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NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Standards Efficiency Review Update

Howard Gugel, Vice President of Engineering and Standards
Member Representatives Committee Meeting
May 13, 2021

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- Evaluate NERC Reliability Standards
- Risk-based approach to identify efficiencies
- Identify potential candidate requirements
 - Not essential for reliability
 - Could be simplified or consolidated
 - Reduce regulatory obligations and/or compliance burden

- The Standards Efficiency Review evolved into three distinct work streams.
 - Phase 1: Identify retirement or modification of Requirements
 - Phase 2: Develop and recommend programmatic standards-based solutions
 - CIP: Evaluate CIP Reliability Standards to identify retirement or modification of Requirements

Project 2018-03 SER Retirements (Phase 1)

- Focused primarily on retirements
- Initial Standard Authorization Request proposed 107 Requirements for retirement
- Upon review, ~80 Requirements recommended for retirement

- Industry survey results for 6 efficiency concepts
 - **Concept 1:** Evidence Retention (8.12)
 - **Concept 5:** Consolidate Information/Data Exchange Requirements (8.11)
 - **Concept 3:** Move Requirements to Guidance (7.85)
 - **Concept 2:** Prototype Standard (7.78)
 - ***Concept 6:*** Relocate Competency-based Requirements to the Certification Program/Controls Review process (6.85)
 - ***Concept 4:*** Consolidate & Simplify Training Requirements (6.19)

- In 2019 and 2020, the SER Working team completed recommendations
- Evidence Retention (NERC Staff, Standards Committee (SC))
 - [Evidence Retention Recommendations](#)
 - Revisions to Rules of Procedure proposed by NERC
- Consolidate Info/Data Exchange Requirements (Drafting Team)
 - [Operation Data Exchange Simplification SAR](#) (future development project)
- Move Requirements to Guidance (NERC policy; Reliability and Security Technical Committee (RSTC))
 - [Framework to Address Known and Emerging Reliability and Security Risks](#) (Endorsed by RSTC December 2020)
- Prototype Standard (SC)
 - [SER Recommendation for Standards Template and Drafting Team Training Review](#); (Endorsed by SC December 2020)

- Industry input requested and collected (August 2019)
- Input analyzed and recommendations drafted for requirement retirement (October 2019 – March 2020)
- Input analyzed and recommendations drafted for modifications to the requirements (April 2020 – September 2020)
- CIP SER Team recommend CIP Requirements be evaluated to be more objective/results based on risk where appropriate
- Prioritized listing of CIP Requirements to be evaluated published on NERC website

- Final report to memorialize the project in development
- Final report will be posted on SER project website
- All working documents to be kept on project page for reference

- Use a defense-in-depth strategy
- Portfolio of performance, risk, and competency-based mandatory reliability requirements
 - Performance-based — defines objective or outcome
 - Risk-based — preventive requirements to reduce risks of failure
 - Competency-based — minimum set of capabilities an entity needs
- Support one or more of the eight reliability principles



Questions and Answers



Recent FERC Activities

Andy Dodge
Director, Office of Electric Reliability
Federal Energy Regulatory Commission
May 13, 2021

The views expressed in this presentation are my own and do not represent those of the Commission or any individual Commissioner

Technical Conferences and Workshop

Office of Public Participation Workshop and Listening Sessions

Docket No. AD21-9-000.

- In 12/2020, Congress directed the Commission to provide a report, by 6/25/2021, detailing its progress towards establishing the OPP. Section 319 of the Federal Power Act directs the Commission to establish the OPP to “coordinate assistance to the public with respect to authorities exercised by the Commission,” including assistance to those seeking to intervene in Commission proceedings. (16 U.S.C. § 825q–1).
- Purpose of the workshop and listening sessions was to solicit public input on how the Commission should establish and operate the Office of Public Participation (OPP) pursuant to section 319 of the Federal Power Act (FPA) (16 U.S.C. § 825q–1). The Commission is evaluating input from stakeholders.
- A report is due to Congress on 6/25/2021.

Electrification and the Grid of the Future

Docket No. AD21-12-000. Held 4/29/2021.

- Purpose of the conference is to initiate a dialog between Commissioners and stakeholders on how to prepare for an increasingly electrified future and discuss the shift from non-electric to electric sources of energy at the point of final consumption (e.g., to fuel vehicles, heat and cool homes and businesses, and provide process heat at industrial facilities).

