RC West Oversight Committee

Public Session
February 23, 2023
1:00pm-2:30pm Pacific Time
Housekeeping Reminders

• This call is being recorded for informational and convenience purposes only. Please request permission from RC West before reprinting any related transcriptions.

• Materials related to the RC West Oversight Committee are available on www.caiso.com / Stay Informed / RC West.
Instructions for raising your hand to ask a question

• If you are connected to audio through your computer or used the “call me” option, select the raise hand icon 🙋 located on the top right above the chat window. **Note:** #2 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.
## Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Topic</th>
<th>Presenter</th>
</tr>
</thead>
<tbody>
<tr>
<td>1:00 - 1:02</td>
<td>Welcome/agenda</td>
<td>Yelena Kopylov-Alford</td>
</tr>
<tr>
<td>1:02 – 1:05</td>
<td>Roll call</td>
<td>Chris Hofmann</td>
</tr>
<tr>
<td>1:05-1:10</td>
<td><strong>Oversight Committee Business</strong></td>
<td>Chris Hofmann</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Christopher Sanford</td>
</tr>
<tr>
<td>1:10- 1:40</td>
<td><strong>RC West Operations Update</strong></td>
<td>John Phipps</td>
</tr>
<tr>
<td></td>
<td>• Welcome/Thank you</td>
<td>Tim Beach</td>
</tr>
<tr>
<td></td>
<td>• General operations</td>
<td>Kathleen Fernandez</td>
</tr>
<tr>
<td></td>
<td>• Procedures update</td>
<td>Veera Vinnakota and Aung Oo</td>
</tr>
<tr>
<td></td>
<td>• RC metrics update</td>
<td></td>
</tr>
<tr>
<td>1:40 – 2:20</td>
<td><strong>Working Group Updates</strong></td>
<td>RajaShekar Thappetaobula</td>
</tr>
<tr>
<td></td>
<td>• FERC 881 Update</td>
<td></td>
</tr>
<tr>
<td>2:20 – 2:25</td>
<td><strong>Future agenda items</strong></td>
<td>Yelena Kopylov-Alford</td>
</tr>
<tr>
<td></td>
<td>• Calendar of Meetings for 2023</td>
<td></td>
</tr>
<tr>
<td>2:25</td>
<td><strong>Public Comment</strong></td>
<td></td>
</tr>
<tr>
<td>2:30</td>
<td><strong>Public Session Adjourned</strong></td>
<td></td>
</tr>
</tbody>
</table>
Committee Member Roll Call

Chris Hofmann
Committee Chair
Oversight Committee Business

Chris Hofmann
Committee Chair

Christopher Sanford
Vice Chair
Update: RC West Operations

Tim Beach
Kathleen Fernandez
Samson Adigun
RC West Operations Update

• 2022 Energy Emergency Alerts (EEA)

• NERC RTOS
  ✓ Cold weather Recommendations
  ✓ NERC IROL Activity Team

• NERC Standard Changes
RC West Operations Update - EEA

<table>
<thead>
<tr>
<th>Energy Emergency Alert</th>
<th>2022</th>
<th>2021</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEA - W</td>
<td>9</td>
<td>4</td>
<td>NA</td>
</tr>
<tr>
<td>EEA - 1</td>
<td>19</td>
<td>7</td>
<td>26</td>
</tr>
<tr>
<td>EEA - 2</td>
<td>7</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>EEA - 3</td>
<td>7</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
<td>17</td>
<td>47</td>
</tr>
</tbody>
</table>

32 EEA occurred during the heat wave 9/1-9/9/2022

New Historical Peak Load Sept 6th HE18

- RC West Historical Peak 130,985 MW
- WECC Historical Peak 167,530 MW
RC West Operations – Update

NERC Real-Time Operating Subcommittee (RTOS) Activity

- **Cold Weather Recommendations**
  - Rec 21: Perform Operator Training simulations of firm load shed scenarios, to include administer rotating load shed, avoid cascading outages and system collapse, and protect critical natural gas infrastructure customers.

