



# WEIM Resource Performance Expectations

## **Welcome**

Our presentation will begin shortly.

*Today's Trainer:  
Heidi Holmberg Carder, Lead Customer Education Trainer*

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# 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

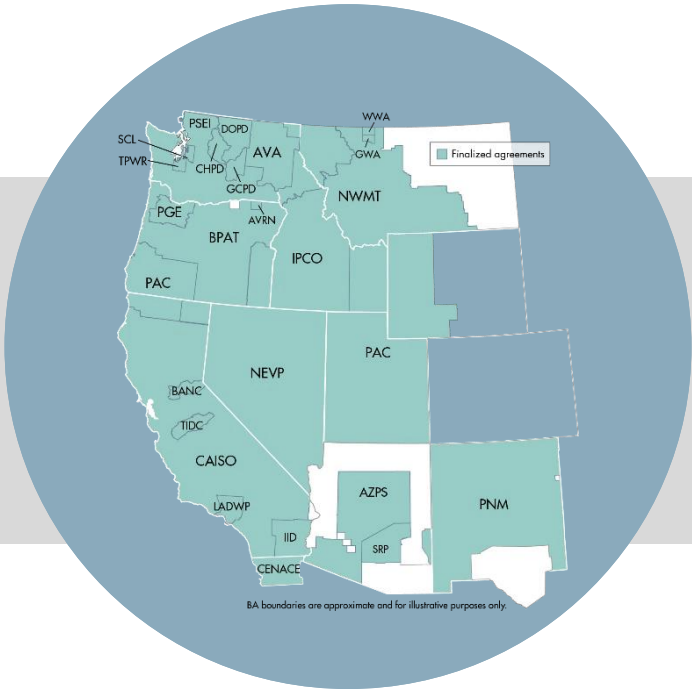
- Maintains reliability on the grid
- Manages the flow of energy
- Oversees the transmission planning process
- Operates the wholesale electric market
- Registered NERC entity
- WEIM Participant



