Agenda
Reliability Issues Steering Committee
November 12, 2021 | 12:00-1:30 p.m. Eastern
Virtual Meeting

ATTENDEE WebEx Link: Join Meeting

Introductions and Chair’s Remarks

NERC Antitrust Compliance Guidelines

Agenda Items

1. Extreme Weather Preparedness*
   a. Findings of FERC/ERO Enterprise Joint Inquiry into 2021 Cold Weather Operations – Information
   b. Cold Weather Activities – Update
      i. Level 2 NERC Alert Activities
      ii. 2021-2022 Winter Reliability Assessment Preview
      iii. Cold Weather Standards

2. Status on Work Associated with the Framework to Address Known and Emerging Reliability and Security Risks* – Update
   a. Prioritization of Reliability, Resilience, and Security Risks
   b. Risk Registry
   c. Reliability and Security Technical Committee Tiger Team

3. 2021 GridSecCon Summary – Update

4. Membership Nomination Cycle* – Update

5. Other Matters and Adjournment

*Background materials included.
Antitrust Compliance Guidelines

I. General
It is NERC’s policy and practice to obey the antitrust laws and to avoid all conduct that unreasonably restrains competition. This policy requires the avoidance of any conduct that violates, or that might appear to violate, the antitrust laws. Among other things, the antitrust laws forbid any agreement between or among competitors regarding prices, availability of service, product design, terms of sale, division of markets, allocation of customers or any other activity that unreasonably restrains competition.

It is the responsibility of every NERC participant and employee who may in any way affect NERC’s compliance with the antitrust laws to carry out this commitment.

Antitrust laws are complex and subject to court interpretation that can vary over time and from one court to another. The purpose of these guidelines is to alert NERC participants and employees to potential antitrust problems and to set forth policies to be followed with respect to activities that may involve antitrust considerations. In some instances, the NERC policy contained in these guidelines is stricter than the applicable antitrust laws. Any NERC participant or employee who is uncertain about the legal ramifications of a particular course of conduct or who has doubts or concerns about whether NERC’s antitrust compliance policy is implicated in any situation should consult NERC’s General Counsel immediately.

II. Prohibited Activities
Participants in NERC activities (including those of its committees and subgroups) should refrain from the following when acting in their capacity as participants in NERC activities (e.g., at NERC meetings, conference calls and in informal discussions):

- Discussions involving pricing information, especially margin (profit) and internal cost information and participants’ expectations as to their future prices or internal costs.
- Discussions of a participant’s marketing strategies.
- Discussions regarding how customers and geographical areas are to be divided among competitors.
- Discussions concerning the exclusion of competitors from markets.
- Discussions concerning boycotting or group refusals to deal with competitors, vendors or suppliers.
• Any other matters that do not clearly fall within these guidelines should be reviewed with NERC’s General Counsel before being discussed.

III. Activities That Are Permitted
From time to time decisions or actions of NERC (including those of its committees and subgroups) may have a negative impact on particular entities and thus in that sense adversely impact competition. Decisions and actions by NERC (including its committees and subgroups) should only be undertaken for the purpose of promoting and maintaining the reliability and adequacy of the bulk power system. If you do not have a legitimate purpose consistent with this objective for discussing a matter, please refrain from discussing the matter during NERC meetings and in other NERC-related communications.

You should also ensure that NERC procedures, including those set forth in NERC’s Certificate of Incorporation, Bylaws, and Rules of Procedure are followed in conducting NERC business.

In addition, all discussions in NERC meetings and other NERC-related communications should be within the scope of the mandate for or assignment to the particular NERC committee or subgroup, as well as within the scope of the published agenda for the meeting.

No decisions should be made nor any actions taken in NERC activities for the purpose of giving an industry participant or group of participants a competitive advantage over other participants. In particular, decisions with respect to setting, revising, or assessing compliance with NERC reliability standards should not be influenced by anti-competitive motivations.