Technical Conferences

Climate Change, Extreme Weather, and Electric System Reliability

Docket No. AD21-13-000. To be held on 6/1-2/2021 from 1pm - 5pm.

- Purpose of the conference is to discuss issues surrounding the threat to electric system reliability posed by climate change and extreme weather events, which are increasing in frequency, intensity, geographic expanse, and duration. As a result, the number and severity of weather-induced events in the electric power industry may also increase. It will also examine how grid operators prepare for and respond to extreme weather events, including, but not limited to droughts, extreme cold, wildfires, hurricanes, and prolonged heat waves.
- Comments in response to staff questions on threats to the electric system related to climate change and extreme weather events were due on 4/15/2021.

Western Resource Adequacy Conference

Docket No. AD21-14-000. To be held on 6/23-24/2021.

- Purpose of the conference is to discuss resource adequacy developments in the Western Interconnection from varied regional perspectives to discuss challenges, trends, and possible ways to continue to ensure resource adequacy in the Western Interconnection.

Reliability Technical Conference

Docket No. AD21-11-000. To be held on 9/30/2021.

- Purpose of the conference is to discuss policy issues related to the reliability of the Bulk-Power System. Supplemental notice on agenda to be issued in the future.

Joint Inquiry into 2021 Cold Weather Grid Operations

- On 2/16/2021, FERC and NERC announced a joint inquiry into the operations of the Bulk-Power System during the extreme winter weather conditions experienced by the Midwest and Southern Central states. The severe cold weather contributed to power outages affecting millions of electricity customers throughout the region.
- Chairman Glick stated that FERC will be "examining the root causes of . . . reliability events" that have occurred throughout the country, in particular in the regions served by ERCOT, SPP, and MISO.
- FERC and NERC will work with other federal agencies, states, regional entities and utilities to identify problems with the performance of the Bulk-Power System and, where appropriate, make recommendations for addressing those issues.
- Preliminary Findings and Recommendations:
Targeted: Late Summer 2021
- Final Report:
Targeted: Late Fall 2021

Recent Reliability Orders

Revisions to Regulations on Electric Reliability Organization Performance Assessments NOPR in Docket No. RM21-12-000

On 1/29/2021, the Commission issued an NOPR proposing to amend the Commission's regulations to:

- Require the ERO to submit assessments of its performance every three years instead of the current period of every five years.
- Amend the Commission's regulations to require that the ERO include in its performance assessment a detailed discussion of any areas of the ERO's responsibilities and activities, or a Regional Entity's delegated functions, beyond those required by the Commission's regulations, that the Commission has identified at least 90 days prior to the expected performance assessment submission date.
- Formalize the method for the ERO to receive and respond to recommendations by the users, owners, and operators of the Bulk-Power System, and other interested parties for improvement of the Electric Reliability Organization's operations, activities, oversight and procedures.
- Comments were due 3/1/2021.

Recent Reliability Orders

Letter Order Approving Reliability Standards addressing supply chain risk management in Docket No. RD21-2-000.

- On 3/18/2021, the Commission approved several Reliability Standards revisions which expanded applicability to Electronic Access Control Monitoring System (EACMS) and Physical Access Control Systems (PACS) associated with high and medium impact BES Cyber Systems.
 - CIP-013-2 (Cyber Security – Supply Chain Risk Management)
 - CIP-005-7 (Cyber Security – Electronic Security Perimeter(s)), and
 - CIP-010-4 (Cyber Security – Configuration Change Management and Vulnerability Assessments).

Recent Reliability Orders

Delegated Letter approving Reliability Standard FAC-008-5 (Facilities Ratings), Docket No. RD21-4-000

- On 4/7/2021, the Commission approved the retirement of Requirement R7 from the current-version of the Reliability Standard.

Order Approving Reliability Standard BAL-002-WECC-3 (Contingency Reserve), Docket No. RM19-20-000

- On 4/15/2021, the Commission approved regional Reliability Standard BAL-002-WECC-3 (Contingency Reserve), which eliminates Requirement R2 from the prior version.
- Commission also directed NERC and WECC to submit an informational filing.

Get Vaccinated and Stay Safe!

- Thank you!
- Questions?