# ISO Market and Reliability Footprints



ISO BAA



RC West

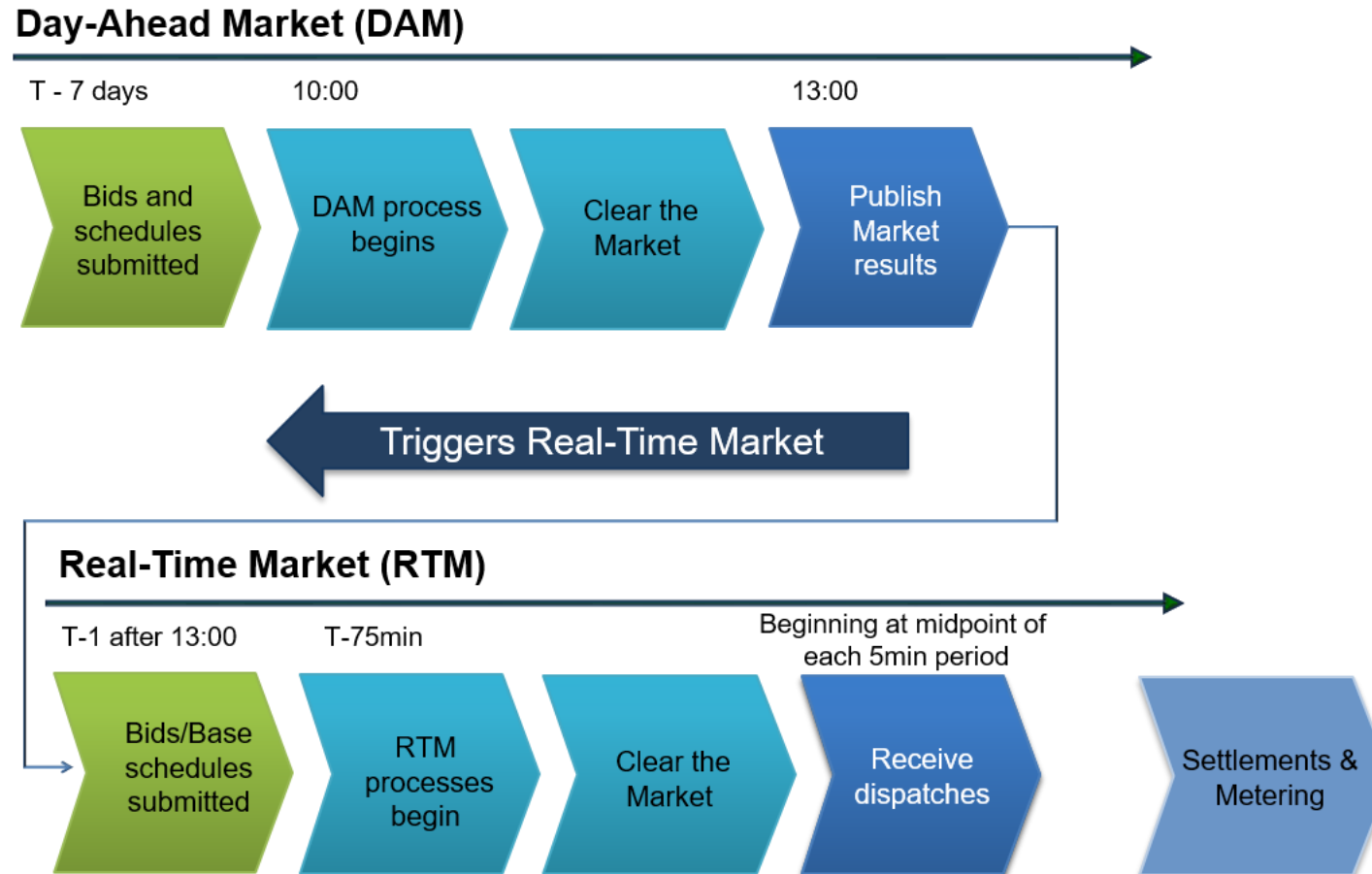


WEIM

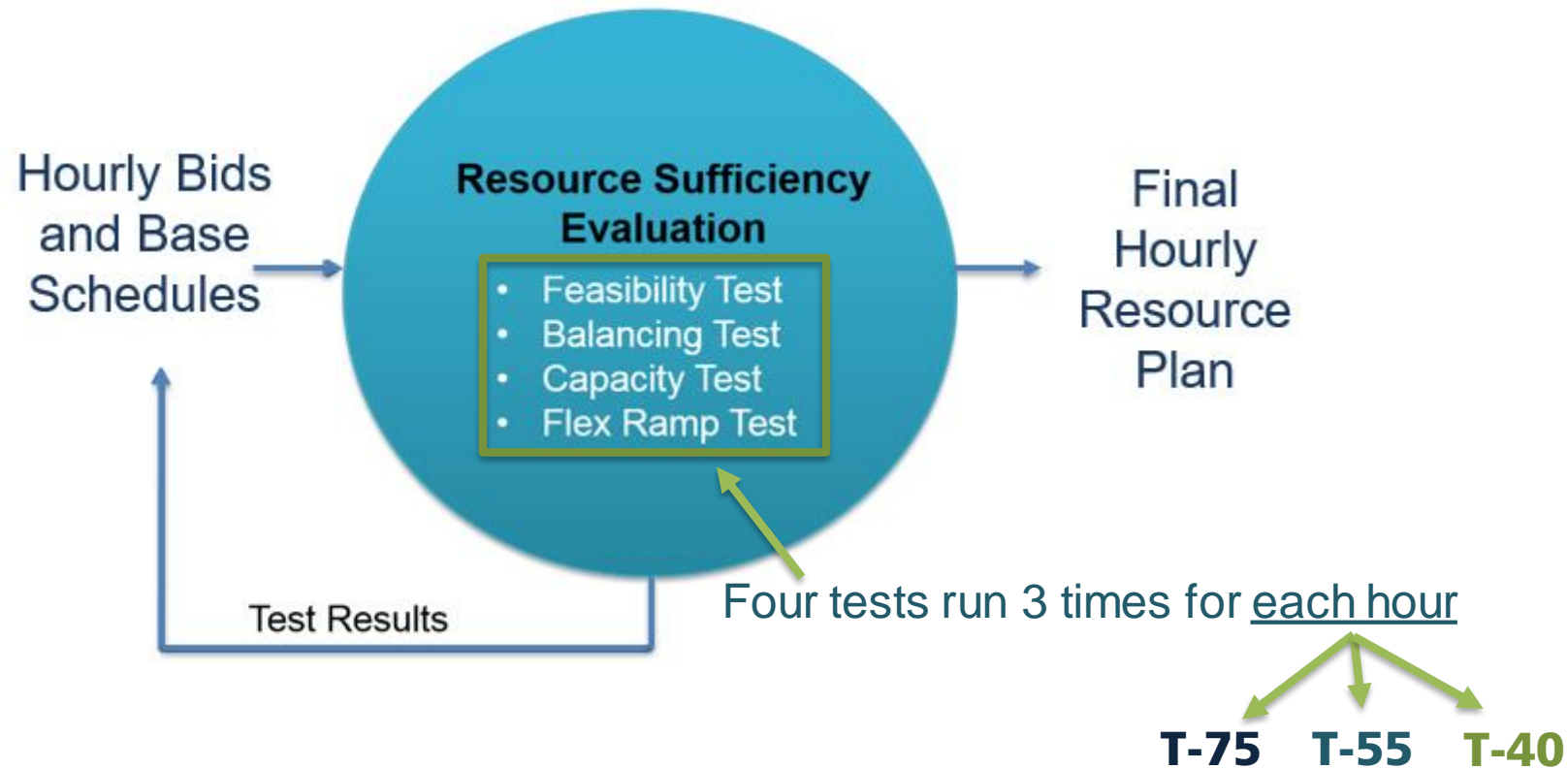


# **Resource Sufficiency Evaluation**

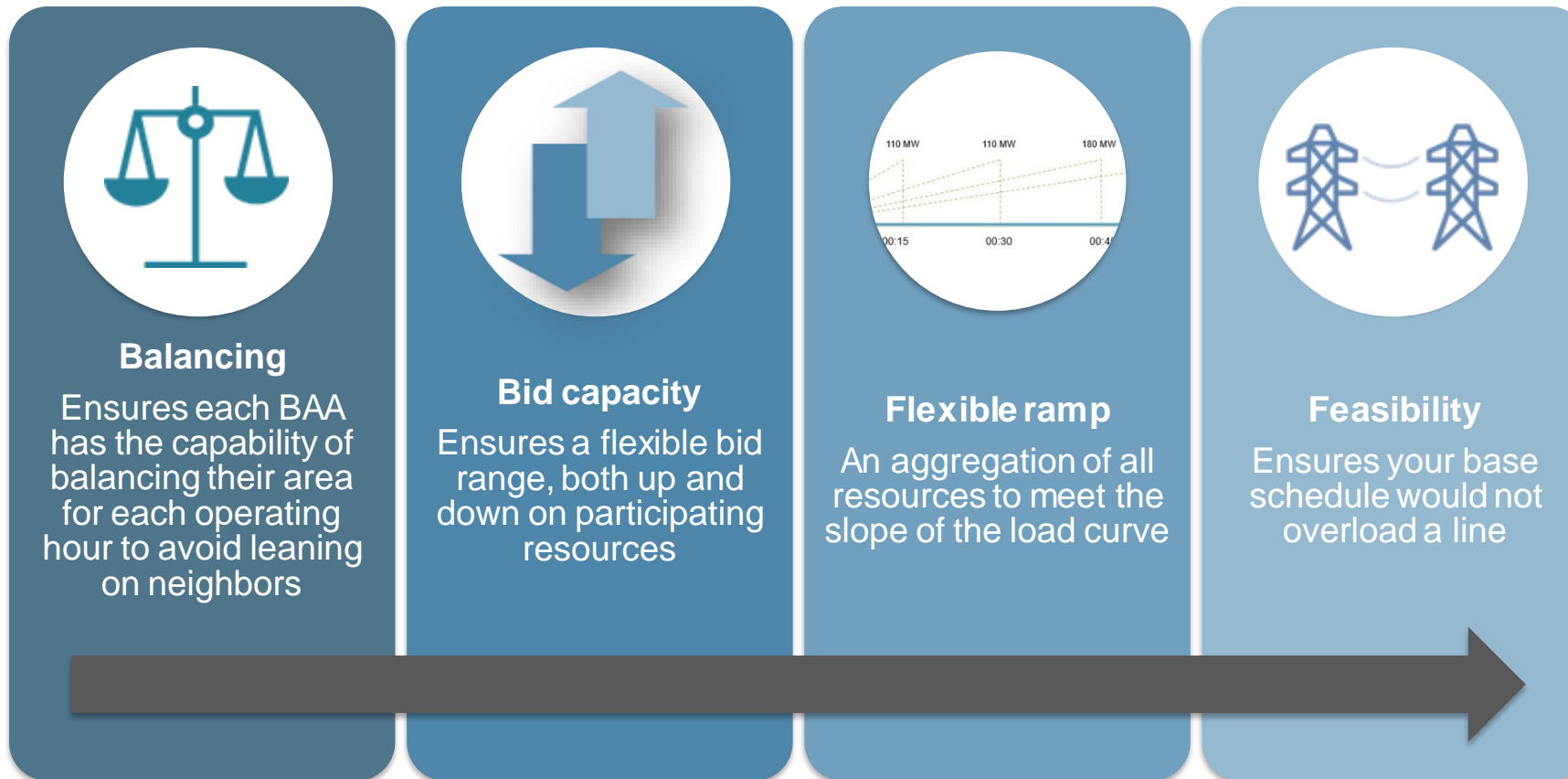
# Market process timelines



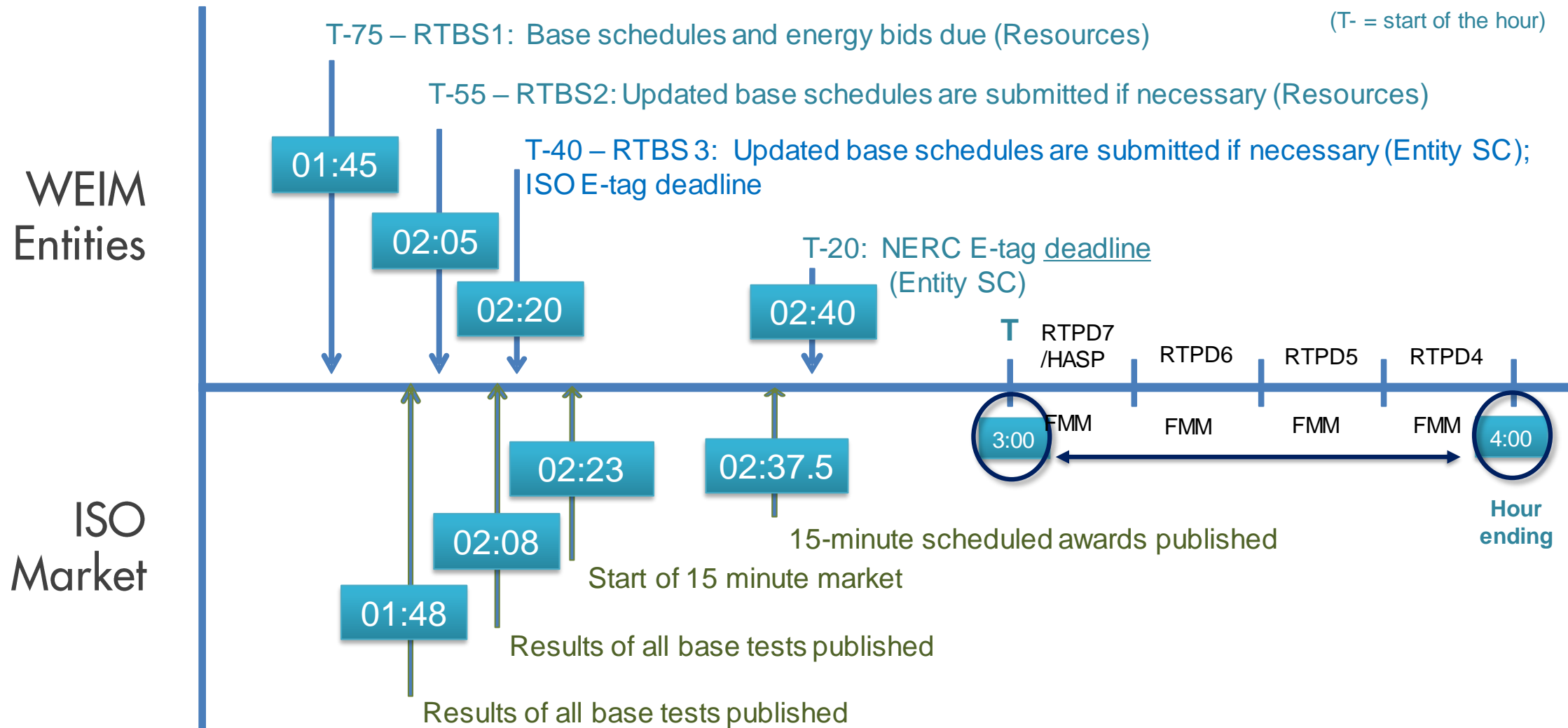
For every operating hour, WEIM entities demonstrate they have adequate capacity to balance load and manage contingencies in their own BAA



# Resource Sufficiency Tests



# Hourly timeline example



# Operators view resource sufficiency results in the BAAOP BSCH display

The screenshot displays the BAAOP BSCH Execution Control interface. At the top, a navigation bar shows 'EIM > EIM > BSCH Execution Control'. Below this, a 'Current Case' section shows details for 'RTBS\_3' with trading period