Welcome
Our presentation will begin shortly.

Today’s Trainer:
Heidi Holmberg Carder, Lead Customer Education Trainer
Why are we here?

To prepare resource owner/operators to effectively manage their resources to maintain market efficiency & grid reliability

It requires a partnership to ensure the safety and reliability of the grid!
What Will I Be Learning?

• Where do I fit within the ISO footprint?
• What is Assistance Energy Transfer (AET)?
• What is the cost of AET?
• What are the Demand Response models in WEIM?
Housekeeping

- Keep yourself muted to minimize background noise
- Unmute to ask verbal questions or write questions in the chat pod
- Raise your hand using WebEx interactivity tools
What’s next?

• This training is being recorded
• Recordings and presentations will be posted on the ISO Learning Center within 3 business days
• Questions gathered during this course will be collected and turned into a comprehensive Q&A guide after the conclusion of the 4 training course series
• This series kicks off Customer Education efforts to create a Resource Owner/Operator training track – stay tuned!
Foundational Information

How do you fit into the overall picture?
California Independent System Operator

- Maintains reliability on the grid
- Manages the flow of energy
- Oversees the transmission planning process
- Operates the wholesale electric market
- Registered NERC entity
- WEIM Participant
Resource Sufficiency Evaluation
Market process timelines

**Day-Ahead Market (DAM)**
- **T - 7 days**
- **10:00**
  - Bids and schedules submitted
  - DAM process begins
- **13:00**
  - Clear the Market
  - Publish Market results
  - Triggers Real-Time Market

**Real-Time Market (RTM)**
- **T-1 after 13:00**
  - Bids/Base schedules submitted
  - RTM processes begin
- **T-75min**
  - Clear the Market
- **Beginning at midpoint of each 5min period**
  - Receive dispatches
  - Settlements & Metering
For every operating hour, WEIM entities demonstrate they have adequate capacity to balance load and manage contingencies in their own BAA.

- Four tests run 3 times for each hour

- T-75
- T-55
- T-40

Resource Sufficiency Evaluation
- Feasibility Test
- Balancing Test
- Capacity Test
- Flex Ramp Test
Resource Sufficiency Tests

Balancing
Ensures each BAA has the capability of balancing their area for each operating hour to avoid leaning on neighbors

Bid capacity
Ensures a flexible bid range, both up and down on participating resources

Flexible ramp
An aggregation of all resources to meet the slope of the load curve

Feasibility
Ensures your base schedule would not overload a line
T-75 – RTBS1: Base schedules and energy bids due (Resources)

T-55 – RTBS2: Updated base schedules are submitted if necessary (Resources)

T-40 – RTBS 3: Updated base schedules are submitted if necessary (Entity SC); ISO E-tag deadline

T-20: NERC E-tag deadline (Entity SC)

15-minute scheduled awards published

Results of all base tests published

Results of all base tests published
Operators view resource sufficiency results in the BAAOP BSCH display.
What happens when a WEIM Entity fails a portion of the RSE?

BAAs that fail the RSE are ineligible to receive incremental energy transfers from other BAAs in the fifteen-minute market, even when such supply is available.
Assistance Energy Transfer

Option available to WEIM Entities to assist during potentially stressed conditions
What is Assistance Energy Transfer?

ISO Market product that enables BAAs with short supply to access the WEIM’s efficient dispatch while still providing incentives for BAAs to participate in the WEIM with sufficient resource to meet their own load.

- provides reliability benefits to balancing authority areas (BAAs) that are deficient in capacity or flexibility
- Leverage’s the ISO Market Real-Time optimization of diverse supply
Who can participate?

• All WEIM Entities who choose to opt in
  – The Market Validation Team makes daily determination on ISO participation
  – Each WEIM Entity determines their criteria for their participation
What does it cost?

- BAAs that opt-in to receive AETs will be subject to the WEIM Assistance Energy Transfer Surcharge if they fail the RSE
- Ex-post surcharge starting at $1000/MW
- Surcharge will be in addition to the applicable LMP cleared in the market for assistance energy transfers
What is the process to opt in?

- All WEIM Entities who choose to opt-in must:
  - Submit a request through CIDI to update the Master File
    - Specify if the request is to ‘opt-in’ or ‘opt-out’
    - Specify the Start and End date
- No action is needed if you choose to opt-out

Designation requests must be submitted by 11AM PST, at least 5 business days in advance of the effective start date.
What is the process to opt in?

