

## Agenda

# Reliability and Security Technical Committee

March 8, 2022 | 11:00 a.m.–4:30 p.m. Eastern Time

Virtual via WebEx

**Attendee Webex Link:** [Join Meeting](#)

### Call to Order

### NERC Antitrust Compliance Guidelines and Public Announcement\*

### Introductions and Chair's Remarks

#### 1. Administrative items

- a. Arrangements
- b. Announcement of Quorum
- c. Reliability and Security Technical Committee (RSTC) Membership 2020-2023\*
  - i. RSTC Roster\*
  - ii. [RSTC Organization](#)
  - iii. [RSTC Charter](#)
  - iv. Parliamentary Procedures
  - v. [Participant Conduct Policy](#)

### Consent Agenda

#### 2. Minutes\* - Approve

- a. December 14-15, 2021 RSTC Meeting
- b. September 8-9, 2021 RSTC Meeting

### Regular Agenda

#### 3. Remarks and Reports

- a. Remarks – Greg Ford, RSTC Chair
  - i. Subcommittee Reports\*
  - ii. [RSTC Work Plan](#)
- b. Report of February 10, 2021 Member Representatives Committee (MRC) Meeting and Board Meeting – Chair Ford

#### 4. RSTC Executive Committee Appointment – Information - Chair Ford

The RSTC EC shall consist of six (6) members:

- Chair;
- Vice-chair;

- Four (4) RSTC voting members selected by the RSTC chair and vice-chair with a reasonable balance of subject matter expertise in Operations, Planning, and/or Security and with consideration for diversity in representation (i.e., sectors, Regional Entities, Interconnections, etc.)

A vacancy on the Executive Committee opened in December 2021 due to a resignation from the RSTC. The RSTC Chair and Vice Chair reviewed the RSTC roster and selected the new Executive Committee member based on the above criteria.

**5. RSTC Sponsor Assignments\* – Information - Chair Ford**

Sponsor nominations were submitted February 11-18, 2022. The RSTC Executive Committee considered all nominations and assigned Sponsors for each group that reports directly to the RSTC.

**6. GADS Section 1600 Data Request\* – Information– Donna Pratt, NERC Staff**

As an addition to the existing Section 1600 Generator Availability Data System (GADS) data request, consider future acceptance to post for a 45-day public comment period on the following proposed data collection:

- GADS Conventional – Additional design and event data.
- GADS Photovoltaic (PV) – Configuration, performance and event data as well as outage detail.
- GADS Wind – Configuration, performance and event data as well as outage detail. Clarify reporting requirements related to plant size and commissioning date.

**7. RSTC Sunset Review Team Recommendation\* – Approve– Robert Reinmuller**

Per the RSTC Charter, the RSTC “will conduct a “sunset” review of each working group every year” and “review the task force scope at the end of the expected duration and at each subsequent meeting of the RSTC until the task force is retired.” The RSTC Executive Committee developed a draft process and template for these reviews to be conducted prior to the December 2021 RSTC meeting.

The RSTC Sponsors in coordination with group leadership and NERC Staff Liaisons reviewed the working group or task force deliverables and work plans to complete the information in the template. From this review, the Sunset Review Team is seeking approval of its recommendation for the Inverter-based Resources Performance Working Group to be promoted to a subcommittee and to retain the Security Working Group and System Protection and Control Working Group as they exist. The team is also requesting to be disbanded.

**8. Reliability Guideline: Inadvertent Interchange\* – Approve – Greg Park, RS Chair | Rich Hydzik**

The NERC Resources Subcommittee (RS) made revisions to the Reliability Guideline: Inadvertent Interchange which includes the development of metrics. The guideline was posted for a 45-day comment period and the RS made conforming revisions to the guideline as appropriate. The RS is requesting approval of the guideline. If approved, the Reliability Guideline will be posted on the RSTC Reliability and Security Guideline web page for industry use.

**1:00 -1:30 P.M. – Lunch Break – 30 MINS**

**9. Event Analysis Subcommittee Membership\* – Approve** – Ralph Rufrano, EAS Chair | Patrick Doyle, Sponsor

The EAS Scope document calls for RSTC approval of its membership. The EAS has a vacancy for the WECC Regional Industry Representative and proposes **Alan Wahlstrom (SPP)** to fill the seat and is requesting RSTC Approval.

**10. RSTC Work Plan, RISC Report Recommendations and Joint FERC NERC Cold Weather Report Recommendations\* – Information** – Rich Hydzik, RSTC Vice Chair

At the September RSTC meeting, the RISC Report Recommendations were reviewed and a Tiger Team formed to review the RISC Report Recommendations and the Joint FERC/NERC Cold Weather Report recommendations to create or modify RSTC work plan items to address the recommendations. The Tiger Team is providing a status update as well as a plan to coordinate with RSTC subgroups to review risks and develop mitigation activities and work plan items. The Tiger Team is also requesting to be disbanded.

**11. Design Basis for a Natural Gas Study\* – Accept to Post for 45-day Comment Period** – Mike Knowland, EGWG Chair | Venona Greaff, Sponsor

The purpose of the enclosed document is to guide the performance of a study of the interface of the electric and natural gas systems. The recommendations are not intended to require any analyses to be performed, nor are they intended to provide market solutions, but rather to improve upon the methods and approach in performing that analysis. A realistic set or range of initial conditions should be reviewed/considered when performing this reliability analysis.

**12. Supply Chain Standard Effectiveness Survey – Information** – Tony Eddleman, SCWG Chair

The Supply Chain Standard Effectiveness survey was previewed at the September 2021 RSTC meeting. Registered entities were then surveyed in the fall of 2021. The SCWG Chair will present the results of the survey at the RSTC March meeting and then plan to present the results to the NERC Board of Trustees at its May 2022 meeting.

**13. BPS Resource Trends Analysis – Information** – Scott Barfield, NERC Staff

Last year as part of the 2021 NERC Board of Trustees approved ERO Enterprise Work Plan Priorities, staff began analyzing trends in the changing resource mix. The work has been expanded to the Regional Entities to assess the risks associated with the shift to inverter-based resources. The ERO Enterprise will prepare recommendations, socialize the information to industry, and then seek stakeholder subject matter expert participation to develop mitigating actions that address the risks. NERC staff will present a status update at the March meeting.

**14. Chair’s Closing Remarks 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.

# Draft Minutes

## Reliability and Security Technical Committee

December 14-15, 2021

Virtual Meeting Via WebEx

A regular meeting of the NERC Reliability and Security Technical Committee (RSTC) was held on December 14-15, 2021, via webinar. The agenda packages and presentations are available on the [RSTC webpage](#).

Chair Ford called the meeting to order at 11:00 a.m. Eastern on Tuesday, December 14, 2021 and thanked everyone for attending. Tina Buzzard, NERC Staff, reviewed the procedures for the meeting, read the Antitrust Compliance Guidelines and Public meeting notice, and confirmed quorum for the RSTC.

### Introductions and Chair's Remarks

Chair Ford, based on comments received in advance of the meeting, reviewed the intent to meet the guideline in the RSTC Charter to post materials for RSTC meetings at least 10 business days in advance of the meeting but that due to December's slightly more compressed timeline the materials were not able to meet this intention and appreciates the Committee's understanding. Chair Ford reminded subcommittees, working groups, and task forces of the need to ensure materials are delivered such that this guideline of at least 10 business days could be met. In addition, Chair Ford noted that the RSTC Executive Committee and NERC management will look at the current processes and what is brought before the Committee and in what order and determine if there is a need to adjust the processes to meet the goals of the Committee and the amount brought forth for each meeting, and welcomes any input from the Committee. Finally, to the extent that Members believe there was insufficient time to review, they may make a motion to table the deliverable (as for any other item) or to take an action without a meeting for a later vote as the meeting progresses.

Chair Ford called on Nina Johnston to review the meeting governance guidelines which were included in the advance materials package, and noted that the RSTC leadership has agreed to adjust the process for agenda topics requiring a formal action. Ms. Johnston stated the Committee will hear the presentation first, provide comments/discussion and then the Chair will call for a motion. Ms. Buzzard reviewed the Committee voting process.

### Consent Agenda

Chair Ford noted that the September 2021 minutes were inadvertently not included in the package and will be brought to the Committee with the December minutes for approval at the March 2022 meeting.

### Regular Agenda

#### Chairs Remarks

Chair Ford in his opening remarks congratulated Marc Child as winner of E-ISAC Electricity Security Service Award in honor of Michael J. Assante award, reviewed the appointment of EAS leadership, and acknowledged the attendance of NERC Trustee Jim Piro and offered Mr. Piro to make any opening comments. Mr. Piro acknowledged the full agendas and looked forward to the discussion and providing his report back to the full NERC Board.

Chair Ford referenced the subgroup reports contained in the Agenda package and thanked the Sponsors for reports being submitted in the requested format.

Lastly, Chair Ford provided highlights from the November 2021 Member Representatives Committee and Board of Trustees meetings.

### **Nominating Subcommittee Member Election**

Chair Ford reviewed that due to recently approved RSTC Charter revisions, the Nominating Subcommittee (NS) was expanded to consist of seven (7) members (the RSTC Vice-Chair and six (6) members drawing from different sectors and at-large representatives). He stated nominations were sought November 5-29, 2021 for the two new seats and recommended candidates were selected by him in consultation with the RSTC Executive Committee. The recommended candidates are John Stephens, Sector 5 representative and Patrick Doyle, At-large representative. The terms for the two new seats will be a shortened term through February 2022 and the full Nominating Subcommittee annual nomination process will commence in March 2022. Upon motion duly made and seconded, the Committee approved the appointments of John Stephens and Patrick Doyle to the Nominating Subcommittee.

### **Frequency Response Annual Analysis**

David Till, NERC, presented on the Frequency Response Annual Analysis which is submitted to FERC on an annual basis noting the report is the 2021 annual analysis of frequency response performance for the administration and support of NERC Reliability Standard BAL-003-2 – Frequency Response and Frequency Bias Setting, effective December 1, 2020. He stated BAL-003-2 (Phase I) revises the BAL-003-1.1 standard and process documents to include (in part) the addressing of the inconsistencies in calculation of Interconnection frequency response obligations (IFRO) due to interconnection frequency response performance changes of Point C and/or Value B; the Eastern Interconnection (EI) Resource Contingency Protection Criteria; and the frequency of nadir point limitations. Upon motion duly made and seconded, the Committee endorsed the report and the annual filing with FERC.

### **6 GHz Task Force Scope**

CCC Chair Jennifer Flandermeyer provided an update on the development of the 6GHz Task Force which has been created to investigate the reliability impacts as the 6 GHz band of the radio spectrum is widely used by a broad array of industries responsible for critical infrastructure such as electric, gas and water utilities, railroads, and wireless carriers, as well as by public safety and law enforcement officials. She reviewed the draft scope document and proposed work plan and noted the proposed task force would report to the RSTC in the Mitigating Risks program area. Upon motion duly made and seconded, the Committee approved the taskforce and scope document.

### **RSTC Sunset Review Team Recommendations**

In follow-up to the discussion at the September RSTC meeting, Ms. Christine Hasha, RSTC Executive Committee member, presented on the RSTC Sunset Review Team recommendations. Ms. Hasha stated the process for this review included the RSTC Sponsors, in coordination with group leadership and NERC Staff Liaisons, reviewing the working group or task force deliverables and work plans to populate the template and determine the recommendations. Upon motion duly made and seconded, the Committee approved the recommendations.

Chair Ford noted that this would be Ms. Hasha's last RSTC meeting due to changing companies and thanked her for her service and support of the Committee's efforts.

### **Reliability Guidelines and Security Guidelines Triennial Review**

Mr. John Moura and Ms. Candice Casteneda, NERC, presented on the Reliability Guidelines and Security Guidelines Triennial review noting the initial triennial review of existing Reliability Guidelines is due June 2023. They noted that NERC Staff made a preliminary recommendation for each existing Guideline to either remain a Guideline, convert to a Technical Reference Document or become a Hybrid (a Guideline and a Technical Reference Document). Each RSTC subcommittee, working group or task force that is responsible for triennial review of an existing guideline reviewed the recommendation and determined the final disposition as well as which tranche the document should be revised within. The RSTC Review Team developed its final recommendations request RSTC approval of the tranches so that work plan items can be developed to meet the regulatory deadlines. Upon motion duly made and seconded, the Committee approved the tranches and proposal for metrics.

### **Event Analysis Subcommittee Membership**

EAS Chair Ralph Rufrano presented Bill Temple, Avangrid, to fill the vacant seat for the NPCC Regional Industry Representative. Upon motion duly made and seconded, the Committee approved the appointment of Mr. Temple.

### **RSTC Work Plan, RISC Report Recommendations and Joint FERC/NERC Cold Weather Report Recommendations**

Vice Chair Hydzik provided a status update on the activities to date completed by the Tiger Team that was formed to review the RISC Report recommendations and the Joint FERC/NERC Cold Weather Report recommendations to create or modify RSTC work plan items to address the recommendations. Mr. Hydzik noted the plan developed to coordinate with the RSTC subgroups to review risks and develop mitigation activities and work plan items for future RSTC approval.

### **EMP Working Group Update**

EMPWG Chair Aaron Shaw briefed the RSTC members on the overall EMP project to include the current thinking on EMP Vulnerability Assessments, as well as other EMPWG subteam's work plans.

### **White Paper – Oscillation Analysis for Monitoring and Mitigation**

SMWG Chair Tim Fritch, provided an overview of the proposed White Paper – Oscillation Analysis for Monitoring and Mitigation noting the SMWG was requested to develop guidance on oscillation analysis methods to encourage consistency in the system quantities that are monitored for oscillation events and the respective thresholds for alarms. The detection and alarming of oscillations and their classification in a consistent manner is critical in ensuring coordinated mitigation of both local and widespread oscillation disturbances in the bulk power system. In the review, Mr. Fritch recommended that the document be changed from a white paper to a technical reference document and sought approval as a technical reference document. Upon motion duly made and seconded, the Committee approved the Technical Reference Document - Oscillation Analysis for Monitoring and Mitigation.

### **Nominating Subcommittee (NS) Update**

Vice Chair Hydzik provided an update of the Nominating Subcommittee activities included a review of the Sector election results and the timeline for the At-Large Nominations.

### **Odessa Disturbance Report and Odessa Disturbance Follow-Up Document**

Ryan Quint and Rich Bauer, NERC provided an overview of the Odessa Event. IRPWG Vice Chair Julia Matevoysan presented on the Odessa Disturbance Report and Odessa Disturbance Follow-Up Document. noting the report contained a set of key findings and recommendations and the IRPWG reviewed each of the key findings and recommendations in detail and has developed a document that provides a brief technical discussion and technical basis for each recommendation and where appropriate identified follow up action items. IRPWG Sponsor Jody Green noted the recommendations will be incorporated into the IRPWG work plan as appropriate. Upon motion duly made and seconded, the Committee approved the IRPWG follow-up document and recommendations.

### **FERC - NERC - Regional Entity Staff Report: The February 2021 Cold Weather Outages in Texas and the South Central United States**

Dave Huff and Heather Polzin, FERC Staff, Steven Noess and Kiel Lyons, NERC Staff presented on the FERC - NERC - Regional Entity Staff Report on the February 2021 Cold Weather Outages in Texas and the South Central United States. The report describes the severe cold weather event that occurred between February 8 and 20, 2021 and how it impacted the reliability of the bulk electric system in Texas and the South Central United States.

### **Other Matters, Chair's Closing Remarks and Adjournment**

Chair Ford concluded the meeting by thanking the participants, the committee members and looked forward to the meeting the next day.

### **Wednesday, December 15, 2021**

Chair Ford called the meeting to order, and thanked everyone for attending. Tina Buzzard reviewed the procedures for the meeting, reviewed the Antitrust Compliance Guidelines, and confirmed quorum, as well as provided an overview of the polling actions to be used for Committee actions during the meeting.

### **Introductions and Chair's Remarks**

Chair Ford noted the packed agenda with a number of approval and informational items of importance.