Subject to the foregoing restrictions, participants in NERC activities may discuss:
• Reliability matters relating to the bulk power system, including operation and planning matters such as establishing or revising reliability standards, special operating procedures, operating transfer capabilities, and plans for new facilities.
• Matters relating to the impact of reliability standards for the bulk power system on electricity markets, and the impact of electricity market operations on the reliability of the bulk power system.
• Proposed filings or other communications with state or federal regulatory authorities or other governmental entities.
• Matters relating to the internal governance, management and operation of NERC, such as nominations for vacant committee positions, budgeting and assessments, and employment matters; and procedural matters such as planning and scheduling meetings.
Findings of FERC/ERO Enterprise Joint Inquiry into 2021 Cold Weather Operations

Action
Information

Background
NERC staff will provide a presentation with background and overview of the February 2021 Cold Weather event that affected millions of customers in the Midwest and South-Central states. FERC, NERC, and the Regional Entities initiated a joint inquiry of the event to identify problems with the performance of the bulk power system and, where appropriate, solutions for addressing those issues.
February 2021 Cold Weather Grid Operations Joint Inquiry
Update and Next Steps

Steven Noess, Director, Regulatory Programs
Reliability Issues Steering Committee Meeting
November 12, 2021
• Unprecedented electric generation outages
• Over 23,400 Megawatts (MW) of controlled electric customer power interruptions were needed for many hours during severely cold weather to avoid entire system blackouts
• Ranks 3rd in U.S. history based on preventable MW of customers outaged:
  ▪ August 2003 Northeast Blackout (61,000 MW)
  ▪ August 1996 West Coast Blackout (28,000 MW)
  ▪ February 2021 Cold Weather Event (23,400 MW)
Preliminary Key Findings

1. Generation Freezing Issues
2. Natural Gas Fuel Supply Disruptions
3. Natural Gas and Electric Reliability Interdependency
4. ERCOT Firm Load Shed Affected Natural Gas Facilities
5. Manual and Automatic Load Shed Coordination
6. Electric Reliability Coordination

Press Release and Presentation
Preliminary Recommendations

- 28 Recommendations, which include:
  - Nine key recommendations, including Reliability Standards changes
  - Five recommendations for further study
- Each have recommended timeframes for implementation
  - before Winter 2021/2022
  - before Winter 2022/2023
  - before Winter 2023/2024
- Some could extend beyond winter 2023-2024, but should be completed as soon as possible

Most are recommended within these timeframes
Key Preliminary Recommendations

1. Nine Revisions to the Reliability Standards:
   - Identification of critical components
   - Specified ambient operating temperature
   - Annual training
   - Development of Corrective Action Plans
   - Better information for BAs and RCs
   - Enhance BA/RC analysis and operations planning
   - Protect critical natural gas infrastructure from manual load shed
   - Prohibit use of critical natural gas infrastructure in demand response
   - Separation of feeders for load shed
Current Activities and Ongoing Coordination

• Final Joint Inquiry report expected in November
• Coordination of ERO Enterprise cold weather activities for winter 2021 – 2022
  ▪ NERC Alert
  ▪ CMEP Practice Guide
  ▪ Outreach visits/activities
  ▪ Joint Inquiry recommendation tracking
• Standards Authorization Request (SAR) submitted covering all Reliability Standard recommendations
Questions and Answers
Level 2 NERC Alert Activities

