WECC
Electric Reliability and Security for the West

Board of Directors
Meeting Agenda
Salt Lake City, UT

Meeting link, Password: WECC | Dial-in Number: 1-415-655-0003, Attendee Access Code: 2632 725 1364

March 13, 2024, 8:15 to 11:00 a.m. Mountain Time

1. Welcome, Call to Order—Ric Campbell

2. Review WECC Antitrust Policy—Jeff Droubay

WECC Antitrust Policy.

Please contact WECC legal counsel if you have any questions.

3. Approve Agenda

4. Consent Agenda

Approval Item: Meeting Minutes from December 6, 2023

Approval Item: Joint Guidance Committee (JGC) Charter

Approval Item: Member Advisory Committee (MAC) Charter

5. Review of December 6, 2023, and January 25, 2024, Closed Sessions—Ric Campbell

6. Remarks and Reports

WECC President and CEO—Melanie Frye

Reliability and Security Oversight—Steven Noess

Western Renewable Energy Generation Information System—Andrea Coon

Member Advisory Committee—Michele Beck

Western Interconnection Regional Advisory Body—Mary Throne

7. Board Committee Reports

Finance and Audit Committee—Gary Leidich

Governance Committee—Felicia Marcus

Human Resources and Compensation Committee—Shelley Longmuir

Nominating Committee—Richard Woodward

Standards Committee—Ian McKay

Approval Item: WECC-0147 BAL-004, Automatic Time Error Correction

Approval Item: WECC-0150- PRC-001-WECC-CRT-3, Governor Droop

Break

8. Reliability Risk Priorities—Kris Raper

9. Public Comment

10. Technical Activities Update

Reliability Planning and Performance Analysis—Branden Sudduth

Joint Guidance Committee—Branden Sudduth

Reliability Risk Committee—Meg Albright

Reliability Assessments Committee—Chelsea Loomis

11. Review New Action Items

12. Review Upcoming Meetings

June 11–12, 2024 ..... Salt Lake City, UT

September 17–18, 2024 ..... Salt Lake City, UT

December 10–11, 2024 ..... Salt Lake City, UT

13. Adjourn

Electric Reliability and Security for the West

Board of Directors Meeting
Approval Item
Consent Agenda
March 13, 2024

For Board Approval

The consent agenda for this meeting consists of:

Approval Item: Meeting Minutes from December 6, 2023

Approval Item: Joint Guidance Committee (JGC) Charter

Approval Item: Member Advisory Committee (MAC) Charter

Recommendation

Staff believes that these items do not require additional Board discussion, and each is non-controversial and appropriate for the consent agenda. Attached is background information on each item.

WECC
Electric Reliability and Security for the West

Board of Directors
DRAFT Meeting Minutes
December 6, 2023
Salt Lake City, UT

1. Welcome, Call to Order

Ric Campbell, Board of Directors (Board) Chair, called the meeting to order at 9:00 a.m. MT on December 11, 2023. A quorum was present to conduct business. A list of attendees is attached as Exhibit A.

2. Review WECC Antitrust Policy

Jeff Droubay, Vice President and General Counsel, read aloud the WECC Antitrust Policy statement. The meeting agenda included a link to the posted policy.

3. Approve Agenda

Mr. Campbell introduced the proposed meeting agenda.

On a motion by Shelley Longmuir, the Board approved the agenda.

4. Consent Agenda

On a motion by Joe McArthur, the Board approved the consent agenda, which consisted of:

Approval Item: Minutes from September 14, 2023, and

Approval Item: WECC Standards Committee (WSC) Charter.

5. Review September 14, 2023, Closed Session

Mr. Campbell reviewed the September 14, 2023, closed session.

6. Sue Kelly, NERC Trustee, Remarks

Sue Kelly, NERC Trustee, commented on the uniqueness of WECC's footprint, the Interregional Transfer Capability Study (ITCS), standards development, FERC approval on budgetary items, and FERC-approved changes to the Standards Process Manual and Rules of Procedure.

Ms. Kelly responded to questions on key risks to reliability, natural gas supply reliability, and potential congressional action on gas legislation.

7. Executive Remarks

Tracey LeBeau, Western Area Power Administration (WAPA), Administrator and CEO, commented on the WAPA footprint, initiatives, challenges, mission, and markets developments. Ms. LeBeau thanked WECC for its work on the Anchor Data Set and for engagement in Western Power Pool initiatives. Ms. LeBeau closed by commenting on WAPA activities on transmission planning, potential expansion of the Mead substation, the process of inspecting rights-of-way associated with the 1964 intertie of authorization agreement, and concerns of hiring and retaining talent.

The Board asked and Ms. LeBeau responded to questions regarding her top reliability concerns and how WAPA is focusing on work force challenges and recruitment.

8. Remarks and Reports

The following people gave reports to the Board:

a. Melanie Frye, President and CEO, reflected on the 10-year anniversary of bifurcation and the changes that have occurred in that time. She summarized FERC, NERC, regional, and international activities and closed by reviewing end-of-year scorecard achievements. The Board asked for clarification on a scorecard metric under Focus Area 5, what WECC's role is in Western Power Pool activities, and congratulated WECC on its achievements.

b. Steven Noess, Vice President Reliability and Security Oversight, provided an update on the Oversight Trends Report, monitoring approach and prioritization, inverter-based resources (IBR), cold weather recommendations and impact, and the self-logging program. The Board asked questions on IBR registrations and thanked Mr. Noess and his team for their continued work and collaboration with the Reliability Planning and Performance Analysis (RPPA) team.

c. Michele Beck, Member Advisory Committee (MAC) Chair, summarized MAC accomplishments and planned activities. Ms. Beck asked that the Reliability Risk Priority schedule be released so it can be added to stakeholder calendars. The Board thanked the MAC for its participation and collaboration.

d. Eric Baran, Western Interconnection Regional Advisory Body (WIRAB), reported on WIRAB participation at the FERC Reliability Technical Conference, WIRAB webinar series on IBRs, and 2023 accomplishments. Mr. Baran closed by highlighting WIRAB advice on the 2024 strategic initiatives. The Board inquired how WIRAB and WECC can address the issue of energy policy risk.

e. Layna McVay, Western Interconnection Compliance Forum (WICF) Chair, provided a summary on WICF's purpose, outreach efforts to members, and ongoing collaboration with

WECC. The Board asked about considerations for focus group and workshop content, and whether there was an outreach program for IBR companies to join WICF.

9. Public Comment

No comments were provided.

10. Winter Storm Elliott

Heather Polzin, FERC, Attorney Advisor and Reliability Coordinator, David Huff, FERC, Electrical Engineer, and Curtis Holland, WECC Senior Reliability Specialist provided a summary of events, lessons learned, and recommendations from NERC's report on Winter Storm Elliott. The Board inquired about firm versus non-firm generation, generation curtailment, utility evaluations of coal-fired generation, and the plan to communicate and address the recommendations from the report.

11. Board Committee Reports

a. Finance and Audit Committee

Gary Leidich, Finance and Audit Committee (FAC) Chair, reported on the previous day's meeting, including review of portfolio investments, the investment policy statement, 2025 Business Plan and Budget (BP&B) schedule, and discussion on assessment stabilization analysis. Mr. Leidich noted that the FAC also received an update on the Mexican regulatory environment and a review of the year-to-date results and 2023 forecast.

b. Governance Committee

Felicia Marcus, Governance Committee (GC) Chair, reported on the GC meeting held the day before, where the GC discussed and recommended a revised Board self-evaluation, heard a summary of the MAC Board Effectiveness Survey, and had reports on the Principles of Corporate Governance, Standards of Conduct, and annual Board policy reviews. The GC closed with a report from Melanie Frye on the Delegation Agreement and conflicts of interest.

Ms. Marcus introduced the following resolution to approve an updated Board evaluation.

> *Resolved*, that the Board of Directors, at its meeting on December 6, 2023, acting on the recommendation of the Governance Committee, herby approves the Board and Board Committee evaluation questions as presented herein.

After discussion, the Board asked that the evaluation be revised to require comments on any score of a three or less.

On a motion by Felicia Marcus, the Board approved the following resolution:

Resolved, that the Board of Directors, at its meeting on December 6, 2023, acting on the recommendation of the Governance Committee, hereby approves the Board and Board Committee evaluation questions as presented herein, with the noted revision to require comments on any score of a three or less.

Additional information is attached as Exhibit B.

c. Human Resources and Compensation Committee

Shelley Longmuir, Human Resources and Compensation Committee (HRCC) Chair, reviewed the closed session HRCC meeting, where the committee received updates on staff performance assessments, benefit renewals, and CEO goals. The HRCC also met in open session and approved recommendation of the 2024 corporate scorecard and had its annual review of the HRCC Charter.

Ms. Longmuir introduced the following resolution:

Resolved, that the WECC Board of Directors (Board), acting upon the recommendation of the Human Resources and Compensation Committee (HRCC), at the meeting of the Board on December 6, 2023, approves the 2024 Corporate Scorecard, as presented and attached.

Ms. Longmuir noted that the HRCC engaged in considerable review and discussion of the scorecard and requested that the resolution be amended to state that the scorecard had considerable review and discussion before approval.

On a motion by Shelley Longmuir, the Board approved the following resolution, as amended:

Resolved, that the WECC Board of Directors (Board), after considerable review and discussion with the HRCC, and acting upon the recommendation of the Human Resources and Compensation Committee (HRCC), at the meeting of the Board on December 6, 2023, approves the 2024 Corporate Scorecard, as presented and attached.

Additional information is attached as Exhibit C.

d. WECC Standards Committee

Ian McKay, WECC Standards Committee (WSC) Chair, reported on the previous day's meeting where the committee elected Tim Kelley as vice chair, approved a standard authorization request for a five-year review of WECC-0154 VAR-001-5, and approved two recommendations for Board approval: WECC-0147 BAL-004-WECC-4 and WECC-0150 PRC-001-WECC-CRT-3. Mr. McKay asked that Mr. Droubay review the approval process to ensure that WSC brings recommendations for Board approval in the most timely manner possible. The WSC added two team members to project WECC-0153 INT Consolidated

Criterion. Mr. McKay closed by highlighting the importance of standards and thanked the team that is part of standard development.

12. Technical Activities Update

Branden Sudduth, Vice President Reliability Planning and Performance Analysis, provided a technical activities update. Mr. Sudduth summarized the 2023 Western Assessment of Resource Adequacy (Western Assessment) and reported on ITCS activities.

The Board inquired about the timing of generation development and planned retirements of resources.

Additional updates were provided by:

a. Meg Albright, Reliability Risk Committee (RRC) Co-chair, who highlighted the RRC risk management process.

b. Kris Raper, Vice President Strategic Engagement and External Affairs, summarized the 2024 risk priorities development process.

c. Chelsea Loomis, Reliability Assessment Committee (RAC), Co-chair, who reported on RAC activities.

d. Jonathan Aust, Joint Guidance Committee (JGC) Co-chair, summarized the JGC Engagement Survey. Mr. Aust responded to a question on possible messaging and communication opportunities for educating and engaging stakeholders on the new committee structure.

13. Review New Action Items

There were no new action items created during this meeting.

14. Upcoming Meetings

March 12–13, 2024.....Salt Lake City, UT

June 11–12, 2024.....Salt Lake City, UT

September 17–18, 2024.....Salt Lake City, UT

15. Adjourn

On a motion by Ian McKay, the Board adjourned at 12:40 p.m. MT and moved into closed session, which commenced at 1:00 p.m. MT.

Exhibit A: Attendance List

Members in Attendance

James Avery (virtual) ..... Vice Chair

Ric Campbell ..... Chair

Melanie Frye ..... CEO

Kris Hafner (virtual) ..... Director

Gary Leidich ..... Director

Felicia Marcus ..... Director

Joe McArthur ..... Director

Ian McKay ..... Director

Shelley Longmuir ..... Director

Richard Woodward ..... Director

Others in Attendance

Sue Kelly ..... Board of Trustee, NERC

Tracey LeBeau ..... CEO, WAPA

Exhibit B: Board and Committee Self-Evaluation Survey

The GC, in accordance with the Board of Directors Principles of Corporate Governance—Section 2.3, has reviewed the self-evaluation process and questions and has recommended that the Board adopt the following evaluation:

The evaluation covers areas of the Board's role as outlined in the Principles of Corporate Governance. The format is comment and Likert-Scale based. Please provide comments on each question and, if rated a 3 or less, include feedback on potential areas of improvement. Included in each survey is an additional question for the Board committees. You will see a committee question for each committee you serve on.

Most of the questions are phrased as positive statements that demonstrate good practices in the following areas:

- Independent, Mission Driven, and Transparent;
- Strategic Focus;
- Commitment to Continual Professional Improvement; and
- Enterprise Risk Management.

Rate the Board on a five-point Likert Scale:

1 – Strongly Disagree

2 – Disagree

3 – Neither Agree nor Disagree

4 – Agree

5 – Strongly Agree

Board Role	Statement	Rate 1-5 (if rated 2 or less you MUST provide comments)	Comment
1. Independent, mission driven, and transparent	The Board demonstrates, through its actions, compliance with the "Principles of Corporate Governance," a full understanding of the roles and responsibilities of an independent board and awareness of the organization's mission, and acknowledges that WECC is		

	fulfilling its mission and all delegated authorities and responsibilities.		
2. Strategic focus	The Board oversees development and communication of clear goals, regularly monitors and evaluates progress of strategic goals, and is fully informed of progress by staff.		
3. Commitment to continual professional improvement	The Board has defined and communicated its expectations and conducts regular evaluations of the CEO. The Board is prepared, interested, and engaged.		
4. Enterprise Risk Management	The Board oversees and monitors WECC's enterprise risk management program.		
5. Board committee evaluation	The committee chair leads effective meetings, materials are provided in advance, and members are prepared and have insightful discussions.		
6. Miscellaneous	Are there additional areas on which you would like to give feedback?		
7. Closed Session Comments	Are there comments that need to be raised in a closed session (Board or committee level)? Directors may mark these comments as "confidential remarks."		
8. Board chair evaluation	The Board chair effectively plans and coordinates the business of the Board, as an unbiased peer, including seeking and sharing stakeholder input, identifying important topics, leading effective meetings, and fostering meaningful discussions, as contemplated by WECC's Principles of Corporate Governance Section 2.6.		

Process

The Board and Board Committee self-evaluation questions identified above will be sent to Board Directors and responses collected in Q1. The Board and Board Committees will review the survey responses to identify any necessary actions during Q2.

Exhibit C: 2024 Corporate Scorecard

FA1: Innovate and expand risk-based focus in all standards, compliance monitoring, and enforcement actions

Outcome	Metrics	2024 Targets	2024 Initiatives
Western viewpoints represented and incorporated in the development of NERC Reliability Standards, regional standards, and regional variances to NERC Reliability Standards	1. % of standards drafting teams that have Western representation 2. % of standards under development on which WECC comments	1. 100% 2. 100%	1. Develop a data-driven process based on feedback from CMEP activities for evaluating effectiveness of Standards and as a mechanism to submit feedback on Standards that may be ineffective, inadequate to risk, unclear, unenforceable, or unnecessary.
Effective and efficient implementation of risk-based monitoring and enforcement activities	1. % change in violation inventory that is over two years old as of 1/1/24 2. % of Compliance Oversight Plans created within 6 months following new registrations.	1. -40% 2. 80%	1. Enhance CMEP oversight strategies to deliver a more holistic oversight approach across all registered entity types, informed by NERC's Appendix 4A audit consolidated recommendations, with ongoing and tailored outreach and assurance activities. 2. Implement strategies to promote self-logging that results in at least 10 new applicants to the program in 2024. 3. Develop and implement an outreach and engagement strategy with initial registration and compliance expectations for newly identified GO IBR and GOP IBR registrants.

FA2: Assess and initiate action to mitigate known and emerging risks to the reliability and security of the Western Interconnection

Outcome	Metrics	2024 Targets	2024 Initiatives
Clear understanding of emerging risks to the BPS and associated mitigation strategies, particularly for WECC Reliability Risk Priorities (RRP). High precision of information and models used to assess the reliability of the BPS	1. % completion of vetted mitigation strategies identified during the year to address RRPs 2. % of power flow model shortcomings resolved versus total number of identified power flow model shortcomings	1. 80% 2. 20%	1. Publish a Risk Report developed by WECC staff with review and input from the RRC 2. Develop data requirements, reporting procedures, and a roadmap for creating datasets and models for use in long-term transmission planning 3. Implement a data management software solution to increase the security of our data and modernize how we collect, manage, store, and report it.
Use of advanced tools, techniques, and industry subject matter experts to identify system performance trends and vulnerabilities	1. # of best practices/guidelines created and reliability and security risk events held 2. # of reliability assessments performed	1. 15 2. 6	1. Develop and publish the revised System Performance Data Portal including stakeholder feedback 2. Implement improvements in resource adequacy assessments by enhancing tools and techniques used for resource adequacy analysis and include an assessment of transmission impacts 3. Enhance in-house capacity to perform transfer capability reliability assessments.

FA3: Strengthen engagement with the reliability and security community in the Western Interconnection

Outcome	Metrics	2024 Targets	2024 Initiatives
Effective relationships with industry groups, WECC technical committees; ERO Enterprise; federal, state, and provincial regulators; policy- and decision-makers; national labs and educational institution; and the broader reliability and security community	1. # of strategic connections/touchpoints 2. # of requests for input/advice/opinion	1. +20% 2. +10%	1. Implement engagement strategies based on 2023 stakeholder mapping work, including knowledge gained through the 2023 Annual Meeting interactive session. 2. Improve products on wecc.org by creating digitally dynamic experiences with enhanced user interactions. 3. Develop an outreach and engagement strategy targeted specifically for new state officials. 4. Enhance the development of the Reliability Risk Priorities by incorporating the risk work from the RRC and WECC's Risk Analysis Department.

FA4: Seize opportunities for effectiveness, efficiency, and continuous improvements

Outcome	Metrics	2024 Targets	2024 Initiatives
Delivery of quantitative and qualitative results for WECC scorecard items, and development of methods and metrics for ongoing evaluation of effectiveness and efficiency	1. % of statutory budgeted expenditures	1. +/-3%	1. Increase effectiveness of future two years' budget forecasts for the 2025 budget planning process via the continuation of the three-year resource planning project. a) Refinement of forecasting process for tools and systems for the future two years.
Continuous improvement of organizational processes and tools to adapt to changes in the industry	1. % of new WECC products focused on current RRPs or emerging risks 2. # of processes improved (e.g., # of days to produce reports/work products (from issue identification to issuance of reports/work products))	1. 75% 2. 20	1. Further the work on improving clarity and alignment on the Denison Organizational Learning index scores; build upon WECC's continuous improvement framework to help foster an innovative mindset that helps us address our response to industry changes and increases the effectiveness of our work. 2. Evaluate current human capital management system and determine effectiveness based on our needs; identify areas for improvement; determine if a new system will better meet needs, and if so, develop a needs analysis for a new system, issue an RFP, evaluate responses, and select a new software solution with a target implementation of 2025.

FA5: Build the capability and culture that enable WECC to deliver on its critical reliability mission

Outcome	Metrics	2024 Targets	2024 Initiatives
WECC is considered an employer of choice, with highly skilled, collaborative, and engaged employees who are committed to WECC's mission	1. Voluntary employee turnover 2. % of critical skills covered by staff expertise 3. % of the critical positions that have successors identified and development plans are in place	1. <15% 2. 75% 3. 40%	1. Develop and implement a dispersed workforce engagement strategy and program to align with the new workforce model introduced in 2023. Program will include components such as: management tools for accountability and engagement, productivity measures, work recognition, inspirational moments, and leadership tools. 2. Evolve the work begun with the Knowledge Transfer Program and KAM charts by creating formalized and structured competency-based career planning. This program will create strong analytics and robust learning and development opportunities to help employees gain new skills in a reasonable timeframe
WECC is respected as a partner and trusted by stakeholders, NERC, and FERC to produce high-quality, credible, and influential work	1. # of new collaborative projects with external partners 2. # of external citations of or references to our technical work (recognition)	1. 7 2. 7	1. Establish an organization-wide rotation program to provide increased internal training and development opportunities and build bench strength. Done in conjunction with Outcome 1, Initiative 2.

WECC
Electric Reliability and Security for the West

Board of Directors
Approval Item
JGC Charter
March 13, 2024

Board Resolution

Resolved, that the WECC Board of Directors (Board), acting upon the recommendation of the Joint Guidance Committee (JGC), at the meeting of the Board on March 13, 2024, approves the changes to the JGC Charter, as presented and attached.

Background

The JGC amended its charter to make three changes:

1. Add provisions for member seat vacancies, including how a member resigns from the group, and how the seat will be filled.
2. Change how at-large WECC Class members are selected for a seat on the JGC from an election process to a selection process. The original charter required empty at-large WECC Class members seats to be filled by a vote of the entire member class at the annual member's meeting. This was problematic because the timing only allowed these seats to be filled once a year, regardless of when they become vacant. In addition, the election process is labor-intensive, and the JGC believes the class representation on the MAC is sufficient. The JGC requested the seats be filled by selection of the appropriate WECC Class members on the MAC.
3. Change the requirement to hold an annual strategic alignment meeting to the annual meeting being one option the JGC can use to advise and align the technical committees on their three-year work plans. The JGC made this change to provide them flexibility in how they carry out this responsibility.

Recommendation

The JGC recommends the approval of the JGC Charter as presented on March 13, 2024.

Issues and Risks

Participation in the JGC provides strategic alignment and partnership between WECC and the technical committees. Easing the processes around membership selection, while maintaining requirements that support the original vision of the JGC will help the group carry out its work.

<Public>

WECC
Electric Reliability and Security for the West

Joint Guidance Committee Charter

Establishment

The Joint Guidance Committee (JGC) was established by and reports to the WECC Board of Directors (Board).

Purpose and Responsibilities

The purpose of the JGC is to ensure the work of the Reliability Assessment Committee (RAC), Reliability Risk Committee (RRC) and their subgroups (collectively the technical committees) is aligned with WECC's strategic direction, objectives, and the priorities approved by the Board. The JGC will advise the CEO in delivering on WECC's mission.

The JGC will:

1. Coordinate with WECC management to ensure technical committee work aligns with WECC's strategic objectives and Reliability Risk Priorities.
    a. Advise technical committees on three-year work plans and ensure the plans adequately outline how they intend to support strategic objectives. The JGC will do this through all appropriate means, for example, holding strategic alignment meetings to ensure the technical committees' work plans align with the Board's strategic direction and priorities, identify key work areas and potential gaps, and share expectations for group work plans.
    b. Make recommendations to the RAC or RRC for necessary alignment, structure, or support changes.
    c. The JGC will review, modify if necessary, and ultimately endorse committee work plans.
2. Ensure existing reliability issues are being adequately addressed by technical committees as needed, and if not, initiate technical committee work to address them.
    a. Conduct a gap-and-overlap analysis to identify areas where the committees need to initiate work, merge duplicate work, or coordinate complementary work.
    b. This includes creating and overseeing ad hoc groups as necessary to address known or emerging risks to reliability.
    c. Identify reliability issues that require cross-functional strategies and assign which technical committee(s) will begin work to address them.

3. Manage processes and oversee governance of the technical committees to ensure timely work completion and minimize time spent on process and governance matters.
    a. Develop criteria and requirements for creating new groups other than those created by WECC management. The JGC will ratify the creation of new groups approved by the RRC or RAC.
    b. Ensure overall strategic and tactical communication and collaboration among the technical committees.
    c. Oversee the WECC Committee Leadership Training for chairs and vice chairs of the technical committees.
    d. Set charter requirements that are consistent across the technical committees. Hear petition, by a committee, to alter the requirements if it can be demonstrated that the base requirements would interfere with the group's work.
    e. Endorse all technical committee charters.
4. Ensure continuous improvement of the technical committee structure. Regularly review and adjust the technical committee structure as appropriate, and advise the Board and WECC CEO of the results.
    a. Conduct a three-year rolling review of each technical committee that reports to the JGC, RAC, or RRC to determine whether that group is still necessary or should be dissolved. The JGC will notify the Board and WECC CEO of changes to the technical committee structure not requiring Board approval.
5. Advise the Board and WECC CEO on strategic direction—for example, priorities defined through the WECC strategic and multi-year planning processes.
6. Perform other duties as assigned by the Board or the WECC CEO.

Committee Composition and Governance

1. **Membership**
    a. The JGC will be composed of the following voting members:
        i. One member from the leadership of each of the RAC, RRC, and Member Advisory Committee (MAC). The chair (or co-chairs) of the respective groups will select their member.
        ii. One member appointed by the Western Interconnection Regional Advisory Body (WIRAB) chair.

iii. Six at-large members, one representing each of the five WECC member classes and one representing international members.

1) At-large class members must be members of the class they represent. They will be appointed by the MAC representatives from that class.

2) The international at-large member will be selected by the international MAC representatives.

3) Appointment of at-large members will occur at the annual class meetings.

4) At-large members will serve staggered terms of two years or until a successor has been elected. At-large members may serve multiple terms.

b. The JGC will also include two WECC executives, appointed by the WECC CEO, as non-voting members.

i. The WECC CEO will select these members who will serve as long as assigned by the WECC CEO.

c. Notice of member appointments will be given to the co-chairs (or their designee).

2. Member Vacancy

a. Any JGC member may resign from their position at any time by giving written notice to the JGC chairs. The vacancy will be effective on the date provided in the notice.

b. When a vacancy for the MAC, RRC, or RAC occurs, the vacant seat will be filled by the co-chair or vice chair from the respective group. If a co-chair or vice chair is not available, the JGC will request a new appointment from the appropriate organization.

c. When a vacancy for the WIRAB seat occurs, WIRAB will appoint a new representative.

d. When a vacancy for an at-large member seat occurs more than four months from the WECC annual meeting, the JGC will seek appointment from the appropriate MAC member class representatives.

3. Leadership

a. The JGC will have two co-chairs as follows:

i. One chair from the committees following the rotation order: RAC, RRC, MAC.

ii. One chair who is a WECC executive member, as selected by the WECC CEO.

b. The co-chairs will manage the committee and its meetings.

c. The co-chairs will hold office for a term of one year, or until a successor co-chair has been duly appointed. The co-chairs may serve multiple terms.

d. The CEO will assign a liaison to work with the co-chairs in managing the committee and its meetings, planning the agenda, and coordinating efforts with the other technical committees to ensure alignment with WECC staff work plans and priorities.

e. WECC management will assign a WECC staff member to prepare minutes of JGC meetings for the committee's approval.

4. Meetings

a. The JGC will meet as often as required to carry out its responsibilities.

   i. Meetings will be held according to the WECC Meeting Policy.

   ii. JGC meetings may be in-person, virtual, a combination of the two (hybrid), or by conference call, as determined by the co-chairs.

   iii. Meetings will be open to the public except as otherwise approved by the Board.

b. A quorum for meetings will be a majority of committee voting members.

c. The JGC will strive to make all decisions by consensus. If consensus is not possible, action taken by the JGC will require a majority vote of the voting members present.

   i. All voting members will have an equal vote.

   ii. Voting may be by any means the chair determines appropriate.

   iii. JGC members may not vote by proxy or absentee ballot.

d. WECC will give notice to each member of the JGC of the time and place of all meetings and will post notice of all meetings on the WECC website. Notice will be given no less than:

   i. 30 days before in-person and hybrid meetings.

   ii. 10 days before virtual meetings and conference calls.

e. An agenda and the items for which action may be taken, will be included with the notice:

   i. 21 days before in-person and hybrid meetings.

   ii. Three days before virtual meetings and conference calls.

f. Any person who wants notice of JGC meetings may notify the WECC liaison. WECC will then email a copy of the notice and agenda of future meetings to that person when the committee members receive the notice and agenda.

Reporting

The JGC will report to the Board on its activities and any recommendations.

Review and Changes to the Charter

The JGC will review this charter annually and recommend any changes to the Board.

	Committee	Date
Approved	Board	December 8, 2021
Reviewed	JGC	November 12, 2021

<Public>

WECC
Electric Reliability and Security for the West

Joint Guidance Committee
Charter

Establishment

The Joint Guidance Committee (JGC) was established by and reports to the WECC Board of Directors (Board).

Purpose and Responsibilities

The purpose of the JGC is to ensure the work of the Reliability Assessment Committee (RAC), Reliability Risk Committee (RRC) and their subgroups (collectively the technical committees) is aligned with WECC's strategic direction, objectives, and the priorities approved by the Board. The JGC will advise the CEO in delivering on WECC's mission.