### **Regular Agenda**

#### **Energy Reliability Assessments Task Force (ERATF) Recommendations**

ERATF Chair Peter Brandien provided an update on the taskforce's work including a draft SAR for RSTC review as well as a plan to gather industry input for development of a final SAR for RSTC endorsement in March, 2022. Mr. Brandien requested RSTC reviewers to review the draft SAR and technical justification document and provide comments by no later than January 14, 2022.

#### **Reliability Guideline: Cyber Intrusion Guide for the System Operator**

RTOS Sponsor Todd Lucas and RTOS Chair Jimmy Hartmann presented on the Reliability Guideline: Cyber Intrusion Guide for the System Operator to include an update on the revisions made which includes additions of specific metrics to facilitate determining the effectiveness of the guideline per the FERC order. Upon motion duly made and seconded, the Committee accepted to post the Reliability Guideline for a 45-day comment period.

#### **GMD Monitoring Reference Document**

RTOS Sponsor Todd Lucas and RTOS Chair Jimmy Hartmann provided an update on the GMD Monitoring Reference Document and revisions to the reference document. Upon motion duly made and seconded, the Committee accepted to post the reference document for a 45-day comment period.

#### **Resources Subcommittee (RS) Reporting ACE Definition SAR**

RS Sponsor Rich Hydzik provided an overview of the purpose of the SAR and RS Chair Greg Park provided a more detailed review of the SAR noting the current definition of Reporting ACE has a conflict with the Western Interconnection's Automatic Time Error Correction (ATEC) process and does not allow other Interconnections to pursue ATEC. He stated the RS has a revised draft of the Reporting ACE definition that accommodates any Interconnection that has an approved ATEC process. The revised definition is also shortened to remove verbiage that duplicates obligations in the BAL standards. Mr. Park requested endorsement of the SAR and submittal to the NERC Standards Committee. Upon motion duly made and seconded, the Committee endorsed the SAR and its submission to the Standards Committee.

#### **White Paper: Grid Forming Technology, Bulk Power System Reliability Considerations**

IRPWG Vice Chair Julia Matevoysan provided an overview of the White Paper: Grid Forming Technology, Bulk Power System Reliability Considerations and developed recommendations. Committee member discussion inquired on how the recommendations would be tracked, Ms. Matevoysan stated the IRPWG will monitor the development of the technology and will follow up with a Reliability Guideline or SAR as appropriate. Upon motion duly made and seconded, the Committee approved the White Paper.

### **White Paper: BPS-Connected IBR and Hybrid Plant Capabilities for Frequency Response**

IRPWG Sponsor Jody Green, IRPWG Chair Al Schriver, and Vice Chair Julia Matevoysan provided an overview of the White Paper: BPS-Connected IBR and Hybrid Plant Capabilities for Frequency Response and its recommendations noting the white paper provides insight on how to utilize the capability of an overbuilt IBR site to assist with frequency response. Upon motion duly made and seconded, the Committee approved the White Paper.

### **TPL-001-5 SAR for BPS-Connected IBRs**

IRPWG Sponsor Green introduced the TPL-001-5 SAR for BPS-Connected IBRs and its development. He noted that the SPIDERWG would also have a SAR for revisions to the TPL-001-5 standard. Mr. Green stated the SAR was rejected by the RSTC earlier and the IRPWG received feedback and made revisions based on the comments as needed. IRPWG Vice Chair Matevoysan provided a detailed overview of the SAR, the IRPWG response to comments received and requested RSTC endorsement. There was a request from Committee member Brian Evans-Mongeeon to defer the ballot until the middle of January to provide the RSTC more time to review the materials. A motion was made to endorse the SAR as presented at the meeting. Mr. Evans-Mongeeon motioned to postpone the vote on the SAR until no later than January 15 via an action without a meeting (e-mail vote), and the motion was seconded, the motion failed with 10 votes for and 14 votes against. The primary motion was seconded, and the Committee endorsed the SAR.

### **TPL-001-5 SAR for DERs**

SPIDERWG Sponsor Wayne Guttormson introduced the TPL-001-5 SAR for DERs, development of the MOD-032 SAR, the White Paper, and the Reliability Guideline. SPIDERWG Chair Zhu provided a detailed overview of the SAR noting the SPIDERWG undertook a review of the TPL-001 standard considering the potential impact of DERs. The review is captured in the white paper and serves as the technical justification for the revisions suggested in the SAR. Upon motion duly made and seconded, the Committee endorsed the SAR.

### **MOD-032 SAR**

SPIDERWG Zhu provided an overview and history of the MOD-032 SAR noting the SPIDERWG updated the SAR and developed a clarifying document for industry, as well provided a letter of support from the ISO/RTO Council which supports the SPIDERWG efforts to develop mandatory provisions to compel Distribution Providers to provide Distributed Energy Resource (DER) data to reliability entities in support of accurate and comprehensive reliability studies, specifically SPIDERWG's request to revive the SAR for Project 2020-01: Modifications to MOD-032: Data for Power System Modeling and Analysis. Mr. Guttormson requested the RSTC endorse the SAR and associated technical justification documents for subsequent Standards Committee action. Upon motion duly made and seconded, the Committee endorsed the SAR and associated technical justification documents.

### **White Paper: Survey of DER Modeling Practices**

SPIDERWG Zhu provided an overview of the White Paper: Survey of DER Modeling Practices highlighting the SPIDERWG sought RSTC reviewers for the draft white paper at the September RSTC meeting. Based on reviewer comments, the white paper was updated to revise recommendations and to further clarify the scope of the survey data (within SPIDERWG members) throughout the document. Upon motion duly made and seconded, the Committee approved the White Paper.

### **Reliability Guideline: Recommended Approaches for UFLS Program Design with Increasing Penetrations of DERs**

SPIDERWG Zhu provided an overview of the Reliability Guideline: Recommended Approaches for UFLS Program Design with Increasing Penetrations of DERs noting the guideline was posted for a 45-day comment period. The SPIDERWG reviewed the comments received and made conforming revisions to the guideline. The SPIDERWG also included metrics to help assess the effectiveness of the guideline and is seeking RSTC approval of the revised guideline. Upon motion duly made and seconded, the Committee approved the White Paper.

### **Facility Ratings Task Force (FRTF) Scope and Next Steps**

FRTF Co-Chair Greg Stone provided an overview of the FRTF scope and next steps stating the revised scope includes a change in reporting structure. Mr. Stone stated the transition of the FRTF to RSTC oversight continues to provide focus and technical expertise on Facility Ratings, including reliability risk to the grid, technical analysis and additional industry perspectives in problem statement definition. He also stated the FRTF recommends adding additional technical expertise from the industry to the group for more robust discussion. Upon motion duly made and seconded, the Committee approved the revised FRTF scope document.

### **Security Working Group (SWG)**

Brent Sessions, SWC and Christine Hasha, Sponsor provided an update on the SWG's current work plan activities as well as the results of the Assessing Cyber Risk Team and NIST partnership survey.

### **Forum and Group Reports**

Mr. Schriver, NAGF and Mr. Carter, NATF provided highlights of their written reports that were provided in the advance agenda package.

### **TOCC Field Test Update**

Marisa Hecht, NERC, provided an update on the TOCC Field Test Status, 2021-03 Standard Drafting Team and sought recommendations from RSTC for Field Test participants, as well as noted the project plan is on the SDT web page. Ms. Hecht requested recommended participants be submitted to Stephen Crutchfield.

### **RSTC 2022 Calendar Review**

Chair Ford referenced the 2022 calendar review contained in the agenda included in the advance materials and noted that the March meeting would be conducted virtually.

### **Closing Remarks and Adjournment**

Chair Ford thanked attendees and Committee members for their attendance and participation. There being no further business before the RSTC, Chair Ford adjourned the meeting.

### **Next Meeting**

The RSTC will meet virtually in March 8-9, 2021, 11:00 a.m. - 4:30 p.m. eastern time.

*Stephen Crutchfield*

Stephen Crutchfield  
Secretary

**DRAFT Minutes****Reliability and Security Technical Committee**

September 8-9, 2021

Virtual Meeting via WebEx

A regular meeting of the NERC Reliability and Security Technical Committee (RSTC) was held on September 8-9, 2021, via webinar. The agenda packages and presentations are available on the [RSTC webpage](#).

Chair Ford called the meeting to order at 11:00 a.m. Eastern on Tuesday, September 8, 2021 and thanked everyone for attending. Tina Buzzard, NERC Staff, reviewed the procedures for the meeting, read the Antitrust Compliance Guidelines and Public meeting notice, and confirmed quorum for the RSTC.

**Introductions and Chair's Remarks**

Chair Ford provided an overview of the agenda noting that due to the number of action items before the Committee it may be necessary to defer some non-action topics to the next meeting.

Chair Ford called on Nina Johnston to review the meeting governance guidelines which were included in the advance materials package, as well as Tina Buzzard reviewed the Committee voting process.

**Consent Agenda**

Upon motion duly made and seconded, the Committee approved the June 8-9, 2021 minutes as presented to the Committee.

**Regular Agenda****Chairs Remarks**

Chair Ford provided a summary of the August 24, 2021 RSTC Informational Session and opened to the Committee for discussion on if this Informational Session was seen as valuable and if the Committee felt there was merit in continuing the sessions on a quarterly basis in advance of the quarterly RSTC meetings. At the conclusion of the discussion, the Committee provided consensus that the Informational Sessions should be continued and NERC staff will look to schedule the future meetings.

Chair Ford referenced the subgroup reports contained in the Agenda package and thanked the Sponsors for reports being submitted in the requested format.

Lastly, Chair Ford provided highlights from the August 2021 Member Representatives Committee and Board of Trustees meetings.

**Nominating Subcommittee Member Election**

Motion was made to appoint Edison Elizeh, Sector 4 representative, to fill the vacant seat for a term ending in January 2023. Due to a member resignation from the RSTC's Nominating Subcommittee (NS), the RSTC held a nomination period to fill the vacant position. Per the RSTC Charter, "The Nominating Subcommittee members are nominated by the RSTC chair and approved by the full RSTC membership."

Nominations were sought and a recommended candidate selected by the RSTC Chair in consultation with the RSTC Executive Committee. Upon motion duly made and seconded, the Committee approved the appointment of Mr. Elizeh.

### **Review of RSTC Policy Input and Improvements to the RSTC**

Chair Ford summarized the policy input received, changes in the operation of the RSTC, as well as collaboration within the ERO Enterprise and with other stakeholder groups. Members of the Committee recommended consideration of process improvements with respect to materials postings timeframe, future platforms for RSTC meetings, and availability of sponsor information on the RSTC webpage.

### **RSTC Proposed Charter Amendments**

Chair Ford reviewed the objective is to hear discussion and receive additional input on the proposed Charter amendments, stating he has agreed to provide Committee members through September 24 to submit any final input to the proposed amendments. Chair Ford called on Ms. Johnston to review the proposed amendments. The Committee members entered into discussion providing additional input and comments. At the conclusion of the discussion, Chair Ford stated NERC legal will review the input provided at this meeting in whole with all written comments submitted, and present a final draft, with a comment matrix, to the Committee in October for consideration and approval, and if approved the Charter will be submitted to the Board for review and approval at its November 2021 meeting.

### **2021 ERO Reliability Risk Priorities Report and the RSTC Work Plan**

Vice Chair Rich Hydzik presented on the proposed process for evaluating the identified risks and mitigating activities from the 2021 ERO Reliability Risk Priorities Report and incorporating into the RSTC work plan including an update on the collaboration work between the RISC and RSTC. As part of the review process, Chair Ford requested volunteers from the Committee to assist in the evaluation and report back to the RSTC at its December 2021 meeting.

### **Risk Registry**

Soo Jin Kim presented an update on the Risk Registry noting 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 and RSTC.

### **Failure Modes and Mechanism Task Force (FMMTF)**

Rich Hackman, NERC and Patrick Doyle, task force sponsor, presented on the work of the task force to include an update on the analysis of 14 types of BES substation equipment to determine their failure modes and mechanisms, FMM trends and patterns, and improve BES reliability by providing information useful for reducing station equipment failures. [A short video explaining the FMM approach\\*](#) is available, as well as current FMM diagrams for eight types of common station equipment are available in the ERO portal for use and more are being prepared ( [\\*https://vimeo.com/nerclearning/cause-coding/video/208745179](https://vimeo.com/nerclearning/cause-coding/video/208745179)).

### **Security Working Group Update**

SWG Co-Chair Katherine Street provided an update on current SWG projects, new activities, and administrative updates.

### **Restoration Analysis to Evaluate Resilience of the Transmission System under Extreme Weather**

Svetlana Ekisheva, NERC summarized a new analysis in the 2021 State of Reliability Report, an analysis of restoration of the North American transmission system after extreme weather events. Additionally to the material included in the 2021 SOR, Ms. Ekisheva stated there be an analysis of impact and recovery for the top weather-related transmission events from 2015 to 2020 and discuss similarities and differences in restoration processes for most disruptive types of extreme weather (hurricanes, tornadoes, winter storms etc.). Ms. Ekisheva concluded the presentation reviewing the conclusions and future work.

### **Cybersecurity for the Operational Technology Environment (CyOTE) Program**

Sam Chanoski, Idaho National Labs, presented on the CyOTE program which provides a methodology for energy sector asset owner-operators to combine network-based sensor data with local context to recognize faint signals of malicious cyber activity before an adversary can cause higher-impact effects. Mr. Chanoski stated by leveraging the CyOTE methodology with existing commercial monitoring capabilities and manual data collection from broader but informative sources in operations and even in the business domain, asset owners can better understand relationships between multiple observables which could represent a faint signal of an attack requiring investigation. He noted CyOTE's vision is to allow an entity to independently get to the point of making a risk informed business decision on whether to respond to an incident or fix a reliability failure, sooner and with more confidence. Mr. Chanoski also reviewed the level of stakeholder engagement.

### **Other Matters, Chair's Closing Remarks and Adjournment**

Under Other Matters, Chair Ford called on Brian Evans-Mongeon and Maris Hecht to present on the Transmission Owner Control Center – NERC SDT Project 2021-03 and requests on behalf of the Standards Drafting Team which included:

- Requesting RSTC member comments by September 30, 2021.
- Requesting the RSTC to permit the RSTC EC to act to resolve any changes to the Field Trial design from comments received and to provide a temporary RSTC endorsement that would allow the SDT to present and gain Field Trial acceptance from the NERC SC by December 2021. As requested, the SDT can provide further updates to the RSTC as the Field Trial progresses.

Many RSTC members expressed concerns about the timing of this request without having seen the document. After lengthy discussion regarding the timeline and the specific actions being requested, it was decided to provide distribute the documents to the RSTC, provide a comment period, and then complete an email ballot.

Chair Ford concluded the meeting by thanking the participants, the committee members and looked forward to the meeting the next day.

### **Wednesday, September 9, 2021**

Chair Ford called the meeting to order, and thanked everyone for attending. Tina Buzzard reviewed the procedures for the meeting, reviewed the Antitrust Compliance Guidelines, and confirmed quorum, as well as provided an overview of the polling actions to be used for Committee actions during the meeting.

### **Introductions and Chair's Remarks**

Chair Ford provided an update to the discussion from the day prior on the Transmission Owner Control Center – NERC SDT Project 2021-03 outlining the timeline drafted by NERC staff and opened to comments from the Committee. At the conclusion of the discussion, the Committee provided consensus to the proposed timeline which would provide for the Committee consideration and approval mid-October and Standards Committee consideration and approval end of October 2021.

### **Regular Agenda**

#### **Reliability Guideline DER Forecasting**

Motion was made to post the reliability guideline for a 45-day comment period. SPIDERWG Chair Zhu presented an overview of the Reliability Guideline DER Forecasting noting the guideline provides guidance on DER forecasting and the growing need to ensure the accuracy of Interconnection-wide planning cases, especially with some states enacting policy that targets a specified level of DER integration. In the discussion there was a request to consider implementation of metrics and to include in the review a process for metric development considering seeking sponsors or a subteam from the RSTC to work on metrics. Upon motion duly made and seconded the guideline was accepted to be posted for a 45-day comment period.

