



WECC

2020 WECC Reliability Risk Priorities

June 17, 2020

Introduction

The Western Interconnection is experiencing unprecedented change. This change is due to several factors:

- Environmental regulations, economics, technology, and customer demands driving the resource mix from large, baseload units, like coal and nuclear, to more distributed, variable energy resources;
- Extreme natural events forcing entities to plan and operate the grid in new ways; and
- An increasing impact from distribution-level resources and customer loads on the bulk power system (BPS).

WECC must use a careful approach to decide the best way to use its resources on emerging reliability risks.

This document identifies four WECC Reliability Risk Priorities, background information on each of the priorities, and recommendations for how to address them. The WECC Reliability Risk Priorities will serve as input to update committee and program-area work plans scheduled for late 2020. The work plans will include detailed information for each WECC Reliability Risk Priority, such as who will be responsible for addressing each activity, when the activity is expected to be complete, and what the work product(s) will be.

Background

On February 20, 2020, WECC hosted the Reliability Workshop in conjunction with the Standing Committee meetings. This provided an opportunity for the Member Advisory Committee (MAC), Western Interconnection Regional Advisory Body (WIRAB), and the Standing Committees to discuss the NERC Reliability Issues Steering Committee (RISC) Electric Reliability Organization (ERO) Reliability Risk Priorities Report¹ (RISC Report) and provide input on reliability risks facing the Western Interconnection.

During the workshop, attendees discussed workshop presentations covering NERC's and WECC's Strategic Planning Processes, the RISC Report, and the MAC's and WIRAB's recommendations about reliability risk priorities specific to the Western Interconnection.

WECC used the outcomes of the Reliability Workshop to create four WECC Reliability Risk Priorities. These issues have a unique impact or importance to the Western Interconnection, or show areas in which WECC can make a material contribution and on which it should focus over the next few years. These proposed WECC Reliability Risk Priorities were discussed at the May 5, 2020, Board Workshop and recommendations stemming from that workshop were incorporated into the proposed WECC

¹ [ERO Reliability Risk Priorities Report](#), November 2019.



Reliability Risk Priorities posted for stakeholder comment from May 22 through June 5, 2020. Comments received during the stakeholder comment period have been considered and incorporated where appropriate in the following WECC Reliability Risk Priorities.

WECC Reliability Risk Priorities

Based on input received at the Reliability Workshop, the Board Workshop, and during the stakeholder comment period, WECC adopts the following WECC Reliability Risk Priorities.

1) Resource Adequacy and Performance

Study interconnection-wide future resource adequacy and performance considering:

- a. The importance of working with resource planners and decision-makers,
- b. Benefits of resource diversity (geographical and resource type),
- c. Technology performance during various conditions (e.g., solar during extreme heat), and
- d. Near-term and longer-term time frames.

Background: With the retirement or planned retirement of considerable amounts of nuclear and coal-fired generation, and an increase in variable energy resources, the need to ensure sufficient capacity to reliably meet electricity demand at any given hour within the Western Interconnection is becoming more significant. Additionally, in regions with high penetrations of solar generation, capacity shortfalls are likely to occur in the hours after the peak demand, which makes traditional methods of determining resource adequacy insufficient.

Recommendations: As the Regional Entity with an independent and interconnection-wide perspective, WECC is uniquely positioned to evaluate multiple scenarios using probabilistic methods and to provide the stakeholders with a clear picture of the risk of resource shortfalls in the future. WECC staff should continue to work with the MAC Resource Adequacy Task Force to identify opportunities to improve assessment and stakeholder engagement. It is also recommended that WECC develop its own Western Interconnection resource adequacy assessment (in addition to the assessment provided for the development of the NERC Long-Term Reliability Assessment) that looks at a broad range of potential futures. WECC should work with resource planners and decision-makers to host a forum focused on resource adequacy issues and use input from the forum to inform WECC resource adequacy assessments. Finally, WECC should expand the capabilities of the Generator Resource Adequacy Forecast (GRAF) tool and continue to educate stakeholders on its value and use.