The JGC will:

1. Coordinate with WECC management to ensure technical committee work aligns with WECC's strategic objectives and Reliability Risk Priorities.
    a. Advise technical committees on three-year work plans and ensure the plans adequately outline how they intend to support strategic objectives. The JGC will do this through all appropriate means ~~necessary~~, for example, holding strategic alignment meetings~~. etc.~~ ~~, including holding an annual strategic alignment meeting with the leadership of the RRC, RAC, and their subgroups to discuss how~~to ensure the technical committees' work plans align with the Board's strategic direction and priorities, identify key work areas and potential gaps, and share expectations for group work plans.
    b. Make recommendations to the RAC or RRC for necessary alignment, structure, or support changes.
    c. The JGC will review, modify if necessary, and ultimately endorse committee work plans.
2. Ensure existing reliability issues are being adequately addressed by technical committees as needed, and if not, initiate technical committee work to address them.
    a. Conduct a gap-and-overlap analysis to identify areas where the committees need to initiate work, merge duplicate work, or coordinate complementary work.
    b. This includes creating and overseeing ad hoc groups as necessary to address known or emerging risks to reliability.

c. Identify reliability issues that require cross-functional strategies and assign which technical committee(s) will begin work to address them.

3. Manage processes and oversee governance of the technical committees to ensure timely work completion and minimize time spent on process and governance matters.

   a. Develop criteria and requirements for creating new groups other than those created by WECC management. The JGC will ratify the creation of new groups approved by the RRC or RAC.

   b. Ensure overall strategic and tactical communication and collaboration among the technical committees.

   c. Oversee the WECC Committee Leadership Training for chairs and vice chairs of the technical committees.

   d. Set charter requirements that are consistent across the technical committees. Hear petition, by a committee, to alter the requirements if it can be demonstrated that the base requirements would interfere with the group's work.

   e. Endorse all technical committee charters.

4. Ensure continuous improvement of the technical committee structure. Regularly review and adjust the technical committee structure as appropriate, and advise the Board and WECC CEO of the results.

   a. Conduct a three-year rolling review of each technical committee that reports to the JGC, RAC, or RRC to determine whether that group is still necessary or should be dissolved. The JGC will notify the Board and WECC CEO of changes to the technical committee structure not requiring Board approval.

5. Advise the Board and WECC CEO on strategic direction—for example, priorities defined through the WECC strategic and multi-year planning processes.

6. Perform other duties as assigned by the Board or the WECC CEO.

Committee Composition and Governance

1. Membership

   a. The JGC will be composed of the following voting members:

      i. One member from the leadership of each of the RAC, RRC, and Member Advisory Committee (MAC). The chair (or co-chairs) of the respective groups will select their member.

ii. One member appointed by the Western Interconnection Regional Advisory Body (WIRAB) chair.

iii. Six at-large members, one representing each of the five WECC member classes and one representing international members.

1) At-large class members must be members of the class they represent. They will be appointed~~nominated~~ by the MAC representatives from that class ~~and elected by the WECC Member Representatives from that class at the annual class meetings~~.

2) The international at-large member will be selected by the international MAC representatives.

3) Appointment of a~~A~~t-large members ~~appointments~~ will occur at the annual class meetings.

~~3)~~4) At-large members will serve staggered terms of two years or until a successor has been elected. At-large members may serve multiple terms.

b. The JGC will also include two WECC executives, appointed by the WECC CEO, as non-voting members.

i. The WECC CEO will select these members who will serve as long as assigned by the WECC CEO.

c. Notice of member appointments will be given to the co-chairs (or their designee).

2. Member Vacancy

a. Any JGC member may resign from their position at any time by giving written notice to the JGC chairs. The vacancy will be effective on the date provided in the notice.

b. When a vacancy for the MAC, RRC, or RAC~~, or WIRAB seats~~ occurs, the vacant seat will be filled by the co-chair or vice chair from the respective group. If a co-chair or vice ~~–~~chair is not available, the JGC will request a new appointment from the appropriate organization.

c. When a vacancy for the WIRAB seat occurs, WIRAB will appoint a new representative.

d. When a vacancy for an at-large member seat occurs more than four~~4~~ months from the WECC annual meeting, the JGC will seek appointment from the appropriate MAC member class representatives.~~:~~

~~i. For the international at-large member, seek an appointment from the MAC international members in accordance with the membership section above.~~

~~i.~~ii. ~~For the WECC Member Class at-large members, seek an appointment by the MAC member representatives of the respective class. The appointed at-large member will~~

~~serve on an interim basis until the next annual meeting, at which time they may seek election to the full two-year term.~~

~~2.~~3. Leadership

a. The JGC will have two co-chairs as follows:

   i. One chair from the committees following the rotation order: RAC, RRC, MAC.

   ii. One chair who is a WECC executive member, as selected by the WECC CEO.

b. The co-chairs will manage the committee and its meetings.

c. The co-chairs will hold office for a term of one year, or until a successor co-chair has been duly appointed. The co-chairs may serve multiple terms.

d. The CEO will assign a liaison to work with the co-chairs in managing the committee and its meetings, planning the agenda, and coordinating efforts with the other technical committees to ensure alignment with WECC staff work plans and priorities.

e. WECC management will assign a WECC staff member to prepare minutes of JGC meetings for the committee's approval.

~~3.~~4. Meetings

a. The JGC will meet as often as required to carry out its responsibilities.

   i. Meetings will be held according to the WECC Meeting Policy.

   ii. JGC meetings may be in-person, virtual, a combination of the two (hybrid), or by conference call, as determined by the co-chairs.

   iii. Meetings will be open to the public except as otherwise approved by the Board.

b. A quorum for meetings will be a majority of committee voting members.

c. The JGC will strive to make all decisions by consensus. If consensus is not possible, action taken by the JGC will require a majority vote of the voting members present.

   i. All voting members will have an equal vote.

   ii. Voting may be by any means the chair determines appropriate.

   iii. JGC members may not vote by proxy or absentee ballot.

d. WECC will give notice to each member of the JGC of the time and place of all meetings and will post notice of all meetings on the WECC website. Notice will be given no less than:

   i. 30 days before in-person and hybrid meetings.

   ii. 10 days before virtual meetings and conference calls.

e. An agenda and the items for which action may be taken, will be included with the notice:

   i. 21 days before in-person and hybrid meetings.

   ii. Three days before virtual meetings and conference calls.

f. Any person who wants notice of JGC meetings may notify the WECC liaison. WECC will then email a copy of the notice and agenda of future meetings to that person when the committee members receive the notice and agenda.

Reporting

The JGC will report to the Board on its activities and any recommendations.

Review and Changes to the Charter

The JGC will review this charter annually and recommend any changes to the Board.

	Committee	Date
Approved	Board	December 8, 2021
Reviewed	JGC	November 12, 2021

Electric Reliability and Security for the West

Board of Directors Meeting
Approval Item
Member Advisory Committee Charter
March 13, 2024

Board Resolution

Resolved, that the WECC Board of Directors (Board), acting on the recommendation of the Member Advisory Committee (MAC), at the meeting of the Board on March 13, 2024, approves the Member Advisory Committee Charter as presented and attached.

Background

The MAC Charter was due for an annual review. The charter was reviewed, and proposed changes were made to the Meetings, MAC Subcommittees, Work Groups, and Liaisons sections, as well as minor grammatical edits throughout.

Issues and Risks

The proposed changes further clarify the MAC's role in prioritizing discussions to better advise the Board and better align language with the WECC Bylaws.

Electric Reliability and Security for the West

Member Advisory Committee

Charter

Establishment and Authority

The WECC Member Advisory Committee (MAC) was established in accordance with Subsection 8.1 of the WECC Bylaws.[1]

Purpose and Responsibilities

The purpose of the MAC is stated in Subsection 8.1 of the bylaws.

The MAC is responsible for:

1. The responsibilities specified in Subsections 4.9 and 8.1 of the WECC Bylaws;
2. Giving timely updates and communications to, and getting feedback from, the membership on issues facing WECC to inform and influence the WECC Board of Directors (Board) in its decisions about those issues;
3. Developing a work plan that includes issues identified by the Board and the MAC. Clearly communicating the work plan to the Board and the membership and implementing it to ensure enough time is given to advise on WECC decisions; and
4. Working with the Board to develop and implement the agenda for the Annual Member Meeting.

MAC members also have a duty to represent the interests of their member class, subclass, or international jurisdiction. All MAC members must keep regular contact with the members of their member class, subclass, or jurisdiction as issues are considered by the MAC, and must make reasonable, good-faith efforts to present and discuss both majority and minority opinions from their jurisdiction or member class on matters before the MAC.

Committee Composition and Governance

Membership

The MAC will be composed of representative members as described in Part 8.1.1 of the bylaws.

Selection of Class and International Jurisdiction MAC Members

Selection of MAC members will be such that no WECC member may have more than one member representative serving as a MAC member at the same time. A MAC member may fill only one member position. Other nomination and election procedures beyond those contained

[1] https://www.wecc.org/Corporate/WECC Bylaws.pdf

in this charter may be proposed for an international jurisdiction, class, or subclass. Depending on approval by the WECC general counsel for their submission to the affected WECC members, other procedures may be implemented by majority vote of the members of an international jurisdiction, class, or subclass.

1. **Class MAC Members**

   a. At the Annual Member Meeting, each member class will elect representative class members for the MAC. Each class may divide into two or three subclasses to elect each class's MAC members.

   b. Each WECC member class will have three MAC members. Each class MAC member will serve a three-year term. Terms must be staggered so that, in each class, only one MAC member's term ends each year.

   c. A member class or subclass may establish term limits for MAC class members as determined by the electing class or subclass.

   d. Each class will determine the need for diversity (regarding, for example, geographic and stakeholder issues) within that class, which may lead to the establishment of subclasses. A class may divide into two or three subclasses. Each class must establish or discontinue its subclasses, if any, by majority vote of the members in the class.

   e. Only members of each class or subclass may nominate and vote on candidates for election as MAC member representatives for their respective class or subclass.

   f. A class or subclass candidate need not be a member of the class or subclass, nor an employee of a class or subclass member.

   g. A quorum of a majority of the members of a class or subclass must be represented to elect a MAC member for the class or subclass; election will be by simple majority of votes cast.

   h. If there are more candidates for election than positions to fill, ballots will allow voters to list the candidates in order of preference so their wishes may be honored in case a runoff is needed. Ballots must be counted in the first ballot based on the top choice, or the top two or three choices, if more than one seat is being filled. In any runoff election, ballots must be counted based on the highest preferences indicated for the candidates who remain in the runoff election.

2. **International Jurisdiction MAC Members**

   a. Alberta, British Columbia, and Mexico ("international jurisdiction") must each have a representative MAC member.

b. An international jurisdiction representative MAC member will serve until removal, resignation, or a vacancy is recognized as provided in this charter.

c. Each international jurisdiction may establish, through majority vote of its WECC members, its selection processes, replacement processes, or both for its representative MAC member. An international jurisdiction may change its selection processes, replacement processes, or both by majority vote of its WECC members. Each international jurisdiction will provide to the MAC chair and WECC's corporate secretary a copy of its MAC member selection and replacement processes to the extent it establishes processes that are different from the current process that requires each of the entities of the independent system operator operating as the Alberta Electric System Operator, for Alberta, and British Columbia Hydro and Power Authority, for British Columbia to designate a MAC member from their respective organizations. Until Alberta and British Columbia WECC members have established their selection and replacement processes, these international jurisdictions will continue to have representative MAC members selected by the independent system operator operating as Alberta Electric System Operator for Alberta, and British Columbia Hydro and Power Authority for British Columbia.

d. Having an international jurisdiction MAC member for each international jurisdiction does not restrict WECC members from Alberta, British Columbia, or Mexico from participating in the activities of their WECC member classes or subclasses, including taking part in their class or subclass MAC member elections. However, no international jurisdiction representative may be employed by a WECC member that also employs a MAC member class or subclass representative.

Member Vacancy by Resignation, Removal, or Nonparticipation

1. Any MAC member may resign from their position at any time by giving written notice to the MAC chair. This notice is effective on the date it is given to the MAC chair. A MAC member's nonparticipation in MAC meetings for a period of four consecutive meetings may be considered a vacancy. The MAC chair will decide whether to recognize a vacancy due to nonparticipation.
2. The MAC, international jurisdiction, member class, or subclass may remove a MAC member before completion of the MAC member's term of office as follows:

   a. The MAC may remove any MAC member for gross negligence; gross misconduct; violation of local, state, provincial, or federal law; or gross failure to carry out the duties of a MAC member. Removal will only occur after the affirmative vote of at least two-thirds of the MAC members.

b. A majority of members from any international jurisdiction, class, or subclass may remove one of their MAC members by submitting in writing their request to the MAC chair and WECC's chief executive officer.

   The MAC member's position will be deemed vacant and the vacancy filled according to Section 2c below.

c. In keeping with Selection of Class and International Jurisdiction MAC Members, Section 2b, members from an international jurisdiction may establish a different process from that provided in Section 3 below to address resignation, removal, nonparticipation, or vacancy, but such process will not infringe on the ability of a majority of members from that international jurisdiction to remove their MAC member representative.

3. Whenever a MAC vacancy occurs, the MAC chair will:

   a. Consult with the members of the affected international jurisdiction, class, or subclass for the appointment of an interim MAC member to fill the vacancy as may be required to meet the MAC quorum requirements. The appointee will serve until an election or the process as established by the international jurisdiction members selects a replacement for the rest of the vacated term. Any interim appointment must come from members of the same international jurisdiction, class, or subclass from which the vacancy arose.

   b. Promptly conduct a special election for the class, subclass, or international jurisdiction—as applicable—from which the vacancy arose, allowing a reasonable period to select candidates and to organize such an election.

   c. If a special election chooses a replacement class or subclass MAC member no more than 14 months before the end of the vacated term filled by the special election, the MAC member chosen by the special election will fill the rest of the vacated term and the following regular three-year term as the MAC member representative for the electing class or subclass.

Leadership

1. The MAC chair will manage the committee and its meetings.
2. The MAC vice chair will perform the duties of the MAC chair in the chair's absence or in case of a vacancy in the office of the chair.
3. During a MAC meeting conducting official business, each MAC member represents one vote while present in person as described in Meetings, Section 7 below.
4. At the Annual Member Meeting, after incoming MAC members are duly elected, the MAC will elect the MAC chair and MAC vice chair from the MAC members following the

guidelines in the "Process for Selecting MAC Leadership." The chair and vice chair must be from different classes; must be from different WECC members; and both must not be from related WECC member affiliates (as that relationship is used in Subsection 4.5 of the WECC Bylaws). The MAC chair and vice chair will serve one-year terms, measured from the Annual Member Meeting to the next Annual Member Meeting. In case the chair or vice chair resigns or is removed, the MAC members will, at their next regular or special meeting, whichever is sooner, elect a new MAC chair or MAC vice chair to serve during the rest of the term.

5. An international jurisdiction MAC member may serve as chair or vice chair if the class association of the international jurisdiction MAC member applies to class and affiliate representation restrictions in Leadership, Section 4.
6. WECC staff performs the secretarial duties for the MAC, including preparing meeting minutes for MAC approval.

Meetings

1. All regular business must occur at duly noticed meetings. The MAC will meet in person not less than two times per year, including once in conjunction with the Annual Member Meeting.
    a. The MAC will establish a written regular meeting schedule, which:
        i. Includes time and venue,
        ii. Is available to the WECC members, Directors, and the public through posting on the WECC website.
    b. An initial notice and any subsequent notice of change for the time and place of any regular meeting will be distributed, which may be by email or similar, to all MAC members and WECC Directors, and be posted on the WECC website at least 10 calendar days before the day on which the meeting is held.
2. Meetings and associated agendas should be designed to prioritize discussion of timely matters relevant to the reliability and security of the Western Interconnection, including recent, ongoing, and forthcoming studies or analyses.
    a. Background information on major issues will be issued with enough advance notice to allow review and discussion by the MAC and, where appropriate, engagement with the membership.

b. The MAC will prioritize discussion about member views on major issues to ensure membership concerns are properly heard by the MAC and to support the MAC's responsibility to advise the Board.

c. Administrative concerns will be addressed efficiently to prioritize discussion of major issues.

3. Required documents will be posted to the WECC website at least 10 calendar days before regular meetings. Required documents are:

   a. The agenda of business to be conducted, including those matters on which a vote may be taken, and

   b. All documents proposed to be approved by the MAC at the meeting.

4. Whenever the MAC chair finds (or upon request to the MAC chair from any five MAC members) that there is urgent business needing MAC consideration or action before the next regularly scheduled meeting, a special meeting will be called within at least three-business day notice to all MAC members and WECC Directors, which notice may be by email or similar. WECC website posting of the notice for the meeting with required and supporting documents will occur at least one business day before the special meeting.

5. A MAC quorum must be established before official business can be conducted. Quorum must be a majority of MAC members being present, including at least one MAC member from each member class and one international jurisdiction MAC member, not including subclass designations.

6. A meeting failing quorum may proceed with general discussion and status reports. However, the chair must postpone any agenda items proposed for approval. Official business may begin at any time upon achieving quorum.

7. A decision of the MAC must be by a simple majority vote of those committee members present in person unless otherwise required in this charter or the bylaws.

8. All MAC members may participate in any meeting of the MAC electronically or by telephone, or by any other means that enables simultaneous discussion. Every MAC member participating in a meeting in this way will be deemed present in person at the meeting.

9. Except as provided elsewhere in this charter, all regular and special meetings of the MAC will be open to observation by any WECC member, Director, or any member of the public.

10. If a quorum exists at a meeting, a MAC open meeting may close and reconvene in closed session after an affirmative vote of two-thirds of the MAC members present in the following instances:

a. To receive and discuss confidential attorney-client-privileged information from WECC's counsel; or

b. To receive and discuss any other information that is privileged, confidential, proprietary, trade secret, or protected from public disclosure by law.

11. Closed sessions of the MAC may not be attended by a MAC member under the following circumstances:

    a. When the qualification or performance of the MAC member is being discussed;

    b. When the MAC member is employed by an entity that is or is likely to become a party to the litigation or legal issue being discussed; or

    c. When the MAC chair determines that the MAC member would have a conflict of interest by becoming privy to the privileged or confidential information that is to be presented to or discussed by the MAC in closed session.

12. Any member of the Board may attend a closed session of the MAC unless the topic considered by the MAC concerns the Director.

13. Before adjourning to a closed session, the MAC chair will announce the purpose of the closed session in a way that gives the public an understanding of the general subject matter to be discussed, but that does not reveal privileged, confidential, or sensitive personal information. The closed session will be limited in scope to the publicly stated purpose of the closed session. After the closed session has ended, the MAC chair will give the public a general description of the business conducted during the closed session without breaching the confidentiality of the information used in the session.

14. All MAC members and any others present at a closed session must maintain the confidentiality of the information, discussions, and decisions made in closed session. Unless otherwise required, all MAC members and closed-session attendees must complete a confidentiality agreement provided by WECC's general counsel. The MAC chair must appoint a secretary for the closed session to take minutes of the closed session, which will be delivered to the WECC corporate secretary. The corporate secretary or delegate will keep minutes of the closed session confidential.

15. MAC member activities will be self-funded by WECC members with respect to labor and travel expenses unless otherwise provided by policy or the bylaws.

Electronic Voting

1. The chair may initiate an electronic vote for the MAC if:

    a. The issue has been discussed at least once in a MAC meeting.

b. The resolution to be voted on is drafted as a "yes-or-no" vote.

2. WECC staff will conduct the electronic vote as follows:

   a. Notify all MAC members, by email or similar, at least seven calendar days before the vote will be taken with the resolution to be voted on, all relevant background documents, and the timeline for the vote.

   b. Upon objection of five or more MAC members within seven calendar days of the notice, the electronic vote will not be conducted.

   c. Allow at least three business days for MAC members to vote.

   d. Send one reminder, if necessary, to try to reach a quorum in the vote.

3. The requirements for quorum must be met for the vote to be valid.

MAC Subcommittees, Work Groups, and Liaisons

1. The MAC may create, by majority vote, subcommittees and work groups as necessary to carry out its business affairs. The MAC chair may appoint one or more MAC members or other people to participate in MAC subcommittees or work groups as full voting members or as nonvoting advisory members.

2. Subcommittees will have no definite disbandment requirement and will address recurring business affairs that need MAC action. The MAC will approve a charter defining the purpose and other direction as the MAC sees fit.

3. Work groups of the MAC disband after completing assigned specific tasks as documented in the MAC meeting minutes.

4. Except as provided in Section 6.4.3 of the bylaws, all subcommittee and work group meetings will be open to observation by any WECC member, Director, or member of the public, with the following limitations:

   a. Meeting schedules will be posted on the WECC website with as much notice as practical.

   b. Any public participation will be decided by the subcommittee or work group chair.

   c. The ability of a MAC subcommittee to meet in closed session must be established in advance and contained in the charter approved by the MAC. The subcommittee charter will mandate that each closed meeting be approved in advance by the MAC. All closed meetings will follow charter requirements for a closed meeting.

   d. The ability of a MAC work group to meet in closed session will be established by resolution in advance during a MAC meeting. The resolution will require the meeting to follow charter requirements for a closed meeting.

5. The MAC chair will appoint MAC member liaisons to other committees and liaisons will perform duties as described in the "MAC Liaisons to Other WECC Committees" document.[2] The liaisons will perform the duties described in that document.

Nominating Committee

1. The MAC will select four voting, and two non-voting liaison members for the Nominating Committee following Section 6.4.1 of the bylaws and these provisions:
   a. Each member class and the international jurisdiction MAC members will elect their respective Nominating Committee members. The MAC chair will notify the Board chair of the selections.
   b. MAC members of the Nominating Committee must not be from the same member class.
   c. Among Classes 1, 2, and 3, the class represented on the Nominating Committee as a nonvoting liaison will rotate each year in numerical order, repeating at Class 1 following Class 3.

Reporting

The MAC will report to the Board as described in Section 8.1.2 of the WECC Bylaws.

The MAC chair or designee will attend the Board's meetings to provide advice, clarification, or responses to Directors' questions. The Board and MAC chairs will develop guiding principles and procedures as necessary to ensure open, effective, and efficient dialogue between the MAC and Board.

The Board and MAC chairs may amend those guiding principles and procedures.

Review and Changes to the Charter

The MAC will review this charter annually and recommend any changes to the Board.

	Committee	Date
Approved	WECC Board of Directors	**March 11, 2020**
Reviewed	MAC	**December 2022**

[2] https://www.wecc.org/Corporate/Role%20of%20a%20MAC%20Liaison%20to%20another%20Committee.pdf

WECC
Electric Reliability and Security for the West

Member Advisory Committee

Charter

Establishment and Authority

The WECC Member Advisory Committee (MAC) was established in accordance with Subsection 8.1 of the WECC Bylaws.[1]

Purpose and Responsibilities

The purpose of the MAC is stated in Subsection 8.1 of the bylaws.

The MAC is responsible for:

1. The r~~r~~esponsibilities ~~include those~~ specified in Subsections 4.9 and 8.1 of the WECC Bylaws; ~~and the following:~~
2. Givinge timely updates and communications to, and getting feedback from, the membership on issues facing WECC to inform and influence the WECC Board of Directors (Board) in its decisions about those issues;~~.~~
3. Developing a work plan that includes issues identified by the Board and the MAC. Clearly communicatinge the work plan to the Board and the membership and implementing it to ensure enough time is given to ~~inform and influence~~advise on WECC decisions; and~~.~~
4. Working with the Board to develop and implement the agenda for the Annual Member Meeting.

MAC members also have a duty to represent the interests of their member class, subclass, or international jurisdiction. All MAC members must keep regular contact with the members of their member class, subclass, or jurisdiction as issues are considered by the MAC, and must make reasonable, good-faith efforts to present and discuss both majority and minority opinions from their jurisdiction or member class on matters before the MAC.

Committee Composition and Governance

Membership

The MAC will be composed of representative members as described in Part 8.1.1 of the bylaws.

Selection of Class and International Jurisdiction MAC Members

Selection of MAC members will be such that no WECC member may have more than one member representative serving as a MAC member at the same time. A MAC member may fill

[1] https://www.wecc.org/Corporate/WECC Bylaws.pdf

only one member position. Other nomination and election procedures beyond those contained in this charter may be proposed for an international jurisdiction, class, or subclass. Depending on approval by the WECC general counsel for their submission to the affected WECC members, other procedures may be implemented by majority vote of the members of an international jurisdiction, class, or subclass.

1. Class MAC Members

a. At the Annual Member Meeting, each member class will elect representative class members for the MAC. Each class may divide into two or three subclasses to elect each class's MAC members.

b. Each WECC member class will have three MAC members. Each class MAC member will serve a three-year term. Terms must be staggered so that, in each class, only one MAC member's term ends each year.

c. A member class or subclass may establish term limits for MAC class members as determined by the electing class or subclass.

d. Each class will determine the need for diversity (regarding, for example, geographic and stakeholder issues) within that class, which may lead to the establishment of subclasses. A class may divide into two or three subclasses. Each class must establish or discontinue its subclasses, if any, by majority vote of the members in the class.

e. Only members of each class or subclass may nominate and vote on candidates for election as MAC member representatives for their respective class or subclass.

f. A class or subclass candidate need not be a member of the class or subclass, nor an employee of a class or subclass member.

g. A quorum of a majority of the members of a class or subclass must be represented to elect a MAC member for the class or subclass; election will be by simple majority of votes cast.

h. If there are more candidates for election than positions to fill, ballots will allow voters to list the candidates in order of preference so their wishes may be honored in case a runoff is needed. Ballots must be counted in the first ballot based on the top choice, or the top two or three choices, if more than one seat is being filled. In any runoff election, ballots must be counted based on the highest preferences indicated for the candidates who remain in the runoff election.

2. International Jurisdiction MAC Members

a. Alberta, British Columbia, and Mexico ("international jurisdiction") must each have a representative MAC member.

b. An international jurisdiction representative MAC member will serve until removal, resignation, or a vacancy is recognized as provided in this charter.

c. Each international jurisdiction may establish, through majority vote of its WECC members, its selection processes, replacement processes, or both for its representative MAC member. An international jurisdiction may change its selection processes, replacement processes, or both by majority vote of its WECC members. Each international jurisdiction will provide to the MAC chair and WECC's corporate secretary a copy of its MAC member selection and replacement processes to the extent it establishes processes that are different from the current process that requires each of the entities of the independent system operator operating as the Alberta Electric System Operator, for Alberta, and British Columbia Hydro and Power Authority, for British Columbia to designate a MAC member from their respective organizations. Until Alberta and British Columbia WECC members have established their selection and replacement processes, these international jurisdictions will continue to have representative MAC members selected by the independent system operator operating as Alberta Electric System Operator for Alberta, and British Columbia Hydro and Power Authority for British Columbia.

d. Having an international jurisdiction MAC member for each international jurisdiction does not restrict WECC members from Alberta, British Columbia, or Mexico from participating in the activities of their WECC member classes or subclasses, including taking part in their class or subclass MAC member elections. However, no international jurisdiction representative may be employed by a WECC member that also employs a MAC member class or subclass representative.

Member Vacancy by Resignation, Removal, or Nonparticipation

1. Any MAC member may resign from their position at any time by giving written notice to the MAC chair. This notice is effective on the date it is given to the MAC chair. A MAC member's nonparticipation in MAC meetings for a period of four consecutive meetings may be considered a vacancy. The MAC chair will decide whether to recognize a vacancy due to nonparticipation.
2. The MAC, international jurisdiction, member class, or subclass may remove a MAC member before completion of the MAC member's term of office as follows:

   a. The MAC may remove any MAC member for gross negligence; gross misconduct; violation of local, state, provincial, or federal law; or gross failure to carry out the duties of a MAC member. Removal will only occur after the affirmative vote of at least two-thirds of the MAC members.

b. A majority of members from any international jurisdiction, class, or subclass may remove one of their MAC members by submitting in writing their request to the MAC chair and WECC's chief executive officer.

   The MAC member's position will be deemed vacant and the vacancy filled according to Section 2c below.

c. In keeping with Selection of Class and International Jurisdiction MAC Members, Section 2b, members from an international jurisdiction may establish a different process from that provided in Section 3 below to address resignation, removal, nonparticipation, or vacancy, but such process will not infringe on the ability of a majority of members from that international jurisdiction to remove their MAC member representative.