#### **White Paper – Survey of DER Modeling Practices**

Chair Ford called an audible and noted that based on comments received in advance of the meeting, the SPIDERWG has decided to not seek approval of the white paper at this meeting, and they will instead seek a request for RSTC reviewers, and bring the white paper back to the RSTC at its December meeting for approval. Chair Ford called on SPIDERWG Chair Zhu to present a summary of the white paper, opened to the Committee for discussion, and sought RSTC reviewers.

#### **White Paper – Simulation Improvements**

SPIDERWG Chair Zhu presented an overview of the White Paper – Simulation Improvements noting this document provides a distilled version that may be pertinent to power system software developers, and outlines some of the related literature that may aid in developing further software improvements and techniques. Chair Ford opened to the Committee for discussion and sought RSTC reviewers.

#### **Synchronized Measurements Working Group (SMWG) Scope Document**

Motion was made to approve the Synchronized Measurements Working Group (SMWG) Scope document. SMWG Chair Tim Fritch presented that the SMWG updated their scope document to reflect the transition from a subcommittee to a working group reporting to the Real Time Operating Subcommittee, and that other clarifying edits for the scope and deliverables for the SMWG were made. Upon motion duly made and seconded the RSTC approved the Synchronized Measurements Working Group (SMWG) Scope document.

### **Supply Chain Standard Effectiveness Survey**

SCWG Chair Tony Edelman presented on the Supply Chain Standard Effectiveness Survey stating that the SCWG developed a voluntary industry survey that will be used to help gather information relevant to the effectiveness of the Supply Chain Standards. He stated the survey is being provided for information purposes to RSTC and industry prior to its publication. In addition, Chair Edelman noted that the SCWG is seeking a Vice Chair and requested those interested should reach out to him directly.

### **Nominating Subcommittee (NS) and Sector Elections Update**

RSTC Vice Chair Rich Hydzik reported on the Nominating Subcommittee activities and the timelines for Sector elections and At-Large nominations to fill RSTC terms ending in 2022. Committee member expressed concern with the need for certain At-Large recusals reducing the size of the Nominating Subcommittee, NERC staff confirmed that the proposed charter amendments proposes adding one seat to the Nominating Subcommittee to address this concern.

### **Impact of Proposed Wi-Fi Operations on Microwave Links AT 6 GHz**

CCC Chair Jennifer Flandermeyer presented on the *Impact of Proposed Wi-Fi Operations on Microwave Links AT 6 GHz* report which identifies impacts to electric power operations. Ms. Flandermeyer stated additional follow-on work by EPRI and various affected stakeholders have shown—through testing--impacts to their critical electric infrastructure communications due to increased congestion and interference on the 6GHz wireless communication band, and as adoption of the new technology increases, the risk to BPS operations increases. Chair Ford opened to the Committee for discussion on if this is an RSTC item and if yes, what would be next steps. At the conclusion of the discussion, it was recommended that a task force be created to evaluate the potential risk and report back to the RSTC at a future meeting. NERC staff will advise the Committee with the expertise needed for the task force and expected work plan, seek volunteers to include a sponsor and leadership and bring back to the RSTC for approval of the new task force.

### **RSTC Subordinate Group Review Process**

RSTC Executive Committee Member Robert Reinmuller reviewed the developed draft process and template for the “sunset” review of each working group which per the RSTC Charter is required on an annual basis to review the task force scope at the end of the expected duration and at each subsequent meeting of the RSTC until the task force is retired. Mr. Reinmuller stated the draft process for this review will include the RSTC Sponsors in coordination with subordinate group leadership and NERC Staff Liaisons reviewing the working group or task force deliverables and work plans to complete the information in the template. Once the templates are complete, the RSTC EC and Sponsors will review them to make a recommendation on the status of the subordinate group. This will be reviewed with the RSTC at the December RSTC meeting for approval. Chair Ford opened to volunteers to participate in the review/recommendation process.

### **Reliability Assessments Subcommittee (RAS) Update**

RAS Chair Lewis De La Rosa, and Mark Olson, NERC presented an overview of the production of the Winter Reliability and Long-Term Reliability Assessments as well as presented on the anticipated RSTC actions.

### **Energy Reliability Assessments Task Force (ERATF) Update**

ERATF Chair Peter Brandien provided an update on ERATF activities to include an update on the distributed ERATF survey, the review of the NERC Alert to help the taskforce evaluate best practices along with recommendations, and the review of standards and guidelines to determine if any additional items to be added for recommendations. Mr. Brandien noted the taskforce will meet on October 17 and begin the evaluation of the submitted surveys. In addition Mr. Brandien noted he will be participating in the Sept 30 FERC Reliability Technical conference about energy concerns from ISO-NE perspective not as the chair of the ERATF.

### **Standing Committee Coordination Group (SCCG) Update**

RSTC Vice Chair Hydzik presented an update on the SCCG activities.

### **Event Analysis Subcommittee – Lessons Learned**

Mr. Hackman and Mr. Doyle, Sponsor of the EAS presented an update on the lessons learned developed in 2021.

### **Forum and Group Reports**

Chair Ford noted that Mr. Schriver, NAGF was not in attendance and referenced the NAGF report provided in the advance materials package. Chair Ford called on Roman Carter, NATF who provided highlights from his written report provided in the advance materials package.

### **RSTC 2021 Calendar Review**

Mr. Crutchfield presented on the remainder of the 2021 and 2022 calendars noting that the December meetings will continue to be in a virtual format and that the platform for the March meetings is still to be determined.

### **Closing Remarks and Adjournment**

Chair Ford thanked attendees and Committee members for their attendance and participation and reminded the Committee of the four email ballots forthcoming, a new task force email, and comment periods on both the proposed Charter amendments and the Standards Field Test.

There being no further business before the RSTC, Chair Ford adjourned the meeting.

### **Next Meeting**

The RSTC will meet virtually in December 14, 2021, 11:00 a.m. - 4:30 p.m. eastern time.

*Stephen Crutchfield*

Stephen Crutchfield  
Secretary

## RSTC Status Report 6 GHZ Task Force (6GHZTF)

*Chair: Jennifer Flandermeyer  
Vice Chair: Larry Butts  
March 8-9, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** Provide to the RSTC: determine scope of issue, gather information related to risk of harmful interference in the 6 GHz spectrum, evaluate options for industry outreach, and recommendations related to the issue

### Items for RSTC Approval/Discussion:

- **Accept:** None
- **Approve:** None

### Workplan Status (6-month look-ahead)

Milestone	Status	Comments
Distribute Survey	<span style="color: green;">●</span>	In progress, Q1/2022
Coordinate w/ E-ISAC (GridEx)	<span style="color: green;">●</span>	In progress Q2/2022
Preliminary Impact Assessment	<span style="color: green;">●</span>	Planning phase Q2/2022
Additional Outreach Opportunities	<span style="color: green;">●</span>	Planning phase Q3/2022
Assess need for Alert/Add'l Data	<span style="color: green;">●</span>	Planning phase Q3/2022
Recommendations	<span style="color: green;">●</span>	Planning phase Q4/2022
Info Sharing	<span style="color: green;">●</span>	Planning phase Q4/2022

### Recent Activity

- Develop a short survey to assess the impact to the electric industry as it relates to 6GHz usage

### Upcoming Activity

- Distribute the survey to the RSTC members and their respective sectors
- Based on survey results, conduct an extent of condition
- Coordinate with the E-ISAC team to clarify expectations of the recommendations and how the task force can support potential actions in response of the GridEx findings

## RSTC Status Report – Event Analysis Subcommittee (EAS)

Chair: Ralph Rufrano  
Vice-Chair: Chris Moran  
March 8, 2022

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** The EAS will support and maintain a cohesive and coordinated event analysis (EA) process across North America with industry stakeholders. EAS will develop lessons learned, promote industry-wide sharing of event causal factors and assist NERC in implementation of related initiatives to reduce reliability risks to the Bulk Electric System.

### Recent Activity

- Nine Lessons Learned currently under development in 2022
- Sub-team assembled for EAP periodic review
- Sub-team assembled for Reliability Guideline review
- EAS, EMSWG, & FMMTF 2022 Work Plans developed

### Items for RSTC Approval/Discussion:

- WECC EAS Industry Representative Replacement – Alan Wahlstrom (SPP).

### Ongoing & Upcoming Activities

- EAP Periodic Review
- 2022 State of Reliability Report
- Winter Weather Webinar
- EMSWG Biennial Review of Risk & Mitigations for Losing EMS Functions Reference Document
- EMSWG to host 10<sup>th</sup> Annual Monitoring & Situational Awareness Conference
- Development of Lessons Learned
- FMMTF Development of Failure Mode & Mechanism Diagrams

### Workplan Status (6 month look-ahead)

Milestone	Status	Comments
EAP Periodic Review	<span style="color: green;">●</span>	On-Going
Event Analysis Data & Trends for 2022 SOR	<span style="color: green;">●</span>	In coordination with the PAS
Winter Weather Webinar	<span style="color: green;">●</span>	Scheduled for September 1st
Lessons Learned for 2022	<span style="color: green;">●</span>	On-Going
10 <sup>th</sup> Annual SA Conference	<span style="color: green;">●</span>	Under Development
FMM Diagrams for 2022	<span style="color: green;">●</span>	On-Going

## EGWG Status Report

- On Track
- Schedule at risk
- Milestone delayed

*Chair: Mike Knowland  
Vice-Chair: Daniel Farmer  
February 16, 2022*

**Purpose:** The EGWG was formed to address fuel assurance issues as a result of the RISC identified Grid Transformation.

### Items for RSTC Approval/Discussion:

- The EGWG has completed a Design Basis Criteria for Natural Gas Related Studies. This document will be presented to the RSTC at its March Meeting. The EGWG will be asking for RSTC approval.

### Workplan Status (6 month look-ahead)

Milestone	Status	Comments
Gauge efficacy of Fuel Assurance guideline	<span style="color: green;">●</span>	In progress
FERC/NERC joint inquiry coordination	<span style="color: green;">●</span>	In progress
Design Basis Criteria RSTC approval	<span style="color: green;">●</span>	In progress

### Recent Activity

- The EGWG completed its Design Basis Criteria for Natural Gas. Additionally, the EGWG has developed a comprehensive survey to gauge the effectiveness of the Fuel Assurance Guideline that was approved by the RSTC..

### Upcoming Activity

- Develop Coordination Plan with NAESB for potential electric related risks/objectives in natural gas related standards.
- Distribute survey for Fuel Assurance Guideline
- Develop Strategy for FERC/NERC inquiry items where EGWG can add value in regards to recommendations.

## Policy Team – BPS Performance Expectations

*Team Lead: Amy Casuscelli  
February 15, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Task:** Establish performance expectations for all sectors of the BPS regarding a predefined EMP event. NERC staff will work with other agencies on areas that require coordination.

### Recent Activity

- Held monthly meetings to prompt discussion
- Outline of performance framework drafted, including additional discussion at October meeting

### Upcoming Activity

- Develop examples of different types of resilience strategies for EMP (hardening vs response and recovery)
- Beginning rough draft of document for discussion at November meeting

### Discussion Points

- Rate recovery and inconsistent State regulatory support for resilience efforts are constantly brought up in discussions
- Deliverable to look more like an example of various strategies to suit different size utilities in various state regulatory jurisdictions.

### Workplan Status (6 month look-ahead)

Deliverable	Status	Comments
Report of Findings	<span style="color: green;">●</span>	Completion of policy draft by Q2 2022.

## Research & Development Team

*Team Lead: Kevin Bryant  
February 15, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Task:** Support additional research to close existing knowledge gaps, monitor current industry research pertaining to EMP, and support efforts to design equipment specifications for the electric sector.

### Recent Activity

- Drafting a bibliography reference document that will have all the published research concerning EMP related to the electric utilities
- Drafting a document to list all the current and future research projects involving the electric grid and EMP.
- Conducted survey with research organizations and industry experts to see what research gaps exist

### Upcoming Activity

- Continue to update documents listed above

### Discussion Points

- Where would be the best location for these documents for utilities can view?
- As new research is published and new projects are created, how do we encourage the industry to inform us and keep this information up to date?

### Workplan Status (6 month look-ahead)

Deliverable	Status	Comments
Report of Findings	<span style="color: green;">●</span>	Completion of draft documents by Q2 2022.

## Vulnerability Assessment Team – Tools and Methods

*Team Lead: Alan Engelmann  
February 15, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Task:** Support development of tools and methods (and make available) for system planners and equipment owners to use in assessing EMP impacts on the BPS.

### Workplan Status (6 month look-ahead)

Deliverable	Status	Comments
Report of Findings	<span style="color: green;">●</span>	Completion of application guide draft by Q2 2022.

### Recent Activity

- Held monthly meetings for team discussion and coordination.
- Presentations from several industry SMEs regarding facility assessment and system studies.

### Upcoming Activity

- Outline application guides for vulnerability assessments and system-wide studies.

### Discussion Points

- Planning to develop guidelines for assessing facility vulnerability and for performing system-wide vulnerability studies.

## Mitigation Team – Hardening of Critical Assets

*Team Lead: Micah Till  
 February 15, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Task:** Develop guideline for industry to use in developing strategies for mitigating the effects of a high-altitude EMP on the BPS.

### Workplan Status (6 month look-ahead)

Deliverable	Status	Comments
Technical Report	<span style="color: green;">●</span>	Completion of hardening draft by Q2 2022.

### Recent Activity

- Held monthly meetings to get team up to speed
- Drafting baseline topics for technical report to consider

### Upcoming Activity

- Develop comparison points for hardening methodologies

### Discussion Points

- There is no one-size-fits-all hardening methodology; different use cases require different approaches.

## EMPWG Team 5 – Response and Recovery

*Team Lead: Ian Grant  
February 15, 2022*

- On Track
- Schedule at risk
- Milestone delayed

### 5 Tasks:

- Strategies for Supporting Recovery
- Coordination with National EMP Notification System
- Response Planning
- Operating Plans and Procedures
- Exercises and Training

Subgroups established to address each Task

### Workplan Status (6 month look-ahead)

Deliverable	Status	Comments
Report of Findings	<span style="color: green;">●</span>	Initial drafts expected by Q4 2022.

### Recent Activity

- Team meets monthly for reports from Task groups
- Task groups meet independently
- Significant interaction between Task groups
- Observers at other Team meetings

### Discussion Points

- Initial documentation of all relevant publications
- Some preliminary draft deliverables expected in early 2022
- National Notification item tabled given earlier NATF, then EEI, and pending DOE activity

## RSTC Status Report – Inverter-based resource Performance Working Group (IRPWG)

Chair: Al Schriver  
Vice-Chair: Julia Matevosyan

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** To explore the performance characteristics of utility-scale inverter-based resources (e.g., solar photovoltaic (PV) and wind power resources) directly connected to the bulk power system (BPS).

**Items for RSTC Approval/Discussion:**

- None

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
San Fernando and Odessa Disturbance SAR Development	<span style="color: green;">●</span>	In progress
2021 NERC Cold Weather Report Recommendations SAR Development (PRC-004 and PRC-024)	<span style="color: green;">●</span>	In progress
Reliability Guideline: Recommended Approach to Interconnection Studies for BPS-Connected Inverter-Based Resources	<span style="color: green;">●</span>	In Progress
Reliability Guideline: Electromagnetic Transient Modeling and Simulations	<span style="color: green;">●</span>	In Progress

**Recent Activity**

- Discussed SAR Developments from San Fernando and Odessa Disturbance
- Discussed Reliability Guideline: Recommended Approach to Interconnection Studies for BPS-Connected Inverter-Based Resources
- Continue work for Assessment: Gap Analysis of Any IBR-Related Issues Not Addressed by NERC Standards

**Upcoming Activity**

- SAR: EOP-004-4 Gen Loss Criteria for IBRs
- SAR: Inclusion of EMT Models into MOD, TPL, and FAC Standards
- SAR: Revisions to PRC-004
- SAR: Revisions to PRC-024
- SAR: Model Quality Checks in FAC-002 and MOD-032 Standards

## RSTC Status Report – Load Modeling Working Group (LMWG)

Chair: Kannan Sreenivasachar,  
Vice-Chair:

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:**

The LMWG is transitioning utilities from the CLOD model to the CMLD Composite Load Model. The CLOD model lacks the capability to model events like FIDVR, which can have significant consequences on planning decisions.

