Managing Interconnections

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?

• What are the basics of interchange?
• What are the basic e-tagging requirements?
• How do we treat interchange priorities and wheel throughs?
• What’s coming up for interchange and e-tagging?
• What notifications inform the interconnection of system events?
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

The information contained in these materials is provided for general information only and does not constitute legal or regulatory advice. The ultimate responsibility for complying with the ISO FERC Tariff and other applicable laws, rules or regulations lies with you. In no event shall the ISO or its employees be liable to you or anyone else for any decision made or action taken in reliance on the information in these materials.
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
• The Interchange & E-Tagging computer based training course will be updated and republished soon!
• This is the third training in a series focused on efforts to create a Resource Owner/Operator training track – stay tuned!
Foundational Information

What are the basics of Interchange Scheduling & e-tagging?
What is interchange scheduling & e-tagging?

Interchange scheduling is the plan to transfer physical energy or capacity between Balancing Authority Areas (BAAs) through interconnection points.

- An electronic tag (e-tag) must be submitted to track every intertie the energy goes through.
- E-tags contain specific information on the SC, type of energy, contract info, etc.
- Each transmission line reserved between the BAs must be identified.
## E-Tagging in the ISO markets

<table>
<thead>
<tr>
<th>Day-Ahead</th>
<th>Real-Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Submitted to schedule:</td>
<td>• Created for:</td>
</tr>
<tr>
<td>– Physical energy</td>
<td>– FMM economic bids</td>
</tr>
<tr>
<td>– Capacity</td>
<td>– economic hourly block bids with intra-hour option</td>
</tr>
<tr>
<td>• Used for</td>
<td>• Transmission profile updated by T-40</td>
</tr>
<tr>
<td>– ancillary service bids</td>
<td>• Energy profile updated by T-20 minutes</td>
</tr>
<tr>
<td>– energy schedules,</td>
<td>before the applicable FMM interval</td>
</tr>
<tr>
<td>– energy self schedules</td>
<td>• WEIM transactions are Energy Transfer System Resources (ETSR) not individual tags</td>
</tr>
<tr>
<td>• E-Tags in day-ahead are optional, but due by 15:00 if submitted</td>
<td>Accuracy is the responsibility of the SC</td>
</tr>
<tr>
<td>• DA RUC auto adjustments of energy profile occur at 15:30 (down direction, only if MW value exceeds RUC award)</td>
<td></td>
</tr>
</tbody>
</table>
E-tags must adhere to specific rules and requirements

1. Tag Info
2. Market Path
3. Physical Path
4. Misc. Info
5. Transmission Allocation
6. Current Energy
All e-tag should contain a single resource of Transaction ID or Resource ID at the associated scheduling point with ISO Market awards.

Every Transaction ID has the five elements you see here. This is an example of a non-specific resource physical import bid.

The Transaction ID must be provided in the OASIS field of the Transmission Allocation section of the e-Tag. Any incorrect, extra, or missing element(s) will result in an e-Tag adjustment to zero (loss of binding award) before the e-Tag is scheduled to flow, with no exceptions.
All e-tag should contain a single resource of Transaction ID or Resource ID at the associated scheduling point with ISO Market awards

Every Resource ID has the five elements you see here. This example is for Scheduling Coordinator ABCE's import to the ISO.

The Resource ID must be provided in the Misc Info field of the Physical Path section of the e-Tag. Any incorrect element(s), extra element(s), or missing element(s) will result in an e-Tag adjustment to zero (loss of binding award) before the e-Tag is scheduled to flow, with no exceptions.
Timeline for tagging

1. Submit e-Tags on time to comply with NERC timetables and policies.

2. Submit Pre-Schedule e-Tags on the day prior to the start of the transaction after the Day-Ahead Market publishes to ensure correct CAISO_PRIORITY_TYPE.

3. • Auto-adjustments of e-Tags occur at 15:30 PPT on the day prior to the start of the transaction, or a minimum of 60 minutes after the Day-Ahead Market publishes.
   • Day-Ahead Residual Unit Commitment (RUC) adjustments are made on both import and export transactions.
   • Adjustments are in the down direction only. The tag will only be adjusted down if the MW value of the Energy Profile exceeds the DA RUC award.

4. After HASP results are published, submit the Intertie Transmission Profile for a fifteen-minute market (FMM) economic bid (EB15MIN) by 40 minutes prior to the start of the first FMM interval of the hour (T-40); submit the Energy Profile by 20 minutes before each binding interval.