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Bulk Power System Awareness

Situational Awareness 2021

Darrell Moore Director, Bulk Power System Awareness and Personnel
Certifications

Member Representatives Committee Meeting

May 13, 2021

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NERC's Bulk Power System Awareness (BPSA) group acquires and disseminates timely, accurate, and complete information regarding the current status of the bulk power system (BPS) and threats to its reliable operation, to enable the Electric Reliability Organization (ERO) Enterprise to effectively assure the reliability of the BPS.

During major system disturbances, BPSA will facilitate effective communications between industry and government stakeholders.

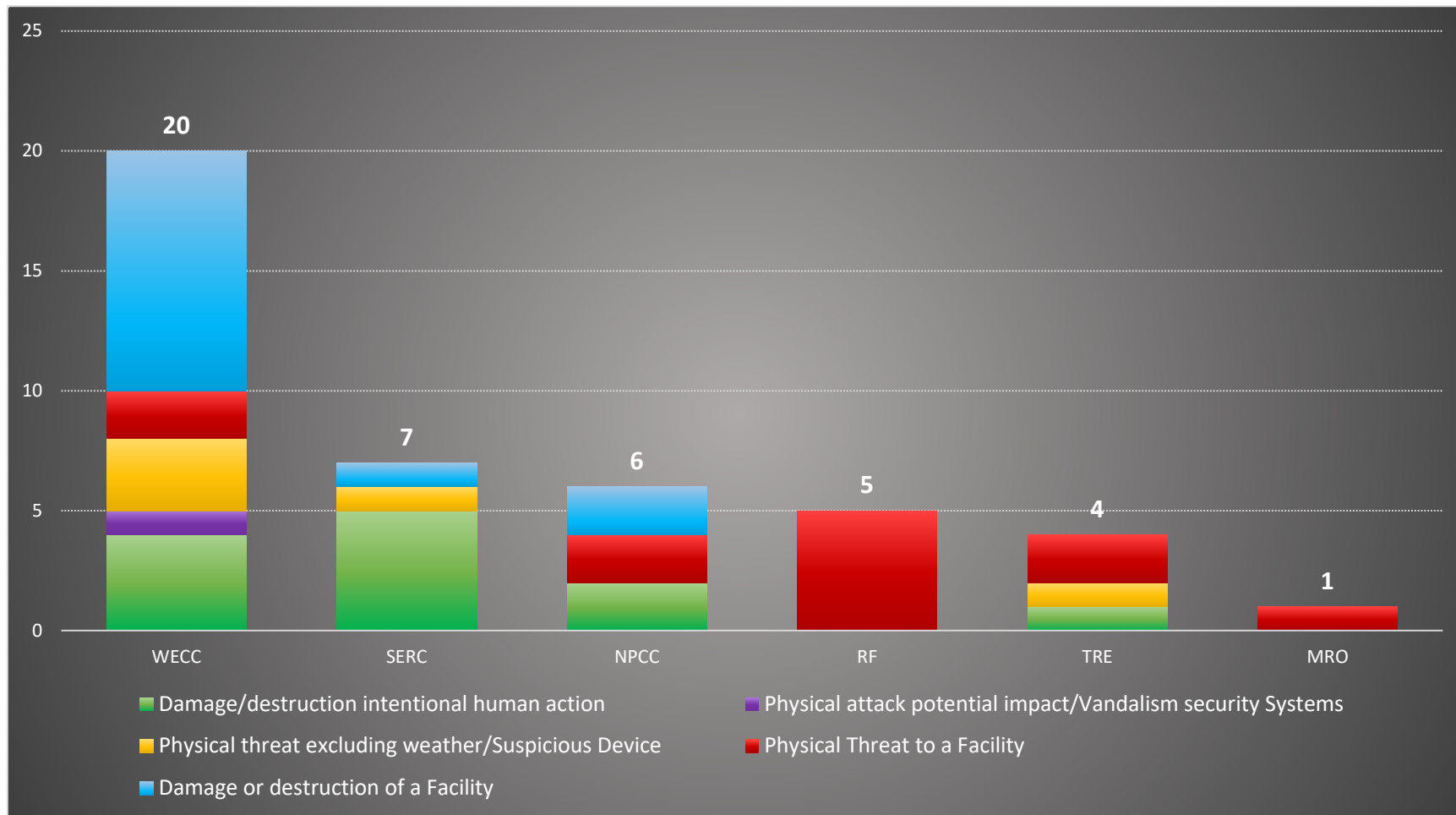


- Prepare and publish daily reports on the status of the BPS
- Monitor the BPS, fires, earthquakes, hurricanes, extreme weather events, etc.
- Special reports to NERC senior leadership, ERO Enterprise and government stakeholders for certain significant occurrences
- Collaborate with the ERO Enterprise Situation Awareness (SA) teams on events across the Enterprise
- Administrator of the ERO Enterprise Crisis Action Plan (CAP)
- Administer NERC Alert Program