**Recent Activity**

- Updated Motor D parameters
- Posted Motor Data Standard Parameters to LMWG Restricted Access Site
- Continued work on Phasor model
- Continued LMDT tool development for PSS/E
- Update model to take care of “Extra Vars” based on discussion with vendors
- Revised the Transient Voltage Response Whitepaper

**Items for RSTC Approval/Discussion:**

- **Approve:** LMWG Work Plan

**Upcoming Activity**

- Develop specifications for Modularization of CMLD
- Continue Phasor Model Development
- Request review of Transient Voltage Response Whitepaper in June
- Work with entities to use Motor Data Standard Parameters
- Update model to address the “Extra Vars” based on discussion with vendors
- Continue LMDT tool development for PSS/E

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
Phasor Model Development	<span style="color: green;">●</span>	In progress
Modular CMLD Development	<span style="color: green;">●</span>	In progress
Update CMLD model to address the “Extra Vars”	<span style="color: green;">●</span>	In progress
Transient Voltage Response Whitepaper	<span style="color: green;">●</span>	In progress

## RSTC Status Report – Performance Analysis Subcommittee (PAS)

*Chair: Brantley Tillis  
Vice-Chair: David Penney  
September 16, 2020*

- On Track
- Schedule at risk
- Milestone delayed
- Not started
- Complete

**Purpose:** The PAS reviews, assesses, and reports on reliability of the North American Bulk Power System (BPS) based on historic performance, risk and measures of resilience.

**Items for RSTC Approval/Discussion:**

- None

**Recent Activity**

- Continue annual metric review and proposed new metrics

**Upcoming Activity**

- GADS Section 1600 data comments under review
- Develop 2022 State of Reliability Report

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
Section 1600 Data Request	<span style="color: green;">●</span>	Public comment period completed 7/31/21. Volume and content of comments will require additional time to review and address. Second round of public comments planned for 2022.
Conduct annual metric review	<span style="color: green;">●</span>	Through first quarter of 2022
Review proposed new metrics	<span style="color: green;">●</span>	Through first quarter of 2022
2022 State of Reliability Report		Commences in March 2022

## RSTC Status Report – Probabilistic Assessment Working Group (PAWG)

Chair: Alex Crawford  
 Vice-Chair: Bryon Domgaard  
 March XX, 2022

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** *The primary function of the NERC Probabilistic Assessment Working Group (PAWG) is to advance and continually improve the probabilistic components of the resource adequacy work of the ERO Enterprise in assessing the reliability of the North American Bulk Power System.*

### Items for RSTC Approval/Discussion:

- None

### Workplan Status (6 month look-ahead)

Milestone	Status	Comments

### Recent Activity

- New Chair and Vice-Chair.
- Met in January and February to get preliminary scenarios for the 2022 Probabilistic Assessment Scenario Case.
- Ongoing engagement with RAS with probabilistic components of their seasonal assessments.
- Continued work on the biennial ProbA process.

### Upcoming Activity

- *White Paper: Probabilistic Planning for the Tails* – Plan to complete by 2023
- *2022 Probabilistic Assessment* – Both the Base Case and Scenario Case to continue work in 2022. Actions follow LTRA development schedule.

## RSTC Status Report – Reliability Assessments Subcommittee (RAS)

*Chair: Anna Lafoyiannis (11/2021)*  
*Vice-Chair: Andreas Klaube (11/2021)*  
*March 8-9, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** The RAS reviews, assesses, and reports on the overall reliability (adequacy and security) of the BPS, both existing and as planned. Reliability assessment program is governed by NERC RoP Section 800.

**Items for RSTC Approval/Discussion:**

- Proposed Workplan additions to address the RISC report and Cold Weather Inquiry Recommendations

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
2022 Summer Reliability Assessment	<span style="color: green;">●</span>	Assessment area info responses due back April 7
2022 Long-Term Reliability Assessment	<span style="color: green;">●</span>	Preliminary Assessment area info responses due back June 15
2022-2023 Winter Reliability Assessment	<span style="color: green;">●</span>	Assessment area info request planned for July/August

**Recent Activity**

- LTRA Request Materials sent to the Regional Entities February 2022
- RAS Meeting February 8-9: topics included RAS Workplan additions, 2022 LTRA planning, 2022 ProbA planning, 2022 SRA planning, and ERO RA Process Document updating
- 2021 LTRA published on December 17, 2021

**Upcoming Activity**

- ProbA request materials sent to the Regional Entities May 2022
- 2022 Summer Reliability Assessment RSTC comment period (April 21-29)

## RSTC Status Report – Resources Subcommittee (RS)

- On Track
- Schedule at risk
- Milestone delayed

*Chair: Greg Park*  
*Vice-Chair: Rodney O'Bryant*  
*March 2022*

**Purpose:** The RS assists the NERC RSTC in enhancing Bulk Electric System reliability by implementing the goals and objectives of the RSTC Strategic Plan with respect to issues in the areas of balancing resources and demand, interconnection frequency, and control performance.

### Recent Activity

- Endorsed the Inadvertent Interchange Guideline in support of the sunset of the Inadvertent Interchange Working Group
- Quarterly review of interconnection performance
- Reviewed Tiger Team RISC report and Cold Weather Report for impacts to RS Workplan

### Items for RSTC Approval/Discussion:

- **Endorse and Advance:**
  - Inadvertent Interchange Guideline – Supports the retirement of the Inadvertent Interchange Working Group

### Upcoming Activity

- Joint RS and RTOS meeting scheduled for April 27, 2022 – Meeting notice to follow.

### Workplan Status (6 month look-ahead)

Milestone	Status	Comments
Support ERSWG Measures 1,2,4, and 6	<span style="color: green;">●</span>	Periodic review and consultation with NERC staff ongoing
2022 RS M6 outreach to BAs indicating a year over year decline in performance.	<span style="color: green;">●</span>	RS leadership and regional representatives are meeting with identified BAs

## RSTC Status Report – Real Time Operating Subcommittee (RTOS)

Chair: Jimmy Hartmann  
Vice-Chair: Tim Beach  
March 2022

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** The RTOS assists in enhancing BES reliability by providing operational guidance to industry; oversight to the management of NERC-sponsored IT tools and services which support operational coordination, and providing technical support and advice as requested.

**Recent Activity**

- RISC Report Assignments completed
- RTOS approved two updated Reliability Plans for SPP and RC West
- Reliability Guideline: Cyber Intrusion Guide for the System Operator: Task force is reviewing comments
- GMD Monitoring Reference Document: Task force is reviewing comments

**Items for RSTC Approval/Discussion:**

- No items for approval

**Upcoming Activity**

- Reliability Coordinator Plan Reference Document Q2 2022

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
Monitor development of common tools and act as point of contact for EIDSN.	<span style="color: green;">●</span>	In Progress
Frequency Monitor Reporting (Standing RTOS agenda item to discuss).	<span style="color: green;">●</span>	In Progress
Reliability Guideline: Cyber Intrusion Guide for System Operators and GMD Monitoring Reference Document under scheduled review.	<span style="color: green;">●</span>	In Progress
Reliability Coordinator Plan Reference Document	<span style="color: green;">●</span>	In Progress

## RSTC Status Report – Supply Chain Working Group (SCWG)

*Chair: Tony Eddleman  
Vice-Chair: Open  
March 8-9, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** To Identify known supply chain risks and address through guidance documentation or other appropriate vehicles. Partner with National Laboratories to address cyber security supply chain risk.

### Items for RSTC Approval/Discussion:

- **Information – Supply Chain Effectiveness Survey results**
- **Please update RSTC workplan with SCWG Security Guidelines plan to maintain separate Guidelines**

### Recent Activity

- Met virtually on December 20<sup>th</sup>, January 10<sup>th</sup> and February 14<sup>th</sup>
- Completed the review, developed key take-aways and conclusions for the Supply Chain Standard Effectiveness Survey
- Started the periodic reviews of five Security Guidelines
- Discussed combining Supply Chain Security Guidelines into one – more difficult to manage! SCWG will maintain separate Security Guidelines.

### Upcoming Activity

- Provide results of the Supply Chain Standard Effectiveness Survey to RSTC and the NERC Board
- Continue periodic review of Security Guidelines
- Monitor the development of the Central Repository
- Monitor the Software Bill of Materials (SBoM) Project by CISA
- Monitoring FERC, Executive Orders, DOE, and CISA for future directions

### Workplan Status (6 month look-ahead)

Milestone	Status	Comments
Supply Chain Standard Effectiveness Survey	<span style="color: green;">●</span>	In Progress
Periodic Review of Supply Chain Security Guidelines	<span style="color: green;">●</span>	In Progress
Guidance documentation on supply chain risk management issues and topics	<span style="color: green;">●</span>	In Progress

## RSTC Status Report Security Integration and Technology Enablement Subcommittee (SITES)

Chair: Brian Burnett  
Vice Chair: Thomas Peterson  
March 8-9, 2022

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** To identify, assess, recommend, and support the integration of technologies on the bulk power system (BPS) in a secure, reliable, and effective manner.

### Items for RSTC Approval/Discussion:

- **Accept:** None
- **Approve:** None

### Workplan Status (6-month look-ahead)

Milestone	Status	Comments
BES Operations in the Cloud	<span style="color: yellow;">●</span>	In progress Q3/2022
Zero-Trust Concepts	<span style="color: yellow;">●</span>	In progress Q2/2022
Security Integration	<span style="color: green;">●</span>	Planning phase Q1/2022
IT/OT Convergence	<span style="color: green;">●</span>	Planning phase Q1/2022
Reliability/Resilience/Security balance	<span style="color: green;">●</span>	Planning phase Q1/2022
Emerging Technologies	<span style="color: green;">●</span>	Planning phase Q1/2022
Risk Identification	<span style="color: green;">●</span>	Planning phase Q1/2022
Security Implementation	<span style="color: green;">●</span>	Planning phase Q1/2022

### Recent Activity

- BES operations in the cloud whitepaper: Subgroup has been formed and initial working draft has been developed.
- Zero-trust whitepaper: Subgroup has been formed; draft is nearly complete.

### Upcoming Activity

- BES operations in the cloud team is drafting the white paper; it will be circulated for public comment period. Date TBD.
- Zero-trust whitepaper initial draft and prep for public comment period. Date TBD.

## RSTC Status Report – System Protection and Control Working Group (SPCWG)

*Chair: Bill Crossland  
Vice-Chair: Lynn Schroeder  
February 14, 2022*

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** The SPCWG will promote the reliable and efficient operation of the North American power system through technical excellence in protection and control system design, coordination, and practices.

### Items for RSTC Approval/Discussion:

- **Information:** SPCWG Review and Approval Process Document

### Workplan Status (6 month look-ahead)

Milestone	Status	Comments
Revising Scope Document	<span style="color: yellow;">●</span>	Behind schedule
Inter-Entity short circuit paper	<span style="color: green;">●</span>	On schedule
Cold weather Recommendation 13	<span style="color: green;">●</span>	On schedule
Cold weather Recommendation 22	<span style="color: green;">●</span>	On schedule

### Recent Activity

- Started work on Cold weather recommendations 13 and 22
- Developing PRC-023-4 SAR
- Developing PRC- 019-2 CIG
- Draft Scope document out to members for review and comment

### Upcoming Activity

- Finalizing Scope Document
- Continuing to identify work for 2022 and beyond
- Review Draft report on Inter-Entity Short Circuit Model
- Review FERC 881 to see if it impacts PRC-023
- Support Cold Weather Recommendation 27
- Support RISC 1.2
- Review PRC-025-2 in context of hybrid plants

## RSTC Status Report – System Planning Impacts from DER Working Group (SPIDERWG)

- On Track
- Schedule at risk
- Milestone delayed

Chair: Shayan Rizvi  
Vice-Chair: Bill Quaintance  
March XX, 2022

**Purpose:** *The NERC Planning Committee (PC) identified key points of interest that should be addressed related to a growing penetration of distributed energy resources (DER). The purpose of the System Planning Impacts from Distributed Energy Resources (SPIDERWG) is to address aspects of these key points of interest related to system planning, modeling, and reliability impacts to the Bulk Power System (BPS). This effort builds off of the work accomplished by the NERC Distributed Energy Resources Task Force (DERTF) and the NERC Essential Reliability Services Task Force/Working Group (ERSTF/ERSWG), and addresses some of the key goals in the ERO Enterprise Operating Plan.*

**Items for RSTC Approval/Discussion:**

- **Approval:** *Reliability Guideline: Recommended Approaches for UFLS Program Design with Increasing Penetrations of DERs*
- **RSTC Review:** *White Paper: NERC Reliability Standards Review by NERC SPIDERWG*
- **RSTC Review:** *White Paper: BPS Reliability Perspectives for Distributed Energy Resource Aggregators.*

**Workplan Status (6 month look-ahead)**

*See next slide*

**Recent Activity**

- Met in January 2022 to update work products and focus on high priority items.
- Reorganized members into analysis subgroup and coordination subgroup. (Reduced from 4 groups to 2)
- Ongoing self-nomination period for subgroup leaders.

**Upcoming Activity**

- *Many deliverables targeted for RSTC action in 2022.*
- *Next SPIDERWG meeting in April. Anticipated SPIDERWG milestone completion of:*
  - *Technical Report on Beyond Positive Sequence*
  - *Simulation Improvement White Paper*
  - *Any returned material from this meeting.*

- On Track
- Schedule at risk
- Milestone delayed

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
C6 – NERC Reliability Standards Review	<span style="color: green;">●</span>	Requesting RSTC Review at March Meeting
O1 – White Paper BPS Perspectives on the DER Aggregator	<span style="color: green;">●</span>	Requesting RSTC Review at March Meeting
S1 – Reliability Guideline: Bulk Power system Planning under Increasing Penetration of Distributed Energy Resources	<span style="color: yellow;">●</span>	Targeting RSTC request to post in Q2 or Q3 of 2022
V2 - Reliability Guideline: DER Forecasting Practices and Relationship to DER Modeling for Reliability Studies	<span style="color: green;">●</span>	Comment period ends November 20 <sup>th</sup> . Anticipate RSTC approval in Q1 2022.
S3 – Recommended Simulation Improvements and Techniques	<span style="color: green;">●</span>	Completed software vendor engagement. Responding to RSTC comments.
S4b – Whitepaper: DER impacts to UVLS Programs	<span style="color: green;">●</span>	Drafting underway for Q2 2022 target.
S5 – Technical Report: Beyond Positive Sequence RMS Simulations for High DER Penetration Conditions	<span style="color: green;">●</span>	Finalizing document. Anticipate request for RSTC review in Q2 2022.
M6 – Modeling Distributed Energy Storage and Multiple Types of DERs	<span style="color: yellow;">●</span>	Drafting underway for Q3 2022 target for RSTC action. New Analysis subgroup should help with volunteers for drafting.

## RSTC Status Report – Security Working Group (SWG)

Co-Chair: Brent Sessions  
Co-Chair: Katherine Street  
March 8, 2022

- On Track
- Schedule at risk
- Milestone delayed

**Purpose:** Provides a formal input process to enhance collaboration between the ERO and industry with an ongoing working group. Provides technical expertise and feedback to the ERO with security compliance-related products.

**Items for RSTC Approval/Discussion:**

- **None**

**Workplan Status (6 month look-ahead)**

Milestone	Status	Comments
BCSI in the Cloud Tabletop Lessons	<span style="color: green;">●</span>	Q1, 2022 review send to SITES
Ongoing ERT comments	<span style="color: green;">●</span>	Ongoing
CIP -> CSF OLIR Mapping	<span style="color: green;">●</span>	Q4, 2022
FERC LL Paper	<span style="color: green;">●</span>	Q3, 2022
FERC NOPR Comments	<span style="color: green;">●</span>	Q1. 2022

**Recent Activity**

- Reconstituted a new FERC CIP-002 Lessons Learned team
- ERTv6 review cycle completed
- Version 2 of the BCSI in Cloud TTX under review
- Call for Volunteers released for the FERC NOPR internal network monitoring
- Completed first draft of project intake process
- Implemented new extranet library structure
- Review and analyze current work plan

**Upcoming Activity**

- Form a new team for CIP -> CSF mapping in OLIR format – **partnership with NIST**
- Coordinate with SITES for review of BCSI in the Cloud TTX document package, and coordinate review process with RSTC
- Implement the project intake process against the current work plan
- Complete SWG as subcommittee question responses (work plan analysis)

## **GADS Section 1600 Data Request**

### **Action**

Information

### **Summary**

As an addition to the existing Section 1600 Generator Availability Data System (GADS) data request, consider future acceptance to post for a 45-day public comment period on the following proposed data collection:

- GADS Conventional – Additional design and event data.
- GADS Photovoltaic (PV) – Configuration, performance and event data as well as outage detail.
- GADS Wind – Configuration, performance and event data as well as outage detail. Clarify reporting requirements related to plant size and commissioning date.