**Action**
Update

**Background**
NERC staff will provide an overview of the Level 2 NERC Alert, the takeaways, and recent activities.
<table>
<thead>
<tr>
<th>Risk Mitigation Actions</th>
<th>Progress Since August</th>
</tr>
</thead>
<tbody>
<tr>
<td>NERC Reliability Standards Development Activities</td>
<td>In progress</td>
</tr>
<tr>
<td></td>
<td>- Standards Authorization Request (SAR) submitted to address Inquiry Recommendations</td>
</tr>
<tr>
<td></td>
<td>- Cold Weather Standards approved by FERC</td>
</tr>
<tr>
<td>Severe Winter Weather Preparedness Outreach and Industry Engagement</td>
<td>Ongoing; seven ERO-sponsored webinars</td>
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<tr>
<td></td>
<td>- Over 2,000 combined participants</td>
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<tr>
<td></td>
<td>- <a href="#">NERC Webinar: Preparation for Severe Cold Weather</a></td>
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<td></td>
<td>- Sharing of <a href="#">Lessons Learned</a></td>
</tr>
<tr>
<td>Registered Entity On-site/Virtual Engagement</td>
<td>Initiated and ongoing</td>
</tr>
<tr>
<td>Level 2 NERC Alert</td>
<td>Complete and posted</td>
</tr>
<tr>
<td></td>
<td>- Data submitted with 97% response rate</td>
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<tr>
<td></td>
<td>- Responses informing outreach and engagement activities</td>
</tr>
<tr>
<td>Compliance Monitoring and Enforcement Program (CMEP) Practice Guide</td>
<td>Posted October 2021</td>
</tr>
<tr>
<td>2021/2022 Winter Reliability Assessment</td>
<td>Expected to be published Mid-November</td>
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<tr>
<td></td>
<td>- Preview at November 4 Board Meeting</td>
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</tbody>
</table>
• NERC issued a Level 2 Alert Recommendation to Industry on August 18, 2021.

• The alert targeted Reliability Coordinators (RCs), Balancing Authorities (BAs), Transmission Operators (TOPs), and Generator Owners (GOs).

• The alert consisted of 5 recommendations and 25 questions, 2 questions for RCs, 4 questions for BAs, 4 questions for TOPs, 15 questions for GOs.

• The Level 2 NERC Alert provides specific recommended actions that NERC registered entities should consider in response to a particular issue.
• 100% of RCs and approximately 80% of TOPs and BAs responded that their organizations developed operating plans that are close to real-time (2–3 days ahead).

• In addition, 100% of RCs and over 97% of TOPs and BAs who reported having operating plans reported that these plans address the operating conditions such as cancellation of outages, generator starting, operating forecasts, and ramping requirements.
• 80% of TOPs responded that they conduct, or will conduct, a complete or partial seasonal assessment including weatherization, equipment, and transfer capability.

• Over 90% of GOs with fossil-fired generation reported that they survey, or will start surveying, the unit weatherization and availability.

• BAs and GOs were mixed in other responses, with many entities indicating they did not plan to coordinate with fuel providers, conduct fuel surveys, or reinforce weatherization capabilities.
• 40% of TOPs and 60% of BAs responded that they did not analyze import capabilities during extreme weather situations.
• GOs are a significant risk, with almost half of fossil-fired entities not communicating with their fuel providers before and during extreme cold weather.
• Preliminary analysis of survey responses indicates that higher risk of unavailable generation during extreme weather is in MRO, Texas, and WECC Regions. NPCC, RF, and SERC responses indicate lower risk of unavailable generation.
Questions and Answers
2021-2022 Winter Reliability Assessment Preview

**Action**
Update

**Background**
The NERC 2021-2022 Winter Reliability Assessment (WRA) identifies, assesses, and reports on areas of concern regarding the reliability of the North American bulk power system (BPS) for the upcoming winter season. An analysis and summary of the NERC Level 2 Alert *Cold Weather Preparations for Extreme Weather Events* responses will be included in the report. In addition, the WRA will present peak electricity supply and demand changes, as well as highlight any unique regional challenges or expected conditions that might impact the BPS. The reliability assessment process is a coordinated reliability evaluation between the Reliability Assessment Subcommittee (RAS), the Regional Entities, and NERC staff.

The final report reflects NERC’s independent assessment and is aimed at informing industry leaders, planners and operators, as well as regulatory bodies in order that they can be better prepared to take necessary actions to ensure BPS reliability. The report also provides an opportunity for the industry to discuss their plans and preparations for ensuring reliability throughout the upcoming winter period.