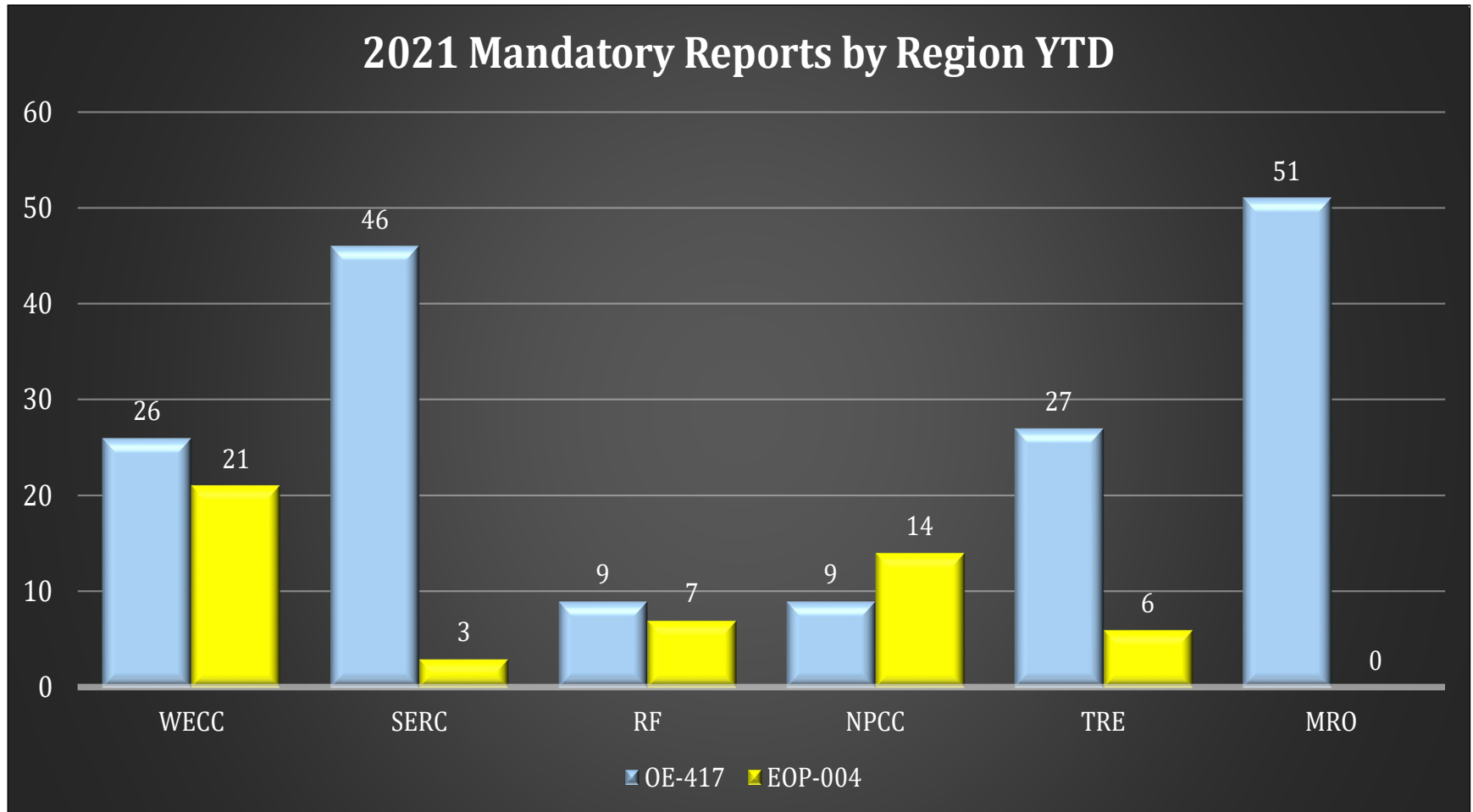
Texas and Mid-South Cold Weather Event:

- Facilitated numerous conference calls with the ERO Enterprise SA teams
- Monitored conditions on the Bulk Electric System (BES), forced outage, de-rates, Reliability Coordinator Information System (RCIS), and the Reliability Coordinator Hotline
- Provided daily updates on the status of the BPS to the ERO Executive Committee (EC), Federal Energy Regulatory Commission (FERC), U.S. Department of Energy (DOE), and the ERO Enterprise
- Received OE-417 and EOP-004 reports from impacted entities
- Provided near real-time data to impacted ERO Enterprise SA teams through the use of situation awareness tools

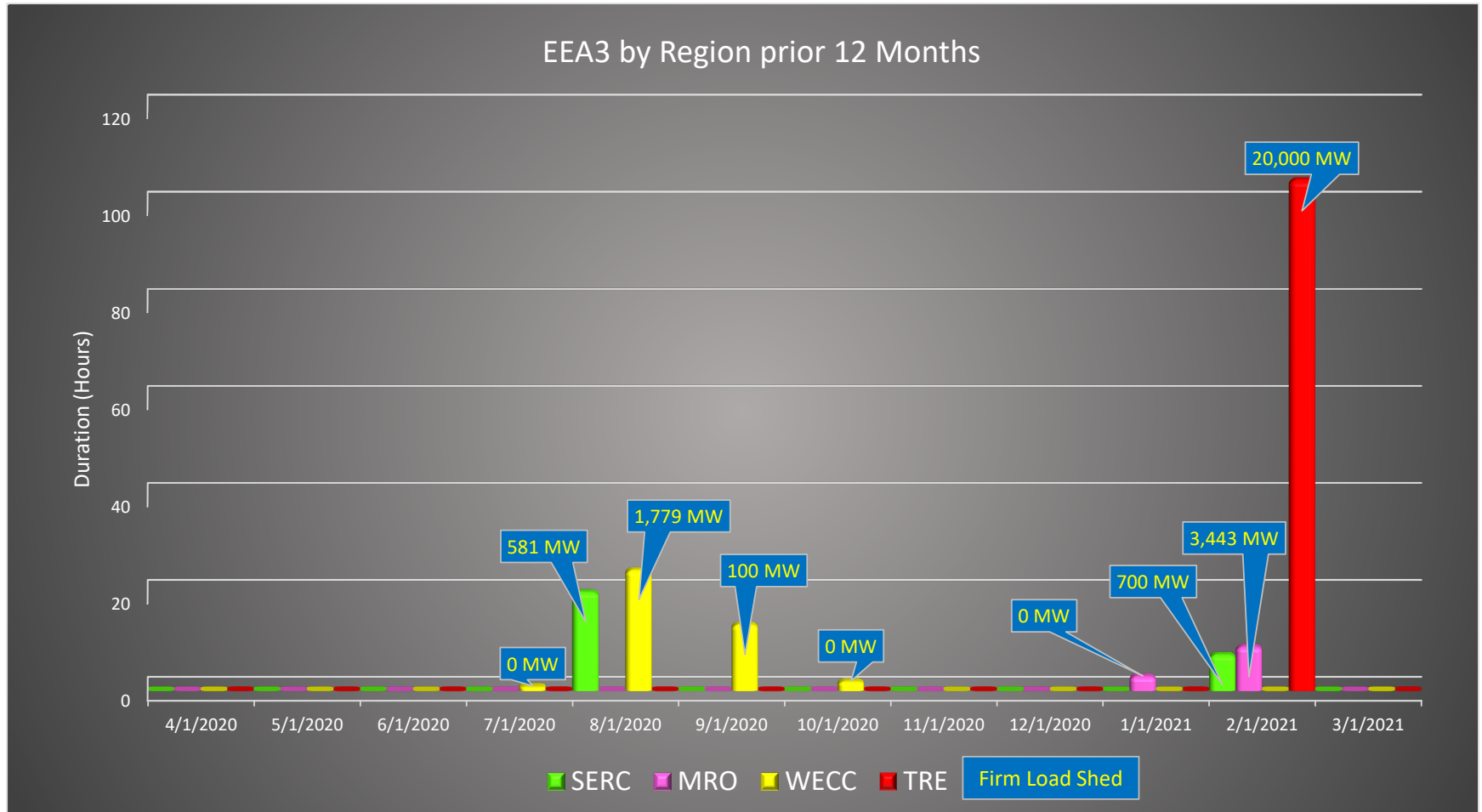
Physical Security Reports OE-417 and EOP-004