## **RSTC Sunset Review Team Recommendation**

### **Action**

Approve

### **Summary**

Per the RSTC Charter, the RSTC “will conduct a “sunset” review of each working group every year” and “review the task force scope at the end of the expected duration and at each subsequent meeting of the RSTC until the task force is retired.” The RSTC Executive Committee developed a draft process and template for these reviews to be conducted prior to the December 2021 RSTC meeting.

The RSTC Sponsors in coordination with group leadership and NERC Staff Liaisons reviewed the working group or task force deliverables and work plans to complete the information in the template. From this review, the Sunset Review Team is seeking approval of its recommendation for the Inverter-based Resources Performance Working Group to be promoted to a subcommittee and to retain the Security Working Group and System Protection and Control Working Group as they exist.

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# RSTC Sunset Review Team Final Recommendations

Robert Reinmuller, RSTC Executive Committee Member  
Reliability and Security Technical Committee Meeting  
March 8, 2022

**RELIABILITY | RESILIENCE | SECURITY**



- A review process and template was finalized by the Sunset Review Team and distributed to all working groups and task forces within the RSTC organization. The templates were completed by the WG/TF and returned to the Sunset Review Team for review on October 29, 2021.
- The Sunset Review Team recommended, and the RSTC approved in December 2021, to retain the following groups as-is:
  - EGWG          EMPWG          EMSWG          FMMTF
  - FWG          LMWG          PAWG          RWG
  - SCWG          SMWG          SPIDERWG

- The RSTC approved the Sunset Review Team recommendation to request the IRPWG, SPCWG and SWG to:
  - Demonstrate that the WG is managing wide ranging and broad processes and their activities include comprehensive cyclical activities that require continuous coordination
  - Provide examples of such activities completed or in process of being completed demonstrating the ongoing nature of work
  - Provide a work plan that clearly articulates the medium to long term (min 3-5y) activities, not just those in progress (demonstrate long term need)
  - Include the strategy employed to increase participation, increase formal structure of work delivered and regular reporting to RSTC or others

Committee Subgroups				
	Scope	Duration	Approvals	Leadership
<b>Subcommittee</b>	<ul style="list-style-type: none"> <li>Oversee broad processes</li> <li>Manage cyclical deliverables</li> </ul>	Long-term	Consensus seeking; vote as specified by its scope	Nominated by subcommittee; Approved by RSTC Leadership
<b>Working Group</b>	<ul style="list-style-type: none"> <li>Oversee specific data systems</li> <li>Support specific initiatives with broader interaction with other subgroups/topics</li> <li>Support a cyclical process</li> <li>Support parent subcommittee</li> </ul>	Long-term/ mid-term	Consensus seeking; non-voting	Nominated by working group, parent subcommittee, or direct appointment by the NERC Technical Committees; approved by RSTC Leadership
<b>Task Force</b>	<ul style="list-style-type: none"> <li>Support a specific initiative</li> <li>Direct, often only one deliverable</li> <li>Support parent subcommittee</li> </ul>	Short-term	Consensus seeking; non-voting	Nominated by task force, parent subcommittee, or direct appointment by the NERC Technical Committees; approved by RSTC Leadership

The review team devised a scoring system for evaluation of the WG activities, by awarding points for the most critical attributes:

1. Wide ranging(1), Comprehensive and New (1) and Continuous / Long Term Engagement(1) – as an example for Wide Ranging consider the impact affecting the industry, for Comprehensive and New consider emerging and complex and for Continuous and Long Term Engagement (3-5y or more) as the emerging issues will persist years. (Max 3 points)
2. Examples of activities – 1 point (1-2 individual papers, activities), 2 points ( 3-4 past and future guidelines, whitepapers, main activities), 3 points (5 or more focused topics that require ongoing attention and future development). (Max 3 points)

1. Future Plan indicative of need for Subcommittee in the long run, 1 point  
Unclear plan, 2 points, Some activities are planned, 3 points, Multiple  
clear activities and future additional impact (Max 3 points)
  2. Participation or interest – Low interest 1, Average interest 2 or wide  
industry high interest 3 point (Max 3 points)
- Scoring
    - 1-5 - Maintain and review the long-term need
    - 6-8 - Maintain or Promote IF there is compelling evidence of  
wide impact changes in the area
    - 9-12 - Consider to Promote

- Analysis

1. Wide Ranging = 1, Comprehensive and New = 1, Continuous and Long Term = 1; Total = 3
2. The IRPWG produced several Performance Guidelines and Whitepapers - Guideline on Improvements to Interconnection requirements, Whitepaper on Fast Frequency Response, Reliability Guideline on BPS-Connected BESS and Hybrid Plant Performance, Modeling and Studies, White Paper on BPS-Connected IBR and Hybrid Plant Capabilities for Frequency Response, White Paper on Grid Forming Technology and the Odessa Disturbance Follow-Up White Paper detailing the changes to Standards and the Interconnection Agreements. Additionally the IRPWG continues to support the development of IEEE P2800. Total = 3

- Analysis:

1. The IRPWG plan includes writing SARs and working with Standards Drafting Teams to write performance requirements for IBRs, to develop disturbance monitoring requirements to detect abnormal performance and to correct performance. Additionally, incorporate EMT modeling requirements and EMT study requirements for the interconnection study process. The IRPWG is also working on two Reliability Guidelines: Electromagnetic Transient Modeling and Simulations and Recommended Approach to Interconnection Studies for BPS-Connected Inverter-Based Resources. Total = 3
2. IRPWG - IRPWG has one of the highest participation rates and is one of the most well-known and well-connected groups at NERC. Given the increasing interest from the industry, it will remain a focus for the next several years. Total = 3

- **Recommendation**

- **IRPWG Total = 12** - The WG is experiencing a rapidly increasing demand to deliver industry wide guidance and perspective. The next several years will be critical in the adoption and integration of IBR's and based on the current and increasingly demanding work, we recommend promoting the WG to a Subcommittee.

- Analysis

1. SPCWG - The SPCWG is considered the subject matter experts on system protection. As the system changes and new technologies are introduced, there will be steady impact to P&C standards and compliance guidelines. While changes are driven by developments in IBR and DER penetration, this team will continue to analyze how current systems need to adapt. Wide Ranging = 0.5, Comprehensive and New = 0.5, Continuous and Long Term = 0; TOTAL = 1
2. SPCWG - Several activities can be listed - Implementation guidelines on new and existing compliance standards (ex PRC-019, PRC-024, and PRC-025). In addition, the SPCWG is working on analysis related to the impacts of the changing resource mix, grid transformation and some aspects of the February 2021 cold weather report. Total = 2

- Analysis

3. SPCWG – Work plan items are mostly self assigned and as a result of industry needs. The main scope is provided by the impacts that new and emerging technologies and their performance characteristics have on current protection systems designed to protect the grid, as well as the impact the current protection systems have on those new devices. Total = 1.5
4. SPCWG – Steady participation as this group is composed of some of the leading experts in industry and is their contribution invaluable as a resource to industry. Total = 2

- **Recommendation**

- **SPCWG - Total = 6.5** - The WG is well established and continue to support transformational trends in the industry. As the impact is increasing from disruptive technologies, the body of industry experts will continue to play a critical role. Based on current envelope of work, we recommend to maintain as a WG and request that the team provides a more clear evaluation of the future plans and deliverables that would support a promotion to a Subcommittee.

- Analysis

1. SWG - Based on the review the SWG continues to provide guidance and expertise that improve ongoing activities related to CIP. Also, there is continued effort to align Reliability Standards to the Cyber Security Framework and enable a better application of the existing assessment tools. The activities build on and expand the established security framework, incorporating improvements where necessary. Wide Ranging = 0, Comprehensive and New = 0.5, Continuous and Long Term = 0.5; TOTAL = 1
2. SWG – Several activities can be listed - Evidence Request Tool Team continued guidance, Mapping CIP Reliability Standards to the NIST Cyber Security Framework and Strategy activity “BCSI in the Cloud table-top exercise” that will require ongoing work. Total = 1.5

- Analysis

3. There are some ongoing activities that the WG is evaluating and looking to update their Plan; however, they are more in line with continued effort to maintain and clarify issues. Total = 1.5
4. SWG – There continues to be a good level of interest in the Security area with natural up and down movement based on established processes and new interest areas. Total = 2

- **Recommendation**

- **SWG – Total = 6** - The WG has important accountabilities that continues to deliver. Based on current envelope of work, we recommend to maintain as a WG and consider clarifying the work plan and future critical activities that require specific focus and periodic delivery to substantiate a promotion in the next cycle review.

- The Sunset Review Team is seeking approval of their recommendation to:
  - Promote the IRPWG to a Subcommittee
  - Retain the SWG as a Working Group
  - Retain the SPCWG as a Working Group
  - Disband the Sunset review Team



# Questions and Answers

## **Reliability Guideline: Inadvertent Interchange**

### **Action**

Approve

### **Summary**

The NERC Resources Subcommittee (RS) made revisions to the Reliability Guideline: Inadvertent Interchange which includes the development of metrics. The guideline was posted for a 45-day comment period and the RS made conforming revisions to the guideline as appropriate. The RS is requesting approval of the guideline.

# Draft Reliability Guideline

## Inadvertent Interchange

### Applicability

Balancing Authorities (BAs)

### Introduction and Purpose

#### Preface

It is in the public interest for NERC to develop guidelines that are useful for maintaining or enhancing the reliability of the Bulk Electric System (BES).

The NERC Reliability and Security Technical Committee (RSTC), through its subcommittees and working groups, develops and triennially reviews reliability guidelines in accordance with the procedures set forth in the RSTC Charter. Reliability guidelines include the collective experience, expertise, and judgment of the industry on matters that impact bulk power system (BPS) operations, planning, and security. Reliability guidelines provide key practices, guidance, and information on specific issues critical to promote and maintain a highly reliable and secure BPS.

Each entity registered in the NERC compliance registry is responsible and accountable for maintaining reliability and compliance with applicable mandatory Reliability Standards. Reliability guidelines are not binding norms or parameters; however, NERC encourages entities to review, validate, adjust, and/or develop a program with the practices set forth in this guideline. Entities should review this guideline in detail and in conjunction with evaluations of their internal processes and procedures; these reviews could highlight that appropriate changes are needed, and these changes should be done with consideration of system design, configuration, and business practices.

This reliability guideline is intended to provide recommended practices for the management of Inadvertent Interchange (also referred to herein as inadvertent) accounting. With the goal of ensuring that, over the long term, BA Areas do not excessively depend on another BA Area in the Interconnection for meeting their demand or Interchange obligations.

### Background

#### Preamble

The purpose of this document is to explain inadvertent accounting and supports the Inadvertent Interchange Accounting activities. The guideline is an aid to NERC, the Regions and Balancing Authorities, but does not set out compliance obligations nor is intended to be used as an auditor resource. Included within this document are accounting practices that every BA within NERC should follow. These practices provide a method for isolating and eliminating the source(s) of accounting errors. They may also be used as an aid in identifying the poor control performance that contributes to inadvertent accumulations.

## **Metrics**

Pursuant to the Commission’s Order on January 19,2021, *North American Electric Reliability Corporation, 174 FERC Section 61,030 (2021)*, reliability guidelines shall now include metrics to support evaluation during triennial review, consistent with the RSTC Charter.

### **Baseline Metrics**

- Performance of the BPS prior to and after a reliability guideline, as reflected in NERC’s State of reliability Report and Long Term Reliability Assessments (e.g., Long term Reliability Assessment and seasonal assessments);
- Use and effectiveness of a reliability guideline as reported by industry via survey; and
- Industry assessment of the extent to which a reliability guideline is addressing risk as reported via survey.

### **Specific Metrics**

The RSTC or any of its subcommittees can modify and propose metrics specific to the guideline in order to measure and evaluate its effectiveness

Evaluated quarterly:

- Dispute Resolution: The sum of the unresolved BA interchange disputes for between t-3 and September 2016 as shown on the “Select Month and Year” display of the IIT
  - Acceptable values are 0 for each Interconnection
- Tool Maintenance: The number of months with sum of absolute values in the “Totals” row of the monthly “NERC Inadvertent Report” in the IIT with greater than 1MWH between t-3 and September 2016
  - Acceptable values are 0 for each Interconnection
  - Open BA interchange disputes (that affect the sum of the absolute values in the Totals row of the monthly NERC Inadvertent Report) shall have their MWH values removed from the Totals row in order to prevent open disputes from negatively affecting the quality of this metric.

## **Responsibilities**

NERC ~~OR~~RSTC - Resources Subcommittee (RS)

Provide oversight of the Inadvertent Interchange reporting process as implemented by the BA and Regional Administrators from each Regional Entity.

### **Balancing Authorities**

Account for, calculate, and report Inadvertent Interchange. Each BA is obligated to maintain its Inadvertent Interchange accounting within two periods, namely, On-Peak and Off-Peak. All hourly Schedules and Schedule changes are confirmed between the involved BA Areas prior to implementation in regard to common magnitude, rate of change, starting time, and ending time. As a double check, Interchange Schedules are also confirmed for the previous day.

82 Each BA must submit in a timely manner a monthly summary of Inadvertent Interchange to the NERC  
83 Inadvertent Interchange Reporting Tool.

84

### 85 **Regional Administrators (RA)**

86 An RA is established voluntarily, for each Region to help maintain the NERC Inadvertent Interchange  
87 Reporting Tool (<https://inadvertent.nerc.net/webhub/>) by ensuring the BAs have effectively reported  
88 Inadvertent Interchange Data.

89

90 Tasks to be performed by the RA are as follows:

91 • Lock the NERC Inadvertent Interchange Reporting ~~Tool~~Tool on or around the 22nd calendar day  
92 of each month for the previous month's data. Please refer to the Adjustments for Error section for  
93 further information regarding how BAs can make adjustments to data after the Tool has been locked  
94 for the month.

95 • Assist in dispute resolution when two BAs cannot agree on a Scheduled Net Interchange (NI<sub>S</sub>) or  
96 Actual Net Interchange (NI<sub>A</sub>).

97 • Verify Interconnection's monthly actual and scheduled On and Off-Peak balances reflect zero after  
98 data submittals are complete.

99     ▪ If the balance does not equal zero, communicate with BAs to identify the root cause and assist  
100 in resolving the imbalance

101 • Report to the NERC RS on a quarterly basis the status of the Region inadvertent reporting by BA via  
102 email or at the RS meeting. For the Western Interconnect this reporting is handled by WECC not the  
103 RA.

104 • Provide quarterly reports in January, April, July, and October for the prior quarter.

105 • Monitor BA's balance to ensure it does not exceed the recommended limits. (See Managing the  
106 Balancing Authorities' Balance section)

107

108 RAs shall report issues that may arise to the RS on no less than a quarterly basis. Questions about RA  
109 responsibilities can be directed to the chair of RS.

110

111 **Definitions**

112 Please refer to the Glossary of Terms used in NERC Reliability Standards as posted on the NERC website for  
113 the definitions associated with the capitalized terms used in this document.

114  
115 **Guideline Details:**

116  
117 **Inadvertent Interchange Accounting Procedure**

118 Each BA shall calculate and record hourly Inadvertent Interchange which includes all AC and DC tie lines  
119 that connect to its Adjacent BA Areas in the same Interconnection and interchange served by jointly owned  
120 generators for On-Peak and Off-Peak periods.