3. Whenever a MAC vacancy occurs, the MAC chair will:

   a. Consult with the members of the affected international jurisdiction, class, or subclass for the appointment of an interim MAC member to fill the vacancy as may be required to meet the MAC quorum requirements. The appointee will serve until an election or the process as established by the international jurisdiction members selects a replacement for the rest of the vacated term. Any interim appointment must come from members of the same international jurisdiction, class, or subclass from which the vacancy arose.

   b. Promptly conduct a special election for the class, subclass, or international jurisdiction—as applicable—from which the vacancy arose, allowing a reasonable period to select candidates and to organize such an election.

   c. If a special election chooses a replacement class or subclass MAC member no more than 14 months before the end of the vacated term filled by the special election, the MAC member chosen by the special election will fill the rest of the vacated term and the following regular three-year term as the MAC member representative for the electing class or subclass.

Leadership

1. The MAC chair will manage the committee and its meetings.
2. The MAC vice chair will perform the duties of the MAC chair in the chair's absence or in case of a vacancy in the office of the chair.
3. During a MAC meeting conducting official business, each MAC member represents one vote while present in person as ~~defined~~described in Meetings, Section 7 ~~of the WECC Bylaws~~below.

4. At the Annual Member Meeting, after incoming MAC members are duly elected, the MAC will elect the MAC chair and MAC vice chair from the MAC members following the guidelines in the "Process for Selecting MAC Leadership." The chair and vice chair must be from different classes; must be from different WECC members; and both must not be from related WECC member affiliates (as that relationship is used in Subsection 4.5 of the WECC Bylaws). The MAC chair and vice chair will serve one-year terms, measured from the Annual Member Meeting to the next Annual Member Meeting. In case the chair or vice chair resigns or is removed, the MAC members will, at their next regular or special meeting, whichever is sooner, elect a new MAC chair or MAC vice chair to serve during the rest of the term.
5. An international jurisdiction MAC member may serve as chair or vice chair if the class association of the international jurisdiction MAC member applies to class and affiliate representation restrictions in Leadership, Section 4.
6. WECC staff performs the secretarial duties for the MAC, including preparing meeting minutes for MAC approval.

Meetings

1. All regular business must occur at duly noticed meetings. The MAC will meet in person not less than two times per year, including once in conjunction with the Annual Member Meeting.
    a. The MAC will establish a written regular meeting schedule, which:
        i. Includes time and venue,
        ii. Is available to the WECC members, Directors, and the public through posting on the WECC website.
    b. An initial notice and any subsequent notice of change for the time and place of any regular meeting will be distributed, which may be by email or similar, to all MAC members and WECC Directors, and be posted on the WECC website at least 10 calendar days before the day on which the meeting is held.

2. Meetings and associated agendas should be designed to prioritize discussion of timely matters relevant to the reliability and security of the Western Interconnection, including recent, ongoing, and forthcoming studies or analyses.
    a. Background information on major issues will be issued with enough advance notice to allow review and discussion by the MAC and, where appropriate, engagement with the membership.

b. The MAC will prioritize discussion about member views on major issues to ensure membership concerns are properly heard by the MAC and to support the MAC's responsibility to advise the Board.

c. Administrative concerns will be addressed efficiently to prioritize discussion of major issues.

~~2.~~3. Required documents will be posted to the WECC website at least 10 calendar days before regular meetings. Required documents are:

a. The agenda of business to be conducted, including those matters on which a vote may be taken, and

b. All documents proposed to be approved by the MAC at the meeting.

~~3.~~4. Whenever the MAC chair finds (or upon request to the MAC chair from any five MAC members) that there is urgent business needing MAC consideration or action before the next regularly scheduled meeting, a special meeting will be called within at least three-business day notice to all MAC members and WECC Directors, which notice may be by email or similar. WECC website posting of the notice for the meeting with required and supporting documents will occur at least one business day before the special meeting.

~~4.~~5. A MAC quorum must be established before official business can be conducted. Quorum must be a majority of MAC members being present, including at least one MAC member from each member class and one international jurisdiction MAC member, not including subclass designations.

~~5.~~6. A meeting failing quorum may proceed with general discussion and status reports. However, the chair must postpone any agenda items proposed for approval. Official business may begin at any time upon achieving quorum.

~~6.~~7. A decision of the MAC must be by a simple majority vote of those committee members present in person unless otherwise required in this charter or the b~~B~~ylaws.

~~7.~~8. All MAC members may participate in any meeting of the MAC electronically or by telephone, or by any other means that enables simultaneous discussion. Every MAC member participating in a meeting in this way will be deemed present in person at the meeting.

~~8.~~9. Except as provided elsewhere in this charter, all regular and special meetings of the MAC will be open to observation by any WECC member, Director, or any member of the public.

~~9.~~10. If a quorum exists at a meeting, a MAC open meeting may close and reconvene in closed session after an affirmative vote of two-thirds of the MAC members present in the following instances:

a. To receive and discuss confidential attorney-client-privileged information from WECC's counsel; or

b. To receive and discuss any other information that is privileged, confidential, proprietary, trade secret, or protected from public disclosure by law.

~~10.~~11. Closed sessions of the MAC may not be attended by a MAC member under the following circumstances:

a. When the qualification or performance of the MAC member is being discussed;

b. When the MAC member is employed by an entity that is or is likely to become a party to the litigation or legal issue being discussed; or

c. When the MAC chair determines that the MAC member would have a conflict of interest by becoming privy to the privileged or confidential information that is to be presented to or discussed by the MAC in closed session.

~~11.~~12. Any member of the Board may attend a closed session of the MAC unless the topic considered by the MAC concerns the Director.

~~12.~~13. Before adjourning to a closed session, the MAC chair will announce the purpose of the closed session in a way that gives the public an understanding of the general subject matter to be discussed, but that does not reveal privileged, confidential, or sensitive personal information. The closed session will be limited in scope to the publicly stated purpose of the closed session. After the closed session has ended, the MAC chair will give the public a general description of the business conducted during the closed session without breaching the confidentiality of the information used in the session.

~~13.~~14. All MAC members and any others present at a closed session must maintain the confidentiality of the information, discussions, and decisions made in closed session. Unless otherwise required, all MAC members and closed-session attendees must complete a confidentiality agreement provided by WECC's general counsel. The MAC chair must appoint a secretary for the closed session to take minutes of the closed session, which will be delivered to the WECC corporate secretary. The corporate secretary or delegate will keep minutes of the closed session confidential.

~~14.~~15. MAC member activities will be self-funded by WECC members with respect to labor and travel expenses unless otherwise provided by policy or the b~~B~~ylaws.

Electronic Voting

1. The c~~C~~hair may initiate an electronic vote for the MAC if:

   a. The issue has been discussed at least once in a MAC meeting.

b. The resolution to be voted on is drafted as a "yes-or-no" vote.

2. WECC staff will conduct the electronic vote as follows:

   a. Notify all MAC members, by email or similar, at least seven calendar days before the vote will be taken with the resolution to be voted on, all relevant background documents, and the timeline for the vote.

   b. Upon objection of five or more MAC members within seven calendar days of the notice, the electronic vote will not be conducted.

   c. Allow at least three business days for MAC members to vote.

   d. Send one reminder, if necessary, to try to reach a quorum in the vote.

3. The requirements for quorum must be met for the vote to be valid.

MAC Subcommittees, Work Groups, and Liaisons

1. The MAC may create, by majority vote, subcommittees and work groups as necessary to carry out its business affairs. The MAC chair may appoint one or more MAC members or other people to participate in MAC subcommittees or work groups as full voting members or as nonvoting advisory members.

2. Subcommittees will have no definite disbandment requirement and will address recurring business affairs that need MAC action. The MAC will approve a charter defining the purpose and other direction as the MAC sees fit.

3. Work groups of the MAC disband after completing assigned specific tasks as documented in the MAC meeting minutes.

4. Except as provided in Section 6.4.3 of the bylaws, all subcommittee and work group meetings will be open to observation by any WECC member, Director, or member of the public, with the following limitations:

   a. Meeting schedules will be posted on the WECC website with as much notice as practical.

   b. Any public participation will be decided by the subcommittee or work group chair.

   c. The ability of a MAC subcommittee to meet in closed session must be established in advance and contained in the charter approved by the MAC. The subcommittee charter will mandate that each closed meeting be approved in advance by the MAC. All closed meetings will follow charter requirements for a closed meeting.

   d. The ability of a MAC work group to meet in closed session will be established by resolution in advance during a MAC meeting. The resolution will require the meeting to follow charter requirements for a closed meeting.

5. The MAC chair will appoint MAC member liaisons to other committees and liaisons will perform duties as described in ~~following the requirements of~~ the "MAC Liaisons to Other WECC Committees~~.~~" document.[2] The liaisons will perform the duties described in that document.

Nominating Committee

1. The MAC will select four voting, and two non-voting liaison members for the Nominating Committee following Section 6.4.1 of the bylaws and these provisions:
   a. Each member class and the international jurisdiction MAC members will elect their respective Nominating Committee members. The MAC chair will notify the Board chair of the selections.
   b. MAC members of the Nominating Committee must not be from the same member class.
   c. Among Classes 1, 2, and 3, the class represented on the Nominating Committee as a nonvoting liaison will rotate each year in numerical order, repeating at Class 1 following Class 3.

Reporting

The MAC will report to the Board as described in Section 8.1.2 of the WECC Bylaws.

The MAC chair or designee will attend the Board's meetings to provide advice, clarification, or responses to Directors' questions. The Board and MAC chairs will develop guiding principles and procedures as necessary to ensure open, effective, and efficient dialogue between the MAC and Board.

The Board and MAC chairs may amend those guiding principles and procedures.

Review and Changes to the Charter

The MAC will review this charter annually and recommend any changes to the Board.

	Committee	Date
Approved	WECC Board of Directors	**March 11, 2020**
Reviewed	MAC	**December 2022**

[2] https://www.wecc.org/Corporate/Role%20of%20a%20MAC%20Liaison%20to%20another%20Committee.pdf

WECC Board of Directors

Review of December 6, 2023, and January 25, 2024 Closed Sessions

Verbal Update

Ric Campbell, Chair

March 13, 2024

<Public>

WECC

CEO Report

March 13, 2024

Melanie Frye, President and CEO

<Public>

ERO Enterprise Long-term Strategy

- Current ERO Enterprise Long-term Strategy approved in 2019
- Energy industry landscape has evolved significantly in the last five years, creating need to refresh
- Initiating a collaborative process, with opportunity for stakeholder engagement; targeting regional entity and NERC Board action by end of 2024
- Serves as a common starting point for Regional Entity strategic planning efforts

<Public>

Potential Use of Peak Donation Funds

- Western Transmission Expansion Coalition (WestTEC) formed late 2023, facilitated by Western Power Pool
- Inclusive West-wide effort to develop an actionable transmission plan
- Supported by a steering committee, technical task force, and regional engagement committee
- Further exploration is needed to confirm eligibility for use of Peak donation reserve funds
- Draft 2025 BP&B includes $1.5M use of Peak reserve

<Public>

FERC, NERC, and Regional Headlines

FERC

- Willie Phillips named Chair; Allison Clements announced would not seek a second term
- Three Commissioner nominees announced to fill vacancies: Judy Chang, David Rosner, and Lindsay See
- Joint FERC/NERC/Regional Entity review of BPS performance during January winter storms launched; report expected by June

NERC

- February Board meetings
  - Ken DeFontes announced as chair and Suzanne Keenan as vice chair and chair elect
  - Approved Revisions of Rules of Procedure to register inverter-based resources
  - Adopted EOP-012-2, Extreme Cold Weather Preparedness and Operations

Regional

- WestTEC, facilitated by Western Power Pool, populated its Regional Engagement Committee; submitted DOE grant application

<Public>

International Updates

British Columbia

- WECC is conducting three audits and six Self-Certifications in 2024. WECC continues to work closely with the BCUC on various registration, compliance monitoring, and enforcement-related activities.
- The BCUC/WECC Administration Agreement is due for automatic renewal in July 2024, unless amendments are warranted

Alberta

- WECC is conducting one audit in Alberta in 2024

Mexico

- No scheduled audits in Mexico in 2024
- Negotiation of a new agreement continues; however, resolution in 2024 is uncertain
- Discussion of accounting treatment of past-due assessments will be included in 2025 BP&B process

<Public>

2024 Scorecard Dashboard

<Public>

Metrics Legend

The metric fully reached its target

The metric is on track to reach its target in 2024

The metric is behind schedule or at risk of not reaching its target in 2024

The metric will not reach its target in 2024

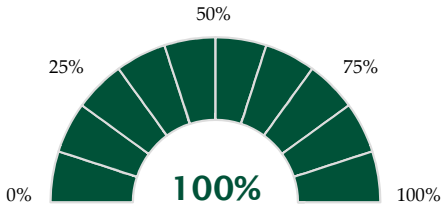
FOCUS AREA	METRICS	INITIATIVES			
		ON TRACK	COMPLETED	AT RISK	NOT COMPLETED
FA1: Innovate and expand risk-based focus in all standards, compliance monitoring, and enforcement actions		4	-	-	-
FA2: Assess and initiate action to mitigate known and emerging risks to the reliability and security of the Western Interconnection		6	-	-	-
FA3: Strengthen engagement with the reliability and security community in the Western Interconnection		4	-	-	-
FA4: Seize opportunities for effectiveness, efficiency, and continuous improvements		3	-	-	-
FA5: Build the capability and culture that enable WECC to deliver on its critical reliability mission		3	-	-	-

Focus Area 1

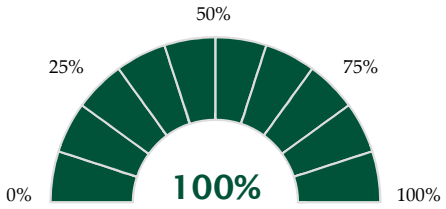
Innovate and expand risk-based focus in all standards, compliance monitoring, and enforcement actions

Outcome 1: Western viewpoints represented and incorporated in standards development

1. Standards drafting teams that have Western representation
   Target: 100%

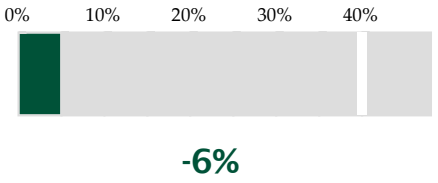


2. Standards under development on which WECC comments
   Target: 100%

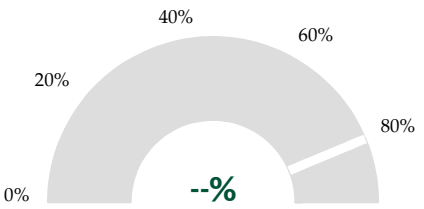


Outcome 2: Effective and efficient implementation of risk-based monitoring and enforcement activities

1. % Change in violation inventory over 2 years old
   Target: -40%



2. COP refreshes completed within six months
   Target: 80%



Initiatives

Outcome 1

- Develop a data-driven process based on feedback from CMEP activities for evaluating effectiveness of Standards and feedback mechanism

Outcome 2

- Enhance CMEP oversight strategies with ongoing and tailored outreach assurance activities
- Implement strategies to promote self-logging that results in 10+ new applicants in 2024
- Develop an outreach and engagement strategy with registration and compliance for GO IBR and GOP IBR registrants

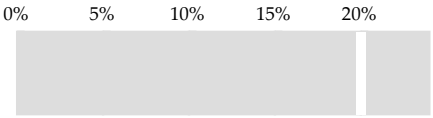
Focus Area 2

Assess and initiative action to mitigate known and emerging risks to the reliability and security of the Western Interconnection

Outcome 1: Clear understanding of emerging risks and mitigation strategies. High-precision information and models

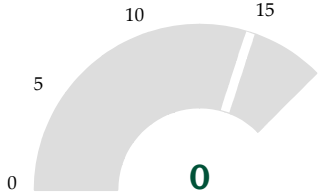
1. Completion of vetted mitigation strategies to address RRPs
   Target: 80%

2. Power flow model shortcomings resolved vs. total identified
   Target: 20%

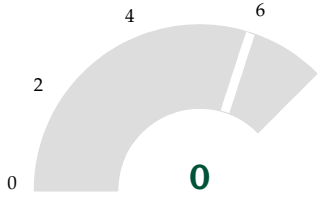


Outcome 2: Use of advanced tools, techniques, and industry subject matter experts to identify system performance trends and vulnerabilities

1. Best practices/guidelines created and risk forums held
   Target: 15



2. Reliability assessments performed
   Target: 6



Initiatives

Outcome 1

- Publish a Risk Report developed by staff with input from the RRC
- Develop data requirements, reporting procedures and roadmap for creating datasets and models for long-term transmission planning
- Implement data management software solution to increase security and modernized data management

Outcome 2

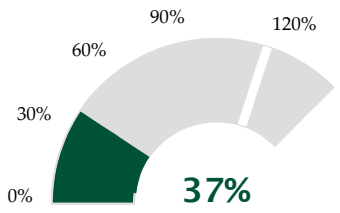
- Develop and publish revised System Performance Data Portal
- Implement improvements in resource adequacy assessments and include transmission impacts
- Enhance in-hour capacity to perform transfer capability reliability assessment

Focus Area 3

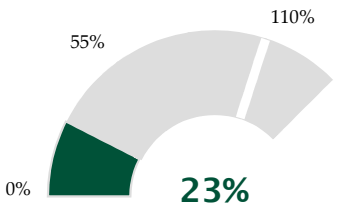
Strengthen engagement with the reliability and security community in the Western Interconnection

Outcome 1: Effective relationships with industry, committee, ERP Enterprise, regulatory, policy and decision-makers, national labs and educational institutions, and the broader reliability and security community

1. Strategic connections/touchpoints
Target: 120% of 2023



2. Requests for input/advice/opinion
Target 110% of 2023



Initiatives

Outcome 1

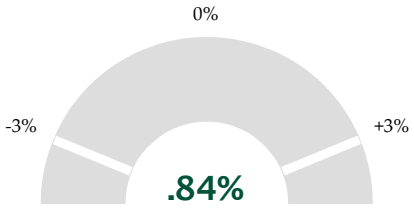
- Implement engagement strategies based on 2023 stakeholder mapping including knowledge gained through the 2023 Annual Meeting
- Improve products on wecc.org by creating digitally dynamic experience with enhanced user interactions
- Develop an outreach strategy targeted to new state officials
- Enhance the development of the RRPs by incorporating risk work from the RRC and the Risk Analysis Department

Focus Area 4

Seize opportunities for effectiveness, efficiency, and continuous improvement

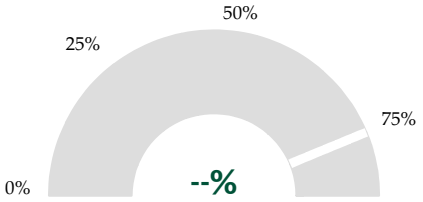
Outcome 1: Deliver of scorecard results, and development of methods/metrics for ongoing evaluation of effectiveness and efficiency

1. % of budget
   Target: +/-3%

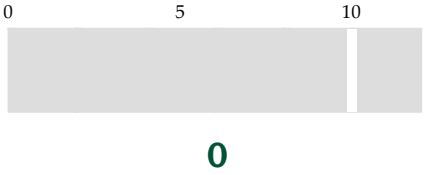


Outcome 2: Continuous improvement of organizational processes and tools to adapt to changes in the industry

1. New WECC products focused on current RRPs or emerging risks
   Target: 75%



2. Processes improved using framework
   Target: 10



Initiatives

Outcome 1

- Increase effectiveness of future two years' budget forecasts via the three-year planning project and refine tools and systems for future two years

Outcome 2

- Further work on improving clarity and alignment on the Denison organizational learning index and build on continuous improvement framework to foster innovative mindset
- Evaluate current human capital management system to identify areas of improvement and develop a needs analysis for a new system

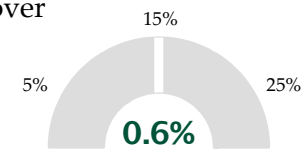
WECC

Focus Area 5

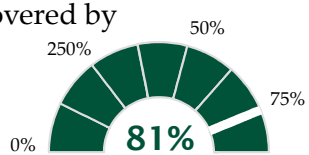
Build the capability and culture that enables WECC to deliver on its critical reliability mission

Outcome 1: WECC is employer of choice, with highly skilled, collaborative, and engaged employees committed to WECC's mission

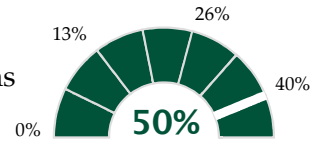
1. Voluntary turnover
   Target: < 15%



2. Critical skills covered by staff expertise
   Target: 75%

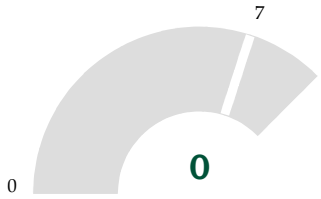


3. Successors and dev. plans for critical positions
   Target: 40%

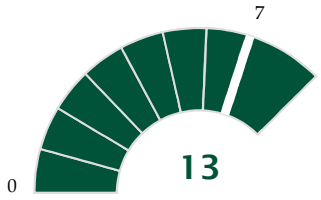


Outcome 2: WECC respected as a partner and trusted to produce high-quality, credible, and influential work

1. New collaborative projects with external partners
   Target: 7



2. External citations of or references to our technical work
   Target: 7



Initiatives

Outcome 1

- Develop and implement dispersed workforce engagement strategy to align with the workforce model
- Evolve the KAMs program and charts by creating formalized and structured competency-based career planning

Outcome 2

- Establish organization-wide rotation program to increase internal training and development opportunities

WECC

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Electric Reliability and Security for the West

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WECC

Reliability and Security Oversight
Report to the WECC Board of Directors

Steven Noess, Vice President, Reliability and Security Oversight

March 13, 2024

Introduction

WECC's Long-Term Strategy identifies five priorities for the Compliance Monitoring and Enforcement Program (CMEP). These priorities inform work to innovate and expand its risk-based focus.

- Strengthen analysis of entity risks, controls, and programs
- Tailor oversight frequency, depth, and tools to assess past compliance and future reliability
- Deploy innovative tactics, techniques, and procedures to increase effectiveness and efficiency
- Share actionable information and expertise with entities as they evaluate and mitigate risk
- Seek opportunities for ERO Enterprise alignment and coordination of practices and outcomes

This report highlights Reliability and Security Oversight achievements, findings, and plans aligned with these priorities during the year.

Strengthen Analysis of Entity Risks, Controls, and Programs

WECC continues to refine Inherent Risk Assessment (IRA) and Compliance Oversight Plan (COP) processes and tools to build on their value proposition and role in oversight planning. Enhancements introduced throughout 2023 help WECC differentiate monitoring based on risk and reflect entity investment in programs and controls.

Greater understanding of entity risks, controls, and programs inform how WECC interacts with an entity in multiple ways, including determining eligibility for self-logging as well as the level and types of evidence and information reviewed during monitoring engagements. WECC continues to build stronger interfaces between CMEP components to increase this understanding. For example, measurements of how entities identify and remediate risk established as part of self-logging review can also affect the entity's COP and monitoring objectives.

Tailor Oversight Frequency, Depth, and Tools

Effective in 2024, WECC is restructuring the entity monitoring function to align with inherent risk. The new structure allows more effective use of tools and expertise tailored to entity footprint and complexity of operations. Both entities and WECC benefit from more consistent and harmonized interactions, promoting greater understanding of individual entity compliance programs and internal controls and increased opportunity for outreach as a monitoring and risk mitigation tool. The structure also increases collaboration opportunities across disciplines to address physical security, cold weather preparedness, inverter-based resource risks, and other priority topics.

Deploy Innovative Tactics, Techniques, and Procedures

WECC is refining the annual self-certification process to strengthen alignment with risk priorities and integrate with other monitoring and enforcement activities. Scopes for the 2023 monitoring year were

informed by entity COP risk categories and areas of focus from the CMEP Implementation Plan and regional risk register. WECC will use annual self-certification results to determine future monitoring, including spot checks or audits as needed.

Enhancement of enforcement processes and tools continued in 2023, with a focus on integrating risk assessment and performance measures across CMEP areas. In 2024, WECC will expand mitigation verification sampling to ensure the level of review is commensurate with risk. Integration of self-logging program eligibility with other CMEP performance measures will build connections between monitoring and enforcement and support a holistic entity experience.

Share Actionable Information and Expertise

Enforcement fundamentals training initiated in 2023 will continue in 2024. This training helps entities successfully navigate the enforcement process and engage more effectively with WECC, with an ultimate goal of making enforcement processing more efficient. Two sessions planned in Arizona and California target local entity compliance staff. WECC will also hold sessions as part of the March Reliability & Security Workshop and grid fundamentals training in August.

Through the industry subject-matter expert (ISME) program, WECC invites industry experts to observe monitoring engagements and share perspectives and input. This supports increased resource flexibility while fostering entity collaboration and a culture of reliability. WECC is preparing to launch the program in the coming months, following the successful pilot in 2023.

Seek Opportunities for Alignment

WECC piloted IRA and COP functionality in Align in 2023 in conjunction with similar efforts across the ERO Enterprise. WECC will complete all IRAs and COPs in Align starting in 2024 based on input from the pilots. This will facilitate information sharing between entities, WECC, and NERC, and help support the role of these tools in oversight planning and analysis.

The ERO Enterprise is launching efforts in 2024 to enhance consistent promotion and execution of self-logging across Regions. WECC will share input from ongoing self-logging expansion as part of this effort to help increase the visibility and usefulness of the program.

WECC publishes a quarterly summary of Reliability and Security Oversight data and trends. Refer to the current report for updates on registration, monitoring, risk analysis, and enforcement.

<Public>

WECC

Reliability and Security Oversight Update

March 13, 2023

Steven Noess

Vice President, Reliability and Security Oversight

<Public>

Enforcement and Mitigation

- Entity-staff engagement
  - Fundamentals training
- Process enhancements
  - Mitigation sampling and evidence
  - Casework tracking tools

<Public>

Self-Logging

- CMEP integration
- Program promotion
  - ERO Enterprise collaboration
- Participant engagement

Quarter	Applications Received	Applications Reviewed	Active Participants
Q1 2023	1	--	7
Q2 2023	2	1	8
Q3 2023	1	2	10
Q4 2023	3	1	11
Q1 2024 As of 1/25	--	2	13
Total	7	4	--

<Public>

Inverter-Based Resources

- ROP revisions
- Registration analysis
- GO/GOP outreach
- Cross-functional coordination

IBR Work Plan Milestones

Months 1-12
Revise registration-related sections of Rules of Procedure (ROP), including stakeholder feedback. Seek NERC Board and FERC approval.
Months 13-24
Identify and communicate with unregistered IBR owners and operators. Develop approach to establish applicable standards.
Months 25-36
Complete registration activities for IBR entities, including technology updates, training, and onboarding. Notify entities of registration and compliance responsibilities.

<Public>

Cold Weather

- Interconnection performance
- Standards updates
  - EOP-012-1 (eff. 10/1/2024)
  - EOP-012-2
- Monitoring plans
- Outreach and engagement

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WECC

Electric Reliability and Security for the West

www.wecc.org

Western Renewable Energy Generation Information System Report to the WECC Board of Directors

Andrea Coon, Director, WREGIS

March 13, 2024

Background

The Western Renewable Energy Generation Information System (WREGIS) was created following a years-long stakeholder process that had more than 400 participants from across the West. Upon request from a WECC Board member, WECC agreed to house WREGIS under a contract with the California Energy Commission (CEC), in which the CEC would provide backstop funding for WREGIS for the first few years of operation. WREGIS went live on June 25, 2007, and started registering customers and generators from around the Western Interconnection as well as in non-WECC territory in states bisected by WECC.

On March 31, 2012, the contract with the CEC expired, and WECC made the decision to fold WREGIS into WECC. WREGIS has been operating as a department in WECC since that time, providing tracking services for both program compliance and voluntary purposes. WREGIS tracks mainly renewable electricity, but also tracks renewable thermal energy produced by co-generators in the state of Oregon for compliance purposes.

Overview

Current Program Information and data

Since its inception, participation in WREGIS has increased steadily in every measure, including customers, registered generators, and certificate activity. As of January 31, 2024, 14 programs in seven states and provinces use WREGIS for compliance. Multiple jurisdictions within WECC's footprint have used WREGIS for their Renewable Portfolio Standards (RPS) compliance for several years, including Alberta, California, Colorado, Nevada, New Mexico, Oregon, and Washington. The number of RPS programs we support has decreased in past years, as Montana repealed their RPS in 2021, but the overall number of programs has increased as WREGIS also supports carbon-related programs in Alberta, California, Oregon, and Washington. Many entities across the West also use WREGIS for voluntary purposes, such as "greening" electricity profiles.