Pursuant to delegated authority from the Board of Trustees, NERC management expects to issue the 2021-2022 Winter Reliability Assessment on or about November 17, 2021. The review schedule below identifies key milestones for the report.

<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
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<tbody>
<tr>
<td>October 14</td>
<td>Draft sent to NERC Reliability and Security Technical Committee (RSTC)</td>
</tr>
<tr>
<td>November 10</td>
<td>Report sent to NERC Executive Management</td>
</tr>
<tr>
<td>November 12</td>
<td>Final report sent to NERC Board</td>
</tr>
<tr>
<td>November 17</td>
<td>Report release</td>
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2021-2022 Winter Reliability Assessment

John Moura, Director, Reliability Assessment and Performance Analysis
Reliability Issues Steering Committee Meeting
November 12, 2021
WRA Key Findings

- Energy emergencies in ERCOT, SPP, and MISO likely under extreme weather conditions.
- Natural gas generators face added risk from fuel supply issues in infrastructure-limited areas.
- Electricity transfers in the Western Interconnection limited due to low hydro conditions.

Winter Reliability Risk Map
• **Key takeaway:** Grid operators should prepare their operating plans to manage supply shortfall in extreme winter weather

• All RCs have operating plans to address real-time conditions
  - Plans consider cancellation of outages, generator starting, operating forecasts, and ramping requirements to address the operating conditions
• **Mixed responses from TOPs and BAs**
  - 40% of TOPs and 60% of BAs did not analyze import capabilities during extreme weather situations

• **GO responses indicate potential for unavailable generation**
  - Nearly half of fossil-fired entities are not communicating with their fuel providers to mitigate fuel risks from extreme cold weather
  - Nearly half of entities with wind units are not implementing cold weather mitigation strategies
Operational risk scenarios analyze the effects of extreme conditions on meeting operating reserve targets.

MISO Risk Scenario
• Coal stockpiles have declined rapidly in the last few months
• Natural gas in storage is below average levels for upcoming winter
• Sufficient oil back-up inventories improve resilience
• Generator owners should give special attention to supply chains
• No specific impacts identified

Source: EIA
## 2021-2022 WRA Review Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Milestone</th>
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<tbody>
<tr>
<td>Week of October 14</td>
<td>Report sent to Reliability &amp; Security Technical Committee for review</td>
</tr>
<tr>
<td>Week of November 10</td>
<td>Report sent to NERC Executive Management for approval</td>
</tr>
<tr>
<td>November 12</td>
<td>Final Report sent to NERC Board of Trustees</td>
</tr>
<tr>
<td>Week of November 15</td>
<td>Target report release</td>
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Questions and Answers
Prioritization of Reliability, Resilience, and Security Risks

Action
Update

Summary
The North American bulk power system is undergoing a transformation that is unprecedented in both scale and velocity. This transformation, coupled with evolving security threats and emerging reliability and resilience risks, presents significant challenges for industry professionals that are both complex and numerous. The ERO Enterprise mission is to identify, prioritize, and assure effective and efficient mitigation of risks to the reliability, resilience, and security of the North American bulk power system. The word prioritize here is key to a successful strategy in mitigating risk, and is of utmost importance in using resources effectively and efficiently, particularly given the current environment. Prioritization of risk is critical to an integrated risk management framework that enables the ERO to appropriately identify, prioritize, and mitigate risk, ensuring a reliable, resilient, and secure bulk power system into the future.

At its meeting on February 4, 2021, the NERC Board of Trustees accepted the ERO Enterprise Framework to Address Known and Emerging Reliability and Security Risks (risk framework). This framework was developed with input from industry members that serve on the NERC Reliability Issues Steering Committee (RISC) and Reliability and Security Technical Committee (RSTC). Industry stakeholders provided comment on the risk framework as part of the Policy Input letter for the NERC Board in October 2020. The purpose of the risk framework is to have a consistent ERO-wide approach to identifying, prioritizing, and addressing known and emerging reliability and security risks, utilizing the following six steps.