121  
122 Adjacent BA Areas shall operate to a common Net Interchange Schedule and Actual Net Interchange value  
123 and shall record these hourly quantities, with like values but opposite sign.

124  
125 In order to ensure that each BA can agree to a common Scheduled Net Interchange and Actual Net  
126 Interchange, it is recommended that the BAs, by the end of the next business day, agree with its adjacent  
127 BA to the hourly values of Net Interchange Schedule and hourly integrated megawatt-hour values of Actual  
128 Net Interchange.

129  
130 The BA needs to use the agreed-to daily and monthly accounting data to compile its monthly accumulated  
131 Inadvertent Interchange for the On-Peak and Off-Peak hours of the month in order for the BAs to submit a  
132 monthly summary of Inadvertent Interchange to the NERC reporting tool. The values should be populated  
133 in the NERC tool no later than the 15<sup>th</sup> calendar day of the following month.

134  
135 These values are reported in the Central prevailing time zone and should only include agreed to values  
136 between by the Source BA, Sink BA and all Intermediate BAs. If the BAs cannot come to agreed values they  
137 should populate the actual interchange and schedule interchange they have at the time.

138  
139 **Differences**

140 If the BAs cannot mutually agree to a common Actual Net Interchange or Scheduled Net Interchange with  
141 like values but opposite signs by the 15<sup>th</sup> calendar day of the following month they need to contact their RA  
142 and advise them of the situation. The BAs need to provide the RA a description of the cause for the dispute  
143 and the plan for correcting the discrepancy including the timeline for the completion. This includes  
144 instances where the BAs need additional time for reconciliation. In circumstances where an RA does not  
145 exist, the involved BAs should resolve their differences to meet the NERC standards, such as BAL-005.

146  
147 Documentation should be saved for the parties' involved up to 24 months after the difference has been  
148 resolved.

149  
150 **Adjustments for Error**

151 A BA may make after-the-fact corrections to the agreed-to monthly accounting data only as needed to  
152 reflect actual operating conditions (e.g., a meter being used for control was sending bad data). After-the-

153 fact corrections to scheduled or actual values can only be made with agreement of the impacted Adjacent  
154 BAs, by making equal, but opposite, adjustments.

155  
156 If changes need to occur after the data has been locked, email a request form (See Appendix A) to the RA  
157 including the following information:

- 158 • The month and year for which a change needs to be made.
- 159 • Whether the change is for NI<sub>A</sub> or NI<sub>S</sub>.
- 160 • Explanation for the change.
- 161 • Agreements to the change from all BAs involved.
- 162 • Whether the change is On-Peak or Off-Peak.

163  
164 In circumstances where an RA does not exist, the involved BAs should resolve their differences to meet  
165 the NERC standards, such as BAL-005.

## 167 **Managing the Balancing Authorities' Balance**

### 169 Eastern Interconnection

170 Each BA's accumulated Inadvertent Interchange for both the monthly On-Peak period and the monthly Off-  
171 Peak period, individually, should not exceed 150% of the previous calendar year's average of integrated  
172 hourly Peak Demand and integrated hourly peak generation ( $1.5 * ((\text{average hourly peak for preceding}$   
173  $\text{calendar year} + \text{hourly peak generation}) / 2$ ). If the BA's balance does exceed 150% of the previous calendar  
174 year's average of integrated hourly Peak Demand and integrated hourly peak generation, it is expected that  
175 the BA should start a form of inadvertent payback method that includes a target of driving their balance  
176 down towards zero in accordance with the North American Energy Standards Board (NAESB) requirements.

### 178 Western Interconnection

179 Each BA Area's accumulated Primary Inadvertent Interchange must be managed in accordance with BAL-  
180 004-~~WECC Requirement~~ WECC Requirement R1.

## 182 **Dissolution of Balancing Authorities**

183 When a BA deregisters, presumably to transfer its load and generation into another BA, its Inadvertent  
184 Interchange balance should be accurately accounted for to keep the Interconnection in balance. In the  
185 event the deregistering BA is being absorbed by more than one BA, the deregistering BA Inadvertent  
186 Interchange balance must be apportioned among the absorbing BAs.

187  
188 The transfer of the inadvertent balance needs to occur the month *after* the dissolving BA is  
189 decommissioned.

190  
191 The dissolving BA inadvertent balance will need to reflect *zero* in the NERC Inadvertent Interchange  
192 reporting tool. The new or acquiring BA would absorb the inadvertent balance of the dissolving BA.

193 The dissolving BA should contact the NERC RS, to discuss the necessary changes. This acts as a notification  
194 to the vendor of the tool so that an adjustment can be made to the NERC inadvertent reporting tools.

195  
196 The month after the dissolving BA's balance has been transitioned to the new BA(s) the vendor of the tool  
197 should remove that BA from the list of BAs that must report into the NERC inadvertent reporting tool.

198  
199 Historical data will remain in the NERC inadvertent reporting tool for the dissolving BA.

200  
201 Below are examples for inadvertent accounting changes:

202  
203 Example #1:

204 BA dissolving into a single BA  
205 BA 1 last day of operation as a BA is June 30, 2012. They are being absorbed by BA 2 as of July 1, 2012 0000.  
206 BA 1 inadvertent balance will be taken to zero in the NERC Inadvertent Interchange reporting tool once  
207 they are no longer a BA.

208  
209 BA1 has finished their end of the month check out for the month of June 2012 they report their remaining  
210 inadvertent balance, on and off-peak, to BA2.

211  
212 For the month of July 2012 BA 1 and BA2 would report the accumulated inadvertent numbers between the  
213 two of them in the Actual columns, taking BA 1 inadvertent balance to zero and increasing BA 2 inadvertent  
214 balance by the agreed to amount.

215  
216 BA 1 On-peak Inadvertent Interchange = -300  
217 BA 1 Off-~~Peak-peak~~ Inadvertent Interchange = 500

218  
219 BA 1 would report on-peak actual of 300 with an off-peak actual value of -500.

220  
221 BA 2 would report on-peak actual of -300 with an off-peak actual value of 500.

222  
223 This would take BA 1 inadvertent balance to zero for both on and off-peak and adjust BA 2 inadvertent  
224 balance by the amount absorbed from BA 1.

225  
226 For BA 1 these should be the only numbers reported in July 2012. Going forward BA 1 would no longer  
227 report values in the NERC Inadvertent Interchange reporting tool.

228  
229 Example #2:

230 One BA dissolving into two BAs  
231 BA 1 last day of operation as a BA is June 30, 2012. They are being split between two BAs (BA 2 and BA 3)  
232 as of July 1, 2012 0000. The three BAs have agreed to split the inadvertent 50/50 between BA 2 and BA 3.

233  
234 BA 1 inadvertent balance will be taken to zero in the NERC Inadvertent Interchange reporting tool once  
235 they are no longer a BA.

236 BA1 has finished their end of the month check out for the month of June 2012 they report their remaining  
237 inadvertent balance, on and off-peak, to BA2 and BA 3.

238  
239 For the month of July 2012 BA 1, BA2 and BA 3 would report the accumulated inadvertent numbers between  
240 the three of them in the *Actual* columns, taking BA 1 inadvertent balance to zero and increasing BA 2 and  
241 BA 3 inadvertent balance by the agreed to amount.

242  
243 BA 1 On-peak Inadvertent Interchange = -1000  
244 BA 1 Off-~~Peak-peak~~ Inadvertent Interchange = 5000

245  
246 BA 2 would take the following  
247 On-peak = -500  
248 Off-peak = 2500

249  
250 BA 3 would take the following:  
251 On-peak = -500  
252 Off-peak = 2500

253  
254 In the NERC Tool BA 1 would report with BA 2 an on-peak value of 500 and off-peak value of -2500.  
255 BA2 would report with BA 1 on-peak of -500 and off-peak value of 2500.

256  
257 In the NERC Tool BA 1 would report with BA 3 an on-peak value of 500 and off-peak value of -2500.  
258 BA 3 would report with BA 1 on-peak of -500 and off-peak value of 2500.

259  
260 This will take BA 1 inadvertent accounting balance to zero for both on and off-peak and adjust BA 2 and BA  
261 3 by the agreed to amount.

## 262 263 **Creation of Balancing Authorities**

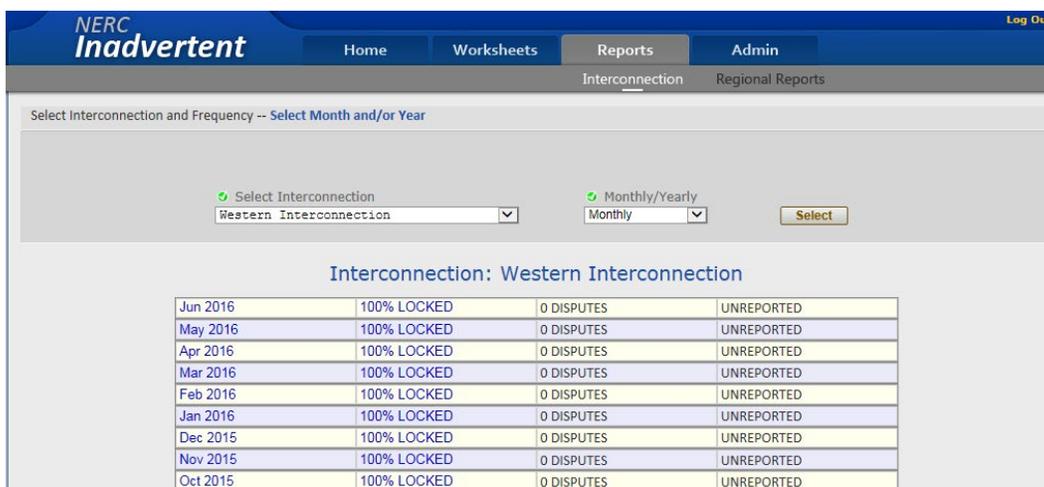
264 Please refer to [Housekeeping Task for New, Reconfigured or Retiring Balancing Authorities](#) located on the  
265 NERC website.

## 266 267 **Managing the Interconnection Balance**

268 On a monthly basis, the summation of the Regions On and Off-~~Peak-peak~~ balances sum to zero in the NERC  
269 inadvertent reporting tool. The NERC Inadvertent Interchange reporting tool has the capability to provide  
270 inadvertent reports. The Inadvertent Interchange reports can be located by following the steps below:

- 271 1. Go to the Reports tab on the top of the screen/Select the correct Interconnection and select  
272 Monthly under Monthly/Yearly. Once the screen has loaded, select the desired month by clicking  
273 on the blue hyperlink.

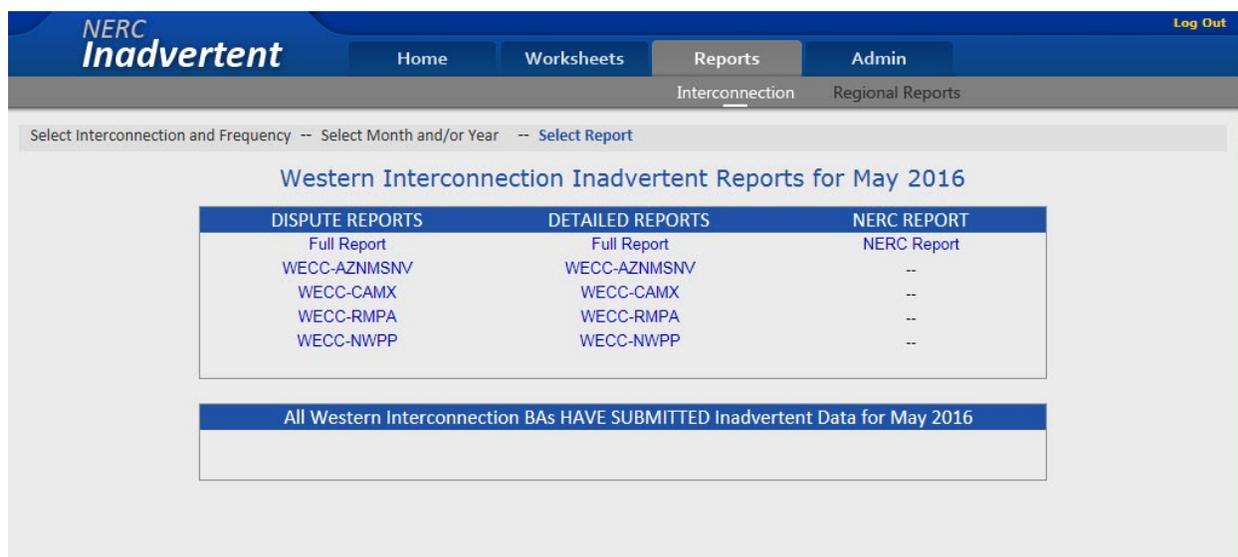
274



275  
276

277  
278

2. Click on the NERC Report link.



279  
280

281  
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284

3. Once the report is open, scroll to the bottom of the page and verify that the On-Peak-peak and Off Peak-peak Totals net to zero between the Regions. Also verify the Total Inadvertent for the month is zero.

Region	ON-PEAK		OFF-PEAK		TOTAL	
	Scheduled	Metered	Scheduled	Metered	Scheduled	Metered
	685883	686904	564548	564473	1250431	1251377
	-3403523	-3406938	-2904497	-2904122	-6308020	-6311060
	2354777	2354938	2076545	2083555	4431322	4438493
	362863	365096	263404	256094	626267	621190
<i>Totals:</i>	0	0	0	0	0	0
<i>TOTAL INADVERTENT:</i>	0					

If the balance does not equal zero, the RA should investigate the root cause of the non-zero value and assist in resolving the imbalance. If the RA is unable to determine the cause of the discrepancy then the RA or the BA should contact the Chair of the NERC RS for assistance.

### Inadvertent Interchange Payback Options

#### Eastern Interconnection

Please refer to the NAESB Wholesale Electric Quadrant (WEQ) Standard, Version 003, WEQ-007, entitled, Inadvertent Interchange Payback. The Federal Energy Regulatory Commission (FERC) approved Version 003 on September 18, 2014 in Order No. 676-H.<sup>1</sup>

#### Western Interconnection

Please refer to BAL-004-WECC. The only payback method allowed in the Western Interconnection is through automatic time error correction (ATEC); as described in the definition of Reportable ACE in the NERC Glossary of Terms.

### Related Documents and Links:

NERC Operating Committee Charter

### Revision History

Date	Version Number	Reason/Comments
7/27/2016	1.0	Initial Version – Inadvertent Interchange
12/13/2017	1.1	Addressed Industry Comments

<sup>1</sup> Standards for Business Practices and Communication Protocols for Public Utilities, 148 FERC ¶ 61,205 (2014).