All OE-417 and EOP-004 Reports



EEA3 reports – 12 month view



NERC Alerts over the past 3 years covered many noteworthy topics:

- Level 1: 3/5/2021 - Microsoft Exchange On-Premise Product Vulnerability Exploitation by Advanced Persistent Threat Actor
- Level 1: 1/19/2021 - Prohibition Order Securing Critical Defense Facilities
- Level 2: 12/22/2020 - Supply Chain Compromises by Advanced Persistent Threat Actor
- Level 2: 7/8/2020 - Supply Chain Risk III
- Level 2: 3/10/2020 - Coronavirus Disease (COVID-19) Pandemic Contingency Planning
- Level 2: 7/16/2019 - Supply Chain Risk II
- Level 2: 5/1/2018 - Loss of Solar Resources during Transmission Disturbances due to Inverter Settings - II



Questions and Answers

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Ensuring Energy Adequacy with Energy-Constrained Resources

Mark G. Lauby, Senior Vice President and Chief Engineer
Pete Brandien, Chair, Energy Reliability Assessment Task Force
Member Representatives Committee Meeting
May 13, 2021

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- Sufficient amounts of energy are needed to meet the energy needs of the end-use consumer
- Historically, industry ensured energy requirements solely through capacity and reserve margins (with adjustment to hydro)
- The Grid Transformation (from RISC) is resulting in a system that has a higher level of energy uncertainty, regardless of fuel type
- The focus needs not to be fuel type, but energy adequacy
- The current tools, rules of thumb, and approaches were not designed to ensure energy adequacy with the types of resources in the transformed grid

- Mid-to-long term planning (1-5 year timeframe)
 - Ensure that resources are planned that can provide options to obtain sufficient and flexible energy resources
 - Review tools, rules-of-thumb and processes to support the need for these energy resources
- Operational planning (1 day to 1 year)
 - Ensure sufficient resources are available and able to provide energy to meet demand and off-set ramping requirements
 - Electrical energy production needs to reflect status of energy availability given the uncertainties
- Operations (0-1 day)
 - Ensure sufficient amounts of capacity, energy, and ramp flexibility are available from available resources

Define
Adequate
Studies

Require
Adequate
Studies

Take action
for all time
horizons

Energy
Adequacy

Common underlying risk is the increased use of just-in-time delivery of fuel

- A NERC reliability guideline was recently drafted on fuel assurance and fuel-related reliability risk analysis
- A Standard Authorization Request developed for cold weather operation (Operational Planning and Operational timeframe)
- Study is needed mid-to-long-term planning horizon so impacts understood
- Can industry agree on a planning and operating design basis' that will ensure energy sufficiency (e.g. 1 event in 10 years, solar drought impacts)?

- Understanding energy adequacy, and by extension, fuel availability compared to capacity requires advanced consideration of multiple technologies and concepts
- Eleven Questions asked in the whitepaper entitled “Ensuring Energy Adequacy with Energy-Constrained Resources”
 - Evaluated each of the eleven questions against three time frames
 - The questions are categorized into 3 focus areas
 - Focus 1 – Energy Adequacy and Flexibility for Evolving Resource Mix
 - Focus 2 – Gas Delivery Security
 - Focus 3 - Metrics, Procedures and Analysis

- Energy Adequacy and Flexibility for Evolving Resource Mix
 - As the mix of resources trends toward more renewable energy, primarily with variable and intermittent supplies of fuel (e.g. sunshine, wind, and water), maintaining a balanced power system will require a more flexible approach to energy and capacity adequacy in order to maintain operational awareness.
 - Traditionally, peak-hour capacity can be solved in an isolated case that ignores all other hours, but in a limited energy situation, the utilization of system resources affects the availability during peak hours.
 - Generator flexibility is gaining importance as load ramps begin to stress the existing infrastructure.

