Failure to comply with dispatch and operating instructions can result in economic and contractual consequences, and can result in being reported or referred to FERC, NERC/WECC, and CAISO DMM.

4.2.1 Comply with Dispatch Instructions and Operating Instructions

With respect to this Section 4.2, all Market Participants, including Scheduling Coordinators, Utility Distribution Companies, Participating Transmission Owners, Participating Generators, Participating Loads, Demand Response Providers, Distributed Energy Resource Providers, Balancing Authorities (to the extent the agreement between the Balancing Authority and the CAISO so provides), and MSS Operators within the CAISO Balancing Authority Area and all System Resources shall comply fully and promptly with the Dispatch Instructions and Operating Instructions, unless such compliance (1) would impair public health or safety; (2) is otherwise exempted pursuant to Section 34.13.1; or (3) it is physically impossible for the Market Participant to perform in compliance with the Dispatch Instruction or Operating Instruction. Shedding Load for a System Emergency does not constitute impairment to public health or safety. The Market Participant shall immediately notify the CAISO of its inability to perform in compliance with the Operating Instruction.

Economic Consequences of Resource Non-Compliance

- Resources face economic consequences for deviating from dispatch instructions, such as:
 - Energy deviations paid/charged at the Real-Time LMP as Uninstructed Imbalance Energy.
 - Ancillary Service (Regulation) deviations blocked/charged-back.
- Reliability penalties assessed against the ISO may be allocated to Scheduling Coordinators for non-compliant resources that exacerbated system conditions.

Contractual Consequences of Resource Non-Compliance

- Scheduling Coordinators are **required** to notify the ISO in the event its resource is unable to comply with Dispatch **or** Operating Instructions. Failing to comply with Operator instructions, and failing to provide the required notifications, is inconsistent with:
 - ISO Tariff
 - Scheduling Coordinator Agreement
 - Resource’s Interconnection Agreement + Participating Generator Agreement
- The ISO may investigate deviations with repeated or adverse behavior addressed through:
 - Formal notification of non-compliance sent to applicable entities
 - Good faith negotiation with Resource Owners, Operators, and the ISO
 - Referral to applicable enforcement regulator(s)
 - Revocation of applicable certification

Enforcement of Resource Non-Compliance

- Scheduling Coordinators and/or Resources that fail to comply with Tariff and binding agreements should self-report such non-compliance to FERC enforcement
 - FERC has civil penalty authority of up to \$1.49 million per violation.
- Scheduling Coordinators and/or Resources registered with NERC/WECC that fail to comply with Operating Instructions should self-report non-compliance
- Scheduling Coordinators and/or Resources that fail to comply with Operating Instructions may be referred to the ISO's Department of Market Monitoring for code of conduct violation