from 09/16/2019 03:00 to 04:00. The 'Base Schedule Test Results' section contains three sub-sections: 'Balancing and Feasibility', 'Bid Range Capacity', and 'Flex Ramp Sufficiency', each with a table of results. The 'Base Schedule Execution Control' section shows 'RTBS Status: DONE' and 'BSCH Start/End' times. The 'Base Schedule Output' section shows a table of output data. The 'BAA Information' section at the bottom shows details for the BAA.

**Current Case**

Field	Value
Trading Period Start	09/16/2019 03:00
Trading Period End	09/16/2019 04:00
Trading Interval[mins]	60
No of Intervals	1

**Case Description**: RTBS\_3

**Base Schedule Test Results**

**Balancing and Feasibility**

BAA	Start Time	End Time	Test Status
09/16/2019 03:00	09/16/2019 03:00	09/16/2019 04:00	PASS

**Bid Range Capacity**

BAA	Start Time	End Time	Up	Down
09/16/2019 03:00	09/16/2019 03:15	PASS	PASS	
09/16/2019 03:15	09/16/2019 03:30	PASS	PASS	
09/16/2019 03:30	09/16/2019 03:45	PASS	PASS	
09/16/2019 03:45	09/16/2019 04:00	PASS	PASS	

**Flex Ramp Sufficiency**

BAA	Start Time	End Time	Up	Down
09/16/2019 03:00	09/16/2019 03:15	PASS	PASS	
09/16/2019 03:15	09/16/2019 03:30	PASS	PASS	
09/16/2019 03:30	09/16/2019 03:45	PASS	PASS	
09/16/2019 03:45	09/16/2019 04:00	PASS	PASS	

**Base Schedule Execution Control**

RTBS Status: DONE

BSCH Start: 09/16/2019 02:21

BSCH End: 09/16/2019 02:23

Execute

Thresholds

Balancing: 1.0000

**Base Schedule Output**

BAA	Start Time	End Time	Area Generation	Base NBI	Demand Forecast	Base Load
-----	------------	----------	-----------------	----------	-----------------	-----------