308  
309  
310  
311

# Appendix A

## Request to Unlock NERC Inadvertent Interchange Tool Form

\*This form must be completed if the NERC Tool needs to be unlocked

Company: \_\_\_\_\_  
Name: \_\_\_\_\_  
Date: \_\_\_\_\_

1. State the Month and Year of the requested change

Month: \_\_\_\_\_ Year: \_\_\_\_\_

2. Changes affect

- Net Actual Interchange (NI<sub>A</sub>)
- Net Schedule Interchange (NI<sub>S</sub>)
- Both

3. Please explain the reason for the change request

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. List the names and contact information for each Balancing Authority (BA) representative who are in agreement with the change.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

312

<b>Reliability Guideline</b>	Reliability Guideline: Inadvertent Interchange
<b>Instructions</b>	<p>Please use this form to submit comments on the draft Reliability Guideline. Comments must be submitted within the review period below to Darrel Richardson (Darrel.Richardson@nerc.net) with the words "Reliability Guideline: Inadvertent Interchange Comments" in the subject line. Only comments submitted in this Microsoft Excel format will be accepted. Both general and specific comments should be provided within this form.</p> <p>Comments may be submitted by individuals or organizations. Please provide the requested information in Row 6. If comments are submitted on behalf of multiple organizations, list all organizations in Row 6. Please provide the Industry Segment and Region (if applicable) in Rows 7 and 8 and provide the requested contact information in Rows 9 and 10.</p> <p>If you have any questions regarding this process, please contact Darrel Richardson (Darrel.Richardson@nerc.net)</p>
<b>Review Period</b>	July 12, 2021 - August 26, 2021

Organization(s)	Page #	Line / Paragraph	Comment	Proposed Change	NERC Response
#REF!	N/A	N/A	<p>General Comments: EEI supports the Reliability Guideline but offers the following suggestions:</p> <ol style="list-style-type: none"> <li>1.The format of this Reliability Guideline does not conform to other newer Reliability Guideline and should be updated consistent with those guidelines. (e.g., Reliability Guideline: Primary Frequency Control) <ol style="list-style-type: none"> <li>a.No cover pages, no date, no indication of the revision (outside the revision history/more recent Reliability Guidelines have this information on the coverpage) or place to indicate Approval by the RSTC, including approval date.</li> <li>b.No table of contents</li> <li>c.Inconsistent placement of the revision history</li> <li>d.No Preface</li> <li>e.No Preamble</li> </ol> </li> <li>2.EEI understands that Reliability Guidelines, as of January 19, 2021, (under a FERC accepted NERC proposal, which defines the approach for evaluating all future NERC Reliability Guidelines) now obligates NERC to include "metrics specific to each Reliability Guideline." (See RSTC Committee Meeting Documentation dated March 3, 2021. Document titled "Evaluating Reliability Guideline Effectiveness Industry survey, Triennial Review and Metrics".) Accordingly, it is our belief that this Reliability Guideline falls under that agreement/proposal and as such should not be approved until necessary metrics are added. Otherwise, NERC and the Industry will have no ability to measure the effectiveness of this Reliability Guideline.</li> </ol>	EEI asks that the issues identified in our General Comments be addressed prior to final approval of this Reliability Guideline.	Agreed. For both comments.
#REF!	1	Line 40	NERC OC has been disbanded. The Resources Subcommittee (RS) now reports to the RSTC. Please correct. (Additional note: The NERC webpage still identifies the RS as reporting to the OC, EEI suggests correcting the webpage as well.)	NERC OC has been disbanded. The RSTC should now be referenced in the Guideline.	Agreed. Thanks!
#REF!	2	Line 60	Typo - missing space between tool and on	EEI suggests adding a space between tool and on	Agreed. Thanks!
#REF!	3	Line 121	Typo - off-peak and on peak should be hyphenated.	EEI suggests adding a coma after e.g.	Agreed. Thanks!
#REF!	5, 6, etc.	Lines 188, 190 and elsewhere	Typo - off-peak and on peak should be hyphenated.	EEI suggests hyphenating off-peak and on-peak.	Agreed. Thanks!
Rodney O'Bryant - Southern Company	1	40	NERC OC is no longer active	Change to RSTC - Resources Subcommittee (RS)	Agreed. Thanks!
Rodney O'Bryant - Southern Company	2	60	Toolon	Tool on	Agreed. Thanks!
Rodney O'Bryant - Southern Company	3	70 & 73	This appears to be a duplicate bullet point	Remove one of the bullets - suggested change Report to the NERC RS on a quarterly basis (January, April, July and October) for the prior quarter the status of the Region Inadvertent by BA via email or at the RS Meeting. For the Western Interconnect this reporting is handled by WECC not the RA.	Agreed. Thanks!
Bonneville Power Administration	2	60	Current text reads "Lock the NERC Inadvertent Interchange Reporting Toolon or around the 22nd calendar day of each". This is a spacing error.	Text should read: "Lock the NERC Inadvertent Interchange Reporting Tool on or around the 22nd calendar day of each"	Agreed. Thanks!
Bonneville Power Administration	4	149	Current text reads: "...004-WECCRequirement R1." This is a spacing error.	Text should read: "...004-WECC Requirement R1."	Agreed. Thanks!

## **Event Analysis Subcommittee Membership**

### **Action**

Approve

### **Summary**

The EAS Scope document calls for RSTC approval of its membership. The EAS has a vacancy for the WECC Regional Industry Representative and proposes **Alan Wahlstrom (SPP)** to fill the seat and is requesting RSTC approval.

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# Sector Elections and RSTC Nominating Subcommittee Update

Ralph Rufrano, EAS Chair  
RSTC Meeting  
March 8, 2022

**RELIABILITY | RESILIENCE | SECURITY**



- The EAS Scope document calls for RSTC Approval of its membership.
- The EAS has a vacancy for the WECC Regional Industry Representative.
- The EAS proposes Alan Wahlstrom (SPP) to fill the seat and is requesting RSTC Approval.



# Questions and Answers

**RSTC Work Plan, RISC Report Recommendations and  
Joint FERC NERC Cold Weather Report Recommendations**

**Action**

Information

**Summary**

At the September RSTC meeting, the RISC Report Recommendations were reviewed and a Tiger Team formed to review the RISC Report Recommendations and the Joint FERC/NERC Cold Weather Report recommendations to create or modify RSTC work plan items to address the recommendations. The Tiger Team is providing a status update as well as a plan to coordinate with RSTC subgroups to review risks and develop mitigation activities and work plan items.

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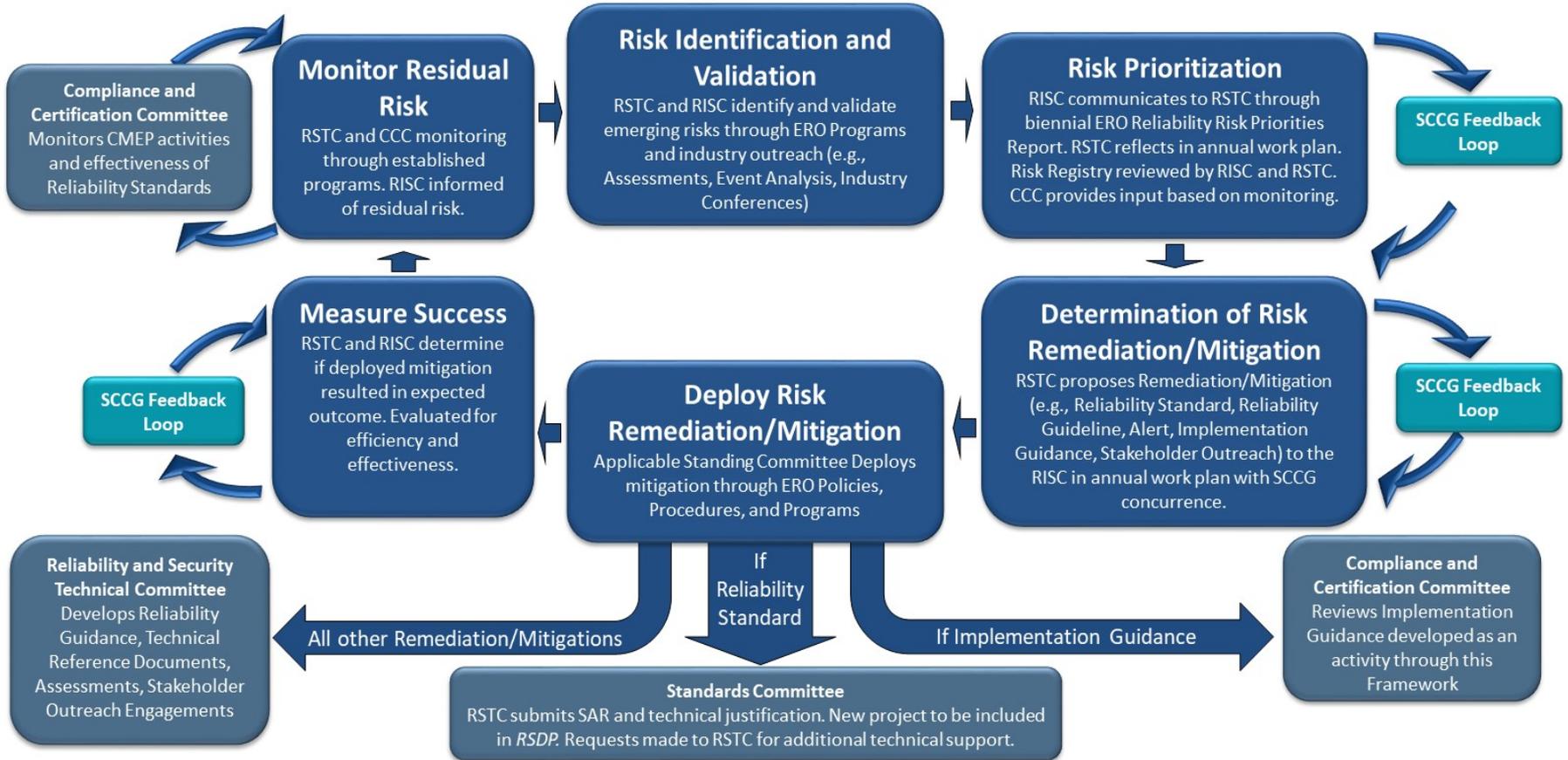
# RISC/RSTC Coordination 2021 RISC Report

Rich Hydzik, RSTC Vice Chair  
Reliability and Security Technical Committee Meeting  
March 8, 2022

**RELIABILITY | RESILIENCE | SECURITY**



# ERO Iterative Risk Management Framework: Standing Committees and RISC Coordination



## RSTC Tiger Team tasks:

- Identify current RSTC subgroup work plan items that address recommendations identified in the RISC Report and the Cold Weather Report
- Identify gaps between the work plan and the RISC Report and the Cold Weather Report recommendations that should be addressed by RSTC groups
- Coordinate with RSTC groups to develop mitigation strategies and work plan items for RSTC approval in March 2022

- The Tiger Team reviewed the recommendations against the RSTC work plan to:
  - Determine if any RISC Report Recommendations are addressed by current RSTC Work Plan items.
  - Reviewed Preliminary Cold Weather Report Recommendations for applicability to RSTC groups.
  - For those RISC Report Recommendations or Cold Weather Report Recommendations that are not addressed or partially addressed by current RSTC Work Plan items, develop proposal for next steps and assignments to RSTC groups for specific mitigation identification.
  - Not all RISC Report Recommendations or Cold Weather Report recommendations will be included in the proposed assignments to the RSTC as they may not be applicable (e.g. recommendations to be addressed by the E-ISAC)

- The Tiger Team communicated initial findings with RSTC groups
- Each RISC Report recommendation was assigned a lead group for review to coordinate specific mitigation actions and work plan items
- Most RISC Report recommendations were assigned one or more supporting groups for review
- Lead groups will:
  - Review the RISC Report Recommendation(s) to confirm their completed work plan items partially address the recommendation(s)
  - Coordinate with Supporting Groups to confirm their completed work plan items partially address the recommendation(s)

- 2021 RISC Report Recommendations Tab
  - Column A – Major RISC Report Profile
  - Column B – Recommendation from RISC Report
  - Column C – Current RSTC Work Plan items that partially address the recommendation (number corresponds to the row number in the “RSTC Work Plan” tab of the spreadsheet)
  - Column D – The group(s) assigned to take the lead for addressing the recommendation
  - Column E - – The group(s) assigned to potentially providing support to addressing the recommendation
  - Column F – Comments from NATF (further review is under way by NATF)
  - Columns G-I – Responses from lead and/or support groups regarding how they address the recommendation
  - Columns J- M – Initial thoughts/comments from Tiger Team members for some recommendations. Included here for reference.

ERO Reliability Risk Priorities Report (2021 RISC Report)						
Risk Mitigation Recommendations						
Risk Profile	Recommendations for Mitigating the Risk	Current RSTC Activities	Potential Lead Group Applicability	Potential Supporting Group Applicability	NATF	RAS Response
1. Grid Transformation	<p><b>1.1 Ensure sufficient operating flexibility at all stages of resource and grid transformation:</b> System operators and planners should ensure that sufficiently flexible ramping/balancing capacity is available as a tool to meet the needs of changing patterns of variability and new characteristics of system performance. Traditional concepts of resource adequacy may need to evolve to consider adequacy and flexibility during all hours, including consideration of correlated outages, transmission availability, and common-mode fuel supply dependencies.</p>	2, 3, 12, 26, 27, 37, 39, 85, 96, 97, 99	RS	RTOS, ERATF, RAS, SPIDERWG; SOR metric?		
	<p><b>1.2 Update data, modeling, and assessment requirements to ensure valid and accurate results given resource and grid transformation (ongoing effort):</b> The RSTC should identify the information and modeling capabilities needed to ensure the efficacy of assessments while taking into consideration the complex and interrelated aspects of the ongoing transformation, including the evolving nature of resource adequacy itself. The ERO should continue to pay attention to settings of controllable devices, remedial action schemes, and power electronics installed to stabilize the system.</p>	2, 3, 12, 37, 39, 42, 48, 57, 58, 90, 127, 128, 129, 132,133, 135, 136, 139, 140, 141, 142, 144	RAS	PAWG, IRPWG, SPCWG, ERATF, SPIDERWG, LMWG		RAS will review existing long-term reliability assessment request materials to identify gaps and develop proposed narrative and/or data request items for ERO use in future LTRA beginning in 2023. Specific attention is directed to settings of controllable devices, remedial action schemes, and power electronics that stabilize the system. Development will be coordinated with necessary RSTC subgroups including SPCWG.

- Final Cold Weather Recommendations Tab
  - Column A – Final recommendation language
  - Column B – Implementation Timeline from the report
  - Column C – Additional notes, mostly identifying recommendations in the Cold Weather SAR
  - Column D – Current RSTC Work Plan items that partially address the recommendation (number corresponds to the row number in the “RSTC Work Plan” tab of the spreadsheet)
  - Column E – The group(s) assigned to take the lead for addressing the recommendation. Some are marked as contained in the Cold Weather SAR or are out of scope for the RSTC.
  - Column F – Responses from lead and/or support groups regarding how they address the recommendation
  - Columns G - I – Initial thoughts/comments from Tiger Team members for some recommendation. Included here for reference.

<b>February 2021 Cold Weather Grid Operations: Final Findings and Recommendations</b>				
<b>FERC, NERC and Regional Entity Joint Staff Inquiry</b>				
<b>Recommendation:</b>	<b>Implementation Timeframe</b>	<b>Additional Notes</b>	<b>Current RSTC Activities</b>	<b>Group Assignment to address gap, form new group under RSTC or out of RSTC scope</b>
<b>1. Revise the Reliability Standards to require:</b>				
1a: To require Generator Owners to identify cold-weather-critical components and systems for each generating unit. Cold-weather-critical components and systems <sup>261</sup> are those which are susceptible to freezing or otherwise failing due to cold weather, and which could cause the unit to trip, derate, or fail to start. (Winter 2023-2024)	Winter 2023/2024	Cold Weather SAR	24, 25, 91	SAR; Monitor for SC request for assistance
1b: To require Generator Owners to identify and implement freeze protection measures for the cold-weather-critical components and systems (see Key Recommendation 1f., below, for guidance on ambient temperature and weather conditions to be considered). The Generator Owner should consider previous freeze-related issues experienced by the generating unit, and any corrective or mitigation actions taken in response. At an interval of time to be determined by the Balancing Authority, the Generator Owner should analyze whether the list of identified cold-weather-critical	Winter 2023/2024	Cold Weather SAR	24, 25, 91	SAR; Monitor for SC request for assistance
1c: To revise EOP-011-2, R7.3.2272 to require Generator Owners to account for the effects of precipitation and the accelerated cooling effect of wind when providing temperature data. (Winter 2023-2024)	Winter 2023/2024	Cold Weather SAR	24, 25, 91	SAR; Monitor for SC request for assistance

- Final Cold Weather Recommendations Tab
  - Column A – Final recommendation language
  - Column B – Implementation Timeline from the report
  - Column C – Additional notes, mostly identifying recommendations in the Cold Weather SAR
  - Column D – Current RSTC Work Plan items that partially address the recommendation (number corresponds to the row number in the “RSTC Work Plan” tab of the spreadsheet)
  - Column E – The group(s) assigned to take the lead for addressing the recommendation. Some are marked as contained in the Cold Weather SAR or are out of scope for the RSTC.
  - Column F – Responses from lead and/or support groups regarding how they address the recommendation
  - Columns G - I – Initial thoughts/comments from Tiger Team members for some recommendation. Included here for reference.