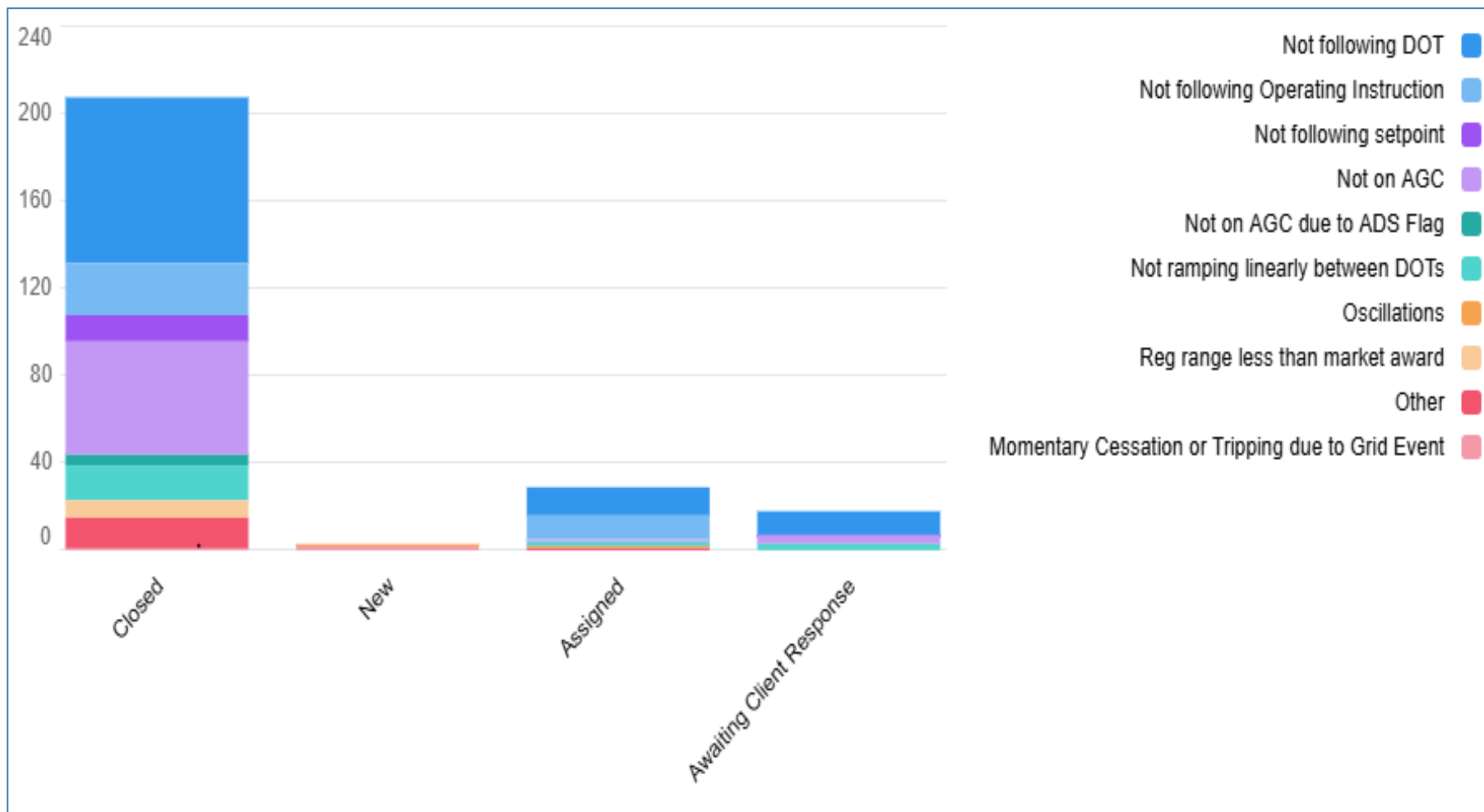
Testing in Compliance with Dispatch and Operator Instructions

- Resources providing Energy, Capacity, or Ancillary Services should refer to OP 5330.
- Resources engaged in on-site test operations and commissioning of a Generation Unit prior to Commercial Operation should refer to OP 5320 and OP5320A if an NGR resource.
- Resources subject to performance audits and unannounced compliance testing should refer to OP 5370.