Elections to opt-in must be submitted to Master File through the **Customer Inquiry, Dispute, & Information (CIDI)** application.

Click the **Submit Inquiries, Access or Maintenance** tab, then select the **Inquiry Ticket Record Type**.

Election to ‘opt-in’ or ‘opt-out’ must include:
1. Select **Assistance Energy Designation Request** button
2. Specify to ‘opt-in’ or ‘opt-out’
3. Effective Start Date
4. Effective End Date
Designation requests must be submitted by 11AM PST, at least 5 business days in advance of the effective start date.

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- Designation request submitted by 11am PST
- Earliest effective start date
Where can you see if a WEIM Entity is on AET?

Real-Time Market Operators view all Entities on Assistance in BAAOP on the RTD Dispatch Control display.

Settlement Analysts are alerted that AET was used when they see Charge Codes 6476 (surcharge) or 6479 (allocation) on their settlement statement.

The ISO will send out a notification via Market Notification System (MNS) if the ISO has opted in.
AET Settlements
AET Charge Codes

**CC 6476 Surcharge**

- Calculate the RT Assistance Energy Transfer Surcharge assessed for insufficient WEIM BAAs
- Receive data for the last binding RTBS run for hour T-40, which includes the corrected data
- Settlements shall consume on an hourly basis the RTM Bid Cap ($1,000/MWh or $2,000/MWh) from the Market

**CC 6479 Allocation**

- **Allocate** assistance energy transfer revenue between WEIM BAAs that provided extra supply
- Sum of AET surcharge revenue collected from all insufficient WEIM BAAs
  - allocated to all other sufficient WEIM BAAs that have passed both RSE Capacity Test and Flexible Ramping Test
  - pro rata to their net exports beyond base transfer
- Sub-allocate surcharge revenue by ISO to SCs providing incremental net RT imbalance energy
  - excludes non-participating loads
Settlements shall sub-allocate the charged Assistance Energy Transfer Surcharge cost for CAISO BAA to SCs, pro rata to their Measured Demand in relationship to CAISO BAA Measured Demand

Settlements shall allocate the charges to the Entity SC and Entity SC can sub-allocate at their discretion

AET charge codes will not be applied since the applicable Real Time Assistance Energy Transfer shall be set to zero
Scenario – A (Net Import is less than Failed Capacity Quantity)

Example A

BAA failed quantity = 100MW
BAA net import = 80MW
BAA Reg up = 20MW

Surcharge qty = 60MW

If BAA1:
- Opt-in for AET
- Fails their RSE tests (RSE Capacity Up or Flex Ramp Up)

Then:
If the net imports (any incremental transfer energy from the base schedule) < RSE failed quantity, the surcharge qty = Difference between net imports - applicable credit (ABC Reg up/Regulation up minus no pay for CISO).
Scenario – A (Net Import is less than Failed Capacity Quantity)

If BAA2:
-_opts-in for AET
- Fails their RSE tests (RSE Capacity Up or Flex Ramp Up)

Then:
If the net imports is > Failed Capacity Quantity, the surcharge quantity is capped at the failed quantity.

Example B

BAA failed quantity = 100MW
BAA net import = 150MW

Surcharge qty = 100MW
AET in relation to ABC

- When a WEIM BAA opts-in and if your Available Balancing Capacity (ABC) Reg up ultimately reduces your net import to 0, your surcharge quantity will be 0.

- The Available Balance Capacity (ABC) credit does not trigger unless the surcharge is applied to the net WEIM transfers into the Balancing Authority Area. This only happens if the net WEIM transfers into the BAA are lower than the RSE failure amount.

- If your net imports are less than your failed capacity, the surcharge will be the difference between your net imports and ABC reg up (capped at 0). If your net imports are higher than your failed capacity qty then your surcharge is capped at the failed capacity quantity.