1. Risk identification and validation;
2. Risk prioritization;
3. Remediation mitigation identification and evaluation;
4. Mitigation deployment;
5. Measurement of success; and

MRC policy input for the November 4, 2021 Board meeting showed continued support for the risk framework.

MRO has taken the lead and developed this prioritization framework (step 2), and the ERO Enterprise is seeking RISC volunteers to assist with the formal process development, documentation, and socialization of this process.
Prioritization of Reliability, Resilience, and Security Risks

Mark Lauby, NERC Senior VP and Chief Engineer
Richard Burt, MRO Senior VP and COO
Reliability Issues Steering Committee Meeting
November 12, 2021
<table>
<thead>
<tr>
<th>MRO</th>
<th>NERC / ERO</th>
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<tbody>
<tr>
<td>RAC develops MRO Reliability Risk Matrix</td>
<td>ERO Reliability Risk Framework is finalized</td>
</tr>
<tr>
<td>• SAC augments for security</td>
<td></td>
</tr>
<tr>
<td>• CMEPAC augments for compliance</td>
<td></td>
</tr>
<tr>
<td>• MRO shares matrix with NERC and other regions for feedback</td>
<td></td>
</tr>
<tr>
<td>MRO staff pilots use in Regional Risk Assessment (RRA)</td>
<td></td>
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### MRO Risk Matrix

#### Reliability Risk Matrix

<table>
<thead>
<tr>
<th>Consequence/Impact (C)</th>
<th>Likelihood (L)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L1</td>
</tr>
<tr>
<td></td>
<td>Very Unlikely</td>
</tr>
<tr>
<td>C5  Severe</td>
<td>Medium</td>
</tr>
<tr>
<td>C4  Major</td>
<td>Medium</td>
</tr>
<tr>
<td>C3  Moderate</td>
<td>Low</td>
</tr>
<tr>
<td>C2  Minor</td>
<td>Low</td>
</tr>
<tr>
<td>C1  Negligible</td>
<td>Low</td>
</tr>
</tbody>
</table>

#### Consequence/Impact – How could a typical event due to this risk effect BPS Reliability?

**Severe (C5)**
- Impacts may have widespread effects to the BPS across North America.

**Major (C4)**
- Impacts may have widespread effects to the RC area.

**Moderate (C3)**
- Impacts may have widespread effects to portions of the RC area.

**Minor (C2)**
- Impacts may have effects on the local entity.

**Negligible (C1)**
- Impacts may have small or non-existent effects to the BPS.

#### Likelihood – What is the reasonable probability that consequences will occur?

**Almost Certain (L5)**
- Mandatory Controls – No NERC reliability standards in place for mitigation.
- Emerging Trends – Increasing trends have been identified.
- Event History – Documented events or widely publicized exploits have been recorded.

**Likely (L4)**
- Mandatory Controls – No NERC reliability standards in place for mitigation.
- Emerging Trends – Some trends have been identified.
- Event History – Documented events or generally publicized exploits have been recorded.

**Possible (L3)**
- Mandatory Controls – NERC reliability standards in place for limited mitigation.
- Emerging Trends – Some trends have been identified.
- Event History – No documented events, or moderately publicized exploits have been recorded.

**Unlikely (L2)**
- Mandatory Controls – NERC reliability standards are in place for mitigation.
- Emerging Trends – Some trends have been identified.
- Event History – No documented events, or minimally publicized exploits have been recorded.