**BAA Information**

Name	Market Operator Flag	EIM Flag	Gap	Anode ID
	N	Y		7238

RTBS Run Results

Balancing & Feasibility results

Bid Range Capacity results

Flex Ramp Sufficiency results



## 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?

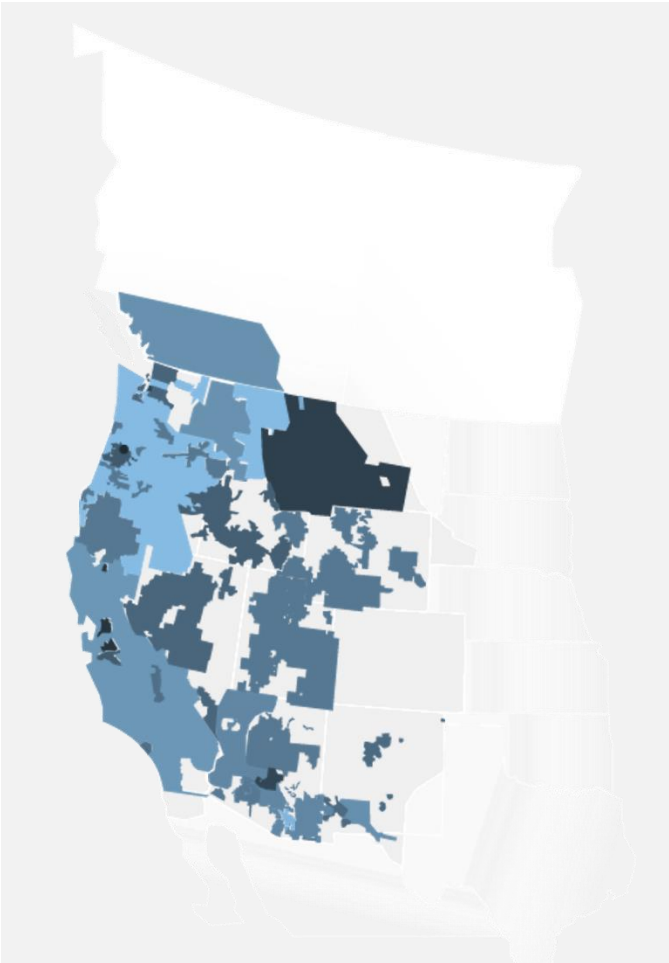
AET

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

Real-Time Market Process

# 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

Assistance Energy Transfer

## 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

Assistance Energy Transfer

# What is the process to opt in?

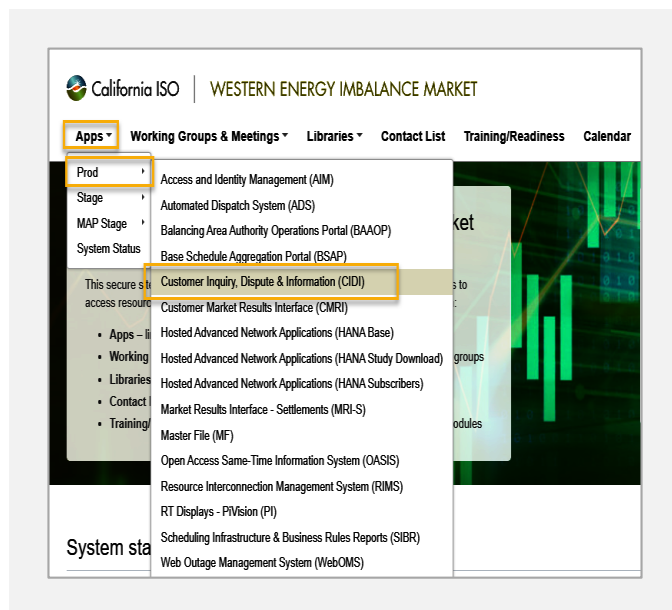
Designation requests must be submitted by 11AM PST, at least 5 business days in advance of the effective start date