- A number of new work plan items were developed by the RAS and EGWG to address recommendations.
- Existing work plan items will require collaboration between groups listed in the spreadsheet. They are aware of this continued collaboration.
- The Tiger Team will inform external entities that are listed as “Potential Lead Group Applicability” in the recommendations tabs for awareness and potential further work to address the recommendations:
  - ERO/E-ISAC
  - NATF/NAGF/ESSC
  - EPRI/DOE

- The Tiger Team requests that the RSTC disband the team.
- It is anticipated that this work product will need to be reviewed in early 2023 for any potential gaps and to coordinate work plans.



# Questions and Answers

## **Design Basis for a Natural Gas Study**

### **Action**

Accept to post for a 45-day comment period.

### **Summary**

The purpose of the enclosed document is to guide the performance of a study of the interface of the electric and natural gas systems. The recommendations are not intended to require any analyses to be performed, nor are they intended to provide market solutions, but rather to improve upon the methods and approach in performing that analysis. A realistic set or range of initial conditions should be reviewed/considered when performing this reliability analysis.

# Design Basis for a Natural Gas Study

## Gas Delivery Design Basis

The purpose of this document is to guide the performance studies of the interface between the electric and natural gas systems. The recommendations below are not intended to require any analyses to be performed, nor are they intended to provide market solutions, but rather to improve upon the methods and approach in performing that analysis. A realistic set or range of initial conditions should be reviewed/considered when performing this reliability analysis.

A design-basis gas event is an event used to establish acceptable performance requirements of the reliable operation of the Bulk Power System (BPS) processes, structures, systems, and components, following a disruption of the natural gas fuel delivery system (i.e. pipeline or distribution network).

When considering such a natural gas disruption within a given area, the examination is not just limited to the loss of the natural gas transportation. Rather, it includes any loss of electric generation with associated energy and essential reliability services, and any ancillary natural gas delivery system needs, such as the loss of electric compression on the natural gas system, the loss of processing plants, and the unavailability of production. The examination should also take into account the level of flexibility available on natural gas pipelines, according to the individual pipeline tariffs, and the impact that wholesale electric markets may have on the procurement of sufficient natural gas supply.

Evaluation<sup>1</sup> should include the credible reliability risks (including durations) associated with the natural gas supplied to generators within the reliability footprint of the Registered Entity (RE) performing the evaluation, and its neighbors, which could have an impact on the reliable operation of the BPS of the RE. Further, the system should be viewed through an “all-hazards” lens, to include additional considerations, such as weather impacts, supply chain logistics, regional policies, wholesale electric market design, and security risks (cyber and physical). Evaluation should also include examination of each generator/plant as well as groups of generators/plants that are on the same gas transportation system. Assessments should include dependence on electric supply, potential physical access to natural gas supply (including access to pipeline, distribution, and storage facilities), the amount of capacity subscribed and available at each natural gas supply<sup>2</sup> facility, the amount of flexibility from daily nominations allowed, impacts of extreme weather events, and the ability of the natural gas facilities to meet daily and seasonal demand swings. As part of this assessment, considerations should be made for potential service restrictions and curtailments to key supply points based on the applicable transportation agreements and regulations (e.g., what level of service priority does a generation facility have pursuant to its transportation agreements, scheduling protocols, federal and state tariffs, and applicable regulations, particularly when severe weather or supply disruptions occur). The evaluation of the impact of curtailments of fuel supply should include the ability of dual fuel generators/plants to

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<sup>1</sup> Evaluation could be in any timeframe, Long Term Planning, Operations Planning, or Operations

<sup>2</sup> Supply facilities at any point in the natural gas supply chain

continue operation, and the associated limitations (e.g. switching time and limited maximum output), on alternate fuel from stored fuel or from multiple natural gas pipeline connections.

These key areas of evaluation would result in a confidence level of fuel assurance for all generators in a given planning area, and would highlight any potential system reliability risks given a gas supply disruption that impacts a significant amount of critical generation resources.

Additional information is available in the NERC Reliability Guideline: Gas and Electrical Operational Coordination Considerations<sup>3</sup>

DRAFT

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<sup>3</sup> [https://www.nerc.com/comm/RSTC\\_Reliability\\_Guidelines/Gas\\_Electric\\_Guideline.pdf](https://www.nerc.com/comm/RSTC_Reliability_Guidelines/Gas_Electric_Guideline.pdf)

## **Supply Chain Standard Effectiveness Survey**

### **Action**

Information

### **Summary**

The Supply Chain Standard Effectiveness survey was previewed at the September 2021 RSTC meeting. Registered entities were then surveyed in the fall of 2021. The SCWG Chair will present the results of the survey at the RSTC March meeting and then plan to present the results to the NERC Board of Trustees at its May 2022 meeting.

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# Supply Chain Working Group

Tony Eddleman, NPPD and SCWG Chair  
Reliability and Security Technical Committee  
March 8-9, 2022

**RELIABILITY | RESILIENCE | SECURITY**



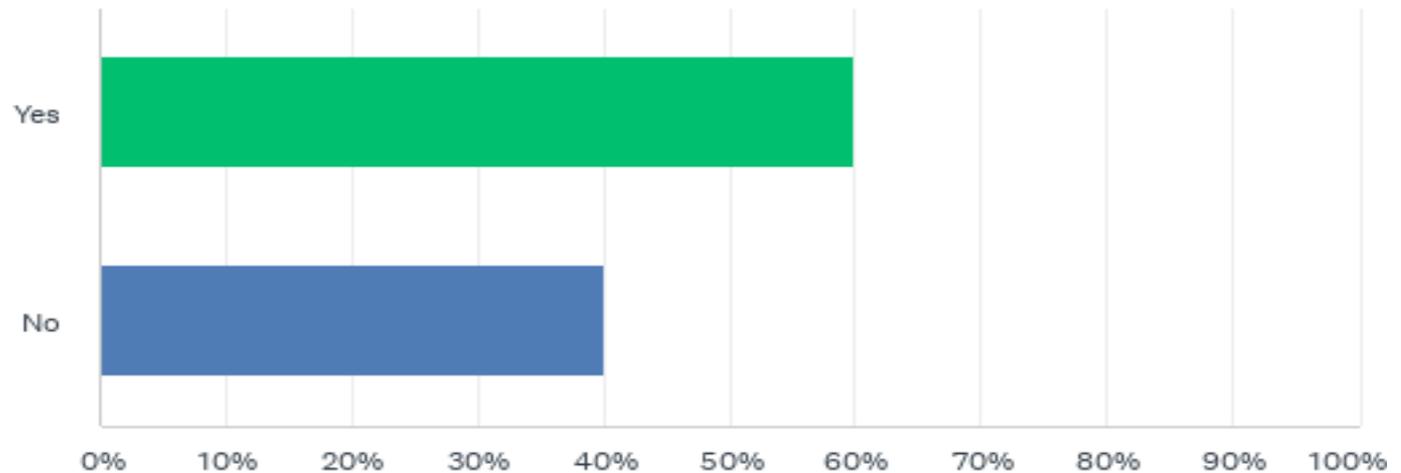
- The NERC Supply Chain Risk Management (SCRM) Reliability Standards are:
  - CIP-013-1; CIP-005-6 (parts 2.4 and 2.5); and CIP-010-3 (part 1.6)
    - Initially effective on October 1, 2020
  - CIP-013-2, CIP-005-7 and CIP-010-4 to be effective on October 1, 2022
- The NERC Board requested an update on the effectiveness of the Supply Chain requirements
  - SCWG developed the Supply Chain Effectiveness Survey and provided it to RSTC at the September 2021 meeting
  - The results of this survey have been reviewed, key take-aways and conclusions developed by the SCWG
  - Survey results will be combined with results from compliance audits by the ERO Enterprise to develop the update for the Board
    - Planning to discuss results at the May NERC Board meeting

## Survey Overview

- Voluntary survey sent to Registered Entity compliance contacts on October 12, 2021 – survey closed on November 30, 2021
- 201 total responses
  - Eleven (11) responders did not select any responses nor provide any comments
  - The survey was sent to approximately 900 compliance contacts at Registered Entities and requested their voluntary response
- Survey responses came from the United States, Canada, and Mexico
  - Responses also came from all six NERC Regions
- Majority of 190 responses, 60% (114), selected NERC Supply Chain Risk Management (SCRM) Reliability Standards applicable to them as Registered Entities.
- Responders provided very good comments which have been incorporated into key take-aways and conclusions.
- Survey was conducted through SurveyMonkey

## Q2: Are the NERC Supply Chain Risk Management (SCRM) Reliability Standards applicable to you as a registered entity?

- Answered: 190 Skipped: 11



## Q2: Are the NERC Supply Chain Risk Management (SCRM) Reliability Standards applicable to you as a registered entity?

- Answered: 190 Skipped: 11

ANSWER CHOICES	RESPONSES	
Yes	60.00%	114
No	40.00%	76
TOTAL		190

**SCRM Reliability Standards are not applicable to you as a registered entity:**

**Q3: Are you applying the SCRM principles from the SCRM standards to your operational, business and/or contract language?**

- Answered: 64 Skipped: 137

ANSWER CHOICES	RESPONSES	
Yes	37.50%	24
No	62.50%	40
TOTAL		64

- Of the 64 respondents that indicate the SCRM **requirements are not applicable** to their entity, 24 responders are applying the SCRM principles from the SCRM standards to their operational, business, and/or contract language
  - Standards have been a good basis to determine what is needed if entity was to have a formal NERC program.
  - **Conclusion:** The SCRM requirements are relatively new, but some entities that don't have compliance requirements are using the requirements to develop programs.
- Of the 60% of respondents (114) that the SCRM **requirements are applicable** to them, over half of the respondents are applying SCRM principles to some degree to cyber assets not in scope of the requirements
  - Once the supply chain process is more mature and the larger implications of the standard are better understood, some will evaluate implementing the SCRM principles in other areas
  - **Conclusion:** Entities are generally working towards applying the SCRM requirements to other systems

- 61% of respondents felt the requirements are clear but have questions about compliance evidence
  - Compliance ambiguity is a significant concern for respondents.
  - **Conclusion:** Entities have some questions about the requirements but are more concerned about what to expect from an audit.
- 59% of respondents indicate they have a clear understanding of what constitutes a violation
  - **Conclusion:** Entities are relatively unclear about what would be deemed a noncompliance.
- Two-thirds of respondents do not believe there are gaps in the requirements.
  - **Conclusion:** Entities are hesitant to say there are gaps in the standards as they would like stability and answers before more changes are made.

- 84% of respondents have not reached out to the ERO with questions and concerns
  - **Conclusion:** While a few entities reported positive interactions with regions, most entities are getting answers through workshops, guidance, consultants or other non-personal interactions
- 45% of respondents indicated vendors are reasonably supportive in responding to requests on risk assessments
  - 19% indicated vendors are resistive
  - **Conclusion:** Recognize that vendors receive SCRM questionnaires from multiple clients, in varied formats, across multiple industries. Better consistency and effectiveness can be achieved through industry convergence on a standard questionnaire.

- 51% indicated vendors don't provide enough information to determine risk
  - **Conclusion:** Registered entities should expect to invest more time in vetting questionnaire responses; not all vendors have the knowledge to respond properly
- 72% of respondents support vendors providing a Software Bill of Material (SBoMs)
  - **Conclusion:** Entities support the concept of SBOMs, but are concerned about having the resources to conduct analysis; they would like to see a consistent format that provides information from the data
- 59% of respondents indicated CIP-013 has not enabled them to identify previously unknown risks
  - **Conclusion:** People have identified some risks and have had some positive internal actions, but these are limited, which could be due to limited experience with the standard

- 70% of respondents indicate they have not implemented new supply chain mitigations
  - **Conclusion:** People have limited experience with the standard, so few are implementing new mitigations. Some are implementing new contract terms.
- 65% of respondents indicate they have not implemented compensating security measures other than specification and procurement activities
  - **Conclusion:** People appear to be putting analysis tools and contract terms in place for security measures, but other additional security measures have not been required
- 64% of respondents indicate they gather the information and perform the risk assessment while the other respondents indicate some involvement of contracts for services
  - **Conclusion:** The majority of responders are gathering information and conducting the risk assessments themselves, while others are contracting out some or all of the process

- 63% of respondents indicate they have added new or updated contract language to procurements
  - **Conclusion:** The majority of responders are adding attachments to current contracts and are updating contracts as they are renewed
- 60% of respondents indicate no existing contracts were renegotiated, 1% indicate all were renegotiated while the other respondents are somewhere between
  - **Conclusion:** Responders are not renegotiating all contracts. Most are not updating existing contracts, but some are updating or adding attachments as opportunities arise.
- For vendors being agreeable to renegotiating existing contracts - 69% of respondents indicated “not applicable” or did not attempt to renegotiate existing contracts.
  - **Conclusion:** The majority of responders are not renegotiating contracts. Approximately one third of responders that are subject to the standard responded that vendors were agreeable to renegotiating (updating, adding attachments) when responders are requesting it.

- The SCWG wanted to understand the impact of the new requirements on entities, so SCWG asked for two percentages:
  - Percentage of CIP Compliance Program resources dedicated to SCRM compliance
  - Percentage growth of CIP Compliance Program because of implementing SCRM compliance
  - And, asked for any comments from the entities.
- 57 entities responded by providing percentages or comments and some provided both.
- Average of 22.5% (49 responses) of CIP Compliance Program resources dedicated to SCRM compliance
- Average of 9.15% (49 responses) growth of CIP Compliance Program because of implementing SCRM compliance

- A concerning observation from the survey is entities are more apt to pull CIP staff from other areas to address SCRM processes than add additional resources. This may further deplete strained resources in the other CIP areas and continue to increase compliance fatigue. Finding trained, experienced, staff willing to tie their career to compliance is getting even more difficult
- Sobering quote: “We all cringe when we know we have a to make a purchase.”
- Conclusion: SCRM is requiring significant resources to implement and stealing resources from other CIP programs. The resource drain is both on entities and vendors.

- Supply Chain is a global issue for all critical infrastructure and not just electric utilities
  - The vendor is held harmless, and utilities are held accountable for the vendor's actions which utilities have no control over. Simply buying a product or not buying a product from a vendor may not influence their security practices. The vendor must be held accountable and not the consumer using the product.
- Industry is asking for a certification program
  - Third-party certification recognized by NERC for example, SOC2 type 2 would simplify the compliance process and address non-cyber security risks (financial, geopolitical) through appropriate channels and/or specialists
- Acknowledge that SCRM requirements will drive up the cost of goods and services from vendors that choose to continue to supply our industry. The nuclear industry provides examples.
- The term "vendor" is not clear for some Entities

- Entities are gradually expanding Supply Chain Risk Management principles to Cyber Assets outside compliance requirements
- Entities have some questions about the requirements but are more concerned about what to expect from an audit
- Vendors are working with the Electric Industry, but the solution is bigger than the Electric Industry
  - Electric Industry has developed a Critical Infrastructure leading program
- Entity work on Supply Chain Risk Management is taking significant resources and vendors are also being impacted
  - Entities are more apt to pull CIP staff from other areas to address SCRM processes than add additional resources
- Industry work on Supply Chain Risk Management is a journey and not a quick fix
  - Requirements have and will increase costs



# Questions and Answers

## **BPS Resource Trends Analysis**

### **Action**

Information

### **Summary**

Last year as part of the 2021 NERC Board of Trustees approved ERO Enterprise Work Plan Priorities, staff began analyzing trends in the changing resource mix. The work has been expanded to the Regional Entities to assess the risks associated with the shift to inverter-based resources. The ERO Enterprise will prepare recommendations, socialize the information to industry, and then seek stakeholder subject matter expert participation to develop mitigating actions that address the risks. NERC staff will present a status update at the March meeting.

# NERC

NORTH AMERICAN ELECTRIC  
RELIABILITY CORPORATION

# BPS Emerging Resource Mix

## Informational Update

Scott Barfield-McGinnis, Principal Technical Advisor  
Reliability Security and Technology Committee  
March 8-9, 2022

**RELIABILITY | RESILIENCE | SECURITY**