- NERC Alert responses noted 185 entities incorporate rotational load shedding into training and restoration drills, referring to RTSC for further direction.
  - Refer to regions
  - Develop reference paper
  - Issue NERC Alert
RC West Operations – Update

NERC Real-Time Operating Subcommittee (RTOS) Activity

• **Cold Weather Recommendations**
  
  - **Rec 22. UFLS coordination with frequency tripping of relays**
    - Related to recovering from frequency stalling via manual load shedding.
    - SAR Project 2020-02, PRC-024-6 (Generator ride through)
    - SAR will go to ballot on 3/7-3/17 (comments closed)
  
  - Scope:
    - Mainly oriented toward inverter based resources, but does address generator ride through for frequency and voltage
    - Scope does not mention coordination with PRC-006 Automatic UFLS
    - Comments closed
NERC Real-Time Operating Subcommittee (RTOS) Activity

- **REC 22 Next steps**

  Monitor SAR and Standards development team

  - System Protection and Control WG also monitoring
  - Attend meetings (do not anticipate nominating RTOS member nomination)
  - Provide input as observing member
  - Potentially RTOS to comment on draft changes to the standard

  **Possible Deliverables**

  - Recommend changes to PRC-006 (UFLS)
  - Develop Coordination Guideline
  - Issue NERC Alert
  - Recommend back to RTSC or subcommittee (SPCWG)
RC West Operations – Update
NERC Real-Time Operating Subcommittee (RTOS) Activity

• **Update on IROL Project from the IROL Activity Team – Craig Struck, NERC**
  – **Objective to develop consistent IROL practices in the following areas**

<table>
<thead>
<tr>
<th>Terminology</th>
<th>IROL parameters</th>
<th>Local vs Wide area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishing Real-time / Day Ahead</td>
<td>IROL Like conditions (Insecure Operating State)</td>
<td>Tools VSA – TSAT - DSA</td>
</tr>
<tr>
<td>RC-RC Communication</td>
<td>NERC Standards</td>
<td>Philosophical</td>
</tr>
</tbody>
</table>

• **Next steps**
• *Draft white paper under management review at NERC*
• *NERC will hold industry Workshop/Webinar when the paper is published*
• *NERC RTOS to rewrite Reliability Guideline: Methods for Establishing IROLs*
RC West Operations – Update

NERC Standard Changes (Effective April 1st 2024)

- FAC-011-4 – System Operating Limits Methodology for the Operations Horizon
- FAC-014-3 – Establish and Communicate System Operating Limits
- IRO-008-3 – Reliability Coordinator Operational Analyses and Real-time Assessments
- TOP-001-6 – Transmission Operations

- Repurpose Voltage SOL Task Force (OPWG/RTWG Task Force)
  - Task Force scope to address Methodology and Procedure related changes
Primary objective was to align the FAC standards with existing IRO, TOP, and TPL standards as well as new definitions. In particular updated and new requirements address the following,

- The proposed revisions to the SOL definition, coupled with the revisions to the FAC standards will support the concept that the SOL is the actual operating parameter; and eliminate confusion between “what the limits are” verses “how the system should be operated given the limits.”
Updated RC SOL Methodology will:

- Identify the method that its TOPs will use in determining which of the Facility Ratings provided by the owner (under FAC-008-3) are appropriate for use in establishing SOLs for use in operations. Under the revised definition of SOL, the Facility Ratings will be the SOL. Additionally, RC and the TOP will need to use the same Facility Ratings, which will eliminate the risk of different or inconsistent types of Facility Ratings used in operations.

- Require the TOP to determine System voltage limits for use in operations.
• **Updated or Revised requirements**
  
  – Set a number of minimum required attributes specific to stability limitations that must be contained within the RC SOL Methodology.

  – Describe how contingencies are identified and allow for different contingency lists to determine stability and steady state system impacts.

  – Describe the performance framework to determine SOL exceedances.