As of the end of January, WREGIS provides services to 1,280 organizations spread over 47 states and territories, four Canadian provinces, and several other areas around the world. These organizations fall into three categories: Customers, Qualified Reporting Entities (QRE), and Program Administrators (PA).

- Customers are entities that need to generate, transfer, buy, sell, or use a Renewable Energy Certificate (REC). This is the only group that pays to use WREGIS.
- QREs can be Balancing Authorities and non-Balancing Authorities, and the entities' sole purpose is to provide primary meter data for registered generators.
- PAs determine eligibility and control compliance or voluntary programs; these are generally state or provincial representatives for compliance programs.

Over the years, the breakdown among these categories has remained consistent, with Customers representing approximately 89% of all organizations, QREs making up 10%, and PAs making up the remaining 1%.

Generators are registered individually or in aggregate groups, if eligible, depending on size and other considerations. At the end of January 2024, more than 6,850 (60%) stand-alone generators were registered. There were also more than 4,600 (40%) Distributed Generation Groups (DGG) registered that contain more than 212,000 customer-sited generators under 50 kW in size. Generators of this size are generally roof-top solar on residences, although we do see some on small commercial facilities.

Activity and Growth Trends

Extreme growth of the program continues as we see an increasing number of programs using WREGIS and as RPS compliance requirements increase. California RPS will increase from 33% of retail load to 44% of retail load by the end of 2024. At the current 33% level, the California RPS accounts for more than half of WREGIS volume. An increase of 1/3 this year will trigger significant registration and certificate activity as more generators come online to comply with the standard. Nevada and New Mexico also have increases in their RPS obligations in 2024 and 2025. Utilities in Oregon also have new compliance obligations in 2025, and Utah's RPS program becomes effective in 2025. All of these state program changes will significantly increase the number of organizations and generators participating in WREGIS.

We also see more non-traditional participation. Early adopters were large utilities and load-serving entities, followed by independent energy producers and others participating in traditional energy markets. Over the last few years, we have more participants like large industrial or commercial entities, interested in lowering carbon footprints and voluntarily "greening up" their energy profiles. There is also an increase in smaller generators participating in WREGIS and selling RECs into the market. Currently, more than 60% of registered stand-alone generating units have a nameplate capacity of less than 1 MW. Generators of this size are generally roof-top or free-standing solar in commercial or industrial spaces such as on Costco or Walmart roofs or on farms.

WREGIS also tracks an enormous and rapidly increasing number of distributed generators with a residential size under 50 kW through our DGG program. WREGIS tracks more than 205,000 of these units, an increase of over 40,000 (25%) from the prior year, with more to come. There are currently 25 Customers with more than 4,600 DGG registrations in WREGIS, and more than 67% of the groups belong to two Customers. Due to the size restrictions on these groups, the average group is 230 kW and contains 53 individual units.

Upcoming Initiatives

In the past couple of years, many states within the Western Interconnection have passed legislation that will require zero-emissions, 100% renewable standards, or significantly increase renewable adoption

over the next 15 years. With these new laws, we anticipate massive growth in the number of generators in WREGIS.

In 2023, our major goal was the replacement of the WREGIS platform software system provided by a new vendor. As with all software implementations, we experienced some issues during and after implementation. We continue to work with our software vendor to resolve issues so we can provide our customers with the level and quality of service that they expect.

In 2024, our focus is on building and improving relationships with our customers. We will restart our training program, which we paused while we worked through the software issues and conducting stakeholder outreach with the programs using WREGIS for compliance.

In the Inflation Reduction Act of 2022, significant dollars were allocated for advancement of hydrogen technology. Currently, the federal agencies involved envision using existing tracking systems to track hydrogen production and the associated use of renewable energy on an hourly basis. California is actively working on legislation that would define California's program in this area. We anticipate that WREGIS will be asked to participate, since we already track renewable energy data, as well as to track some renewables on an hourly basis.

Other emerging topics that could affect WREGIS are hourly REC tracking (non-hydrogen), all generation tracking currently being deliberated in market discussions, and greenhouse gas accounting.

WREGIS continues to serve an important role for stakeholders in the Western Interconnection by providing high quality data that is used to prove both compliance and market claims. While the future is never certain, increasing usage of renewable energy and the requirements in laws or rules to track this energy point to the need for WREGIS services to continue for stakeholders for the foreseeable future.

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WECC

WREGIS Update

March 13, 2024

Andrea Coon

Director, WREGIS

<Public>

WREGIS by the Numbers

- As of January 31, 2024:
  - WREGIS is used for compliance by 14 programs in seven states and provinces
  - There are 1,280 (12% increase) active organizations from 45 states, four Canadian provinces, two U.S. territories, and four other countries
  - There are 11,488 approved generating units
    - 6,859 Stand-alone generators (10% increase)
    - 4,629 Distributed Generation Groups (DGG) that account for nearly 213,000 customer-sited solar projects under 50 kW in nameplate (25% increase)

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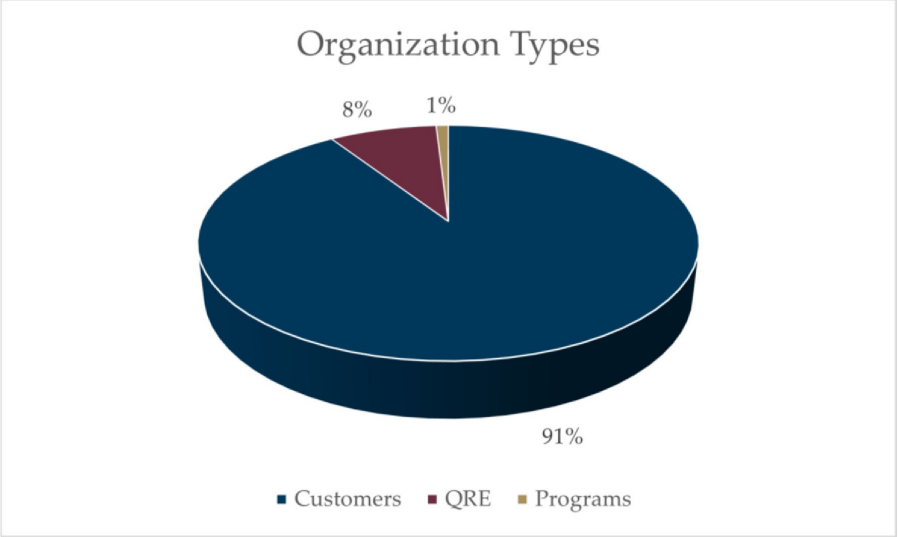
WREGIS Customers by Organization Type

- 1162 REC holding/producing organizations
- 106 QRE (data reporting) organizations
- 12 Program Administrators
  - Several programs choose to have WREGIS provide support without having an active organization registered



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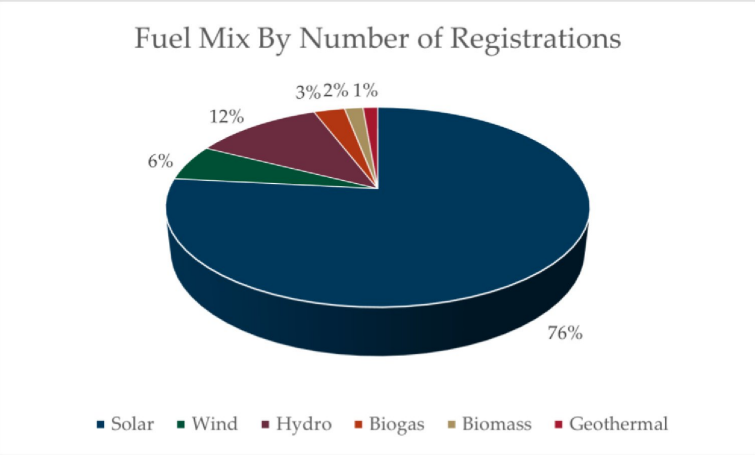
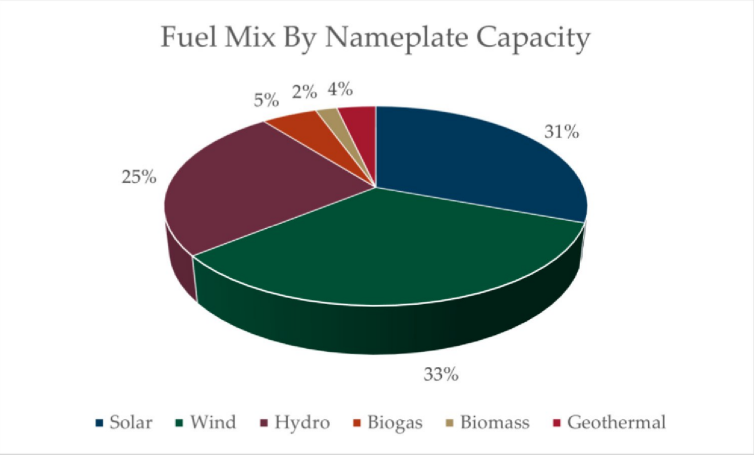
Stand-alone Generating Units





- 5,262 Solar
- 810 Hydro
- 414 Wind
- 192 Biogas
- 94 Geothermal
- 83 Biomass

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Distributed Generation Groups

- 4,627 DGGs contain nearly 213,000 individual units
  - 25% increase in registered units in 2023 (41,000)
- More than 1,250 MW of registered nameplate capacity
- 25 customers participate
- Looking forward:
  - 51,000 additional units being registered
  - Eight new customers in pre-approval stage

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Increases in Compliance Needs

- Carbon standards using RECs as instruments
- Carbon program participation in Alberta, California, Oregon, and Washington
- RPS requirements increase in 2024/2025 in four states including the largest participant, California
  - Could trigger 20% increase in activity

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Collaboration within WECC

- WREGIS provides data and personnel resources to support various projects across WECC
  - Provided data for a distributed solar “heat map” to show where there is significant residential or smaller commercial solar
  - WREGIS staff will participate in the Inverter Based Resources group

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What's Next for WREGIS?

- Preparing for massive growth
  - States moving to 100% renewable standards
  - RPS compliance in the Western Interconnection increases
- Staying abreast of emerging industry topics and trends
  - Hydrogen tracking and matching to RECs under the Inflation Reduction Act
  - Data granularity (hourly) for hydrogen tracking and load matching
  - All generation tracking and associated greenhouse gas tracking
- Continuing to seek opportunities to support WECC products and contribute to reliability and security

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www.wecc.org

Member Advisory Committee
Report to the WECC Board of Directors

Michele Beck, MAC Chair

March 13, 2024

MAC Report to the Board—March 13, 2024

Highlights

- Charter Update
- December MAC Workshop
- MAC Budget Subcommittee and Nominating Committee work underway
- Discussions focused on key reliability issues

Purpose

The Member Advisory Committee (MAC) advises the Board of Directors (Board) on any matters the Board requests the committee to evaluate or consider, and advises the Board on policy, business planning, and budgetary matters as the committee deems appropriate.

WECC Board Action Items

Approve charter changes, which add guidelines for selecting agenda items reflecting recently agreed upon changes and include minor clean-up edits.

Current Year Goals

- Review and analyze key reliability issues, providing advice to the Board as warranted.
- Review and provide recommendations on the WECC budget.
- Participate in the Nominating Committee.

Major Accomplishments and Planned Activities

1. **December MAC workshop**

   The MAC held its annual workshop, which was an excellent opportunity for new and existing MAC members to get to know each other and discuss MAC operations and priorities. The discussions focused on the MAC perspective on stakeholder engagement, including its communications with the broader community of MAC members, and the MAC role with respect to risk priorities.

2. **Review and analysis of key reliability issues**

   The MAC is focusing its work on key reliability issues by continuing with streamlined agendas and having a renewed focus on reports from MAC liaisons to technical committees.

3. **Planned activities**

   The work of the MAC Budget Subcommittee and MAC member participation in the Nominating Subcommittee is underway. Both committees will present recommendations in the spring.

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Member Advisory Committee

March 13, 2024

Michele Beck, MAC Chair

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Member Advisory Committee Report

- Recent Accomplishments
  - Charter update
  - December Workshop
- Ongoing Work
  - Budget Subcommittee
  - Participation in Nominating Committee
  - Focus on key priority issues

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Board of Directors

Western Interconnection Regional Advisory Board

Verbal Update

Mary Throne, WIRAB Chair

March 13, 2024

WECC Board of Directors
Finance and Audit Committee

Verbal Update

Gary Leidich, Chair

March 13, 2024

WECC Board of Directors
Governance Committee

Verbal Update

Felicia Marcus, Chair

March 13, 2024

WECC Board of Directors
Human Resources and Compensation Committee

Verbal Update

Shelley Longmuir, Chair

March 13, 2024

WECC Board of Directors
Nominating Committee

Verbal Update

Richard Woodward, Chair

March 13, 2024

WECC Standards Committee
Report to the WECC Board of Directors

Ian McKay, Chair

Steve Rueckert, Director of Standards

March 13, 2024

Highlights

Project WECC-0153 WECC Interchange Criteria Consolidation was posted for comment for a third time—page 3.

Project WECC-0154 VAR-001-5, Voltage and Reactive Flow WECC Regional Variance Standard project is complete—page 3.

Strategic Purpose

The purpose of the WECC Standards Committee (WSC) is to oversee the implementation of the WECC Reliability Standards Development Procedures (Procedures).

The WSC will—

1. Maintain and administer the Procedures, including:
    a. Due process,
    b. Balloting,
    c. Annual review of the WECC Glossary of Terms and Naming Conventions, and
    d. Meeting the quality control attributes of FERC Order 672.
2. Administer each Standard Authorization Request (SAR) to ensure the project:
    a. Is within WECC's authority to develop,
    b. Is appropriate for development by WECC, and that it,
    c. Remains within the scope of the SAR, as may be changed by the WSC.
3. Monitor and manage drafting teams, including:
    a. Team selection, and
    b. Provision of general oversight and guidance to include a description and explanation of the project to be drafted and time prioritization where needed.
4. Monitor and manage the development of projects created per the Procedures, including prioritization.
5. Perform other duties assigned by the Board of Directors (Board).

WECC Board Action Items

The WSC seeks approval of revisions to WECC Regional Reliability Standard BAL-004-WECC-3, resulting in BAL-004-WECC-4, and revisions to WECC Regional Criterion PRC-001-WECC-CRT-2.1, resulting in PRC-001-WECC-CRT-3

BAL-004-WECC-4 Automatic Time Error Correction (ATEC) is designed to maintain frequency in the Western Interconnection and ensure that time error accumulation via Primary Inadvertent Interchange payback is conducted in a way that does not negatively affect reliability. The proposed revisions address a concern identified by a member of the WECC Compliance Monitoring and Enforcement team

related to Balancing Authorities that do not have a full year's worth of operating data as well as creating a requirement to use the Interchange Software as the sole source of data to calculate ATEC. They also include clarifying language in the requirements and update the document to NERC's newest template. The revisions also address the mandatory five-year review process. A clean version as well as a redline version showing the revisions from the currently approved version is included in the Board packet. The proposed Regional Reliability Standard received a 100% quorum and a 100% weighted segment approval of the Ballot Pool. If this Regional Reliability Standard is approved by the Board, it will be sent to NERC for NERC Board of Trustees adoption and for submission to FERC for approval.

PRC-001-WECC-CRT-3 Governor Droop is designed to facilitate primary frequency support in the Western Interconnection. This project was started to meet the mandatory five-year review process. No change was made to the single Requirement and single Measure in this Regional Criterion. However, changes were made to the Facilities, Background, and Overview sections to clarify that the Criterion applied to inverter-based resources. The proposed Regional Criterion received a 100% quorum and a 100% weighted segment approval of the Ballot Pool. If this Regional Criterion is approved by the Board, it will become effective on October 1, 2024.

Current Year Goals

- Keep the WECC Standards Development Process moving forward by overseeing the drafting teams.
- Act on requests and recommendations from the drafting teams.
- Review the WSC Charter and WECC Procedures to revise and improve them.

Major Accomplishments and Planned Activities

1. **Project WECC-0153—INT Consolidation Criterion.**

   The third draft of the proposed consolidation of 11 WECC Interchange (INT) criteria into a single INT Criterion was posted for a third-time comment period from January 26 to February 26, 2024. The drafting team will meet after the close of the comment period to review comments received and decide whether further drafting is required or whether the document should be posted for ballot.

2. **Project WECC-0154—Voltage and Reactive Flow WECC Regional Variance.**

   The purpose of this project is to address the required five-year review. The SAR for this project was approved by the WSC at its December 2023, meeting. No outstanding issues were identified in the SAR. The drafting team met once and concluded that no changes were

necessary. A notice will be provided to NERC indicating the mandatory five-year review has been completed and no changes are necessary.

<Public>

WECC

WECC Standards Committee

March 13, 2024

Ian McKay

WSC Chair

<Public>

Approval Items

- BAL-004-WECC-4 Automatic Time Error Correction
  - Regional Reliability Standard
- PRC-001-WECC-CRT-3 Governor Droop
  - Regional Criterion

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BAL-004-WECC-4

- Designed to maintain Western Interconnection frequency and ensure that time error accumulation via Primary Inadvertent Interchange payback is conducted in a way that does not negatively affect reliability
- Addresses a gap in the old version for Balancing Authorities that do not have a full year of operating data
- Clarifying language and template updates
- 100% quorum and 100% weighted segment approval

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PRC-001-WECC-CRT-3

- Designed to facilitate primary frequency support in the Western Interconnection
- No changes to the Requirement or Measure
- Revised the language to clarify that the Criterion applies to inverter-based resources
- 100% quorum and 100% weighted segment approval

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Board of Directors Meeting
Approval Item

BAL-004-WECC-4, Automatic Time Error Correction

March 13, 2024

Board Resolution

Resolved, that the WECC Board of Directors (Board), acting on the recommendation of the WECC Standards Committee (WSC) at the meeting of the Board on March 13, 2024, approves BAL-004-WECC-4, Automatic Time Error Correction Regional Reliability Standard as presented and attached.

Background

A clean and a redline version of the proposed Regional Reliability Standard are included in the Board package.

This project was initiated to address a concern noted by the WECC Compliance and Monitoring and Enforcement team and to complete the mandatory five-year review process. The proposed revisions expand the existing Background section, create a requirement to use the Interchange Software, address the treatment of Balancing Authorities that do not have a full year of operating data, add clarifying language, and update the document to NERC's newest template.

Issues and Risks

If the proposed revisions to the Regional Reliability Standard are not approved, the issue of a Balancing Authority without a full year of operating data being non-compliant will remain in the Regional Reliability Standard.

Standard Development Narrative

This section is maintained by the drafting team during the development of the standard and will be removed/updated as needed during the development process.

Description of Current Draft

Posting 4, Proposed Clean, updates this document to NERC's most current Results-Based Template.

General changes include:

- Section A. Introduction
  - At 4.2.1. redundant language was removed.
- Section B. Requirements and Measures
  - VRFs and Time Horizons were updated/added as needed.
  - At M2, the word "prescribed" was replaced with "allowed."
- Section C. Compliance
  - This entire section was updated to match NERC's templated boilerplate.
- Table of Compliance Elements (TOC)
  - The TOC no longer matched NERC's newest template. The TOC was deleted and replaced with the most current Violation Severity Level table. The new table was updated to reflect the proposed Requirements and Measures.
- Section G. Rationale
  - The Rationale section was updated, renumbered to match the proposed clean Requirements, updated for readability, and relocated to the end of the document to match NERC's most recent template.

A. Introduction

1. **Title:** Automatic Time Error Correction

2. **Number:** BAL-004-WECC-4

3. **Purpose:** To maintain Western Interconnection (WI) frequency, and ensure that time error accumulation via Primary Inadvertent Interchange (PII) payback is conducted in a manner that does not result in a negative impact on reliability.

4. **Applicability:**

   4.1. Functional Entities:

   4.1.1. Balancing Authorities operating synchronously within the WI

   4.2. Compliance Waiver:

   4.2.1. See Section C., Compliance, 1.4 Compliance Waiver, for applicability during periods of Interchange Software unavailability.

5. **Effective Date:** The first day of the second quarter following regulatory approval.

6. **Background:**

   Pre-2000 (prior to mandatory Standards), the Western Electricity Coordinating Council (WECC) operated using the Minimum Operating Reliability Criteria (MORC). Per MORC Section D. Time Control, Control Areas were required to assist in maintaining frequency at or near 60.0 Hz, as prescribed in the Western System Coordinating Council (WSCC)[1] Procedure for Time Error Control (PTEC). Various versions of the PTEC predate 1980.

   In February 2003, the WECC Automatic Time Error Correction (ATEC) Procedure (Procedure) became effective for all Balancing Authorities in the WI. The original intent of the Procedure was to minimize the number of manual Time Error Corrections in the WI.[2]

   In June 2007, the Procedure was translated into BAL-STD-004-1, Time Error Correction, followed by BAL-004-WECC-1 through 3, Time Error Correction.[3] BAL-004-WECC-1 required Balancing Authorities within the WI to maintain Interconnection frequency within a predefined frequency profile, and to ensure that Time Error Corrections would not result in a negative impact on Interconnection reliability.

   In September 2009, in response to Federal Energy Regulatory Commission (FERC) Order 723, WECC received Standard Authorization Request (SAR) WECC-0068 requesting

[1] WECC began in 1967 as the Western Systems Coordinating Council (WSCC), a group of 40 power systems with a common goal of providing reliable power to the public whom they served. WECC was founded March 22, 1994.

[2] The Procedure provided for cost assignment and equitable payback of Inadvertent Interchange, not otherwise addressed in BAL-004-4, Time Error Correction.

[3] See Version History Table.

modification of BAL-004-WECC-1. Modifications were effective April 1, 2014, creating BAL-004-WECC-2. BAL-004-WECC-2 introduced two performance metrics: 1) in Requirement R1, a 150% metric, and 2) in Requirement R2, a 90-day metric. Neither of these metrics are supported by technical studies. They were included in BAL-004-WECC-2 as a compromise during drafting.

In May 2018, FERC approved minor revisions to BAL-004-WECC-2 as part of WECC SAR WECC-0124, effective October 1, 2018, creating BAL-004-WECC-3.[4]

In 2023, this Standard was reviewed as part of the WECC SAR WECC-0147. The drafting team noted: 1) Version 3, Requirement R5 migrated from the pre-2000 MORC without initial or subsequent technical support, and 2) R5 addresses capabilities of Automatic Generator Control (AGC) found in no other Standard, without mandating its use or stating how that capability interfaces with ATEC. R5 is retained herein until it can be properly addressed per a NERC Standard Authorization Request.

7. Standard-Only Definition:

7.1 Interchange Software:

This Standard uses the Standard-Only term "Interchange Software" to mean:

The single electronic confirmation tool identified by the Western Electricity Coordinating Council (WECC), or its successor, to be used by all Balancing Authorities throughout the Western Interconnection (WI), that serves as the primary means for confirmation and creation of the final record of Scheduled Net Interchange (NI_S[5]) and Actual Net Interchange (NI_A[6]), during all periods when the Interchange Software is available.

7.2. ATEC:

This Standard uses the term "ATEC" as defined in the WECC Regional Definitions section of the NERC Glossary of Terms Used in Reliability Standards.

[4] FERC Docket No. RD18-2-000. Effective Date October 1, 2018.

[5] Previously called Net Scheduled Interchange

[6] Previously called Net Actual Interchange

B. Requirements and Measures

R1. Each Balancing Authority shall use the Interchange Software as the sole source of data to calculate its ATEC. [Violation Risk Factor: Severe] [Time Horizon: Operations Assessment]

M1. Each Balancing Authority will have evidence that it used the Interchange Software as the sole source of data to calculate its ATEC, as required in Requirement R1.

Evidence may include, but is not limited to production of a corporate attestation or operating procedure indicating use of the Interchange Software as the sole source for calculating ATEC.

R2. Each Balancing Authority shall operate its system such that, the month-end absolute value of its On-Peak and Off-Peak, accumulated Primary Inadvertent Interchange (PIIaccum), as calculated by the Interchange Software, are each individually less than or equal to 150% of the previous calendar year's integrated hourly peak demand where peak demand is total load plus total exports. *[Violation Risk Factor Medium:] [Time Horizon: Operations Assessment]*

2.1. For new Balancing Authorities, the peak demand will be the maximum hourly integrated peak demand as it increases during the first year of operation.

M2. Each Balancing Authority will have evidence that it operated its system such that the month-end absolute value of its On-Peak and Off-Peak, accumulated Primary Inadvertent Interchange (PIIaccum), as calculated by the Interchange Software, are each individually less than or equal to 150% of the previous calendar year's integrated hourly peak demand where peak demand is total load plus total exports, average load in those hours, as calculated by the Interchange Software, per Requirement R2, or per the exception allowed in R2.1.

R3. Each Balancing Authority shall, upon discovery of an error in its On-Peak or Off-Peak Inadvertent Interchange calculation, recalculate and correct the Inadvertent Interchange values within 90 days from the time the error is discovered. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M3. Each Balancing Authority discovering an error in its On-Peak or Off-Peak Inadvertent Interchange calculation will have evidence that it recalculated and corrected the Inadvertent Interchange values, within 90 days from the time the error is discovered, as required in Requirement R3.

Evidence may include, but is not limited to:

- Screen shots from the Interchange Software;
- Screen shots from the Balancing Authority's internal software functions such as internal databases, spreadsheets, and displays;
- Dated archive files; and
- Historic data.

R4. Each Balancing Authority shall keep ATEC in service, with an allowable exception period of less than or equal to an accumulated 24 hours per calendar quarter for

ATEC to be out of service. This period is separate from any period during which the Interchange Software was unavailable. *[Violation Risk Factor: Medium] [Time Horizon: Same-day Operations]*

M4. Each Balancing Authority will have evidence that it kept ATEC in service as required in Requirement R4, subject to the allowable exceptions provided.

Evidence may include, but is not limited to:

- Screen shots from the Interchange Software;
- Screen shots from the Balancing Authority's internal software functions such as internal databases, spreadsheets, and displays;
- Dated archive files; and
- Historical data.

R5. Each Balancing Authority shall be able to change its Automatic Generation Control (AGC) operating mode to correspond to current operating conditions. *[Violation Risk Factor: Medium] [Time Horizon: Real-Time Operations]*

M5. Each Balancing Authority will have evidence that its AGC is able to change operating modes to correspond to current operating conditions, as required in R5.

Evidence may include, but is not limited to:

- Screen shots from Energy Management System; and
- Demonstration using an off-line system.

R6. Each Balancing Authority shall upload hourly Actual Net Interchange (NI_A) to the Interchange Software no later than 50 minutes after each hour. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M6. Each Balancing Authority will have evidence that it uploaded hourly Actual Net Interchange (NI_A) to the Interchange Software no later than 50 minutes after each hour, as required in Requirement R6.

Evidence may include, but is not limited to:

- Screen shots from the Interchange Software;
- Screen shots from the Balancing Authority's internal software functions such as internal databases, spreadsheets, and displays;
- Dated archive files; and
- Historical data.

R7. Each Balancing Authority making a month-end adjustment shall input that value as part of its Actual Net Interchange (NI_A). *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M7. Each Balancing Authority making a month-end adjustment will have evidence that it input that value as part of its Actual Net Interchange (NI_A), as required in Requirement R7.

R8. Each Balancing Authority making a month-end adjustment shall ensure that value is added to its accumulated Primary Inadvertent Interchange. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M8. Each Balancing Authority making a month-end adjustment will have evidence that the value was added to its accumulated Primary Inadvertent Interchange, as required in Requirement R8.

C. Compliance

1. Compliance Monitoring Process

1.1. Compliance Enforcement Authority:
As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority" means NERC or the Regional Entity in their respective roles of monitoring and enforcing compliance with the NERC Reliability Standards.

1.2. Evidence Retention:
The following evidence retention period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full-time period since the last audit.

The applicable entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority to retain specific evidence for a longer period of time as part of an investigation.

- Each Balancing Authority in the WI shall keep the following records for the preceding calendar year (January – December) plus the current calendar year:
  - Its values for PIIhourly, PIIaccum (On-Peak and Off-Peak), ΔTE, and any month-end adjustments.
  - Documentation illustrating any period(s) during which the Balancing Authority operated without ATEC, including the reason ATEC was not in operation.