- 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

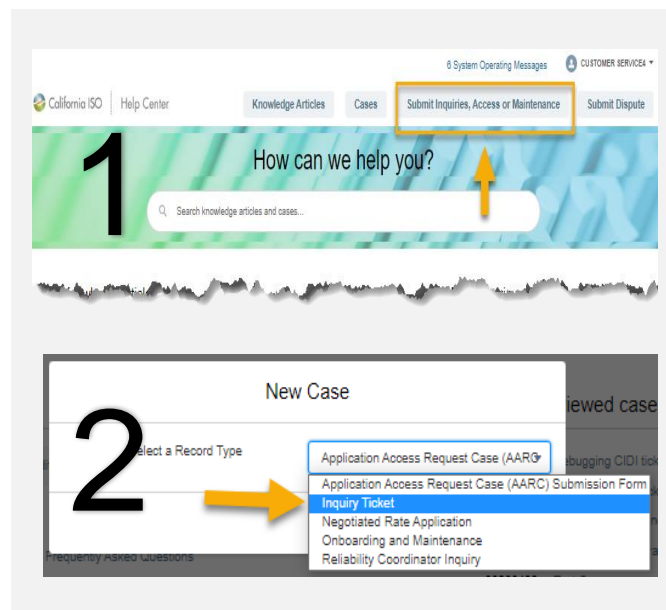
Assistance Energy Transfer



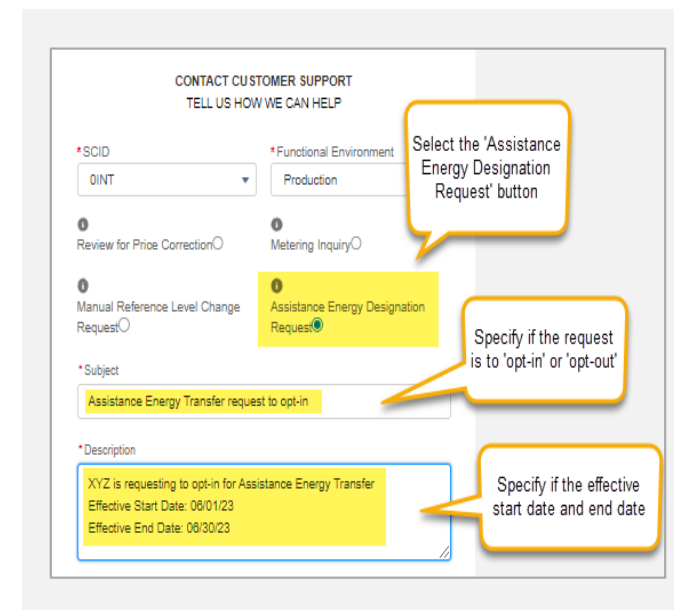
# What is the process to opt in?



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

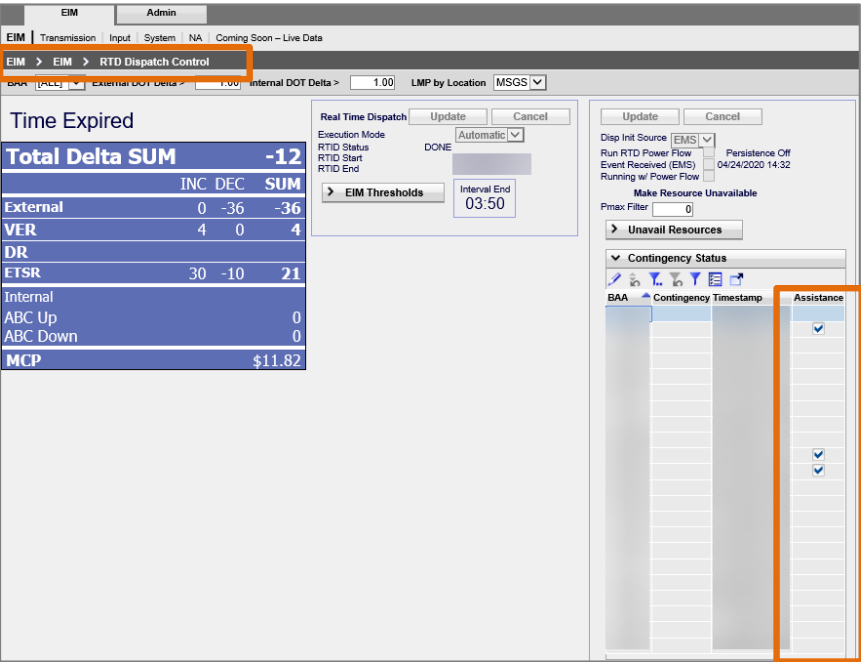
Designation requests must be submitted by 11AM PST, at least 5 *business* days in advance of the effective start date.

Examples	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	Calendar Days
Regular week	•							✓									7
Regular week		•							✓								7
Regular week						•									✓		9
3-day holiday weekend		•								✓							8
3-day holiday weekend						•										✓	10
Mid-week holiday	•								✓								8
Thanksgiving weekend			•									✓					9
Thanksgiving weekend				•											✓		11

- Designation request submitted by 11am PST
- ✓ Earliest effective start date

## Examples of 5 Day Business Requirement

# 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



California ISO

Daily Recalc Market Statement

Date: 11-May-24  
Page: 1 of 3

WEIM Entity SC  
9874 ADDRESS ROAD  
PLACE CA 94321

Statement #:  
Version:  
BAID:

159877362564101001273254  
1  
1235

Comments:

Charge for Settlement 11-May-2024

Charge Code	Description	Current	Previous	Net
CC6476	Real Time Assistance Energy Transfer Surcharge	2000.12345	0.00000	2000.12345
CC6479	Real Time Assistance Energy Transfer Allocation	560.65087	0.00000	560.65087
Real Time Assistance Energy Transfer Charge Group Total		\$1439.47258	\$0.00000	\$1439.47258
Imbalance Energy Parent Group Total		\$1439.47258	\$0.00000	\$1439.47258

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

## **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

# CC 6476 - Real Time Assistance Energy Transfer Surcharge

## CAISO BAA (Opt-In)

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

## WEIM BAA (Opt-in)

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

## WEIM BAA (Opt-out)

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)

## If BAA1:

- Opts-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).