5. After HASP results are published, submit the Intertie Hourly Transmission Profile by 40 minutes prior to the start of the first interval of the next hour’s market, and the Energy Profile by 20 minutes prior for the following export bid types:
   • Self-scheduled hourly block bid (SSHB)
   • Self-scheduled Variable Energy Resource bid (SSVER)
   • Economic hourly block bid (EBHB)
   • Economic hourly block single change bid (EBHBCHG)

6. • Auto-adjustments of e-Tags occur at xx:20 each hour after the HASP results have published.
   • Adjustments are in the down direction only. The tag will only be adjusted down if the MW value of the Energy Profile exceeds the HASP Energy Award.
Key points

- All ISO interchange market awards require an e-tag for energy flow and settlement
- All e-tags should contain a single Resource ID or Transaction ID at the scheduling points with Market awards
- Follow the timing
- Always check your market award ID against your e-tag ID in CMRI before submitting to prevent mistakes
Overview

July 2023 Emergency Events
Treatment of Export and Wheeling Transactions
Balancing Authority Area (BAA) dynamics

- All Balancing Authorities (BAs) must adhere to NERC and FERC rules regarding exports, firmness of transmission and load management
- Energy transfer transactions are prioritized between BAs during strained grid conditions
- Similar to all other BAs the ISO will clear low priority transactions once it has served its own native load and there is sufficient supply
Important distinction between low priority and high priority exports

**Low Priority**
Considered opportunity sales sourced from the ISO’s pool of resources that the ISO can support once it has met its own load requirements.

**High Priority**
Supply from the ISO that is not already contractually committed to serve ISO load.

ISO Tariff Section 34.12.4.3 describes three categories of LPT Exports.

Low priority exports may not be feasible during strained grid conditions.
Treatment of wheel through transactions on the ISO system

ISO provides low and high priority wheel-through service to allow entities to transfer energy through the ISO’s transmission system from one BAA to another.

High priority wheels

• Requires demonstration of need to wheel through the ISO system based on external contractual commitment at least 45-days in advance of the month

• Receive treatment equal to the ISO’s native load

Without required demonstration the wheel is considered low priority
Summer 2023, extreme heat conditions in the desert southwest

- Record heat in the DSW
- Unprecedented demand outside CA
- Western energy supply stretched thin

Despite improved supply conditions from prior years, extreme heat put a strain on the grid in the month of July
Emergency declarations and actions taken in July 2023 during high demand conditions

- July 20 - An Energy Emergency Alert 1 (EEA1) was declared for the ISO BAA on the evening of July 20 resulting in a demand response event
- July 25 – An Energy Emergency Watch was declared as solar power diminished
- July 26 – An Energy Emergency Watch was declared due to similar system conditions as July 25

The ISO honored all high-priority exports and wheels during each of the emergency events
Due to tight supply conditions, the RT Market could not clear all low priority transactions.

All high priority exports and wheel-through transactions were honored.

Low priority and economic transactions that could not clear the hourly market in hours 19 - 22.
On July 26, the ISO limited reliance on imports from the WEIM

Reliance on WEIM transfers into the ISO BAA were limited to minimize the risk of supply not materializing starting on July 26.

Limiting incoming WEIM transfers was necessary to manage uncertainty.
The ISO was able to support a large volume of exports and wheels

Unprecedented high volume of exports cleared in July
Exports during peak hours were double of those in summers of 2021 & 2022 during strained system conditions

Breakdown of ISO exports by sinking BAA July 20, 25 & 26

Market cleared an unprecedented 9,000 MW of exports at various times in July
During this critical time period, the ISO was still able to clear up to 1,200 MW of wheel-through transactions.

Significant volume of low priority transactions were supported.
To summarize…

The interconnected nature of the grid coupled with the high demand from the desert southwest put a strain on the system

Coordination and communication with our customers and stakeholders was critical in maintaining grid reliability

Increased regional coordination through an optimized regional market is essential to effectively leverage resources across the West

Detailed July market performance report was published in September

Annual Summer Loads and Resources Assessment helps prepare for summer system operations to maintain grid reliability

- evaluates expected 2024 summer supply and demand conditions for the California Independent System Operator (ISO) balancing authority area (BAA)

- indicates continued improvement in resource availability for the upcoming summer driven by accelerated resource development

Available on the Reports and Bulletins webpage on www.caiso.com
Initiatives
Learning Activity

- Where are we at with interchange & e-tagging initiatives?
- What are the main considerations?
WEIM Resource Sufficiency Evaluation Enhancements
Phase 2 Track 2

Release User Group meeting project info
WEIM Resource Sufficiency Evaluation Enhancements Phase 2 Track 2 – Training Resources

Resource Sufficiency Evaluation Enhancements Phase 2

Scheduling Priorities & Export Schedules
Emergency Response

How does it work?
Being short on energy (Flex Alerts, EEAs) affects the whole system.