• **TOP-001 and IRO-008 changes** will allow for consistency with this framework in determining SOL exceedances and communicating them to the RC
Next steps

✓ Communicate to RTWG/OPWG members requesting confirmation of Task Force participants

✓ Develop Task Force Scope and Objectives

✓ Identify impacted Methodologies and Procedures
  ✓ SOL Methodology
  ✓ SOL Procedures

✓ Kick Off Meeting (April)
## Recently Published Procedures:

<table>
<thead>
<tr>
<th>RC Proc. #</th>
<th>Procedure Title</th>
<th>Status</th>
<th>Description of changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC9010</td>
<td>Unscheduled Flow Mitigation on Qualified Transfer Paths</td>
<td>Published 2/07/23</td>
<td>Annual Review: No content changes, only minor formatting.</td>
</tr>
<tr>
<td>RC9230</td>
<td>Path 14 Operating Guide</td>
<td>Published 2/07/23</td>
<td>Updated Section 4 to include IPCO mitigation actions using real-time market constraints management, and RC coordination actions for managing USF. Added additional limiting credible multiple contingency. Clarified Table 2 Operating Characteristics to highlight focus on west-to-east flows on Path 14. Changes approved all by impacted parties.</td>
</tr>
<tr>
<td>RC9410</td>
<td>Olinda 500 kV High Voltage Mitigation</td>
<td>Published 1/26/23</td>
<td>Periodic Review: Minor formatting and punctuation edits only.</td>
</tr>
<tr>
<td>RC0120A</td>
<td>RC West IRO-010 Data Specification</td>
<td>Published 1/24/23</td>
<td>Publishing these changes as current update and future change will be published as version 6.2 and effective 4/01/23 (To follow). Annual Review: Removed exceptions to data request. Clarified RDFID in 6.23. Section 4: Updated data transfer method on 4.9 and 4.10 to match SOL methodology. Added data requests 5.17, 5.18, and 5.19 for items communicated in real-time via webOMS that were previously listed in RC0130. Removed RC0130 reference from outage data requests 5.1, 5.4, and 5.9 prior to real-time / OPA process. Minor format and grammar edits. Note: Also reposted future v6.2 for 4/01/23 (Joint Cold Weather Task Force update).</td>
</tr>
<tr>
<td>RC9230</td>
<td>Path 14 Operating Guide</td>
<td>Published 1/11/23</td>
<td>Periodic Review: Minor formatting and grammar edits for procedures consistency.</td>
</tr>
<tr>
<td>RC0120</td>
<td>Guidelines for RC West IRO-010 Data Specification and Collection</td>
<td>Published 12/15 - Effective 4/01/23</td>
<td>Annual Review: Updated references to IRO-010-4. Added to data request 5.1 for coverage of IRO-010-4 R1.3.1. Section 3.1.6.11 – defined RDFID. Minor grammar and punctuation edits.</td>
</tr>
<tr>
<td>RC0120A</td>
<td>RC West IRO-010 Data Specification</td>
<td>Published 12/15 - Effective 4/01/23</td>
<td>Annual Review: Removed exceptions to data request. Clarified RDFID in 6.23. Added data request 6.8.2 from discussions with DEWG on 9/7/22 and Joint Cold Weather Task Force. Added data requests 5.17, 5.18, and 5.19 for items communicated in real-time via webOMS that were previously listed in RC0130. Removed RC0130 reference from outage data requests 5.1, 5.4, and 5.9 prior to real-time / OPA process. Minor format and grammar edits.</td>
</tr>
</tbody>
</table>
## Recently Published Procedures:

<table>
<thead>
<tr>
<th>RC Proc. #</th>
<th>Procedure Title</th>
<th>Status</th>
<th>Description of changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC0120B</td>
<td>RC West IRO-010 Data Specification for Adjacent RC</td>
<td>Published 12/15 -</td>
<td>Annual Review: Added RC-5.17, RC-5.18, and RC-5.19 for items communicated in real-time via webOMS that were previously listed in RC0130.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effective 4/01/23</td>
<td></td>
</tr>
<tr>
<td>RC0120C</td>
<td>ICCP or PMU Data Request Procedure</td>
<td>Published 12/15 -</td>
<td>Annual Review: No changes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effective 4/01/23</td>
<td></td>
</tr>
<tr>
<td>RC0600</td>
<td>RC West Implementation of Common Interconnection-wide Methodology</td>
<td>Published 12/15 -</td>
<td>Annual Review: Minor formatting and punctuation edits only.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effective 1/01/23</td>
<td></td>
</tr>
<tr>
<td>RC0600A</td>
<td>Western Interconnection Modeling and Monitoring Common Methodology</td>
<td>Published 12/15 -</td>
<td>Annual Review: No content changes to this document were requested.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Effective 1/01/23</td>
<td></td>
</tr>
<tr>
<td>RC0670A</td>
<td>PRC-002-2 RC West DDR List</td>
<td>Published 12/15</td>
<td>Appendix I: Updated DDR list for Alamitos Units. Updated instances of PG&amp;E to PGAE and corrected typo with Potrero.</td>
</tr>
</tbody>
</table>
# Procedures Update - continued

Upcoming Procedure Changes:

<table>
<thead>
<tr>
<th>RC Proc. #</th>
<th>Procedure Title</th>
<th>Status</th>
<th>Description of changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RC0210</td>
<td>Monitoring Frequency and Balancing Authority Performance</td>
<td>Internal Review – Target publish 3/31</td>
<td>Updated references to EOP-011-1 due to standard update.</td>
</tr>
<tr>
<td>RC0330</td>
<td>Coordination with Neighboring Reliability Coordinators</td>
<td>Internal Review – Target Publish 3/30</td>
<td>Annual Review: Updated references of EOP-011; minor formatting and grammar updates.</td>
</tr>
<tr>
<td>RC0410B</td>
<td>Transmission Emergencies Due to Wildfire</td>
<td>Internal Review – Target Publish 3/30</td>
<td>Annual Review: No changes.</td>
</tr>
<tr>
<td>RC9000</td>
<td>Open Loop Guideline</td>
<td>Internal Coordination – Target Publish 2/23</td>
<td>Clarifications to Section 3.3.2.1 regarding operating limit for Path 66, when one contingency away from Open Loop, and monitoring for potential insecure operating state.</td>
</tr>
<tr>
<td>RC9030</td>
<td>Mitigating Forced and Inter-area Oscillations</td>
<td>Internal/External (BPA) Coordination</td>
<td>Major Update and reorganization: Added Background section to provide clarity on the different type of oscillations observed in the grid and how to distinguish between these different types of oscillations so that appropriate mitigation actions can be taken. Added subsection on taking actions for AGC related low frequency oscillations having frequencies less than 0.1 Hz that may not be detected by the ODM tool.</td>
</tr>
<tr>
<td>RC9210</td>
<td>Path 3 (Northwest - British Columbia)</td>
<td>Internal Review – Target Publish 3/2</td>
<td>Annual Review: Minor formatting and grammar edits only.</td>
</tr>
</tbody>
</table>
RC Metrics Year End 2022 - SE Solution related metrics (MW)

- Count of MW anomalies observed on 500kV, 345kV, 230kV, 138kV, and 115kV lines

- *Note:* Though the measurement is not used by SE in estimating the solution, the residue is computed and contributes to the metric.
RC Metrics Year End 2022 - SE Solution related metrics (MVAR)

- Count of MVAR anomalies observed on 500kV, 345kV, 230kV, 138kV, and 115kV lines

- Note: Though the measurement is not used by SE in estimating the solution, the residue is computed and contributes to the metric.

![Graph showing Telemetry Errors & SE Solution Related Metrics, MVAR](image-url)
RC Metrics Year End 2022 - RTCA Non-Converged Contingencies

- Percentage of Real-Time Contingency Analysis (RTCA) non-converged contingencies over the total number of contingencies in five-minute intervals

- Note: Over 8,500 contingencies are solved in every RTCA solution
Day Ahead Contingency Analysis (DACA) tool is designed to identify potential contingencies in the day ahead timeframe
• Count of Customer Inquiry and Dispute Information (CIDI) tickets of the RC Inquiry case record type
• The number of opened cases will not change each time the data is pulled, but the other numbers can change as there are still cases opened from a prior month that haven’t been closed.
Working Group Updates
FERC 881 Ambient Adjusted Rating & Dynamic Line Ratings