1.3 Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, "Compliance Monitoring and Enforcement Program" refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

1.4 Compliance Waiver: Compliance with this Standard is waived for all periods during which the Interchange Software is deemed unavailable.

Interchange Software is deemed unavailable when it fails to function as designed by the software's vendor, or when the applicable entity(ies) is unable to access the Interchange Software due to hardware, software, or communications difficulties, such as but not limited to, communications failure, lack of internet connectivity, or catastrophic hardware/software system failure.

Failure of the applicable entity(ies) to procure access to the Interchange Software, such as but not limited to failure to contract for Interchange Software services, does not constitute unavailability.

Violation Severity Levels

R #	Violation Severity Levels			
	Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.	NA	NA	NA	The Balancing Authority failed to use the Interchange Software as the sole source to calculate ATEC.
R2.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 150%, but was less than or equal to 160% of the previous calendar year's peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 160%, but was less than or equal to 170% of the previous calendar year's peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 170%, but was less than or equal to 180% of the previous calendar year's peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 180% of the previous calendar year's peak demand or peak generation for generation-only Balancing Authorities.
R3.	The Balancing Authority did not recalculate PIIhourly and adjust the PIIaccum within 90 days of the discovery of the error; but made the required recalculations and adjustments within 120 days.	The Balancing Authority did not recalculate PIIhourly and adjust the PIIaccum within 120 days of the discovery of the error; but made the required recalculations and adjustments within 150 days.	The Balancing Authority did not recalculate PIIhourly and adjust the PIIaccum within 150 days of the discovery of the error; but made the required recalculations and adjustments within 180 days.	The Balancing Authority did not recalculate PIIhourly and adjust PIIaccum within 180 days of the discovery of the error.
R4.	The Balancing Authority operated during a calendar	The Balancing Authority operated during a calendar	The Balancing Authority operated during a calendar	The Balancing Authority operated during a calendar

	quarter without ATEC in service for more than an accumulated 24 hours, but less than or equal to 72 hours.	quarter without ATEC in service for more than an accumulated 72 hours, but less than or equal to 120 hours.	quarter without ATEC in service for more than an accumulated 120 hours, but less than or equal to 168 hours.	quarter without ATEC in service for more than an accumulated 168 hours.
R5.	N/A	N/A	N/A	The Balancing Authority is not able to change its AGC operating mode to correspond to current operating conditions.
R6.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in less than or equal to two hours.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in less than or equal to four hours.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in less than or equal to six hours.	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but uploaded the required data in more than six hours.
R7.	NA	NA	NA	The Balancing Authority making a month-end adjustment failed to input that value as part of its Net Actual Interchange.
R8.	NA	NA	NA	The Balancing Authority making a month-end adjustment failed to add that value to its accumulated Primary Inadvertent Interchange.

D. Regional Variances

None.

E. Associated Documents

None.

Version History

Version	Date	Action	Change Tracking
1	February 4, 2003	Effective Date.	New
1	October 17, 2006	Created Standard from Procedure.	Errata
1	February 6, 2007	Changed the Standard Version from 0 to 1 in the Version History Table.	Errata
1	February 6, 2007	The upper limit bounds to the amount of Automatic Time Error Correction term was inadvertently omitted during the Standard Translation. The bound was added to the requirement R1.4.	Errata
1	February 6, 2007	The statement "The Time Monitor may declare offsets in 0.001-second increments" was moved from TEoffset to TDadj and offsets was corrected to adjustments.	Errata
1	February 6, 2007	The reference to seconds was deleted from the TE offset term.	Errata
1	June 19, 2007	The standard number BAL-STD-004-1 was changed to BAL-004-WECC-01 to be consistent with the NERC Regional Reliability Standard Numbering Convention.	Errata
2	December 19, 2012	Adopted by NERC Board of Trustees.	
2	October 16, 2013	A FERC Letter Order was issued on October 16, 2013, approving BAL-004-WECC-02. This standard will become enforceable on April 1, 2014.	

Version	Date	Action	Change Tracking
3	December 6, 2017	Approved by the WECC Board of Directors.	Five-year review. The project: 1) relocates the Background section to the preamble of the Guidance section, 2) adds On-Peak and Off-Peak parameters in Requirement R1/M1, 3) addresses WECC Interchange Tool software successors throughout, 4) conforms the document to current drafting conventions (R1/M1, R4/M4), and 5) addresses non-substantive syntax and template concerns.
3	February 8, 2018	Adopted by the NERC Board of Trustees.	
3	May 30, 2018	FERC Order issued approving BAL-004-WECC-3. Docket No. RD18-2-000. Effective Date October 1, 2018.	
4	TBD	TBD	TBD

Standard Attachments

Not used.

G. Rationale

Nomenclature Update

To conform to NERC's definitional approach, the legacy term Net Actual Interchange (NAI) was replaced with Actual Net Interchange (NI_A). Net Scheduled Interchange (NSI) was replaced with Scheduled Net Interchange (NI_S). The legacy terms and the updated terms are synonymous.

Requirement R1:

The goal of Requirement R1 is to ensure a consistent ATEC calculation within the WI.

Because ATEC is an automatic process, allowing inconsistent calculation of ATEC will cause imbalance in accumulations.

Requirement R2:

The goal of Requirement R2 is to limit the amount of PII_{accum} that a Balancing Authority can have at the end of each month.

To reach the goal, each Balancing Authority should ensure that the absolute value of its PII_{accum} for both the on-peak period and the off-peak period each individually does not exceed 150% of the previous year's Peak Demand for load-serving Balancing Authorities, and 150% of the previous year's peak generation for generation-only Balancing Authorities. The Balancing Authority is required to keep each PII_{accum} period within the limit. For example, the Balancing Authorities actions may include:

- Identifying and correcting the source of any metering or accounting error(s) and recalculating the hourly Primary Inadvertent Interchange **(**PII_{hourly}) and the PII_{accum} from the time of the error;
- Validating the implementation of ATEC; or
- Setting L_{max} equal to L_{10}.until the PII_{accum} is below the limit in Requirement R1.

This approach is required because PII_{accum} may grow from month-end adjustments and metering errors, even with the inclusion of I_{ATEC} in the ACE equation.

Requirement R3:

The goal of Requirement R3 is to promote: 1) the timely correction of errors in the calculation of PII and PII_{accum}, and 2) the accurate, fair, and timely payback of accumulated PII balances.

When a Balancing Authority finds an error in the calculation of its PII, the Balancing Authority needs time to correct the error and recalculate PII and PII_{accum}.

Hourly adjustments to hourly Inadvertent Interchange (II) require a recalculation of the corresponding hourly PII value, the corresponding PII_{accum}, and all subsequent PII_{accum} for every hour up to the current hour.

The drafting team selected 90 days as a reasonable amount of time to correct an error and recalculate PII and PII_{accum}, since recalculation of PII and PII_{accum} is not a real-time operations reliability issue. As PII hourly is corrected, then PIIaccum should be recalculated.

Requirement R4:

The goal of Requirement R4 is to promote fair and timely payback of PII_{accum} balances by ensuring that ATEC remains in service whenever possible.

When a Balancing Authority is not participating in ATEC, payback of PII_{accum} is delayed.

The limit of 24 hours per quarter discourages a Balancing Authority from withdrawing ATEC participation, for example, for economic gain during selected hours. If the limits were increased to 60 hours, a Balancing Authority could technically withdraw ATEC participation for one hour from Monday to Friday.

Requirement R5:

A review of NERC Standards conducted by the Version 4 drafting team concluded that this Requirement is best located in a Standard focused on Automatic Generator Control (AGC). However, until an AGC-specific Standard is drafted, the Requirement should not be retired.

The goal of Requirement R5 is to ensure that AGC has the ability to respond to varying operating conditions.

Requirement R6:

Not used**.**

Requirement R7:

Not used.

Requirement R8:

Not used.

Standard Development Narrative

This section is maintained by the drafting team during the development of the standard and will be removed/updated as needed during the development process.

Description of Current Draft

Posting 4, Proposed Clean, updates this document to NERC's most current Results-Based Template.

General changes include:

- Section A. Introduction
  - At 4.2.1. redundant language was removed.
- Section B. Requirements and Measures
  - VRFs and Time Horizons were updated/added as needed.
  - At M2, the word "prescribed" was replaced with "allowed."
- Section C. Compliance
  - This entire section was updated to match NERC's templated boilerplate.
- Table of Compliance Elements (TOC)
  - The TOC no longer matched NERC's newest template. The TOC was deleted and replaced with the most current Violation Severity Level table. The new table was updated to reflect the proposed Requirements and Measures.
- Section G. Rationale
  - The Rationale section was updated, renumbered to match the proposed clean Requirements, updated for readability, and relocated to the end of the document to match NERC's most recent template.

Page 1 of 23

<Public>

BAL-004-WECC-3 — Automatic Time Error Correction

A. Introduction

1. **Title:** Automatic Time Error Correction

2. **Number:** BAL-004-WECC-~~3~~4

3. **Purpose:** To maintain Western Interconnection (WI) frequency, and ~~to~~ ensure that ~~Time Error Corrections and~~time error accumulation via Primary Inadvertent Interchange (PII) payback ~~are effectively~~is conducted in a manner that does not ~~adversely affect the~~ result in a negative impact on reliability.

4. **Applicability:**

   4.1. **Functional Entities:**

      4.1.1. Balancing Authorities operating synchronously within the WI

   4.2. **Compliance Waiver:**

      4.2.1. See Section C., Compliance, 1.4 Compliance Waiver, for applicability during periods of Interchange Software unavailability.

5. **Effective Date:** The first day of the second quarter following regulatory approval.

6. **Background:**

Pre-2000 (prior to mandatory Standards), the Western Electricity Coordinating Council (WECC) operated using the Minimum Operating Reliability Criteria (MORC). Per MORC Section D. Time Control, Control Areas were required to assist in maintaining frequency at or near 60.0 Hz, as prescribed in the Western System Coordinating Council (WSCC)[1] Procedure for Time Error Control (PTEC). Various versions of the PTEC predate 1980.

In February 2003, the WECC Automatic Time Error Correction (ATEC) Procedure (Procedure) became effective for all Balancing Authorities in the WI. The original intent of the Procedure was to minimize the number of manual Time Error Corrections in the WI.[2]

In June 2007, the Procedure was translated into BAL-STD-004-1, Time Error Correction, followed by BAL-004-WECC-1 through 3, Time Error Correction.[3] BAL-004-WECC-1 required Balancing Authorities within the WI to maintain Interconnection~~.~~ frequency within a predefined frequency profile, and to ensure that Time Error Corrections would not result in a negative impact on Interconnection reliability.

~~**Applicability**~~

[1] WECC began in 1967 as the Western Systems Coordinating Council (WSCC), a group of 40 power systems with a common goal of providing reliable power to the public whom they served. WECC was founded March 22, 1994.

[2] The Procedure provided for cost assignment and equitable payback of Inadvertent Interchange, not otherwise addressed in BAL-004-4, Time Error Correction.

[3] See Version History Table.

Page 2 of 23

~~**Functional Entities**~~

~~**4.1.1** Balancing Authorities that operate synchronously in the Western Interconnection.~~

~~**3. Effective Date:** On the first day of the second quarter, after applicable regulatory approval has been received (or the Reliability Standard otherwise becomes effective the first day of the fourth quarter following NERC Board adoption where regulatory approval is not required).~~

In September 2009, in response to Federal Energy Regulatory Commission (FERC) Order 723, WECC received Standard Authorization Request (SAR) WECC-0068 requesting modification of BAL-004-WECC-1. Modifications were effective April 1, 2014, creating BAL-004-WECC-2. BAL-004-WECC-2 introduced two performance metrics: 1) in Requirement R1, a 150% metric, and 2) in Requirement R2, a 90-day metric. Neither of these metrics are supported by technical studies. They were included in BAL-004-WECC-2 as a compromise during drafting.

In May 2018, FERC approved minor revisions to BAL-004-WECC-2 as part of WECC SAR WECC-0124, effective October 1, 2018, creating BAL-004-WECC-3.[4]

In 2023, this Standard was reviewed as part of the WECC SAR WECC-0147. The drafting team noted: 1) Version 3, Requirement R5 migrated from the pre-2000 MORC without initial or subsequent technical support, and 2) R5 addresses capabilities of Automatic Generator Control (AGC) found in no other Standard, without mandating its use or stating how that capability interfaces with ATEC. R5 is retained herein until it can be properly addressed per a NERC Standard Authorization Request.

7. Standard-Only Definition:

7.1 Interchange Software:

This Standard uses the Standard-Only term "Interchange Software" to mean:

The single electronic confirmation tool identified by the Western Electricity Coordinating Council (WECC), or its successor, to be used by all Balancing Authorities throughout the Western Interconnection (WI), that serves as the primary means for confirmation and creation of the final record of Scheduled Net Interchange (NI_S[5]) and Actual Net Interchange (NI_A[6]), during all periods when the Interchange Software is available.

7.2. ATEC:

This Standard uses the term "ATEC" as defined in the WECC Regional Definitions section of the NERC Glossary of Terms Used in Reliability Standards.

[4] FERC Docket No. RD18-2-000. Effective Date October 1, 2018.
[5] Previously called Net Scheduled Interchange
[6] Previously called Net Actual Interchange

Page 3 of 23

B. Requirements and Measures

R1. Each Balancing Authority shall use the Interchange Software as the sole source of data to calculate its ATEC. [Violation Risk Factor: Severe] [Time Horizon: Operations Assessment]

M1. Each Balancing Authority will have evidence that it used the Interchange Software as the sole source of data to calculate its ATEC, as required in Requirement R1.

Evidence may include, but is not limited to production of a corporate attestation or operating procedure indicating use of the Interchange Software as the sole source for calculating ATEC.

R2. Each Balancing Authority shall operate its system such that, ~~following the conclusion of each month,~~ the month-end absolute value of its On-Peak and Off-Peak, ~~Accumulated~~accumulated Primary Inadvertent Interchange (PIIaccum), as calculated by the ~~WECC~~ Interchange ~~Tool (WIT) or its successor electronic confirmation tool~~Software, are each individually less than or equal to~~:~~ 150% of the previous calendar year's integrated hourly peak demand where peak demand is total load plus total exports. *[Violation Risk Factor Medium:] [Time Horizon: Operations Assessment]*

2.1. For ~~load-serving~~new Balancing Authorities, ~~150% of~~ the ~~previous calendar year's~~ peak demand will be the maximum hourly integrated ~~hourly Peak Demand,~~peak demand as it increases during the first year of operation.

~~For generation-only Balancing Authorities, 150% of the previous calendar year's integrated hourly peak generation.~~

~~M1~~**M2.** Each Balancing Authority will have evidence that it operated its system such that, ~~following the conclusion of each month,~~ the month-end absolute value of its On-Peak and Off-Peak, ~~Accumulated~~accumulated Primary Inadvertent Interchange (PIIaccum), as calculated by the ~~WECC Interchange Tool (WIT) or its successor electronic confirmation tool, meets all criteria stated in Requirement R1.~~Interchange Software, are each individually less than or equal to 150% of the previous calendar year's integrated hourly peak demand where peak demand is total load plus total exports, average load in those hours, as calculated by the Interchange Software, per Requirement R2, or per the exception allowed in R2.1.

R3. Each Balancing Authority shall~~**R2.** Each Balancing Authority shall~~, upon discovery of an error in ~~the~~ its On-Peak or Off-Peak Inadvertent Interchange calculation ~~of PII_{hourly}~~, recalculate and correct the Inadvertent Interchange values within 90 days~~, the value of PII_{hourly} and adjust the PII_{accum}~~ from the time ~~of~~ the error is discovered. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

~~M2. Forms of acceptable~~**M3.** Each Balancing Authority discovering an error in its On-Peak or Off-Peak Inadvertent Interchange calculation will have evidence ~~of compliance with~~that it recalculated and corrected the Inadvertent Interchange values, within 90 days from the time the error is discovered, as required in Requirement

Page 4 of 23

~~R2~~R3.

Evidence may include, but ~~are~~is not limited to ~~any one of the following~~:

- ~~Data, screen~~Screen shots from the ~~WECC~~ Interchange ~~Tool (WIT) or its successor electronic confirmation tool,~~Software
- ~~Data, screen~~Screen shots from the Balancing Authority's internal ~~Balancing Authority tool, or~~
- ~~Production of data from any other~~ software functions such as internal databases, spreadsheets, and displays~~.~~

- Dated archive files
- Historic data

R4. Each Balancing Authority shall~~**R3. Each Balancing Authority shall**~~ keep ~~its Automatic Time Error Correction (~~ATEC~~)~~ in service, with an allowable exception period of less than or equal to an accumulated 24 hours per calendar quarter for ATEC to be out of service. This period is separate from any period during which the Interchange Software was unavailable. *[Violation Risk Factor: Medium] [Time Horizon: Same-day Operations]*

~~**M3.** Forms of acceptable~~**M4.** Each Balancing Authority will have evidence ~~of compliance with~~that it kept ATEC in service as required in Requirement ~~R3~~R4, subject to the allowable exceptions provided.

Evidence may include, but ~~are~~is not limited to:

- ~~Dated archived files,~~
- ~~Historical data,~~
- ~~Other data that demonstrates the ATEC was out of service for less than 24 hours per calendar quarter.~~

~~**R4.** Each Balancing Authority shall compute each of the following using the WECC Interchange Tool (WIT) or its successor electronic confirmation tool, no later than 50 minutes after each hour,~~

~~**4.1.** $PII_{hourly;}$~~

~~**4.1.** $PII_{accum;}$~~

~~***4.1.*** Automatic Time Error Correction term (I_{ATEC}).~~

~~*[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*~~

~~**M4.** Forms of acceptable evidence of compliance with Requirement R4 include but are not limited to any one of the following:~~

- ~~Data, screen shots from the WECC Interchange Tool (WIT) or its~~

Page 5 of 23

~~successor electronic confirmation tool, that demonstrate compliance;~~

- ~~Data, screen~~Screen shots from the Interchange Software
- ~~Screen~~ shots from ~~internal~~the Balancing ~~Authority tool that demonstrate compliance; or,~~
- ~~Data from any other~~Authority's internal software functions such as internal databases, spreadsheets, and displays ~~that demonstrate compliance.~~
- Dated archive files
- Historical data

R5. Each Balancing Authority shall be able to change its Automatic Generation Control (AGC) operating mode ~~between Flat Frequency (for blackout restoration); Flat Tie-Line (for loss of frequency telemetry); Tie-Line Bias; and Tie-Line Bias plus Time-Error Control (used in ATEC mode),~~ to correspond to current operating conditions. *[Violation Risk Factor: Medium] [Time Horizon: Real-Time Operations]*

M5. ~~Forms of acceptable~~Each Balancing Authority will have evidence ~~of compliance with Requirement~~that its AGC is able to change operating modes to correspond to current operating conditions, as required in R5.

Evidence may include, but ~~are~~is not limited to ~~any one of the following:~~:

- Screen shots from Energy Management System~~,~~
- Demonstration using an off-line system~~.~~

R6. Each Balancing Authority shall ~~recalculate the PII hourly and PII accum for the On-Peak and Off-Peak periods whenever adjustments are made to~~upload hourly ~~Inadvertent Interchange or ΔTE.~~Actual Net Interchange (NI_A) to the Interchange Software no later than 50 minutes after each hour. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M6. ~~Forms of acceptable~~Each Balancing Authority will have evidence ~~of compliance with~~that it uploaded hourly Actual Net Interchange (NI_A) to the Interchange Software no later than 50 minutes after each hour, as required in Requirement R6.

Evidence may include, but ~~are~~is not limited to ~~any one of the following~~:

- ~~Data, screen~~Screen shots from the ~~WECC~~ Interchange ~~Tool (WIT) or its successor electronic confirmation tool, that demonstrate compliance;~~Software
- ~~Data, screen~~Screen shots from ~~an~~the Balancing Authority's internal ~~Balancing Authority tool that demonstrate compliance with; or,~~
- ~~Data from any other~~ software functions such as internal databases, spreadsheets, and displays ~~that demonstrate compliance.~~

Page 6 of 23

- Dated archive files
- Historical data

R7. Each Balancing Authority ~~shall make the same adjustment to the PII~~accum ~~as it did for any~~making a month-end ~~meter reading adjustments to Inadvertent~~adjustment shall input that value as part of its Actual Net Interchange~~.~~ (NI_A). *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M7. ~~Forms of acceptable~~ Each Balancing Authority making a month-end adjustment will have evidence ~~of compliance with~~that it input that value as part of its Actual Net Interchange (NI_A), as required in Requirement R7 ~~include but are not limited to any one of the following:~~.

- ~~R8. Data, screen shots from the WECC Interchange Tool (WIT) or its successor electronic confirmation tool, that demonstrate compliance;~~
- ~~Data, screen shots from an internal Balancing Authority tool that demonstrate compliance; or,~~
- ~~Production of data from any other databases, spreadsheets, displays that demonstrate compliance.~~

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~~R8.~~ Each Balancing Authority making a month-end adjustment shall ~~payback~~ensure that value is added to its accumulated Primary Inadvertent Interchange ~~using ATEC rather than bilateral and unilateral payback~~. *[Violation Risk Factor: Medium] [Time Horizon: Operations Assessment]*

M8.

~~M8.~~ ~~Forms of acceptable~~Each Balancing Authority making a month-end adjustment will have evidence ~~of compliance with Requirement R8 include but are not limited~~that the value was added to ~~historical On-Peak and Off-Peak~~its accumulated Primary Inadvertent Interchange ~~data, data from the WECC Interchange Tool, and ACE data.~~, as required in Requirement R8.

Page 7 of 23

C. Compliance

2.1. Compliance Monitoring Process

2.2.1.1. Compliance Enforcement Authority:

~~The Regional Entity shall serve as~~As defined in the NERC Rules of Procedure, "Compliance Enforcement Authority~~.~~

~~For entities that do not work for~~ " means NERC or the Regional Entity~~,~~ in their respective roles of monitoring and enforcing compliance with the ~~Regional Entity shall serve as the Compliance Enforcement Authority.~~

~~For~~NERC Reliability ~~Coordinators and other functional entities that work for their Regional Entity, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority~~Standards.

~~For responsible entities that are also Regional Entities, the ERO or a Regional Entity approved by the ERO and FERC or other applicable governmental authorities shall serve as the Compliance Enforcement Authority.~~

~~**1.1 Compliance Monitoring and Assessment Processes:**~~

~~Compliance Audits~~

~~Self-Certifications~~

~~Spot Checking~~

~~Compliance Investigations~~

~~Self-Reporting~~

~~Complaints~~

2.9.1.2. Evidence Retention:

The following evidence retention ~~periods~~period(s) identify the period of time an entity is required to retain specific evidence to demonstrate compliance. For instances where the evidence retention period specified below is shorter than the time since the last audit, the Compliance Enforcement Authority may ask an entity to provide other evidence to show that it was compliant for the full ~~-~~time period since the last audit.

~~Each Balancing~~The applicable entity shall keep data or evidence to show compliance as identified below unless directed by its Compliance Enforcement Authority ~~in the Western Interconnection shall~~ to retain specific evidence for a longer period of time as part of an investigation.

- Each Balancing Authority in the WI shall keep the following records for the preceding calendar year (January – December) plus the current calendar year:
  - Its values ~~of~~for PIIhourly, PIIaccum (On-Peak and Off-Peak), ΔPTE, and any

Page 8 of 23

month-end adjustments ~~**for the preceding calendar year (January – December), as well as the current calendar year**~~.

- ~~Each Balancing Authority in the Western Interconnection shall retain the amount of time~~ Documentation illustrating any period(s) during which the Balancing Authority operated without ATEC ~~for the preceding calendar year (January – December), as well as the current calendar year.~~, including the reason ATEC was not in operation.

~~**Additional Compliance Information**~~

~~None~~

Page 9 of 23

~~**Table of Compliance Elements**~~

1.3 Compliance Monitoring and Enforcement Program: As defined in the NERC Rules of Procedure, "Compliance Monitoring and Enforcement Program" refers to the identification of the processes that will be used to evaluate data or information for the purpose of assessing performance or outcomes with the associated Reliability Standard.

1.4 Compliance Waiver: Compliance with this Standard is waived for all periods during which the Interchange Software is deemed unavailable.

Interchange Software is deemed unavailable when it fails to function as designed by the software's vendor, or when the applicable entity(ies) is unable to access the Interchange Software due to hardware, software, or communications difficulties, such as but not limited to, communications failure, lack of internet connectivity, or catastrophic hardware/software system failure.

Failure of the applicable entity(ies) to procure access to the Interchange Software, such as but not limited to failure to contract for Interchange Software services, does not constitute unavailability.

Violation Severity Levels

R #	~~Time Horizon~~	~~VRF~~	Violation Severity Levels			
			Lower VSL	Moderate VSL	High VSL	Severe VSL
R1.			NA	NA	NA	The Balancing Authority failed to use the Interchange Software as the sole source to calculate ATEC.
~~R1~~**R2.**	~~Operations Assessment~~	~~Medium~~	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 150%, but was less than or equal to 160% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 160%, but was less than or equal to 170% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 170%, but was less than or equal to 180% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.	Following the conclusion of each month each Balancing Authority's absolute value of PIIaccum for either the On-Peak period or Off-Peak period exceeded 180% of the previous calendar year's ~~Peak Demand~~peak demand or peak generation for generation-only Balancing Authorities.
~~R2~~**R3.**	~~Operations Assessment~~	~~Medium~~	The Balancing Authority did not recalculate PIIhourly	The Balancing Authority did not recalculate PIIhourly	The Balancing Authority did not recalculate PIIhourly	The Balancing Authority did not recalculate PIIhourly

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			and adjust the PIIaccum within 90 days of the discovery of the error; but made the required recalculations and adjustments within 120 days.	and adjust the PIIaccum within 120 days of the discovery of the error; but made the required recalculations and adjustments within 150 days.	and adjust the PIIaccum within 150 days of the discovery of the error; but made the required recalculations and adjustments within 180 days.	and adjust PIIaccum within 180 days of the discovery of the error.
R4.			The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 24 hours, but less than or equal to 72 hours.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 72 hours, but less than or equal to 120 hours.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 120 hours, but less than or equal to 168 hours.	The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 168 hours.
R5.			N/A	N/A	N/A	The Balancing Authority is not able to change its AGC operating mode to correspond to current operating conditions.
R6.			The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but	The Balancing Authority failed to upload hourly Actual Net Interchange to the Interchange Software no later than 50 minutes after each hour, but

	uploaded the required data in less than or equal to two hours.	uploaded the required data in less than or equal to four hours.	uploaded the required data in less than or equal to six hours.	uploaded the required data in more than six hours.
R7.	NA	NA	NA	The Balancing Authority making a month-end adjustment failed to input that value as part of its Net Actual Interchange.
R8.	NA	NA	NA	The Balancing Authority making a month-end adjustment failed to add that value to its accumulated Primary Inadvertent Interchange.