## Example A

BAA failed quantity = 100MW

BAA net import = 80MW

BAA Reg up = 20MW

**Surcharge qty = 60MW**

## 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>

California ISO

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WEIM and EDAM Interplay Series

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File Name

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Dec 2023 Meeting Recording.pdf

1/3/2024 9:30 AM

Tavares, Phelim

6b\_CAISO Change and Deployment Improvements.pdf

12/5/2023 11:38 AM

Tavares, Phelim

3a\_EDAM Update.pdf

12/5/2023 8:22 AM

Tavares, Phelim

3b\_EDAM WEIM Interplay.pdf

12/5/2023 8:22 AM

Tavares, Phelim

6A\_CAISO Latency Challenges.pdf

12/4/2023 4:56 PM

Tavares, Phelim

5a\_Demand Response Participation Models in WEIM.pdf

12/4/2023 4:46 PM

Tavares, Phelim

7a\_Battery Presentation Challenges.pdf

12/4/2023 2:24 PM

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Agenda - ISO-WEIM Joint Meeting December 2023.pdf

12/4/2023 1:27 PM

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4a\_TSMSP Update - Wheeling.pdf

12/4/2023 1:04 PM

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1b - ISO - POCs slide December 2023.pdf

12/4/2023 12:58 PM

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1c\_Customer Education Corner and WEIM Forum Updates.pdf

12/4/2023 12:38 PM

Tavares, Phelim

2a\_Base\_ETSR\_Scheduling.pdf

12/4/2023 12:33 PM

Tavares, Phelim

Working Groups & Meetings > Meetings > Joint WEIM Meetings > December 2023 Meeting



# 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

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>• Full control of dispatch &amp; scheduling by WEIM Entity</li><li>• Not directly WEIM market price-responsive</li></ul> | <ul style="list-style-type: none"><li>• Dispatch determined by Real-Time Market prices/conditions</li><li>• Bid in, price-responsive</li></ul> |
|--|--|

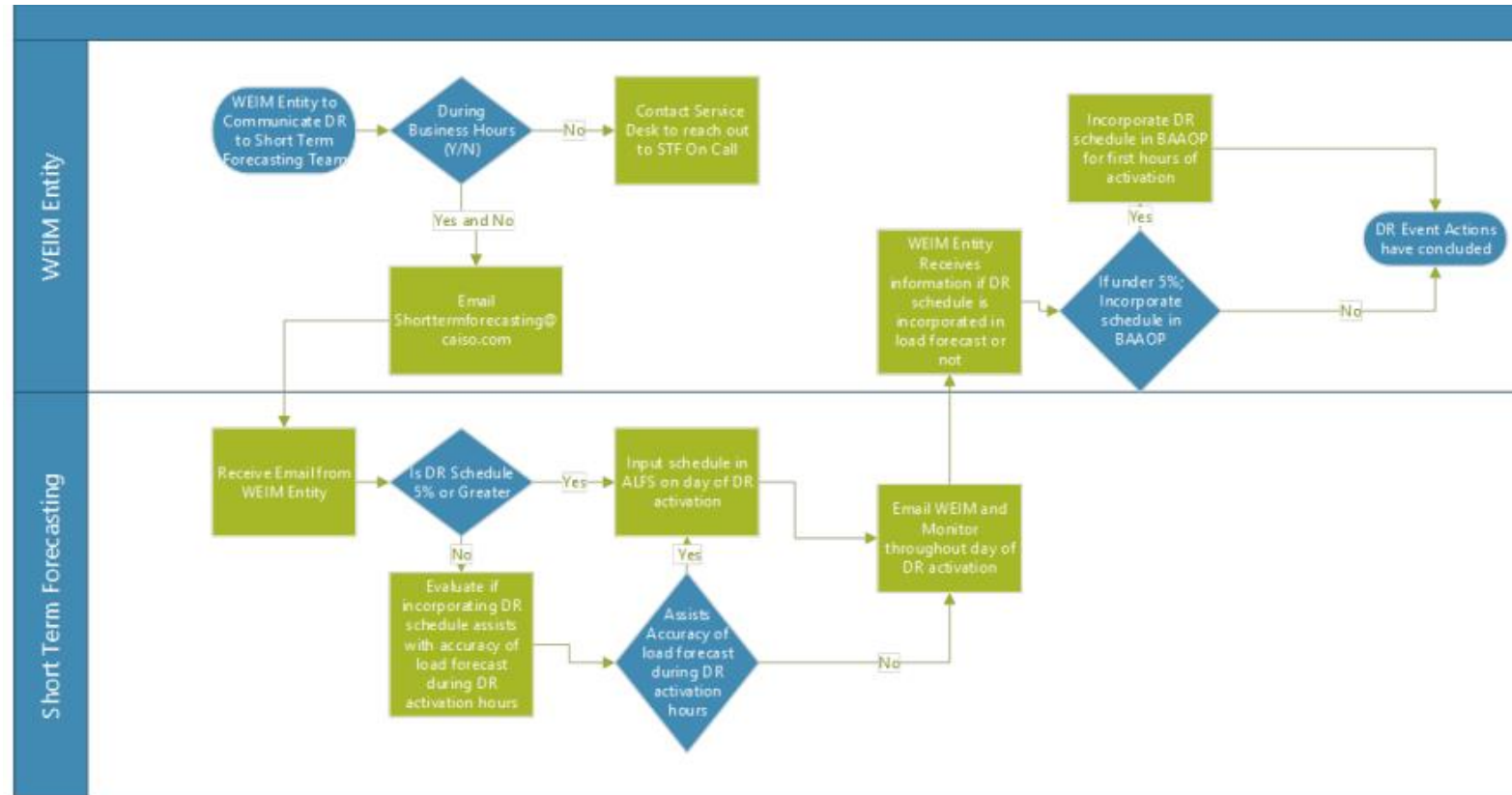
# Demand-Side DR reduces WEIM entities' baseload forecast into the real-time market