- ABC Reg up for WEIM Entities or Reg up for CAISO BAA does not count towards the Assistance Energy Transfer Quantity that is subject to a surcharge.
Learning Activity

Place your answers in the chat:

1. True or False: All WEIM Entities are required to opt-in to AET during stressed conditions.

2. How many business days in advance does an Entity need to opt-in to AET?
Demand Response

Participation Models
Get the full presentation with discussion on the WEIM Portal

December 5, 2023 Meeting Recording: https://youtu.be/Z4go6Oui4H
### Two Demand Response participation models in WEIM

**Load Forecast Adjustment**

Also known as:
- Non-participating, load-modifying, non-market
- Reduces (or increases) an entity’s capacity needed to support load & pass RSE
- Submitted to ISO short-term forecasting for scheduling

**Supply Side DR**

Subtypes
- Reliability Demand Response Resource (RDRR)
- Proxy Demand Response (PDR)
- DER Aggregation (DERP)
- Non-Generating Resource (NGR)
- Price-responsive
- Market integrated – supply side DR offers are considered in the Real-Time Market

**Differences**

- Full control of dispatch & scheduling by WEIM Entity
- Not directly WEIM market price-responsive
- Dispatch determined by Real-Time Market prices/conditions
- Bid in, price-responsive
Demand-Side DR reduces WEIM entities’ baseload forecast into the real-time market

- Reduces (or increases) entities’ shown capacity needed to support load and pass RSE
- When submitted, always considered in RSE, but may not be recognized in Real-Time Market load forecast
- CAISO works with BAAs to ensure the most accurate load forecast is developed and used
- After submitting forecast, DR deployment is expected
  - Over performance: resource may receive a positive real-time settlement
  - Under performance: may receive a charge
- Resources aggregated across WEIM BAA’s forecast zones
Accounting for Non-Participating DR Scheduling in the ALFS Demand Forecasting for WEIM Entities
Demand-Side DR reduces WEIM entities’ baseload forecast into the real-time market

- **Input to ALFS (greater than 5%)**
  - Counted in RSE
  - Counted in Real Time Market

- **Input to ALFS (less than 5%)**
  - Determined by ISO STF Team
  - Counted in RSE
  - Counted in Real Time Market

- **Not input to ALFS (less than 5%)**
  - Counted in RSE
  - When EIM Entity chooses to submit via BAAOP
  - **Not** counted in Real Time Market*
Demand-Side DR reduces WEIM entities’ baseload forecast into the real-time market

1. Proxy Demand Response (PDR)
   • Enables 3rd parties to bid demand response into the CAISO market
   • Reliability Demand Response Resource (RDRR)
     • Reliability-based load curtailment
     • Triggered only under certain emergency conditions (starting at EEA Watch)
   • Distributed Energy Resource (DER) Provider
     • Aggregation of DERs into one virtual resource (<100MW)
     • Best fit for Virtual Power Plants (VPPs)
Demand Response participation models in WEIM

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<td>Five-minute real-time dispatch (RTD)</td>
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• What questions do you have regarding Demand Response for WEIM Entities?
Wrap Up

Summary, Q&A
Resource Operations Readiness Training

Training Goal: to prepare customers in advance of summer to meet ISO expectations for successful resource management, especially during tight conditions.

These courses build on concepts shared during the May 1st Resource Interconnection Fair.

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Find recordings on the ISO Learning Center: [https://www.caiso.com/participate/Pages/LearningCenter/default.aspx](https://www.caiso.com/participate/Pages/LearningCenter/default.aspx)

Contact CustomerReadiness@caiso.com with questions.

Share this information with your staff!
Stay informed!

Follow the WEIM Resource Sufficiency Evaluation Enhancements initiative & provide your input!
Series Recap: It Takes All Of Us To Maintain Safety and Reliability of the Grid & knowledge is key!

- Ensure proper set up for resource testing and performance
- Communicate between SC and Resource Operator to ensure adequate control of resources
- Register accurate information in Master File
- Submit detailed outage cards reflecting physical limitations
- Actively monitor your resources
- Respond to Operating Instructions within required time parameters, consistent with Tariff requirements
- Be ready to respond to emergency notifications
- Report suspicious activity
- Manage interchange and e-tagging by considering priorities
- Consider utilizing Assistance Energy Transfer to add protection against RSE failures
- Utilize Demand Response

Share information with your colleagues!
Thank you for your participation!

For more detailed information on anything presented, please visit our website at: www.caiso.com or send an email to: CustomerReadiness@caiso.com.

For resource specific questions or concerns, please submit a CIDI ticket.