**Very Unlikely (L1)**
- Mandatory Controls – NERC reliability standards are in place for mitigation.
- Emerging Trends – No known trends identified.
- Event History – No documented events or publicized exploits have been recorded.
## 2021 MRO RRA Risks

### MRO Reliability Risk Matrix – Operations and Planning Risks + Physical and Cyber Security Risks

<table>
<thead>
<tr>
<th>Consequence/Impact (C) to the BPS</th>
<th>Likelihood of Occurring (L)</th>
<th>L1</th>
<th>L2</th>
<th>L3</th>
<th>L4</th>
<th>L5</th>
</tr>
</thead>
<tbody>
<tr>
<td>C5 Severe</td>
<td>Very Unlikely</td>
<td>3</td>
<td>6</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C4 Major</td>
<td>Unlikely</td>
<td>6</td>
<td>4, 7</td>
<td>11</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C3 Moderate</td>
<td>Possible</td>
<td>1, 2, 9</td>
<td>5, 8, 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2 Minor</td>
<td>Likely</td>
<td>5</td>
<td>7</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>C1 Negligible</td>
<td>Almost Certain</td>
<td>1</td>
<td>2</td>
<td>9</td>
<td></td>
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### Physical and Cyber Security Risks

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Adequate Security Staffing &amp; Funding</td>
<td>1</td>
</tr>
<tr>
<td>2 CIP Standard Compliance Fatigue</td>
<td>2</td>
</tr>
<tr>
<td>3 Combined Cyber and Physical Attack</td>
<td>3</td>
</tr>
<tr>
<td>4 Communication Network (Backhaul)</td>
<td>4</td>
</tr>
<tr>
<td>5 Drones / Unmanned Aerial Systems (UAS)</td>
<td>5</td>
</tr>
<tr>
<td>6 Insider Threat</td>
<td>6</td>
</tr>
<tr>
<td>7 Sabotage</td>
<td>7</td>
</tr>
<tr>
<td>8 Supply Chain</td>
<td>8</td>
</tr>
<tr>
<td>9 Unsupported/Legacy Devices</td>
<td>9</td>
</tr>
<tr>
<td>10 Vulnerability Management</td>
<td>10</td>
</tr>
</tbody>
</table>

### Operations and Planning Risks

<table>
<thead>
<tr>
<th>Risk Description</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Overhead Transmission Line Ratings During Cold Weather</td>
<td>1</td>
</tr>
<tr>
<td>2 Voltage Stability and Reactive Management of the BPS</td>
<td>2</td>
</tr>
<tr>
<td>3 Reactive Capability of Inverter Based Resources</td>
<td>3</td>
</tr>
<tr>
<td>4 BPS Modelling Accuracy</td>
<td>4</td>
</tr>
<tr>
<td>5 Sunset of Telecommunication Circuits</td>
<td>5</td>
</tr>
<tr>
<td>6 Uncertainty of Planning Reserve Margins</td>
<td>6</td>
</tr>
<tr>
<td>7 Vegetation Management of 100-200 kV Circuits</td>
<td>7</td>
</tr>
<tr>
<td>8 Cold Weather Operation of SF6 Gas Insulated Circuit Breakers</td>
<td>8</td>
</tr>
<tr>
<td>9 Wind Plant Modelling and Ride-Through Capability During Faults</td>
<td>9</td>
</tr>
<tr>
<td>10 Misoperations Involving Directional Comparison Blocking Schemes</td>
<td>10</td>
</tr>
<tr>
<td>11 Misoperations Due to Errors Occurring During Commissioning</td>
<td>11</td>
</tr>
<tr>
<td>MRO</td>
<td>NERC / ERO</td>
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<tr>
<td>----------------------------</td>
<td>-------------------------------------------------</td>
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<tr>
<td>• RRA pilot is successful</td>
<td>• ERO Framework approved by NERC Board, NERC RISC, and NERC RSTC</td>
</tr>
<tr>
<td>• Results shared with ERO Enterprise</td>
<td></td>
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<tr>
<td>• Both security and reliability risks on a single heat map</td>
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2022 MRO RRA Reliability Risks