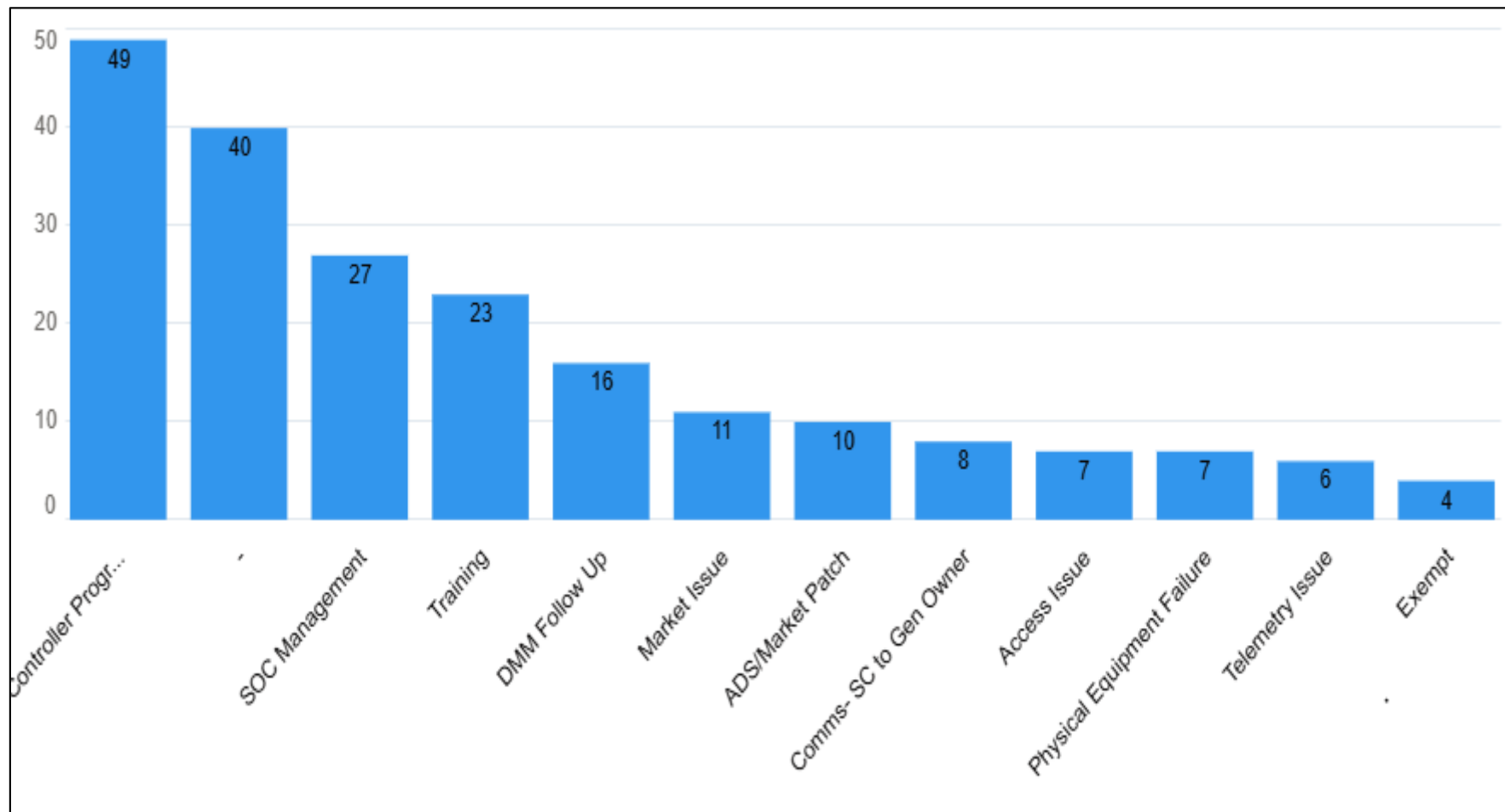
Reminder

- The Outage Management System (OMS) is the primary method of communicating Outage and AS availability-related information. OMS provides an automated mechanism for parties to communicate all aspects of Outage information.
- OMS should be used for all physical limitations at the plant.
 - **Early submission is highly encouraged.**
 - AS procurement can take up to 50 minutes after the availability update/submission is made. Due to timing of the Real-Time market runs, timely updates and submissions of OMS cards reflecting AS availability are key to preventing resources from receiving AS awards that cannot be met.
 - Non-urgent outages should be scheduled based on the practices established in the Outage Management BPM.
 - Reference Section 8.2 of the Outage Management BPM for Real-Time Outage Submissions

Resource Performance Tickets



Resource Performance Tickets Continued



Resource Performance Monitoring

- ISO monitors resource activities to evaluate AS performance. Some of these performance indicators include:
 - Ability to follow dispatch operating targets (DOT)
 - Linear ramping between DOTs
 - Response to Operator Instruction
 - Response to Real Time Contingency Dispatch (RTCD)
 - Automated Generator Control (AGC) activity

Resource Performance Reference Material

- 2024 Resource Operations Readiness Training - <https://www.caiso.com/documents/presentation-resource-operations-readiness-training-may-2024.pdf>
- Resource Performance CBT - <https://www.caiso.com/content/cbt/resource-performance-expectations-dispatch-operating-instructions/story.html>
- Operating Procedure 5320 – [Resource Trail Operations & Test Energy Process](#)
- Operating Procedure 5320A – [Test Energy Process for NGR Resources](#)
- Operating Procedure 5330 – [Resource Testing Guidelines](#)
- Operating Procedure 5370 – [Resource Performance Verification](#)

PROPOSAL TO ADDRESS A/S TESTING REQUIREMENTS

Proposal to address AS testing requirements

Problem Statement: Under current available market mechanisms, the ISO faces challenges ensuring testing of 100% of its resources certified to provide Ancillary Services within such time frames as are reasonable under all the circumstances. This has led to a need to evaluate alternative ways to ensure that AS resources can appropriately respond to and provide their certified AS amounts.