~~R #~~	~~Time Horizon~~	~~VRF~~	~~Violation Severity Levels~~			
			~~Lower VSL~~	~~Moderate VSL~~	~~High VSL~~	~~Severe VSL~~
~~R3~~	~~Real-Time Operations~~	~~Medium~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 24 hours, but less than or equal to 72 hours.~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 72 hours, but less than or equal to 120 hours.~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 120 hours, but less than or equal to 168 hours~~	~~The Balancing Authority operated during a calendar quarter without ATEC in service for more than an accumulated 168 hours.~~
~~R4~~	~~Operations Assessment~~	~~Medium~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within 50 minutes, but made the required calculations in less than or equal to two hours.~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within two hours, but made the required calculations in less than or equal to four hours.~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within four hours, but made the required calculations in less than or equal to six hours.~~	~~The Balancing Authority did not compute PII_{hourly}, PII_{accum}, and I_{ATEC} within six hours.~~
~~R5~~	~~Real-Time Operations~~	~~Medium~~	~~N/A~~	~~N/A~~	~~N/A~~	~~The Balancing Authority is not able to change its AGC operating mode between Flat Frequency (for blackout restoration; Flat Tie Line (for loss of frequency~~

~~R #~~	~~Time Horizon~~	~~VRF~~	~~Violation Severity Levels~~			
			~~Lower VSL~~	~~Moderate VSL~~	~~High VSL~~	~~Severe VSL~~
						~~telemetry); Tie Line Bias; or Tie Line Bias plus Time Error control (used in ATEC mode).~~
~~R6~~	~~Operations Assessment~~	~~Medium~~	~~N/A~~	~~N/A~~	~~N/A~~	~~When making adjustments to hourly Inadvertent Interchange or ΔTE, the Balancing Authority did not recalculate the PII_{hourly} and the PII_{accum} for the On-Peak and Off-Peak periods.~~
~~R7~~	~~Operations Assessment~~	~~Medium~~	~~N/A~~	~~N/A~~	~~N/A~~	~~When making any month-end meter reading adjustments to Inadvertent Interchange, the Balancing Authority did not make the same adjustment to the PII_{accum}.~~

~~R #~~	~~Time Horizon~~	~~VRF~~	~~Violation Severity Levels~~			
			~~Lower VSL~~	~~Moderate VSL~~	~~High VSL~~	~~Severe VSL~~
~~R8~~	~~Operations Assessment~~	~~Medium~~	~~N/A~~	~~N/A~~	~~N/A~~	~~The Balancing Authority paid back Inadvertent Interchange using bilateral and unilateral payback rather than using ATEC.~~

<Public>

BAL-004-WECC-34 — Automatic Time Error Correction WECC-0147 Posting 4 – Clean Proposed

Guidelines and Technical Basis

Background

In February 2003, the WECC Automatic Time Error Correction (ATEC) Procedure (Procedure) became effective for all Balancing Authorities in the Western Interconnection. The original intent of the Procedure was to minimize the number of Manual Time Error Corrections in the Western Interconnection. ATEC provides the added benefit of a superior approach over NERC Reliability Standard BAL- 004-0 – Time Error Correction for assigning costs and providing for the equitable payback of Inadvertent Interchange. In October 2006, the Procedure became a WECC Criterion. In May 2009, FERC issued Order No.723 that approved Regional Reliability Standard BAL-004-WECC-1 - Automatic Time Error Correction, as submitted by NERC. In addition, the Commission directed WECC to develop several clarifying modifications to BAL-004-WECC-1 using the FERC-approved Process for Developing and Approving WECC Standards. The Effective Date of the BAL-004-WECC-1 standard was July 1, 2009. BAL- 004-WECC-1 required Balancing Authorities within the Western Interconnection to maintain Interconnection frequency within a predefined frequency profile and to ensure that Time Error Corrections were effectively conducted in a manner that did not adversely affect the reliability of the Interconnection. In September 2009, WECC received WECC Standards/Regional Criterion Request Form (Request) WECC-0068, which was a request for modification of BAL-004-WECC-1. In July 2010, the chair of the WECC Operating Committee assigned the Request to the Performance Work Group (PWG) for development.

Requirement R1:

Premise: Each Balancing Authority should ensure that the absolute value of its PII_{accum} for both the On- Peak period and the Off-Peak period each individually does not exceed 150% of the previous year's Peak Demand for load-serving Balancing Authorities and 150% of the previous year's peak generation for generation-only Balancing Authorities. The Balancing Authority is required to keep each PII_{accum} period within the limit. For example, the Balancing Authorities actions may include:

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- Identifying and correcting the source of any metering or accounting error(s) and recalculating the hourly Primary Inadvertent Interchange (PII_{hourly}) and the PII_{accum} from the time of the error;
- Validating the implementation of ATEC; or
- Setting L_{max} equal to L_{10} until the PII_{accum} is below the limit in Requirement R1.

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Page 1712

Justification: PII_{accum} may grow from month-end adjustments and metering errors, even with the inclusion of I_{ATEC} in the ACE equation.

Goal: To limit the amount of PII_{accum} that a Balancing Authority can have at the end of each month.

Requirement R2:

Premise: When a Balancing Authority finds an error in the calculation of its PII, the Balancing Authority needs time to correct the error and recalculate PII and PII_{accum}.

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Page 1712 of 2213

~~**Justification**: The drafting team selected 90 days as a reasonable amount of time to correct an error and recalculate PII and PII_{accum}, since recalculation of PII and PII_{accum} is not a real-time operations reliability issue.~~

~~**Goal**: To promote the timely correction of errors in the calculation of PII and PII_{accum}.~~

~~**Requirement R3:**~~

~~**Premise**: When a Balancing Authority is not participating in ATEC, payback of PII_{accum} is delayed.~~

~~**Justification**: The limit of 24 hours per quarter discourages a Balancing Authority from withdrawing ATEC participation, for example, for economic gain during selected hours. If the limits were increased to 60 hours, a Balancing Authority could technically withdraw ATEC participation for one hour from Monday to Friday.~~

~~**Goal**: To promote fair and timely payback of PII_{accum} balances.~~

~~**Requirement R4:**~~

~~**Premise**: PII_{hourly}, PII_{accum}, and I_{ATEC} should be determined before the next scheduling hour begins.~~

~~**Justification**: To promote timely calculations 50 minutes was selected because it is before the next hour ramp begins and permits time to collect the data and resolve interchange metering values.~~

~~**Goal: To promote the timely calculation of PII_{hourly}, PII_{accum}, and I_{ATEC}:**~~

~~**Requirement R5:**~~

~~**Premise:** The ACE equation, and hence the AGC mode, will contain any number of parameters based on system operating conditions. Various AGC modes are identified corresponding to those operating conditions, as well as the specific sets of parameters included in the ACE equation.~~

~~**Justification**: Changing to the proper operating mode, corresponding to current operating conditions, affords proper movement of generating units in response to those conditions. The addition of the ATEC term results in an additional AGC mode and a different set of parameters. The inability to correctly calculate the ATEC term would dictate that AGC not be operated in the ATEC mode.~~

~~**Goal**: To set the AGC mode and calculate ACE in a manner that corresponds to the system operating conditions and to accommodate changes in those conditions.~~

~~**Requirement R6:**~~

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~~**Premise:** Hourly adjustments to hourly Inadvertent Interchange (II) require a recalculation of the corresponding hourly PII value, the corresponding PII_{accum}, and all subsequent PII_{accum} for every hour up to the current hour.~~

~~**Justification**: As PII_{hourly} is corrected, then PII_{accum} should be recalculated.~~

~~**Goal**: To promote accurate, fair and timely payback of accumulated PII balances.~~

~~**Requirement R7:**~~

~~**Premise:** Month-end meter-reading adjustments are made, for example, when a Balancing Authority performs monthly comparisons of recorded month-end Net Actual Interchange (NI_A) values derived from hourly Actual Interchange Telemetered Values against month-end Actual Interchange Register Meter readings.~~

~~**Justification**: Month-end adjustments to II_{accum} are applied as 100% PII_{accum}. 100% was chosen for simplicity to bilaterally assign PII_{accum} to both Balancing Authorities, since the effect of this metering error on system frequency is not easily determined over the course of a month.~~

~~**Goal**: To provide a mechanism by which corresponding month-end II adjustments can be applied to PII_{accum}, when such adjustments cannot be attributed to any one hour or series of hours.~~

~~**Requirement R8:**~~

~~**Premise:** ATEC includes automatic unilateral payback of Primary Inadvertent Interchange and Secondary Inadvertent Interchange.~~

~~**Justification**: Additional unilateral and bilateral exchanges disturb the balance and distribution between Primary Inadvertent Interchange and Secondary Inadvertent Interchange throughout the Interconnection; thereby stranding Secondary Inadvertent Interchange.~~

~~**Goal**: To not strand Secondary Inadvertent Interchange.~~

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D. Regional Variances

None.

E. Associated Documents

None.

Version History

Version	Date	Action	Change Tracking
1	February 4, 2003	Effective Date.	New
1	October 17, 2006	Created Standard from Procedure.	Errata
1	February 6, 2007	Changed the Standard Version from 0 to 1 in the Version History Table.	Errata
1	February 6, 2007	The upper limit bounds to the amount of Automatic Time Error Correction term was inadvertently omitted during the Standard Translation. The bound was added to the requirement R1.4.	Errata
1	February 6, 2007	The statement "The Time Monitor may declare offsets in 0.001-second increments" was moved from TEoffset to TDadj and offsets was corrected to adjustments.	Errata
1	February 6, 2007	The reference to seconds was deleted from the TE offset term.	Errata
1	June 19, 2007	The standard number BAL-STD-004-1 was changed to BAL-004-WECC-01 to be consistent with the NERC Regional Reliability Standard Numbering Convention.	Errata
2	December 19, 2012	Adopted by NERC Board of Trustees.	
2	October 16, 2013	A FERC Letter Order was issued on October 16, 2013, approving BAL-004-WECC-02. This standard will become enforceable on April 1, 2014.	

<Public>

Version	Date	Action	Change Tracking
3	December 6, 2017	Approved by the WECC Board of Directors.	Five-year review. The project: 1) relocates the Background section to the preamble of the Guidance section, 2) adds On-Peak and Off-Peak parameters in Requirement R1/M1, 3) addresses WECC Interchange Tool software successors throughout, 4) conforms the document to current drafting conventions (R1/M1, R4/M4), and, 5) addresses non-substantive syntax and template concerns.
3	February 8, 2018	Adopted by the NERC Board of Trustees.	
3	May 30, 2018	FERC Order issued approving BAL-004-WECC-3. Docket No. RD18-2-000. Effective Date October 1, 2018.	
4	TBD	TBD	TBD

Standard Attachments

Not used.

G. Rationale

Nomenclature Update

To conform to NERC's definitional approach, the legacy term Net Actual Interchange (NAI) was replaced with Actual Net Interchange (NI_A). Net Scheduled Interchange (NSI) was replaced with Scheduled Net Interchange (NI_S). The legacy terms and the updated terms are synonymous.

Requirement R1:

The goal of Requirement R1 is to ensure a consistent ATEC calculation within the WI.

Because ATEC is an automatic process, allowing inconsistent calculation of ATEC will cause imbalance in accumulations.

Requirement R2:

The goal of Requirement R2 is to limit the amount of PII_{accum} that a Balancing Authority can have at the end of each month.

To reach the goal, each Balancing Authority should ensure that the absolute value of its PII_{accum} for both the on-peak period and the off-peak period each individually does not exceed 150% of the previous year's Peak Demand for load-serving Balancing Authorities, and 150% of the previous year's peak generation for generation-only Balancing Authorities. The Balancing Authority is required to keep each PII_{accum} period within the limit. For example, the Balancing Authorities actions may include:

- Identifying and correcting the source of any metering or accounting error(s) and recalculating the hourly Primary Inadvertent Interchange (PII_{hourly}) and the PII_{accum} from the time of the error;
- Validating the implementation of ATEC; or
- Setting L_{max} equal to L10.until the PII_{accum} is below the limit in Requirement R1.

This approach is required because PII_{accum} may grow from month-end adjustments and metering errors, even with the inclusion of I_{ATEC} in the ACE equation.

Requirement R3:

The goal of Requirement R3 is to promote: 1) the timely correction of errors in the calculation of PII and PII_{accum}, and 2) the accurate, fair, and timely payback of accumulated PII balances.

When a Balancing Authority finds an error in the calculation of its PII, the Balancing Authority needs time to correct the error and recalculate PII and PII_{accum}.

Hourly adjustments to hourly Inadvertent Interchange (II) require a recalculation of the corresponding hourly PII value, the corresponding PII_{accum}, and all subsequent PII_{accum} for every hour up to the current hour.

The drafting team selected 90 days as a reasonable amount of time to correct an error and recalculate PII and PII_{accum}, since recalculation of PII and PII_{accum} is not a real-time operations reliability issue. As PII hourly is corrected, then PIIaccum should be recalculated.

Requirement R4:

The goal of Requirement R4 is to promote fair and timely payback of PII_{accum} balances by ensuring that ATEC remains in service whenever possible.

When a Balancing Authority is not participating in ATEC, payback of PII_{accum} is delayed.

The limit of 24 hours per quarter discourages a Balancing Authority from withdrawing ATEC participation, for example, for economic gain during selected hours. If the limits were increased to 60 hours, a Balancing Authority could technically withdraw ATEC participation for one hour from Monday to Friday.

Requirement R5:

A review of NERC Standards conducted by the Version 4 drafting team concluded that this Requirement is best located in a Standard focused on Automatic Generator Control (AGC). However, until an AGC-specific Standard is drafted, the Requirement should not be retired.

The goal of Requirement R5 is to ensure that AGC has the ability to respond to varying operating conditions.

Requirement R6:

Not used.

Requirement R7:

Not used.

Requirement R8:

Not used.

WECC
Electric Reliability and Security for the West

Attachment N
Final Ballot Results
WECC-0147, BAL-004-WECC-3
ATEC Five-year Review with Focus on Requirement R1

Ballot Name: WECC-0147, BAL-004-WECC-3, ATEC Five-year Review with Focus on Requirement R1

Overview: This project:

Expands the existing Background section; Creates a Standard-specific definition (Interchange Software); Creates a requirement to use the Interchange Software; Addresses treatment of Balancing Authorities that do not have a full year of operating data; Consolidates and clarifies requirements; and updates the document to NERC's newest templates.

Ballot Pool Open:	08/21/2023	Ballot Pool Closed:	09/06/2023
Ballot Opened:	09/14/2023	Ballot Closed:	09/29/2023
Total Ballot Pool:	25	Total Votes:	25
Quorum:	100%	Weighted Votes:	100%
Ballot Results:	Pass		

Voting Sectors	Total in Ballot Pool	In-Pool Affiliates Excluded	Votes Non-Abstain	Sector Weight	Yes Votes	Weighted Segment Vote	No Votes	Abstain	Total Votes for Quorum	Did Not Vote
Transmission Owners	5		4	0.4	4	40.0%	0	1	5	0
Regional Transmission Organizations (RTO) and Independent System Operators (ISO)	0		0	0	0	0.0%	0	0	0	0
Load-Serving Entities (LSE)	4		3	0.3	3	30.0%	0	1	4	0
Transmission Dependent Utilities (TDU)	3		2	0.2	2	20.0%	0	1	3	0
Electric Generators	5		4	0.4	4	40.0%	0	1	5	0
Electricity Brokers, Aggregators, and Marketers	8		7	0.7	7	70.0%	0	1	8	0
Large Electricity End Users	0		0	0	0	0.0%	0	0	0	0
Small Electricity Users	0		0	0	0	0.0%	0	0	0	0
Federal, State, Provincial Regulatory, other Gov. Entities	0		0	0	0	0.0%	0	0	0	0
Regional Entities	0		0	0	0	0.0%	0	0	0	0
Totals	25	0	20	2	20	100.0%	0	5	25	0

Final Ballot Results

Title	Company	Sector	Vote	Comments	Created By
WECC-0147	Powerex, Inc.	Electricity Brokers, Aggregators, and Marketers	Yes	0	Raj Hundal
WECC-0147	Arizona Public Service Company	Electricity Brokers, Aggregators, and Marketers	Yes	0	Marcus Bortman
WECC-0147	Arizona Public Service Company	Electric Generators	Yes	0	Brandon Smith
WECC-0147	Arizona Public Service Company	Load-Serving Entities (LSEs)	Yes	0	Jessica Lopez
WECC-0147	Arizona Public Service Company	Transmission Owners	Yes	0	Daniela Atanasovski
WECC-0147	Bonneville Power Administration	Electric Generators	Yes	0	Christopher Siewert
WECC-0147	Bonneville Power Administration	Electricity Brokers, Aggregators, and Marketers	Yes	0	Tanner Brier
WECC-0147	Bonneville Power Administration	Electricity Brokers, Aggregators, and Marketers	Yes	0	Tanner Brier
WECC-0147	Bonneville Power Administration	Electricity Brokers, Aggregators, and Marketers	Yes	0	Tanner Brier
WECC-0147	Sacramento Municipal Utility District	Electric Generators	Yes	SMUD supports these changes.	Tim Kelley
WECC-0147	Sacramento Municipal Utility District	Transmission Dependent Utilities (TDUs)	Yes	SMUD supports these changes.	Tim Kelley
WECC-0147	Sacramento Municipal Utility District	Transmission Owners	Yes	SMUD supports these changes.	Tim Kelley
WECC-0147	Sacramento Municipal Utility District	Load-Serving Entities (LSEs)	Yes	SMUD supports these changes.	Tim Kelley
WECC-0147	Sacramento Municipal Utility District	Electricity Brokers, Aggregators, and Marketers	Yes	SMUD supports these changes.	Tim Kelley
WECC-0147	Balancing Authority of	Transmission Owners	Yes	BANC supports these changes.	Tim Kelley

	Northern California				
WECC-0147	Balancing Authority of Northern California	Electricity Brokers, Aggregators, and Marketers	Yes	BANC supports these changes.	Tim Kelley
WECC-0147	British Columbia Hydro and Power Authority	Electric Generators	Yes	0	Adrian Andreoiu
WECC-0147	British Columbia Hydro and Power Authority	Transmission Dependent Utilities (TDUs)	Yes	0	Adrian Andreoiu
WECC-0147	British Columbia Hydro and Power Authority	Transmission Owners	Yes	0	Adrian Andreoiu
WECC-0147	British Columbia Hydro and Power Authority	Load-Serving Entities (LSEs)	Yes	0	Adrian Andreoiu
WECC-0147	Black Hills Corporation	Electric Generators	Abstain	Black Hills Corporation is not a Balancing Authority.	Rachel Schuldt
WECC-0147	Black Hills Corporation	Transmission Dependent Utilities (TDUs)	Abstain	Black Hills Corporation is not a Balancing Authority.	Rachel Schuldt
WECC-0147	Black Hills Corporation	Transmission Owners	Abstain	Black Hills Corporation is not a Balancing Authority.	Rachel Schuldt
WECC-0147	Black Hills Corporation	Load-Serving Entities (LSEs)	Abstain	Black Hills Corporation is not a Balancing Authority.	Rachel Schuldt
WECC-0147	Black Hills Corporation	Electricity Brokers, Aggregators, and Marketers	Abstain	Black Hills Corporation is not a Balancing Authority.	Rachel Schuldt

Electric Reliability and Security for the West

Board of Directors Meeting
Approval Item
PRC-001-WECC-CRT-3, Governor Droop
March 13, 2024

Board Resolution

Resolved, that the WECC Board of Directors (Board), acting on the recommendation of the WECC Standards Committee (WSC) at the meeting of the Board on March 13, 2024, approves PRC-001-WECC-CRT-3, Governor Droop Regional Criterion as presented and attached.

Background

A clean and a redline version of the proposed Regional Criterion are included in the Board package.

This project was initiated to address the mandatory five-year review process. The proposed revisions include additional language in the Regional Criterion to clarify that the Criterion applies to inverter-based resources. It was never the intent of the original drafting team to exclude inverter-based resources, however, at the time of the initial drafting, inverter-based resources were not as prevalent.

Issues and Risks

If the proposed revisions to the Regional Criterion are not approved, the question as to whether the Criterion applies to inverter-based resources will remain.

WECC

Electric Reliability and Security for the West

WECC Criterion

PRC-001-WECC-CRT-3

Introduction

1. **Title**: **Governor Droop Setting**
2. **Number**: PRC-001-WECC-CRT-3
3. **Purpose**: To facilitate primary frequency support in the Western Interconnection
4. **Applicability**:
   - **4.1. Functional Entities:**
     - **4.1.1.** Generator Owners
   - **4.2. Facilities Included**[1]
     - **4.2.1.** All generating units connected to the Bulk Electric System (BES) within the Western Interconnection, whether synchronously or asynchronously, having Governor function. This specifically includes, but is not limited to:
       - **4.2.1.1.** Inverter-based resources (IBR), such as those powered by:[2]
         - **4.2.1.1.1.** Solar
         - **4.2.1.1.2.** Battery energy storage system (BESS)
         - **4.2.1.1.3.** Wind
   - **4.3. Facilities Excluded**
     - **4.3.1.** Blackstart Resources during system restoration or islanded conditions are excluded from this document.
5. **Effective Date**: First day of the second quarter following WECC Board of Directors approval.

[1] This document applies to the governor setting on individual generators rather than as an effective droop for an individual unit, a Balancing Authority Area, or a group of generators.

[2] "IBRs are resources that are asynchronously connected to the grid using a power convertor. IBRs include solar and wind resources, as well as battery energy storage systems (BESS). In 2022, there were three IBR-related events. Two of the events involved BESS." Impacts of Changing Resources and Consumer Load, Inverter Based Resources, WECC State of the Interconnection, 2023, page 17.

Requirements and Measures

WR1. Each Generator Owner shall set the Frequency Response droop for each generating unit to greater than or equal to 3% but less than or equal to 5%.

WM1. Each Generator Owner will have evidence that it set the Frequency Response droop for each generating unit to the parameters specified in WR1. Evidence may include, but is not limited to, dated setting sheets, generator test reports, generator logs, pictures, or other documentation.

Version History

Version	Date	Action	Change Tracking
1	October 13, 2011	Operating Committee Approved	Initial version
1	December 1, 2011	WECC Board of Directors Approved	Developed as WECC-0070. Initial version
1	September 5, 2012	WECC Board of Directors changed "CRT" to "RBP"	Designation change
1.1	January 17, 2013	Errata	Where applicable, the term "criterion" was exchanged for the generic term "document." At Section 6: Background, a footnote was added to explain the change from Criterion to Regional Business Practice. The document was conformed to the RBP template.
1.1	June 25, 2014	WECC Board of Directors changed "RBP" to "CRT"	Designation change
1.2	January 28, 2016	Errata	Sentence structure in the Effective Date was added for clarity. The information from the Background Fn 1 was removed because it is included in the Version History Table. The title "PRC-001-WECC-RBP-1.1 Regional Business Practice" was removed from Figure 1 to bring the Figure current. "PRC-001-WECC-RBP-1.1" was removed from the Rationale FAQs section to bring the document current.
1.2	April 1, 2016	No Change	Converted to new template
2	November 15, 2017	WECC Standards Committee approved for Board action	This project was developed as WECC-0125. The Purpose statement was shortened by removing the prepositional phrase. Facilities 4.2.2 was added to incorporate new technologies. The Background section was moved to the Guidance section. WR1/WM1 was updated replacing "governor" with "Frequency Response." M1 was updated to reflect current drafting conventions. The "Equipment Installation" section was added to the Guidance section. A typographical error in the April 1, 2016 row was corrected from 2.1 to 1.2.
2	December 6, 2017	WECC Board of Directors approved	The proposed Effective Date for the project was "immediately upon approval by the WECC Board of Directors (Board)." The Effective Date is December 6, 2017.
2.1	June 18, 2019	Errata	Converted to newest template.
3	TBD	TBD	Developed as WECC-0150.

WECC receives data used in its analyses from a wide variety of sources. WECC strives to source its data from reliable entities and undertakes reasonable efforts to validate the accuracy of the data used. WECC believes the data contained herein and used in its analyses is accurate and reliable. However, WECC disclaims any and all representations, guarantees, warranties, and liability for the information contained herein and any use thereof. Persons who use and rely on the information contained herein do so at their own risk.

Attachments

Not used.

Rationale

Equipment Installation

Nothing in this document mandates installation of equipment required to meet Frequency Response.

Nothing in this document mandates installation of governor droop equipment.

This document only addresses equipment already installed or that which may be installed in the future and meets the criteria stated in the Applicability/Facilities section.

What constitutes a unit's "ability to react or respond to a change in system frequency" as described in the NERC Glossary is purposely omitted from this document to allow other regulatory forums to make that determination.

Background

The WECC Minimum Operating Reliability Criteria (MORC 2000) contained the following droop-related requirement:

> "C. Frequency Response and Bias
>
> 2. Governors. To provide an equitable and coordinated system response to load/generation imbalances, governor droop shall be set at 5%. Governors shall not be operated with excessive deadbands [sic], and governors shall not be blocked unless required by regulatory mandates."

After reviewing the MORC in 2010, the WECC Operating Reliability Criteria Work Group (ORCWG) recommended the MORC could be retired so long as its content was preserved elsewhere. That review concluded that the above droop-related language was not preserved elsewhere and should be retained in a WECC Criterion (WECC-0070 and WECC-0125).

After reviewing professional publications, existing practices, manufacturer recommendations, and industry-provided comments, the WECC-0070 drafting team concluded that requiring a droop setting within a bandwidth (3%-5%) would provide greater reliability through greater response and flexibility than requiring that droop be set at a specific, unchanging point.

In reaching this position, both the WECC-0070 and the WECC-0125 drafting teams considered, among other things:

1) The difficulty to measure adherence;
2) Extrinsic factors impacting response, such as:
    a. Response to operating conditions, generator operating points, boiler/turbine conditions, ambient conditions, vintage/design of the unit, physical/regulatory/environmental constraints, ramp rates, Automatic Generation Control, and other control mechanisms,

3) The non-linear response of Governors; and

4) Testing limitations when attempting to replicate operating conditions, particularly for hydro units.

In December 2011, the WECC Board of Directors (Board) approved Version 1 of this WECC Criterion including a single requirement addressing the performance dead band.[3]

As part of the WECC-0150, Version 3 project, the question-and-answer section of this document was deleted. That section is available for review in earlier versions of this document.

Overview

This document does not create a performance Standard. Rather, it establishes the criteria for setting droop with the goal of facilitating primary frequency support.

This document is not intended to apply to regulation. Droop is a setting in the Governor; regulation reflects the measured response of the unit.

Requirement

WR1:

The 3-to-5% range provides a balance between frequency regulation and system stability. If the setting is too low, there could be system instability and negative damping of low frequency oscillations. If the setting is too high, larger frequency dips could result in under frequency load shedding.

Typically, the droop settings are at 5%. It is recommended that the droop setting for hydro units be maintained at 5% for stability reasons.

[3] Version 1, "WR1. Each Generator Owner shall set the governor droop for each generating unit to greater than or equal to 3 percent but less than or equal to 5 percent."

<Public>

WECC
Electric Reliability and Security for the West

WECC Criterion
PRC-001-WECC-CRT-~~2.1~~3

Introduction

1. **Title**: **Governor Droop Setting**
2. **Number**: PRC-001-WECC-CRT-~~2.1~~3
3. **Purpose**: To facilitate primary frequency support in the Western Interconnection
4. **Applicability**:
   - **4.1. Functional Entities:**
     - **4.1.1.** Generator Owners
   - **4.2. Facilities Included[1]**
     - ~~**4.2.1.** Generating units that have governor function.~~
     - ~~**4.2.2.** Generating units having the ability to react or respond to a change in system frequency.~~
     - **4.2.1.** ~~Generating units being used~~All generating units connected to the Bulk Electric System (BES) within the Western Interconnection, whether synchronously or asynchronously, having Governor function. This specifically includes, but is not limited to:
       - **4.2.1.1.** Inverter-based resources (IBR), such as those powered by:[2]
         - **4.2.1.1.1.** Solar
         - **4.2.1.1.2.** Battery energy storage system (BESS)
         - **4.2.1.1.3.** Wind
   - **4.3. Facilities Excluded**
     - ~~**4.2.3.**~~**4.3.1.** Blackstart Resources during ~~blackstart~~system restoration or islanded conditions are excluded from this document.

[1] This document applies to the governor setting on individual generators rather than as an effective droop for an individual unit, a Balancing Authority Area, or a group of generators.
[2] "IBRs are resources that are asynchronously connected to the grid using a power convertor. IBRs include solar and wind resources, as well as battery energy storage systems (BESS). In 2022, there were three IBR-related events. Two of the events involved BESS." Impacts of Changing Resources and Consumer Load, Inverter Based Resources, WECC State of the Interconnection, 2023, page 17.

<Public>

PRC-001-WECC-CRT-~~2.1~~3—Governor Droop Setting

~~5.~~ **Effective Date**: ~~June 18, 2019~~

~~6.~~5. First day of the second quarter following WECC Board of Directors approval.

Requirements and Measures

WR1. Each Generator Owner shall set the Frequency Response droop for each generating unit to greater than or equal to 3% but less than or equal to 5%.

WM1. Each Generator Owner will have evidence that it set the Frequency Response droop for each generating unit to the parameters specified in WR1. Evidence may include, but is not limited to, dated setting sheets, generator test reports, generator logs, pictures, or other documentation.