- Updated Risk Matrix
- Industry Pilot

<table>
<thead>
<tr>
<th>Consequence/Impact (C)</th>
<th>Operations and Planning Reliability Risk Rankings</th>
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<tbody>
<tr>
<td></td>
<td>Likelihood (L)</td>
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<tr>
<td></td>
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<table>
<thead>
<tr>
<th>Operations and Planning Risks</th>
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</thead>
<tbody>
<tr>
<td>1   BFS Modelling Accuracy *</td>
</tr>
<tr>
<td>2   Uncertainty of Winter Planning Reserve Margins *</td>
</tr>
<tr>
<td>3   Reactive Capability of IBRs and Reactive Resource Adequacy *</td>
</tr>
<tr>
<td>4   Inverter Based Resource Modelling and Ride Through Capabilities *</td>
</tr>
<tr>
<td>5   Misoperations Due to Errors Occurring During Commissioning *</td>
</tr>
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<td>6   Vegetation Management of 100-200 kV Circuits *</td>
</tr>
<tr>
<td>7   Cold Weather Operation of SF6 Gas Insulated Circuit Breakers *</td>
</tr>
<tr>
<td>8   Overhead Transmission Line Ratings During Cold Weather *</td>
</tr>
<tr>
<td>9   Lack of Energy Assurance Assessments - New</td>
</tr>
<tr>
<td>10  Generation Availability During Severe Cold Weather - New</td>
</tr>
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### Updated Risk Matrix

#### Industry Pilot

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<thead>
<tr>
<th>Consequence/Impact (C)</th>
<th>Physical and Cyber Security Risk Rankings</th>
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<tr>
<td></td>
<td>L1</td>
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<td>C5 Severe</td>
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<tr>
<td>C4 Major</td>
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<tr>
<td>C3 Moderate</td>
<td></td>
</tr>
<tr>
<td>C2 Minor</td>
<td>1</td>
</tr>
<tr>
<td>C1 Negligible</td>
<td>10</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Physical and Cyber Security Risks</th>
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</thead>
<tbody>
<tr>
<td>1. Accessing and Applying Threat Intelligence *</td>
</tr>
<tr>
<td>2. Adequate Security Staffing and Funding *</td>
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<tr>
<td>3. Focus on CIP Compliance *</td>
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<tr>
<td>4. Insider Threat *</td>
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<td>5. Malware/Ransomware *</td>
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<tr>
<td>6. Security Awareness and Training *</td>
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<tr>
<td>7. Supply Chain Compromise *</td>
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<td>8. Unsupported/Legacy Devices *</td>
</tr>
<tr>
<td>9. Asset Inventory and Management - New</td>
</tr>
<tr>
<td>10. Network Visibility and Monitoring - New</td>
</tr>
<tr>
<td>11. Perimeter Security and Controls - New</td>
</tr>
</tbody>
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Next Steps

• Share Risk Matrix with NERC RISC and RSTC for consideration as ERO Risk Prioritization Tool
• Volunteers from RISC to help write the Process Document
• ERO Pilot (RISC, other Regional Risk Assessments)
• Address Remaining Framework Steps
Questions and Answers
Risk Registry

Action
Update

Summary
In an effort to continually monitor the existing risks to the bulk power system (BPS) and manage the efforts of the ERO Enterprise to actively identify and address current and new risks, NERC created a Risk Registry. This registry overlaps some with the risk profiles identified in the latest ERO Reliability Risk Priorities Report (RISC Report) and other risks identified in past reports and assessments. In addition to reporting on future emerging risks, the Risk Registry also focuses on reporting on activities addressing current emergent risks to the BPS. The draft of the Risk Registry identifies a few of the risks or “tasks” to address current risks to the BPS. The most critical and high priority tasks address energy adequacy, extreme natural events, security threats, and inverter performance. The security threats and extreme natural events mirror the risk profiles of the RISC report. Energy adequacy and inverters are a different categorization focused on grid transformation. Future versions of the Risk Registry will be used as project/resource management tool and will include a consistent risk prioritization method that will be periodically reviewed with the RISC.
Risk Registry

Soo Jin Kim, Director of PRISM
Reliability Issues Steering Committee Meeting
November 12, 2021
Time Horizons