- Proposed solution: Upon notification from CAISO, the scheduling coordinator is required to self-attest for their Resources' ability to provide AS services within 60 days of the request.

Attestation Criteria applicable to all AS products

By completing the form, the signing entity is acknowledging to the best of its abilities that the resource meets or exceeds all applicable Tariff, BPM, and Operating procedure requirements for AS. This includes but is not limited to the following listed criteria:

- The ability to reliably provide capacity that was last certified for the applicable product
- Resource must be fully compliant with the applicable CAISO direct telemetry Standards and be visible through telemetry on the CAISO EMS. A System Resource testing for regulation must be fully compliant with the telemetry requirements outlined in the CAISO Standards for Regulation Imports.
- The Ancillary Service Provider has performed its own testing of its equipment to ensure that the control system performs to meet the CAISO requirements
- Resource communication and controller equipment must be able to send and accept instructions/telemetry within eight (8) seconds of CAISO polling (round trip)

Attestation Criteria for Regulation

- A System Resource testing for regulation must be fully compliant with the telemetry requirements outlined in the CAISO Standards for Regulation Imports (5330E)
- Capability to provide certified capacity for Regulation up/Regulation down
- The resource must be able to linearly increase or decrease real power levels immediately in response to signals from the CAISO's EMS control
- Operations staff on duty are qualified to manage telemetered AGC control points in the event that automated systems fail

Attestation Criteria for NSPIN/SPIN

- The operator of the resource must have a means of receiving Dispatch Instructions to initiate an increase or decrease in real power (MW) within one (1) minute of the CAISO Control Center determination that Energy from Spinning/Non-Spinning Reserve capacity must be dispatched
 - Operations staff on duty are qualified to manage resource operation in the event that automated systems fail
 - Confirmation of voice circuit availability for receipt of Dispatch Instructions anytime resource is awarded
- Resource must have capability under normal operative status to provide certified capacity within ten (10) minutes and maintain output for thirty (30) minutes
- ADS must be configured in a manner that allows resource operators to acknowledge receipt of RTCD instructions
- SPIN: Governors must be operational and configured as required for droop, deadband and response time

Open Discussion

NEXT STEPS

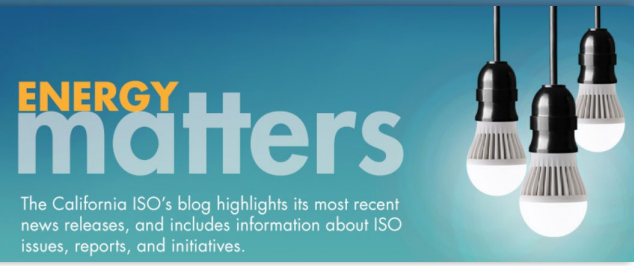
AS Focus Group Schedule

Date	Development
03/31/25	Focus group meeting #1
04/15/25	Comments due
05/05/25	Focus group meeting #2
05/19/25	Comments due
06/26/25	Focus group meeting #3 (If needed)
07/10/25	Publish final procedure

**Dates are tentative and subject to change.*

Next Steps

- Please submit comments on and meeting discussion to ASnotifications@caiso.com due by end of day **April 15, 2025**
- If you have any questions, please contact isostakeholderaffairs@caiso.com



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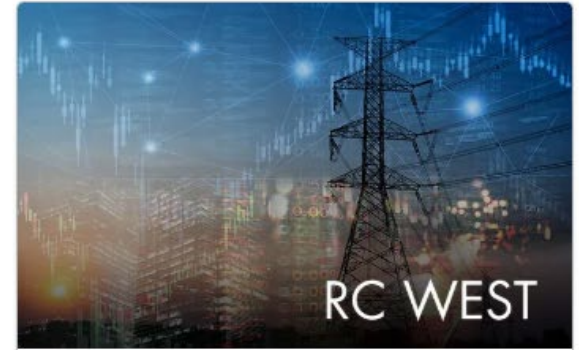


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By ISO Staff

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