2) Changing Resource Mix

Evaluate the impacts of the changing resource mix considering:

- a. Large amounts of coal and nuclear plant retirements,
- b. High use of inverter-based resources,



- c. Transmission congestion and other deliverability challenges,
- d. Changes to capacity factors of natural gas resources,
- e. Market trends and market impacts,
- f. System stability and voltage challenges, and
- g. The benefits and challenges associated with energy storage and hybrid resources.

Background: The changing resource mix continues to be a focus for industry stakeholders in the West and was a common theme at the February workshop. As the system continues to change and new technologies like battery storage are being used more broadly, rigorous analysis should be performed to ensure that BPS is able to meet future power demands and other essential reliability services (e.g., frequency response, voltage support, ramping) needed to maintain system reliability.

Recommendations: With the increasing amount of the resource mix changes planned over the next 10 to 20 years, the RAC should continue to devote a large part of its study program to assessing various resource mixes under different loading conditions. As part of this effort, the RAC should also modify its data requirements and reporting procedures for collecting power flow and production cost modeling data to ensure it is receiving necessary generator retirement and new variable energy resource information. The Energy Storage Task Force should continue working with a focus on the reliable integration of large numbers of energy storage devices on the grid and should work closely with the RAC to mitigate any deficiencies in energy storage data and modeling.

3) Distribution System and Customer Load Impacts on the BPS

Investigate and develop recommendations to limit the reliability risk to the BPS caused by changes to the distribution system (e.g., growth of distributed energy resources and behind-the-meter storage) and customer loads. This should include operational and planning activities.

Background: Growing amounts of distributed energy resources, such as rooftop solar and behind-the-meter energy storage, continue to pose challenges to BPS system operators and planners who have limited visibility into the amounts of these resources on the system. Additionally, mass electrification of loads that traditionally use a fuel source other than electricity (e.g., buildings and transportation) could significantly alter load profiles and how the system is operated. As the distinction between the transmission system and distribution system continues to blur, the impact that distribution system resources and load have on BPS reliability will continue to grow.

Recommendations: Working with the MAC, the Standing Committees should increase engagement of distribution providers in pertinent committee activities like planning model development. Also, WECC should develop a survey to identify what distribution system and load information utilities have access to, and the RAC should use this information to modify data requirements and reporting procedures for collecting modeling information. WECC staff should study trends of changes in load shapes across the interconnection and evaluate the impacts of the COVID-19



pandemic on load patterns. This information should be used to develop alternate load patterns used in resource adequacy assessments and other reliability analyses. Finally, WECC should monitor NERC's activities to address any applicability gaps in Reliability Standards to assure that Registered Entities can access distribution-level data needed to study BPS reliability.

4) Extreme Natural Events

Prepare for and evaluate impacts on the BPS caused by extreme natural events (e.g., wildfires, drought, heavy rain, flooding, extreme cold, pandemics, earthquakes). Share best practices and lessons learned from individual state and utility experiences across the Interconnection.

Background: At the February workshop, many groups discussed the unique natural events that occur in the West. While many other regions around the country focus on system resilience to events like hurricanes, the West has unique risks like droughts, wildfires, and earthquakes. Although the operational challenges associated with the COVID-19 global pandemic are not unique to the West, it has become clear that further study, planning, and the sharing of best practices related to pandemics is critical for the reliability and security of the Interconnection.

Recommendations: WECC can use the expertise of its stakeholders to understand the reliability risks associated with extreme natural events and to develop industry guidance on preparation. The Operating Committee (OC) should host forums on preparing for extreme natural disasters to share information and lessons learned and develop reliability guidelines to help entities develop preparedness plans. The Reliability Assessment Committee (RAC) should develop studies looking at extreme natural event scenarios in the future (including geomagnetic disturbances) to determine system impacts. The RAC should identify mitigating measures to lessen reliability risk. WECC staff, through performance analysis, should correlate weather patterns to generator and transmission outages to identify any existing reliability trends due to weather extremes. Finally, WECC staff, through its event analysis and situation awareness, should work closely with NERC and established industry groups to track wildfire preparedness activities and potential threats to the BPS resulting from public safety power shutoffs or wildfires.