- State of Reliability (past year’s performance)
- Risk Registry (Current Day)
- Assessments and RISC report (forward looking)
2021 Critical Risk Categories

- Energy Adequacy
- Security Risks (Cyber and Physical)
- Extreme Natural Events (including Cold Weather)
- Inverters
Energy Adequacy

- Probabilistic Analysis Forum
- Energy Reliability Assessment Task Force (ERATF)
- Gas-Electric Planning Basis (N-1)
Security Risks

- BES Cyber Access Management
- Cyber - Other
- Physical Security - Other
- Supply Chain
- Virtualization
- Cyber and Physical Security Integration
- Non-CTI Protections

- MITigate
- Monitor
Extreme Natural Events/Cold Weather Preparedness

Cold Weather Risk Registry Tasks

- 2021 Winter Weather Webinar
- Cold Weather CMEP Practice Guide
- Project 2019-06 Cold

- Winter Alert
- 2021-2022 Winter Reliability Assessment
Risk by Risk Profiles

- Critical Infrastructure Interdependencies
- Extreme Natural Events
- Grid Transformation
- Security Risks

- Changing Resource Mix
- Non-CIP Protections
- Inverter - Other
- Increased Penetration of Renewables
- IBR Frequency Response
- IBR Essential Reliability Services
- Data for Models
- Cyber and Physical Security into BPS Planning
- Virtualization
- Supply Chain
- Physical Security - Other
- Cyber - Other
- BES Cyber Access Management
- Maintaining ERS Due to Retirements
- Increased Dependency on Natural Gas
- Energy Adequacy
- Distributed Energy Resources
- Cold Weather
Questions and Answers
Reliability and Security Technical Committee Tiger Team

Action
Update

Summary
NERC staff will provide an overview of the recently formed Reliability and Security Technical Committee (RSTC) Tiger Team, which was formed to:

- Identify current RSTC subgroup work plan items that address risks identified in the 2021 ERO Reliability Risk Priorities Report;
- Develop draft risk mitigation activities and assignments for RSTC subgroups; and
- Develop proposed subgroup work plan items, if appropriate, for full RSTC review and input in December 2021.

The RSTC Tiger Team will be assigned specific groups to coordinate with on these activities.
Membership Nomination Cycle

Action
Update

Summary
The RISC is an advisory committee that reports directly to the NERC Board of Trustees (Board) and triages and provides front-end, high-level leadership and accountability for issues of strategic importance to bulk power system (BPS) reliability and security. The RISC assists the Board, NERC technical committees, NERC staff, regulators, Regional Entities, and industry stakeholders in establishing a common understanding of the scope, priority, and goals for the development of solutions to these issues. In doing so, the RISC provides a framework for developing recommendations to help NERC and the industry effectively focus their resources on the critical issues needed to improve the reliability and security of the BPS. The 2021 ERO Reliability Risk Priorities Report was approved by the Board on August 12, 2021 and is posted on the RISC web page.

As described in the RISC charter, nominees for RISC should meet the following general qualifications:

- Executive-level position within the electric utility industry;
- High-level understanding and strategic perspectives on reliability risks; and
- Commitment to regular participation on the RISC in a collaborative and consensus-building manner.

The RISC holds a combination of in-person meetings and conference calls, at least once per quarter.

When determining a final slate of recommended members, the RISC Nominating Committee will evaluate nominees based on experience and qualifications, as well as diversity within the context of the entire membership of the RISC based on the following considerations:

- Geographic and international diversity, such that Eastern, Western, and Texas Interconnections, along with Canada are represented on the RISC;
- Sector, size, and asset (transmission, distribution, load, generation, etc.) diversity; and
- Diversity in professional background and experience.

Timeline
- Nomination Cycle: November 17-December 15, 2021
- Early January 2022 - RISC Nominating Committee will meet to evaluate nominations and select proposed slate
- February 2022 – Proposed Membership slate submitted to the Board of Trustees for consideration and approval