Raja Thappetaobula
Director, Operations Engineering Services
FERC 881 Quarterly Initiative Update

- FERC Order 881 designed to improve transparency of transmission line ratings.
- FERC Order 881 requires Transmission Owners (TO’s) to implement ambient adjusted ratings on transmission lines over which they provide transmission service.
- FERC Order requires ISOs/RTOs to use AARs in their congestion management process and near term commitment markets.
- FERC Order requires ISO/RTO’s to utilize ambient adjusted ratings (AAR) in evaluation or curtailment of near term (10 days or less) transmission service.
- ISO filed a compliance filing on 7/12/2022
- Full compliance required by 7/12/2025
FERC 881 Quarterly Initiative Update

• ISO initiated a public stakeholder process
  • Quarterly initiative updates
  • Data submission working group – began 2/6/23
  • Small group discussions with transmission owners to ensure consistency in development of transmission line rating methodologies – first meeting on 2/16/23
• Three proposed tracks to develop our tools and processes to meet compliance requirements by 7/12/2025
  • Track 1: Real Time Reliability Applications
    • in progress; target 2023/2024
  • Track 2: Operational/EMS Model Data and Applications
    • target 2023/2024
  • Track 3: Market Applications and Look Ahead Applications
    • target fall 2025
Real Time Ambient Adjusted Rating (AAR) Implementation

Current CAISO TOP and RC West Rating Consumption into Real Time Reliability:

- **PTO (CAISO)**
  - Transmission Registry
    - Static Ratings
    - Summer/Winter Normal and 4 Different Emergency ratings
    - MVA

- **TOP (RC WEST)**
  - CIM Data Exchange for Most TOP's. Some smaller TOP's utilize excel templates
    - Static Ratings
    - Summer/Winter Normal and 4 Different Emergency ratings
    - MVA

- **Enterprise Model Management System**
  - CAISO PTO and RC West TOP Ratings and EM Participants Ratings
    - Static Ratings
    - Summer/Winter Normal and 4 Different Emergency ratings and Duration
    - MVA

- **EMNA (RTCA/HANA)**

- **EMS**

- **OMS Emergency Rating Change process. Normal and Emergency Rating Overrides**
FERC 881 Quarterly Initiative Update

- FERC Order 881 requires at minimum utilization of 4 seasonal ratings.
  - ISO PTOs will need to follow the ISO transmission registry process to utilize 4 seasonal ratings.
  - RC West TOPs will need to follow the RC West IRO-010 data specification process to utilize 4 seasonal ratings.

- Real time AAR from both ISO PTOs and RC West TOPs will be acquired through Inter-Control Center Communications Protocol (ICCP) protocol.

- New interface will be developed to acquire look ahead Ambient adjusted ratings (240 hours).
## Proposed timeline

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>White paper &amp; process drawings</td>
<td>March 2023</td>
</tr>
<tr>
<td>Project timeline</td>
<td>March 2023</td>
</tr>
<tr>
<td>Track 1/Track 2 business requirement specification development</td>
<td>Jan - Jun 2023</td>
</tr>
<tr>
<td>IRO-010 and TOP-003 data specifications published</td>
<td>Q2 2023</td>
</tr>
<tr>
<td>Track 1 data submission templates/guides posted</td>
<td>Q3 2023</td>
</tr>
<tr>
<td>External training</td>
<td>Q3 2023</td>
</tr>
<tr>
<td>Track 1 data submission + testing</td>
<td>Q4 2023</td>
</tr>
</tbody>
</table>

*This is a high level schedule. All dates are tentative and subject to change.*
Future Agenda Items

• The next RC West Oversight Committee meeting is scheduled to be hosted by CAISO on May 25; visit [RC West webpage](https://www.caiso.com) for additional details
• Send topic suggestions to [isorc@caiso.com](mailto:isorc@caiso.com)
Open for Public Comments
Public Session Adjourned