## Load Forecast Adjustment

- 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

## Load Forecast Adjustment



# Demand-Side DR reduces WEIM entities' baseload forecast into the real-time market

## Load Forecast Adjustment

### **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

## Supply Side DR

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

Western EIM Market Process	Supply side DR	Load Forecast Adjustment
<b>Resource Sufficiency Evaluation (RSE)</b>	✓	✓
Bind Range Capacity Test	✓	✓
Flex Ramp Test	✓	✓
<b>Real-Time Market (via base schedules)</b>	✓	
15-Minute Market (FMM)	✓	
Five-minute real-time dispatch (RTD)	✓	
If needed: Real-Time Contingency / Exceptional Dispatch	✓	

## Learning Activity



- What questions do you have regarding Demand Response for WEIM Entities?





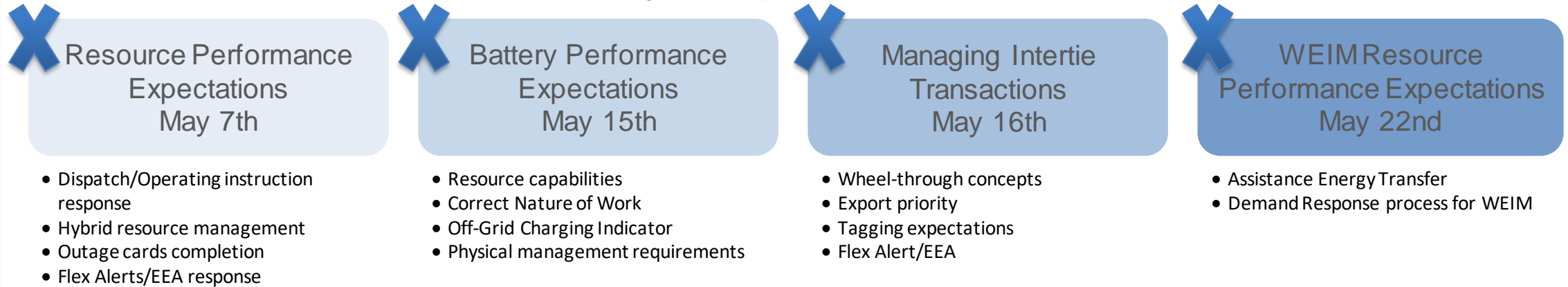
# Wrap Up

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 1<sup>st</sup> Resource Interconnection Fair.



Find recordings on the ISO Learning Center:


<https://www.caiso.com/participate/Pages/LearningCenter/default.aspx>

Contact [CustomerReadiness@caiso.com](mailto:CustomerReadiness@caiso.com) with questions.

**Share this information with your staff!**

# Stay informed!

Follow the WEIM  
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### INITIATIVE: WEIM resource sufficiency evaluation enhancements

Joint Authority

Started: May 25, 2021

**Leads**  
Danny Johnson

Phase 2 of the WEIM resource sufficiency evaluation enhancements initiative considers outstanding enhancements to the WEIM RSE such as the consideration of load conformance, identifying the correct metrics and quantity of uncertainty that should be tested for, and how block hourly exports from the ISO BAA that may be cleared due to advisory WEIM transfers are treated. Phase 2 also investigates the ability for the WEIM to provide assistance for balancing authority areas who have failed the RSE.

OUTCOME (Phase 1): The California ISO activated WEIM resource sufficiency evaluation enhancements Phase 1 (RSEE1) on June 1, 2022. RSEE1 benefits market participants by implementing enhancements to ensure resource sufficiency evaluation is administered accurately and applied equitably, and by improving the accuracy and transparency of the resource sufficiency evaluation.

Relevant notices

Contact us

#### Status

Proposal Development	Decision	Implementation	Completed/Closed
Mar 21, 2023 Revised final draft tariff language posted Nov 07, 2022 Revised final proposal posted	Mar 31, 2023 Tariff amendment filing (ER23-1534) Dec 14, 2022 Joint WEIM Governing Body and Board of Governors approval Sep 14, 2022 FERC Order accepting compliance filing (ER22-1278) Jun 07, 2022 Compliance filing (ER22-1278)	Jun 01, 2022 - phase 1 Jul 01, 2023 - phase 2 track 1 Jun 2024 - phase 2 track 2 <a href="#">Implementation milestones</a>	

## 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](http://www.caiso.com) or send an email to: [CustomerReadiness@caiso.com](mailto:CustomerReadiness@caiso.com).

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