Version History

Version	Date	Action	Change Tracking
1	October 13, 2011	Operating Committee Approved	Initial version
1	December 1, 2011	WECC Board of Directors Approved	Developed as WECC-0070. Initial version
1	September 5, 2012	WECC Board of Directors changed "CRT" to "RBP"	Designation change
1.1	January 17, 2013	Errata	Where applicable, the term "criterion" was exchanged for the generic term "document." At Section 6: Background, a footnote was added to explain the change from Criterion to Regional Business Practice. The document was conformed to the RBP template.
1.1	June 25, 2014	WECC Board of Directors changed "RBP" to "CRT"	Designation change
1.2	January 28, 2016	Errata	Sentence structure in the Effective Date was added for clarity. The information from the Background Fn 1 was removed because it is included in the Version History Table. The title "PRC-001-WECC-RBP-1.1 Regional Business Practice" was removed from Figure 1 to bring the Figure current. "PRC-001-WECC-RBP-1.1" was removed from the Rationale FAQs section to bring the document current.
1.2	April 1, 2016	No Change	Converted to new template
2	November 15, 2017	WECC Standards Committee approved for Board action	This project was developed as WECC-0125. The Purpose statement was shortened by removing the prepositional phrase. Facilities 4.2.2 was added to incorporate new technologies. The Background section was moved to the Guidance section. WR1/WM1 was updated replacing "governor" with "Frequency Response." M1 was updated to reflect current drafting conventions. The "Equipment Installation" section was added to the Guidance section. A typographical error in the April 1, 2016 row was corrected from 2.1 to 1.2.
2	December 6, 2017	WECC Board of Directors approved	The proposed Effective Date for the project was "immediately upon approval by the WECC Board of Directors (Board)." The Effective Date is December 6, 2017.
2.1	June 18, 2019	Errata	Converted to newest template.
3	TBD	TBD	Developed as WECC-0150.

WECC receives data used in its analyses from a wide variety of sources. WECC strives to source its data from reliable entities and undertakes reasonable efforts to validate the accuracy of the data used. WECC believes the data contained herein and used in its analyses is accurate and reliable. However, WECC disclaims any and all representations, guarantees, warranties, and liability for the information contained herein and any use thereof. Persons who use and rely on the information contained herein do so at their own risk.

Attachments

Not used.

Rationale

~~A Rationale section is optional. If Rationale Boxes were used during the development of this project, the content of those boxes appears below.~~

Equipment Installation

Nothing in this document mandates installation of equipment required to meet Frequency Response.

Nothing in this document mandates installation of governor droop equipment.

This document only addresses equipment already installed or that which may be installed in the future and meets the criteria stated in the Applicability/Facilities section.

What constitutes a unit's "ability to react or respond to a change in system frequency" as described in the NERC Glossary is purposely omitted from this document to allow other regulatory forums to make that determination.

Background

~~The~~The WECC Minimum Operating Reliability Criteria (MORC 2000) contained the following droop-related requirement:

> "C. Frequency Response and Bias
>
> 2. Governors. To provide an equitable and coordinated system response to load/generation imbalances, governor droop shall be set at 5%. Governors shall not be operated with excessive deadbands [sic], and governors shall not be blocked unless required by regulatory mandates."

After reviewing the MORC in 2010, the WECC Operating Reliability Criteria Work Group (ORCWG) recommended ~~that the WECC Minimum Operating Reliability Criteria (MORC) document~~ the MORC could be retired~~,~~ so long as its content was preserved elsewhere. That review concluded that the above droop-related language was not preserved elsewhere and should be retained in a WECC Criterion (WECC-0070 and WECC-0125).

After reviewing professional publications, existing practices, manufacturer recommendations, and industry-provided comments, the WECC-0070 drafting team concluded that requiring a droop setting within a bandwidth (3%-5%) would provide greater reliability through greater response and flexibility than requiring that droop be set at a specific, unchanging point.

In reaching this position, both the WECC-0070 and the WECC-0125 drafting teams considered, among other things:

1) The difficulty to measure adherence;

2) Extrinsic factors impacting response, such as:

a. Response to operating conditions, generator operating points, boiler/turbine conditions, ambient conditions, vintage/design of the unit, physical/regulatory/environmental constraints, ramp rates, Automatic Generation Control, and other control mechanisms,

3) The non-linear response of Governors; and

4) Testing limitations when attempting to replicate operating conditions, particularly for hydro units.

In December 2011, the WECC Board of Directors (Board) approved Version 1 of this WECC Criterion including a single requirement addressing the performance dead band.[3]

As part of the ~~ORCWG review of the MORC~~ WECC-0150, Version 3 project, the question-and-answer section of this document was deleted. That section is available for review in earlier versions of this document.

Overview

This document does not create a performance Standard. Rather, it ~~was determined that the existing requirement for a governor droop setting was not covered by any other NERC or WECC requirement. After reviewing documents available from historical and recent professional organizations, such as IEEE, the WECC 0070 Governor Droop Setting Criterion Drafting Team has determined that WECC would be better off with a governor droop~~ establishes the criteria for setting droop with the goal of facilitating primary frequency support.

This document is not intended to apply to regulation.~~requirement in a small range rather than a fixed point. This permits Generator Owners more flexibility in~~ Droop is a setting ~~governor droop to provide more frequency response when appropriate for reliability.~~in the Governor; regulation reflects the measured response of the unit.

Requirement

WR1:

The 3-to-5~~ percent~~% range provides a balance between frequency regulation and system stability. If the setting is too low, there could be system instability and negative damping of low frequency oscillations. If the setting is too high, larger frequency dips could result in under frequency load shedding.

Typically, the droop settings are at 5~~ percent.~~%. It is recommended that the droop setting for hydro units be maintained at 5~~ percent~~% for stability reasons.

[3] Version 1, "WR1. Each Generator Owner shall set the governor droop for each generating unit to greater than or equal to 3 percent but less than or equal to 5 percent."

<Public>

PRC-001-WECC-CRT-~~2.1~~3—Governor Droop Setting

~~If blackstart or islanded conditions require governor droop settings to be modified during the event, this document would not apply.~~

~~The drafting team took the following into consideration developing the requirement:~~

- ~~Are there different settings for different types of units?~~

  ~~The drafting team believes that all generators should provide response to frequency deviations through a setting criterion. In order to obtain participation from the maximum number of units, the drafting team decided to recommend adopting a governor droop setting requirement that permits a range of 3-to-5 percent for all governors. After reviewing industry standard recommendations for governor droop settings, the drafting team found that setting a range of 3-to-5 percent falls within the international industry recommendations for governor droop settings for different types of generators.~~

- ~~Can non-rotating generating resources provide a comparable response to a governor?~~

  ~~The drafting team determined that it was only going to address traditional generating resources and not new technologies. The drafting team does not intend to place any obligations in the requirements for having generating equipment equivalent to a governor. In addition, the drafting team decided that requiring governors or functionally equivalent equipment was outside the scope of the Standard Authorization Request.~~

- ~~Should there be a generator megawatt size limit for this criterion?~~

  ~~No, the drafting team believes in the interest of reliability that all generators with a functioning governor should set the governor droop to between 3 percent and 5 percent.~~

- ~~As the generation mix is changing, does the Governor Droop Setting document need to be different?~~

  ~~No, the 3-to-5 percent governor droop setting range provides flexibility for generators with governors to respond regardless of generation mix.~~

~~Additional Considerations:~~

- ~~Operational Concepts: The drafting team reviewed current practices in setting governor droop and the settings that manufacturers are recommending.~~

- ~~In the drafting team's research of published data, it did not find any technical basis for the current 5 percent droop criterion.~~

- ~~The drafting team reviewed results from technical studies with high loads. The results indicated that raising the droop settings above 5 percent would result in deeper frequency dips (see Figure 1.) Based on these results, the drafting team does not recommend that the governor droop settings be greater than 5 percent.~~

  ~~The labels in the graph for Figure 1 represent the scaling used, based on the existing base-case model; i.e., the first number shows the comparable droop setting. Droop settings were then~~

~~scaled between 3 and 17 percent to determine the effects of changing the droop settings in the Interconnection. As droop settings were increased for a double Palo Verde outage, the frequency dips were greater and response decreased. At a minimum, the drafting team wanted to maintain the current level of reliability. As a result, the drafting team chose not to permit droop settings greater than the previous criterion of 5 percent.~~

~~Lower droop settings reduce frequency dips. Currently, some manufacturers are recommending droop settings as low as 3 percent. Depending on the type of unit, droop settings below 3 percent may result in local instability. Thus, the drafting team felt that 3 percent was a good practical lower limit. Before changing a droop setting, it is recommended that manufacturers be consulted to ensure there is no adverse impact to the unit and that stability studies have been conducted.~~

- ~~This document is not a system performance standard. The drafting team believes that this document should apply to the governor setting on individual generators rather than as an effective droop for an individual unit, a Balancing Authority Area, or a group of generators.~~
- ~~Whereas droop and regulation are often confused, the drafting team clarifies that it considered droop as a setting in the governor while regulation reflects the measured response of the unit. This document is not intended to apply to regulation.~~
- ~~Approximately half the generation will not respond to a frequency event regardless of the droop setting. In determining whether a specific unit will respond to a frequency dip depends upon factors such as generation loading, valve position, or control modes. Some gas turbines' response changes as frequency changes; e.g., output may decrease as frequency declines.~~
- ~~The drafting team developed a setting criterion rather than performance criterion because it is difficult to verify governor performance criteria for generators for the following reasons:~~

  ~~1) The ability to measure response is currently limited by existing data collection and storage systems.~~

  ~~2) Settings do not solely determine response. Governor response is typically non-linear.~~

  ~~3) Response is subject to a variety of operating conditions such as generator operating point, boiler and turbine operating conditions, ambient conditions, and the vintage and design of the unit; as well as by physical, regulatory, and environmental constraints.~~

  ~~4) The response is impacted by the ramp rate, Automatic Generation Control, and other control mechanisms.~~

  ~~5) Performing a test of the governor response is difficult because frequency events are hard to duplicate in test conditions, particularly for non-hydro units.~~

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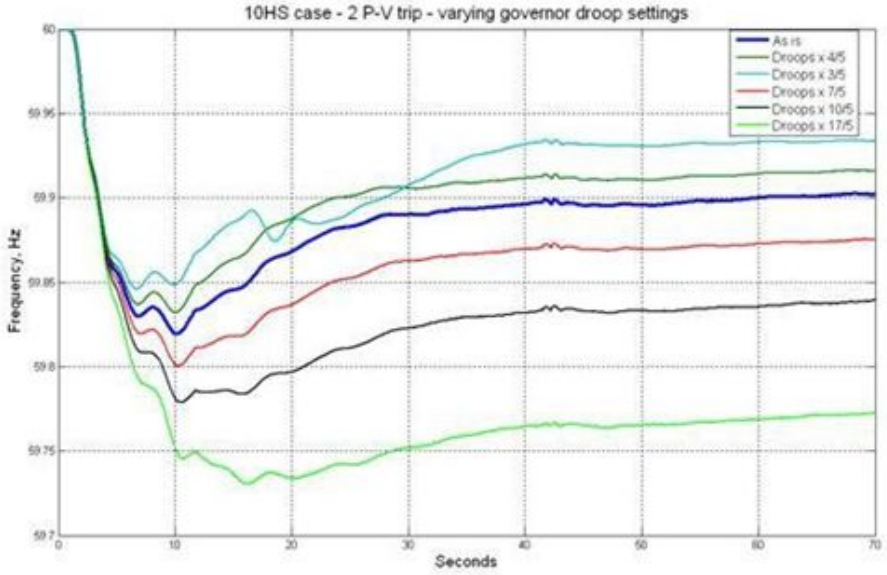
~~6) The frequency is constantly changing throughout a frequency event. Therefore, the response varies with time for each event. Primary response blends into secondary response. External events influence response of the unit (verification requires a steady-state condition that does not exist).~~

<Public>

PRC-001-WECC-CRT-~~2.1~~3—Governor Droop Setting

~~Figure 1—Governor Droop Setting~~



WECC
Electric Reliability and Security for the West

Attachment N
Final Ballot Results
WECC-0150 PRC-001-WECC-CRT-3
Governor Droop

Ballot Name:	WECC-0150 PRC-001-WECC-CRT-3 Governor Droop		
Overview:	This project: Amends and clarifies the Facilities, Background, and Overview sections to specifically address inverter-based resources.		
Ballot Pool Open:	08/21/2023	Ballot Pool Closed:	09/06/2023
Ballot Opened:	09/14/2023	Ballot Closed:	09/29/2023
Total Ballot Pool:	23	Total Votes:	22
Quorum:	95.7%	Weighted Votes:	100%
Ballot Results:	Pass		

Voting Sectors	Total in Ballot Pool	In-Pool Affiliates Excluded	Votes Non-Abstain	Sector Weight	Yes Votes	Weighted Segment Vote	No Votes	Abstain	Total Votes for Quorum	Did Not Vote
Transmission Owners	5		4	0.4	4	40.0%	0	1	5	0
Regional Transmission Organizations (RTO) and Independent System Operators (ISO)	0		0	0	0	0.0%	0	0	0	0
Load-Serving Entities (LSE)	4		3	0.3	3	30.0%	0	1	4	0
Transmission Dependent Utilities (TDU)	3		2	0.2	2	20.0%	0	1	3	0
Electric Generators	5		4	0.4	4	40.0%	0	1	5	0
Electricity Brokers, Aggregators, and Marketers	6		5	0.5	5	50.0%	0	0	5	1
Large Electricity End Users	0		0	0	0	0.0%	0	0	0	0
Small Electricity Users	0		0	0	0	0.0%	0	0	0	0
Federal, State, Provincial Regulatory, other Gov. Entities	0		0	0	0	0.0%	0	0	0	0
Regional Entities	0		0	0	0	0.0%	0	0	0	0
Totals	23	0	18	1.8	18	100.0%	0	4	22	1

Final Ballot Results

Title	Company	Sector	Vote	Comments	Created By
WECC-0150	Arizona Public Service Company	Electric Generators	Yes	0	Brandon Smith
WECC-0150	Arizona Public Service Company	Transmission Owners	Yes	0	Daniela Atanasovski
WECC-0150	Arizona Public Service Company	Load-Serving Entities (LSE)	Yes	0	Jessica Lopez
WECC-0150	Arizona Public Service Company	Electricity Brokers, Aggregators, and Marketers	Yes	0	Marcus Bortman
WECC-0150	British Columbia Hydro and Power Authority	Electric Generators	Abstain	There are no additional comments.	Adrian Andreoiu
WECC-0150	British Columbia Hydro and Power Authority	Transmission Dependent Utilities (TDU)	Abstain	There are no additional comments.	Adrian Andreoiu
WECC-0150	British Columbia Hydro and Power Authority	Transmission Owners	Abstain	There are no additional comments.	Adrian Andreoiu
WECC-0150	British Columbia Hydro and Power Authority	Load-Serving Entities (LSE)	Abstain	There are no additional comments.	Adrian Andreoiu
WECC-0150	Bonneville Power Administration	Electric Generators	Yes	0	Christopher Siewert

Final Ballot Results

Title	Company	Sector	Vote	Comments	Created By
WECC-0150	Bonneville Power Administration	Electricity Brokers, Aggregators, and Marketers	Yes	0	Tanner Brier
WECC-0150	Sacramento Municipal Utility District	Electric Generators	Yes	SMUD supports these changes.	Tim Kelley
WECC-0150	Sacramento Municipal Utility District	Transmission Dependent Utilities (TDU)	Yes	SMUD supports these changes.	Tim Kelley
WECC-0150	Sacramento Municipal Utility District	Transmission Owners	Yes	SMUD supports these changes.	Tim Kelley
WECC-0150	Sacramento Municipal Utility District	Load-Serving Entities (LSE)	Yes	SMUD supports these changes.	Tim Kelley
WECC-0150	Sacramento Municipal Utility District	Electricity Brokers, Aggregators, and Marketers	Yes	SMUD supports these changes.	Tim Kelley
WECC-0150	Balancing Authority of Northern California	Transmission Owners	Yes	BANC supports these changes.	Tim Kelley
WECC-0150	Balancing Authority of Northern California	Electricity Brokers, Aggregators, and Marketers	Yes	BANC supports these changes.	Tim Kelley
WECC-0150	Black Hills Corporation	Transmission Dependent Utilities (TDU)	Yes	0	Rachel Schuldt
WECC-0150	Black Hills Corporation	Transmission Owners	Yes	0	Rachel Schuldt
WECC-0150	Black Hills Corporation	Load-Serving Entities (LSE)	Yes	0	Rachel Schuldt

Final Ballot Results

Title	Company	Sector	Vote	Comments	Created By
WECC-0150	Black Hills Corporation	Electricity Brokers, Aggregators, and Marketers	Yes	0	Rachel Schuldt
WECC-0150	Black Hills Corporation	Electric Generators	Yes	0	Rachel Schuldt
WECC-0150	Powerex, Inc.	Electricity Brokers, Aggregators, and Marketers	0	0	Raj Hundal

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WECC

Reliability Risk Priorities Update

March 13, 2023

Kris Raper
Vice President, Strategic Engagement and External Affairs

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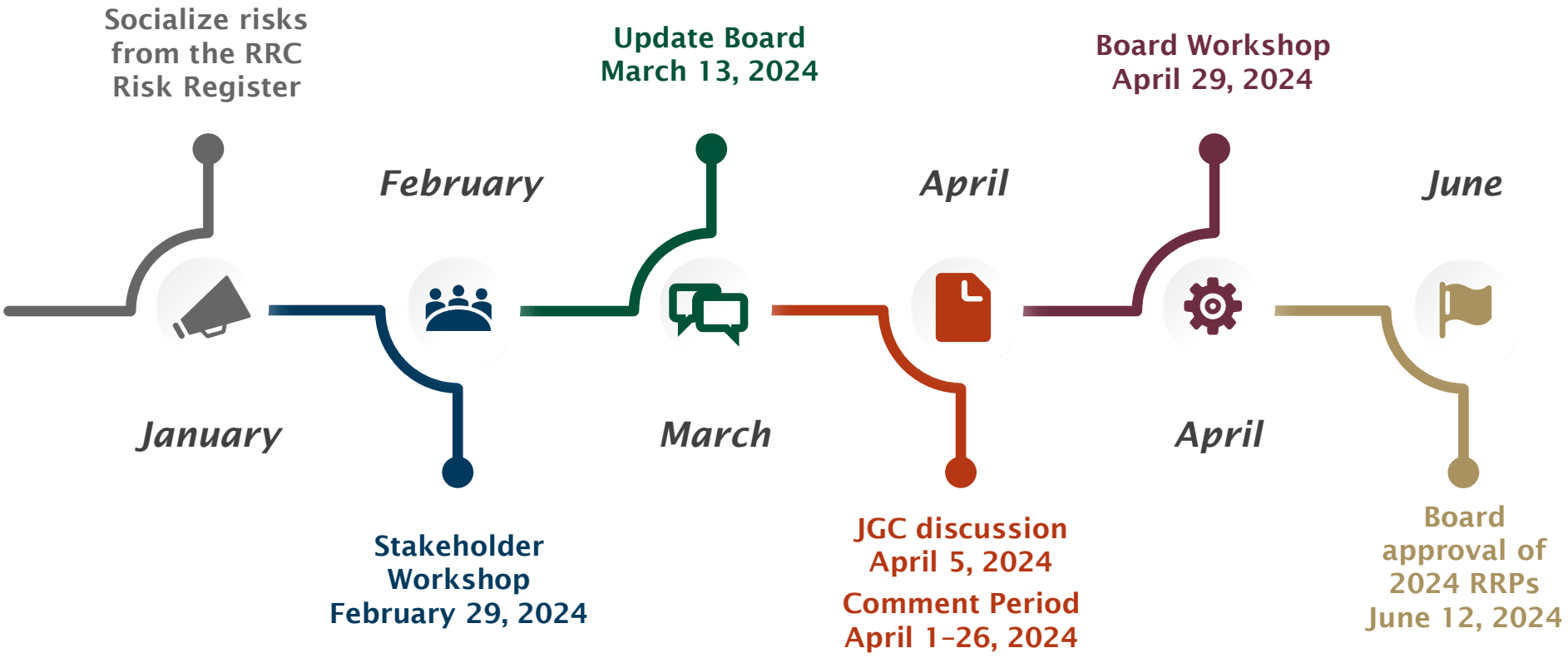
2024 RRP Development Process



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Electric Reliability and Security for the West

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Technical Activities
Update to the WECC Board of Directors

Branden Sudduth, VP of Reliability Planning and Performance Analysis and JGC Co-chair
Kris Raper, VP of Strategic Engagement and External Affairs
Chelsea Loomis, JGC Co-chair
Philip Augustin and Chelsea Loomis, RAC Co-chairs
Dede Subakti and Margaret Albright, RRC Co-chairs

March 13, 2024

Technical Activities Report to the Board—March 13, 2024

Introduction

This report is a compilation of activities being undertaken by the Reliability Planning and Performance Analysis department, the Strategic Engagement and External Affairs department, and the WECC technical committees.

Activities related to WECC's Reliability Risk Priorities (RRP) and activities and tools being supported by Peak Donation funds are identified with the following symbols:

- Peak Donation Items
- RRP: Cybersecurity
- RRP: Resource Adequacy
- RRP: Extreme Natural Events
- RRP: Impacts of Changing Resources and Customer Loads on the BPS

New Initiatives and Recent Activity Highlights

Interregional Transfer Capability Study (ITCS)

The ITCS is moving forward and the project team is on track to complete the study by December 2, 2024. Highlights include:

- The project has been divided into three distinct but overlapping phases:
  - Phase 1—Determine the total transfer capability between neighboring transmission planning regions;
  - Phase 2—Identify "prudent" additional transfer capability between neighboring areas to resolve reliability issues in the future; and
  - Phase 3—Identify ways to achieve and sustain the identified transfer capability and any recommended enhancements.
- The ERO Project team is in the thick of the technical work:
  - The Phase 1 team has finished the cases and supporting input files to be used for the transfer analyses and is beginning to run initial transfer studies.
  - The Phase 2 team is refining the study details for Phase 2 and is reviewing the models, mechanisms, and preliminary outputs.
- On the communications and outreach front, NERC held an in-person ITCS Advisory Group meeting in January to discuss project details and get feedback from the Advisory Group, and WECC held an ITCS Industry update webinar in January. Both events were well attended. NERC plans to hold virtual ITCS Advisory Group meetings monthly. These meetings are open to the public.
- For more information, please see the ITCS Framework on NERC's ITCS webpage.

"Reliability in the West" Discussion Series

In February, WECC began the "Reliability in the West" discussion series. This series grew from the "Resource Adequacy" discussion series to address broader matters that are important to stakeholders in the West. The first discussion addressed inverter-based resources and the need for ride-through when an event occurs on the system. The second discussion in the series will address specifics of grid-forming inverter technology. While the series is not intended to be devoted to IBRs, the subject is broad, with a great deal of room for education as we learn more about the technology and how it responds in various situations. We look forward to hosting conversations about all the matters most important to our stakeholders.

2024 State of the Interconnection

WECC released the 2024 State of the Interconnection on February 15, 2024. The State of the Interconnection is a high-level look at reliability issues in the interconnection over the recent past and near future. In 2023, WECC separated the State of the Interconnection report from the tool now known as the System Performance Data Portal. The data portal shows detailed data and trends.

System Performance Data and Metrics

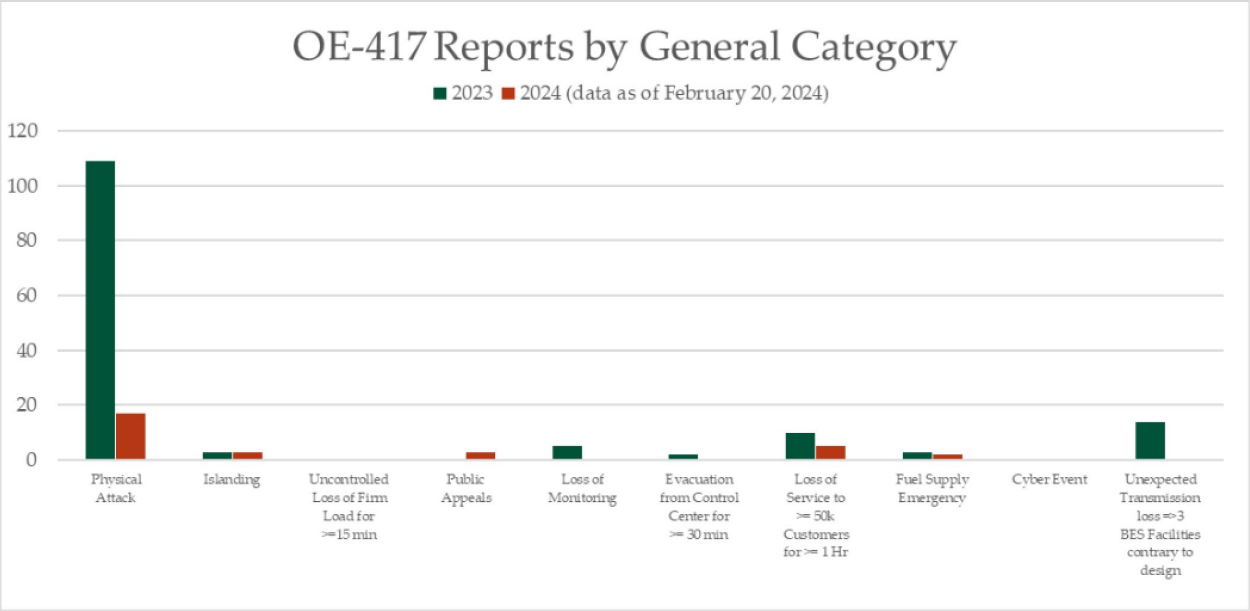
Event Analysis

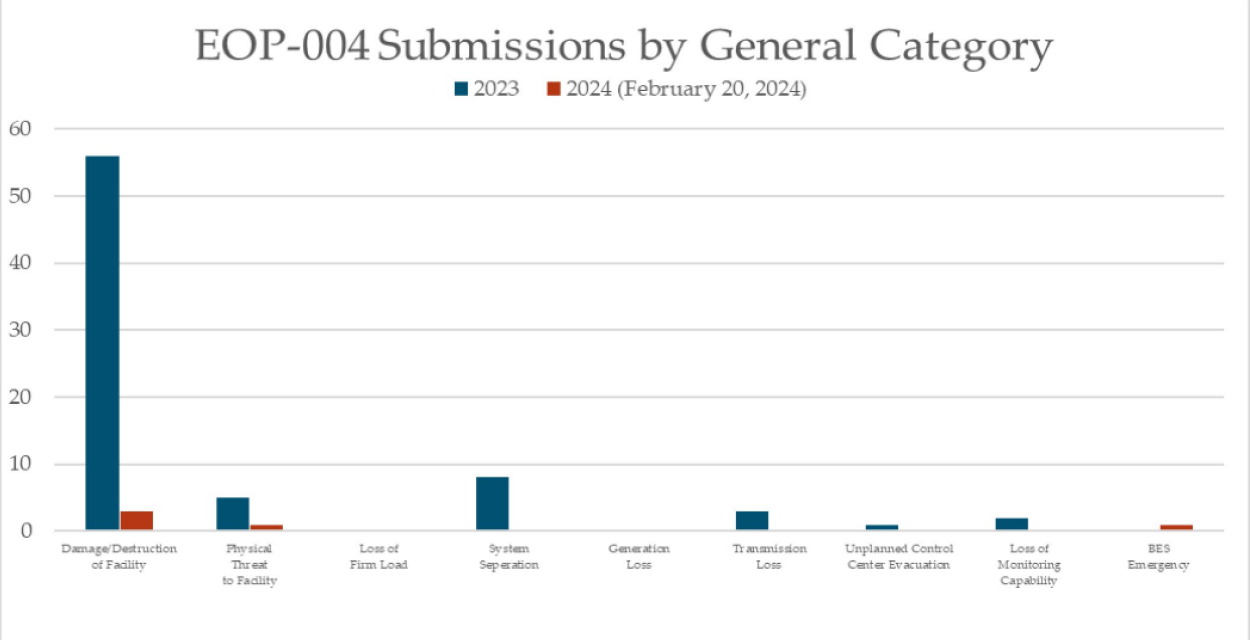
The Operations Analysis team at WECC maintains situation awareness by various means. One source of system events is mandatory reporting through the Department of Energy's OE-417 and the NERC Reliability Standard's EOP-004-4 process. A few items are worth noting:

Physical attacks and damage to facilities make up the highest number of events. While most of these events are prompted by theft of grounding wire or other material, some are more severe and are cause for industry to be more vigilant in physical security approaches. WECC coordinates with NERC and E-ISAC on these events, as well as with WECC's Physical Security Forum.