A Transmission Emergency affects only a particular location based on transmission lines, flows, and equipment.

It’s possible to have one or both alerts at the same time.
Operational considerations during emergency conditions

- Available Generating Capacity
- Reserves for ups, downs and forecast changes
- Reserves for the loss of biggest unit
- Customer Load
Notifications sent as appropriate based on system conditions

<table>
<thead>
<tr>
<th>Emergency Alert Levels</th>
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<tbody>
<tr>
<td>Flex Alert</td>
<td></td>
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<tr>
<td>Restricted Maintenance Operations</td>
<td></td>
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<tr>
<td>Transmission Emergency</td>
<td></td>
</tr>
<tr>
<td>EEA Watch</td>
<td></td>
</tr>
<tr>
<td>EEA 1</td>
<td></td>
</tr>
<tr>
<td>EEA 2</td>
<td></td>
</tr>
<tr>
<td>EEA 3*</td>
<td></td>
</tr>
<tr>
<td>EEA 3 – Firm Load Interruption*</td>
<td></td>
</tr>
</tbody>
</table>

Being short on energy (Flex Alerts, EEAs) affects the whole system.

A Transmission Emergency affects only a particular location based on transmission lines, flows, and equipment.

It’s possible to have one or both alerts at the same time.
Subscribing and Unsubscribing

If you **would like to be removed** from the EA notification distribution list:
- Submit a CIDI ticket requesting to be removed from the distribution list

If you **would like to be added** to the EA notification distribution list:
- Submit a CIDI ticket with **“EA request for addition”** in the Subject field requesting to be added

There will be a new process for subscribing to notifications on the new ISO website
Additional Resources – Operational Procedures

NERC Standards
- COM-002-4 - Operating Personnel Communications Protocol
- EOP-011-1 – Emergency Operations

RC West Procedures
(https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx)
- RC0410 – System Emergencies

CAISO BA Procedures
(https://www.caiso.com/rules/Pages/OperatingProcedures/Default.aspx)
- 4420 – System Emergency
- 4410 – Emergency Assistance
- 4510 – Load Management
- 4510A
Wrap Up

Summary, Q&A
Advanced collaboration and coordination ensures preparedness for summer conditions
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.

- **Resource Performance Expectations**
  - May 7th
  - Dispatch/Operating instruction response
  - Hybrid resource management
  - Outage cards completion
  - Flex Alerts/EEA response

- **Battery Performance Expectations**
  - May 15th
  - Resource capabilities
  - Correct Nature of Work
  - Off-Grid Charging Indicator
  - Physical management requirements

- **Managing Intertie Transactions**
  - May 16th
  - Wheel-through concepts
  - Export priority
  - Tagging expectations
  - Flex Alert/EEA

- **WEIM Resource Performance Expectations**
  - May 22nd
  - Assistance Energy Transfer
  - Demand Response process for WEIM


Contact CustomerReadiness@caiso.com with questions.

Share this information with your staff!
New reference guide to help Resource Owner/Operators find important information

Includes helpful links such as:

- Training Resources
- Knowledge Articles
- Policies & Procedures
- New Resource Implementation Documents

Available on the ISO Learning Center under the Market and Operations Learning Track

California ISO - Learning center (caiso.com)
Stay Informed

Today’s Outlook

Policy Initiatives

Subscriptions & Notifications

www.caiso.com
Stakeholder Engagement & Customer Experience

- Onboarding
  - Provide guidance to becoming a CAISO customer

- Outreach
  - Inform customers of emerging issues

- Account Management
  - Proactively work with stakeholders on strategic and policy matters

- Education
  - Share new information and continuing education

- Customer Support
  - Respond to market participant needs

- Stakeholder meetings
  - Inform customers on stakeholder initiative activities

- Stakeholder Affairs
  - Stakeholder Experience

- Customer Readiness
  - Customer Experience

Joanne Serina
Vice President
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.