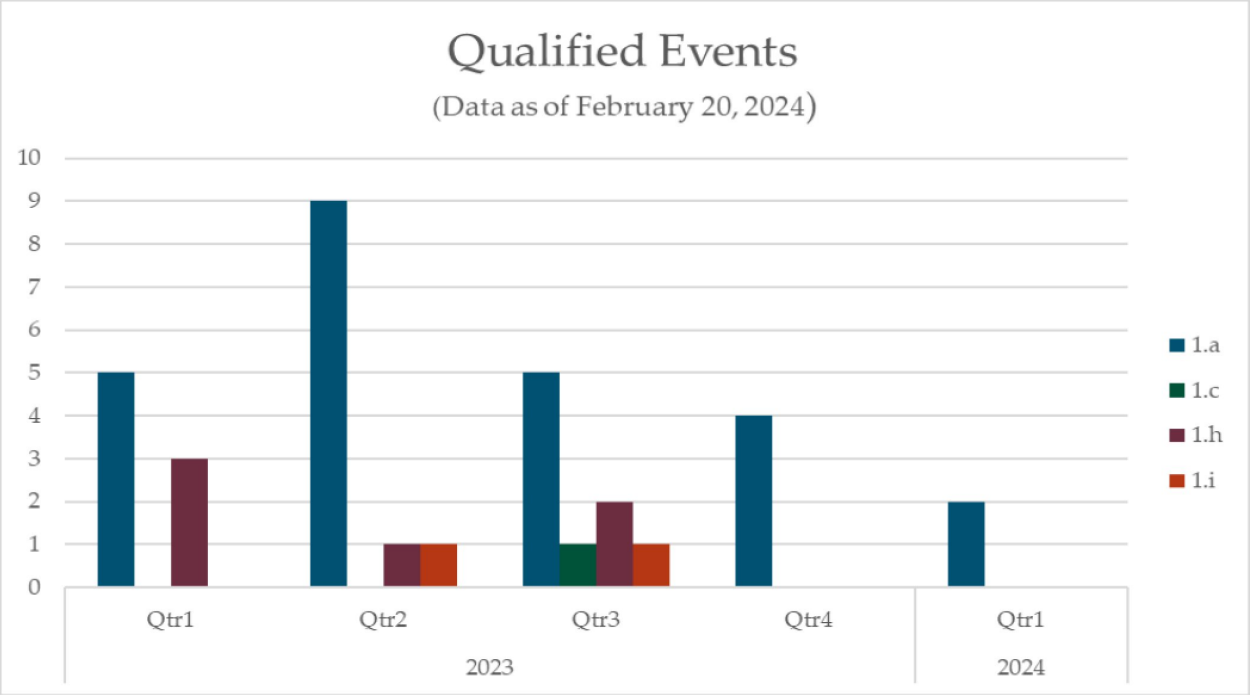
In mid-January, winter storms Gerri and Heather passed through the interconnection. Freezing rain and high winds led to widespread outages in the Pacific Northwest. During this storm there were five OE-417 reports submitted because entities had more than 50,000 customers without power. Almost all outages were on the distribution side of the system. Arctic air led to plummeting temperatures resulting in high demand throughout much of the interconnection. Alberta saw an all-time system peak during this period. Three entities issued public appeals for electricity reduction to ensure there was sufficient power to meet customer needs. Potential gas curtailments that were announced, but never acted upon, could have made meeting demand in certain parts of the interconnection more difficult. There were 12 energy emergency alerts given during this time for entities that were having trouble

meeting their demand and carrying required reserves. No load shedding was necessary. Despite the impact of these storms, the interconnection remained stable and intact, and we consider the performance of the system a success through these tough operating conditions. WECC staff is involved in an ERO-wide effort to identify what went well during this storm and what we can learn from this experience. FERC will provide the details of this investigation in April. Many of the events shown in the following charts took place during these storms.





There have only been two qualified events reported so far in 2024, both of which are Category 1a events. This is a reduction from 10 events by this time last year. We will continue to monitor the number of events coming in to see whether there is a downward trend over time, indicating a possible improvement in performance throughout the interconnection on this criterion.

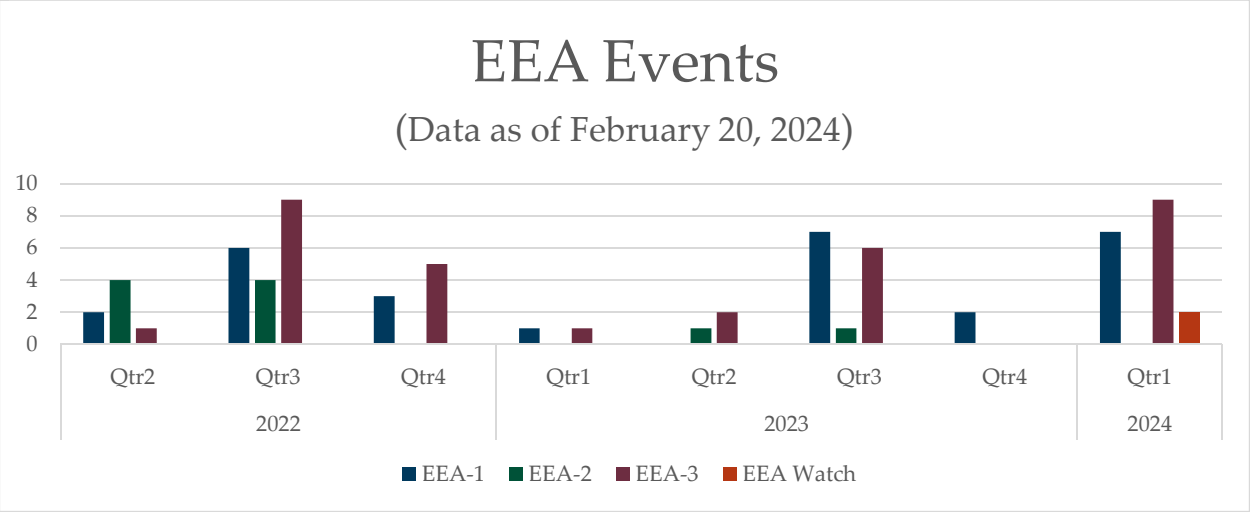


One ongoing investigation that WECC is involved in is a Category 1i event that took place in September 2023, which is the non-consequential loss of over 500 MW of inverter resources. This event affected some of the same plants in Southwestern Utah as another Category 1i event that took place in April 2023. While not complete, the investigation has revealed improvements to the amount of generation affected and the duration in which it remained offline. WECC and NERC have been working with the plant owners and found that most of the plants have contacted the inverter manufacturers to improve the ride-through performance of these plants. The investigation team has some additional questions for the inverter manufacturers. It has not been determined whether there will be a disturbance report for this event.

Energy Emergency Alerts

There was a total of 21 Energy Emergency Alert (EEA) events in 2023. There have been 16 already issued for 2024—more EEAs than we have ever seen in the interconnection in a first quarter. Twelve of these EEAs took place within six days during the aforementioned winter storms. The other four are all from the same entity. This entity is located on a part of the system with limited import capability. High

loads and forced generation outages led to concerns about this entity's operating reserves. In these cases, the entity armed firm load as operating reserves.



Status of Ongoing Activities

ADS development

The 2034 Anchor Data Set (ADS) is under development; the Production Cost Data Subcommittee (PCDS) is behind schedule on Version 1 of the 2034 ADS, which is based on the 2023 Loads and Resources (L&R) data. The delay has been communicated. Version 2 of the 2034 ADS will be updated with the 2024 L&R submittals being validated now.

Modeling Assumption Enhancements

The Reliability Assessment Committee (RAC) is evaluating and discussing the standard power-flow base cases that are developed annually to make sure that what is being produced adds the most value for stakeholders. There have been changes in the transmission flows and load distribution that we need to make sure are being analyzed.

Base Case Development

Base Case Activity (as of 2/16/2024)		
Base Case Name	**Status**	**Date Posted**
2025 Light Spring 1	In Review	11/21/2023
2024 Heavy Spring 2	Final	12/18/2023
2024-25 Heavy Winter 3	In Review	1/12/2024

2024-25 Light Winter 1	In Review	2/6/2024

Base Case Data Quality

WECC, in coordination with the base case data submitters, is constantly looking for ways to enhance the data quality of the base cases. A draft of priority potential data shortcomings has been developed and is being discussed by the System Review Subcommittee. These shortcomings were selected because of the impact they will have on the useability of the base cases. The target for reduction of the priority data shortcomings in 2024 is 20%.

2023 Reliability Assessments

In 2023, the decision was made to release a handful of the 2023 WECC Study Program studies in the first part of 2024. WECC will be releasing the following studies as a collection to share the innovation that WECC is undertaking in the Year 20 period:

- Year 20: Foundational case;
- Year 20: Extreme hot weather event;
- Year 20: Extreme cold weather event; and
- Year 20: Impacts of compound changes in loads/electrification.

2024 Reliability Assessments

For 2024, WECC will continue to work with NERC to complete the Long-term Reliability, Probabilistic, Winter Reliability, and Summer Reliability assessments.

In the interest of continuous improvement, WECC is looking at the way studies are performed to increase efficacy, efficiency, and clarity. The WECC Study Program was a successful approach to reliability assessments under the prior RPPA structure. With the creation of separate Reliability Assessment and Reliability Modeling teams, the ability to perform assessments continuously creates the need for a new process and improved coordination among the WECC teams and stakeholders. RPPA management and Strategic Engagement management have been meeting since the first of the year to craft a new assessment framework. Once the new framework is formalized, the 2024 reliability assessments will be selected with input from the RAC and Studies Subcommittee (StS), along with coordination from the Reliability Risk Committee (RRC) and the WECC Risk Register.

Resource Adequacy

WECC has long been proud of the use of MAVRIC for its resource adequacy assessments, and now, with the extension of WECC's Plexos license, is exploring the possible benefits that Plexos provides regarding those assessments.

For the 2024 Western Assessment of Resource Adequacy, the teams have been established and are coordinating timelines and expectations. This year, the teams will work to integrate Plexos into the Western Assessment along with MAVRIC.

Additional Technical Committee Highlights and Approval Items

RAC Co-chair

Chelsea Loomis's term as a RAC co-chair ends March 31, 2024. Chelsea was nominated, and the RAC recommends Chelsea continue as a RAC co-chair.

Joint Guidance Committee (JGC)

The stakeholder co-chair seat rotated from the Member Advisory Committee (Jon Aust) to the RAC, and Chelsea Loomis assumed the role of JGC co-chair, alongside Branden Sudduth as the WECC executive co-chair.

The JGC hosted its annual committee leadership training on December 13. The training was open to all stakeholders currently holding or interested in holding a leadership role in WECC's technical committees. Eighty people attended the training, which covered tactical skills and knowledge and leadership skills.

Following the leadership meeting, the JGC discussed spreading the training out over the year and creating a place to make some training materials permanently available. The JGC has taken this as an initiative in 2024.

The JGC held a strategic alignment meeting on December 14. The purpose of this meeting was to discuss the technical committee three-year work plans and how they align with WECC's mission, vision, and current risks to the reliability and security of the Western Interconnection. The meeting was moderately successful. Following the meeting, the JGC began a discussion of more effective methods for helping the technical committees align the three-year work plans. This will be an ongoing initiative for the JGC in 2024.

RRC Extreme Natural Events Strike Team

The strike team has been meeting monthly during 2023 and more frequently in early 2024 to complete its white paper that identifies two categories of extreme natural events and associated risks—Category A, events and risks related to changing climate, and Category B, events associated with physical forces in Earth and space causing disruptions. The white paper provides a description of these events, the associated risks, and what mitigation activities are happening inside and outside WECC. Four of the extreme natural events identified by the strike team have been included in the RRC Risk Register and have a risk weighting score of 22 to 24 on a scale of 25 and a weighting value of high to extreme. The strike team will recommend to the RRC that the remaining risks identified in the white paper be added

to the Risk Register, sent through the RRC Risk Management Process, that they determine whether mitigation activities are happening and, if not, what mitigation needs to happen. The white paper will be available to the RRC in Q1 2024.

RAC–RRC Coordination

Coordination and collaboration between the RRC and the RAC are important aspects of WECC's technical committee work, and committee leadership is intentionally creating strong ties between the two groups. The RRC and RAC leadership collaboration group developed a coordination strategy and is increasing the focus on the RRC Risk Register. The group is also examining having joint meetings on topics that are of interest to both the RRC and the RAC. Two of the topics that fit are the risks associated with FERC Order 881—about using ambient adjust ratings for transmission facilities—and the Interregional Transfer Capability Study mentioned above.

Building Capabilities

Performance Analysis

One of the corporate scorecard items for 2024 is to develop and publish a revised version of the System Performance Data Portal. The update to the WECC website requires this work product to be created in a new program, as the existing platform will not be supported. The WECC team will incorporate feedback from stakeholders received in 2023. WECC wants to improve this work product so it will be more useful to WECC stakeholders. This work is anticipated to be complete in Q3 2024.

Data Management Solution Project

Last year, WECC began a project to put in place a data management system to ensure that WECC data is well-managed, accurate, and reliable. However, due to resource constraints and vendor challenges, the project was halted in mid/late 2023. The project has been resumed and is reflected as a scorecard initiative under Focus Area 2.

The scope of this project is limited to the implementation of Loads and Resources (L&R) data into Snowflake (a cloud computing platform), which includes data input and validation. Each year, entities submit a significant amount of L&R data to WECC in response to our annual data request. This data is critical to WECC models and assessments, and it is important that the data is accurate, timely, and easy to submit. Snowflake was selected because it enables cloud-based data storage, processing, and analytic solutions that are critical for a scalable, flexible data management program. The L&R data will be used as a pilot for a data management solution, and we expect to expand it in the future to include other datasets.

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WECC

Technical Activities Update

March 13, 2024

Branden Sudduth, VP RPPA

Chelsea Loomis, RAC Co-chair

Margaret Albright, RRC Co-chair

<Public>

2024 Arctic Storms

- From January 12–19, extremely low temperatures resulted in demand records being broken
- Two Western entities placed in a Level 3 Energy Emergency Alert, but no load was shed
- FERC, NERC, and Regional Entities to perform review of BPS performance during recent winter storms (link)

<Public>

Interregional Transfer Capability Study Update

Fiscal Responsibility Act of 2023, Section 322

Congress directed that, in consultation with the Regional Entities and transmitting utilities, NERC shall conduct a study containing three elements:

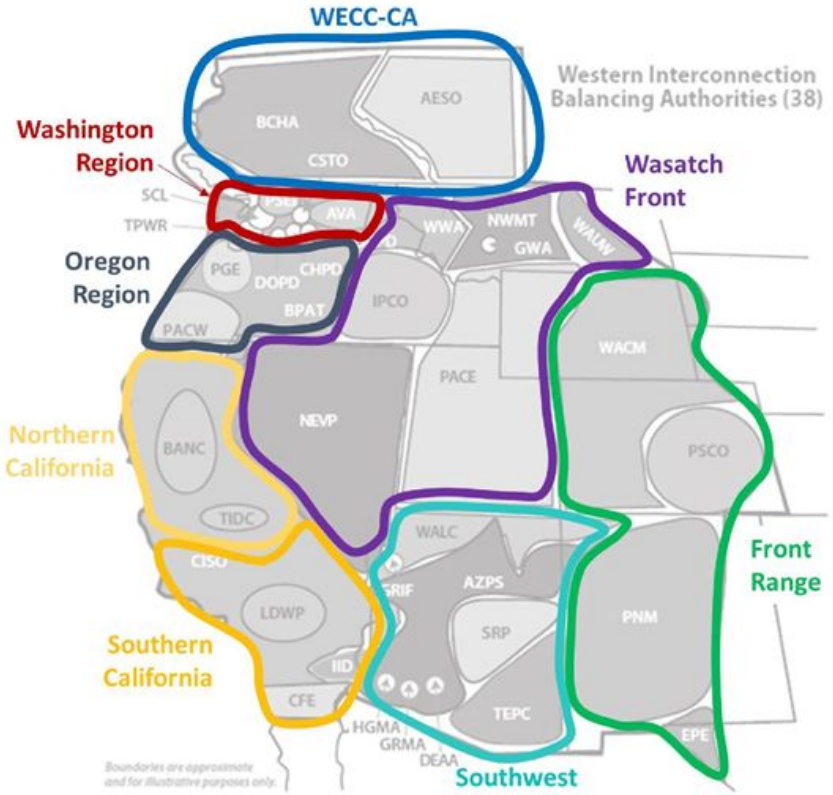
- **Phase 1 Objective:** Determine the total transfer capability between neighboring transmission planning regions.
- **Phase 2 Objective:** Identify "prudent" additional transfer capability between neighboring areas to resolve reliability issues in the future.
- **Phase 3 Objective:** Identify mechanisms to achieve and sustain the identified transfer capability and any recommended enhancements.

<Public>

ITCS Source-Sink Areas

FROM / TO	Canada	WA Region	OR Region	Wasatch Front	Front Range	No. CA	So. CA	Southwest Region
Canada		X						
WA Region (NG)	X		X	X				
OR Region (NG)		X		X		X		
Wasatch Front (NG)		X	X		X		X	X
Front Range (WC)				X				X
Northern CA (CAISO)			X				X	
Southern CA (CAISO)				X		X		X
Southwest Region (WC)				X	X		X	

Planning Regions
- NG – NorthernGrid
- CAISO – California ISO
- WC – WestConnect



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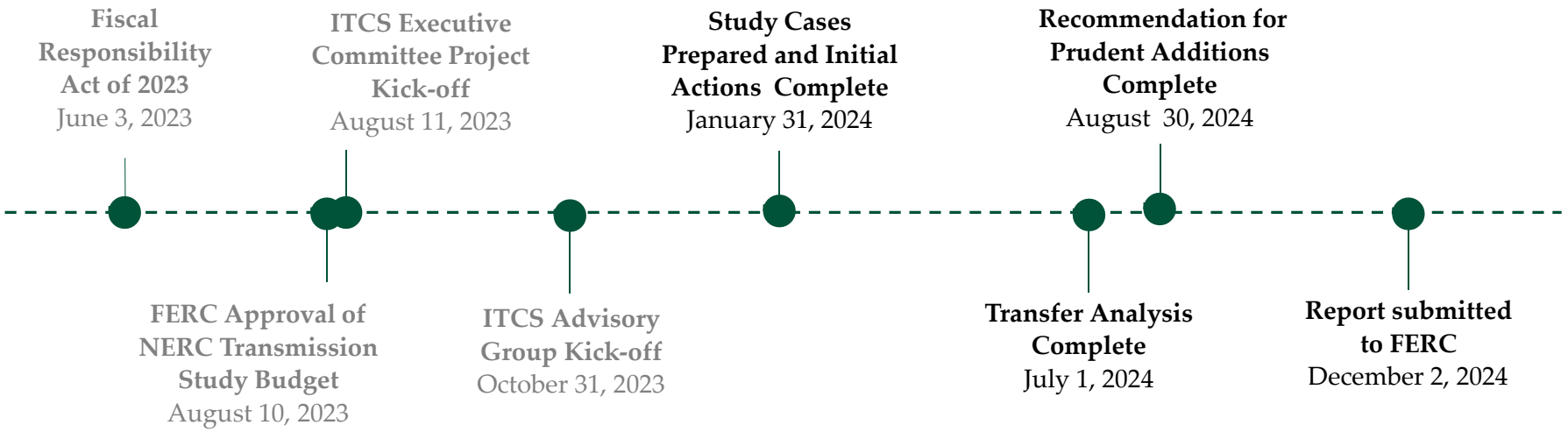
ITCS Timeline



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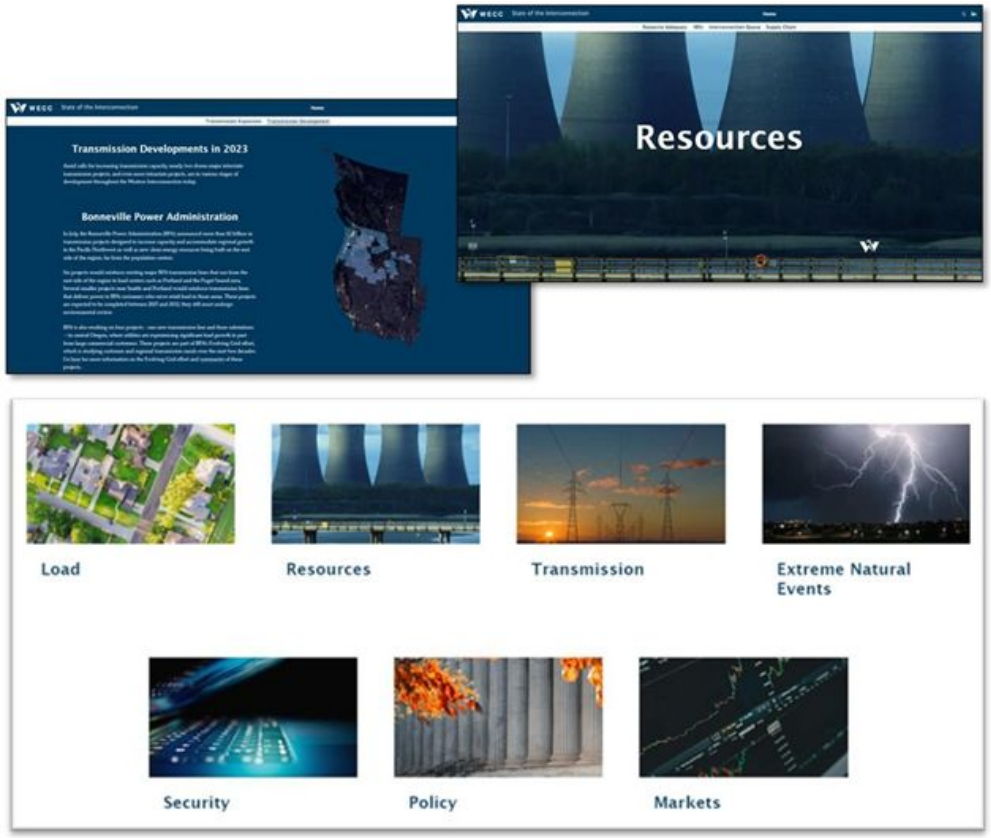
2024 State of the Interconnection

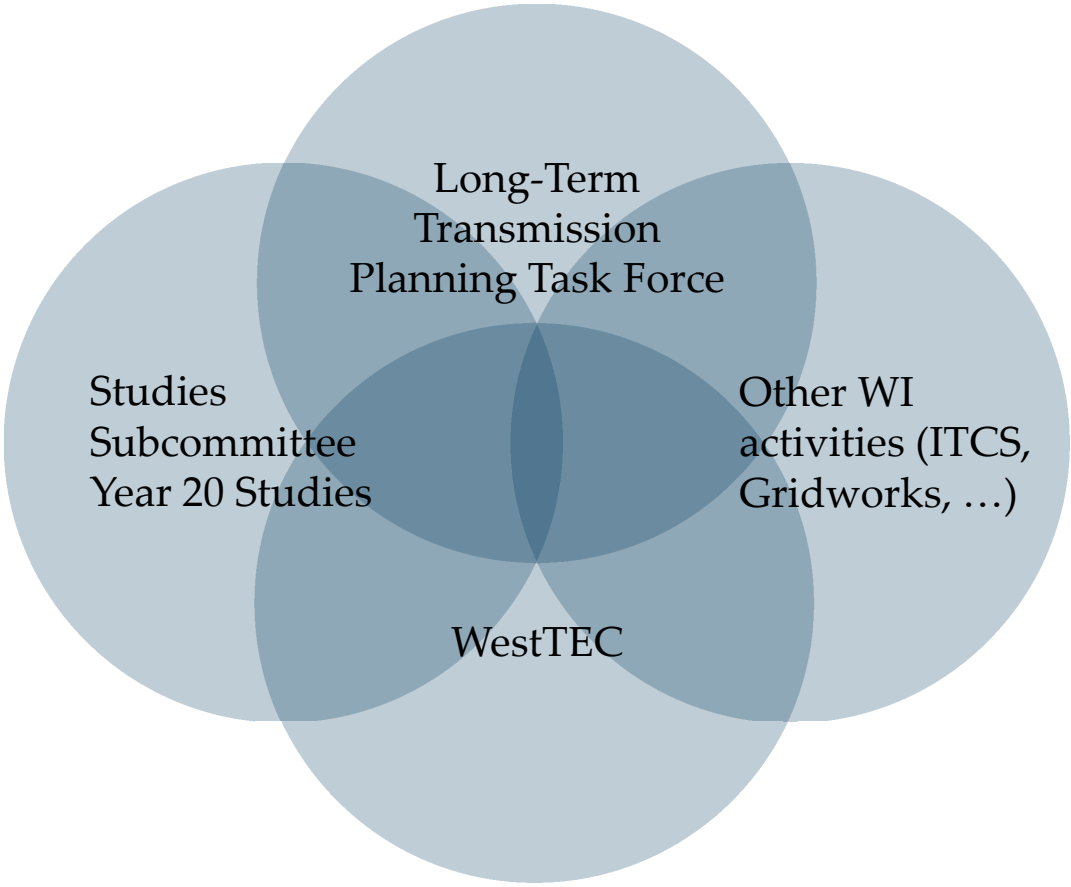
- New digitally dynamic environment
- Entity and state spotlights
- Forward- and backward-looking focus



https://feature.wecc.org/soti/index.html

<Public>

20+ Year Transmission Planning



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Reliability Standard Impact on Assessments

- RAC is tracking and discussing changes to standards
  - Draft TPL-008
    - Assessments of extreme weather events
  - Retirement of MOD-029 and the other MOD A
    - How does the change affect processes like the Path Rating Process?

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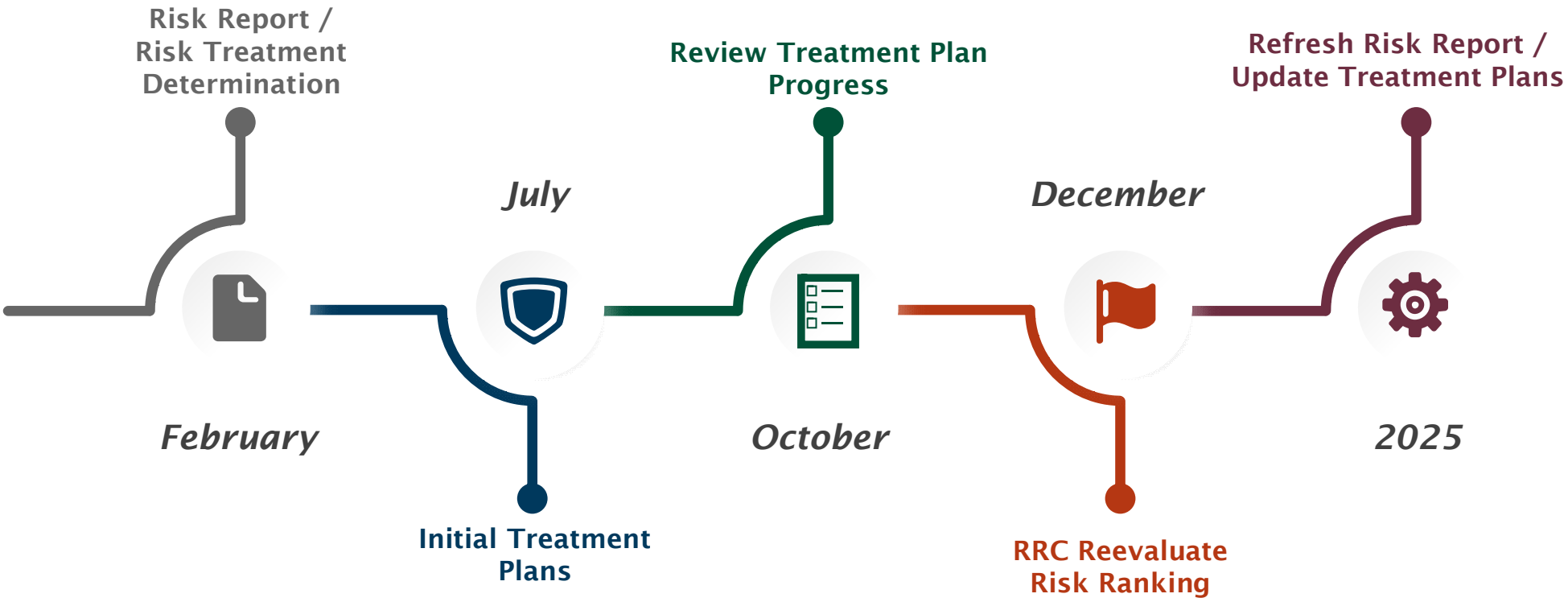
RRC Update



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Electric Reliability and Security for the West

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