- Specific items from white paper:
 1. What flexibility is required to balance volatility in resource and load uncertainty through multiple operating horizons and seasons of the year?
 - High Impact in Operations Planning and Operations timeframe, but better evaluated in Mid-Long Term Planning timeframe.
 - The volatility of variable resources in the Operations timeframe have a high impact in areas with high penetration, already requiring greater flexibility
 4. How should the fuel availability / energy adequacy of battery or long-duration storage be evaluated?
 - Gaps in all 3 timeframes, but lower impact currently, due to lower penetration
 - Should be addressed due to projected higher penetration which is still evolving in different regions
 - Seasonal differences of renewable resources will require evaluation to properly define storage requirements (e.g. snowstorms that eliminate the output of solar panels)
 8. Are there new tools needed to address not only the traditional capacity adequacy, but energy adequacy and meeting reliable operational requirements?
 - Gaps across all 3 timeframes
 - New products and tools are needed, including different ramp products for Ops Planning and Operations timeframe

- Specific items from white paper:
 9. Could strategically overbuilding a similar technology (i.e. solar) augmented by either storage or some portion of the firm capacity fleet (albeit operating at low capacity factors only when needed) provide for a resilient and reliable transition?
 - Gaps in all 3 timeframes
 - This logically extends and adds another level of complexity the question on flexibility required to balance volatility (#1)
 - Daily and seasonal variability of renewable resources should be considered when determining capacity values of the installed resources

- **Gas Delivery Security**

- Maintaining system balance in cooperation with a limited energy set of resources will require some level of controllability with the remaining fleet, which will most likely be gas fired generation.
- The variability of the renewable resources will likely change how gas is utilized, requiring a higher precision of understanding to determine if the existing system is capable to serve the changing needs (e.g. larger swings of gas demand due to higher overall gas generation ramp rates and shorter periods of online time, burning 24 hours of gas in 8 hours instead of 16)
- Forces external to power system operators may influence gas delivery security, such as policies and procedure developments from FERC, NAESB, natural gas pipeline companies, or other entities

- Specific items from white paper
 10. How should fuel availability through long-term fuel contracts (commodity plus transportation capacity) and on-site storage (e.g. oil, coal and reservoir-based hydro) be incorporated as part of the analysis, looking at a simultaneous demand on transportation capabilities over an extended period?
 - Could be High impact, however ISOs are across spectrum on gaps
 - Additional modeling for fuel security event (e.g. DoE North American Energy Resilience Model (NAERM))
 - Consider the unique characteristics of each operating region
 11. How should gas pipeline disruption scenarios be modeled, realizing that individual gas pipeline design and gas generator interconnections vary, which result in different impacts to the generator and the Bulk Power System.
 - Could be High impact, however ISOs are across spectrum on gaps
 - NERC EGWG Reliability Guideline provides foundation
 - Next steps – studies under NERC umbrella, such as a system-wide hydraulic study, or region-specific studies, but in the context of balancing against variability of renewable resources in terms of energy and ramping capability utilizing the existing infrastructure (e.g. assessing the sustainability of increased ramping on existing infrastructure)

1. The Energy Reliability Assessment Task Force was formed and approved by the Reliability and Security Technical Committee (RSTC) at its March 2021 meeting
2. The ERATF's scope and deliverables:
 - a. Coordinate energy reliability assessment activities with industry working groups
 - b. Subject matter experts will be assembled to develop:
 - Technical foundation for the three time horizons
 - Ways to identify the levels of energy that are required to meet the operational needs
 - Tool specifications needed to incorporate energy considerations into planning, operational planning and operations assessments

- c. Engage industry R&D organizations (EPRI, DOE, Natural Resources Canada, National Laboratories, etc.) to validate the technical foundation(s) and development of the tool(s) and methods.
- d. Coordinate studies and plans with adjacent Balancing Authorities to identify enhanced collaborative regional support.
- e. Evaluate whether or not Standard Authorization Requests are needed to enhance existing or create new Reliability Standards to address fuel assurance and resulting energy limitations for the planning timeframe

- Pete Brandien appointed as Chair
- RSTC members, active participants, and observers
- NERC and Regional Entity staff
- FERC Liaison
- NERC Board representative
- MRC representatives
- The ERATF chair may invite additional observers to participate in meetings

ERATF Roster:

<https://www.nerc.com/comm/RSTC/ERATF/ERATF%20Roster.pdf>



Questions and Answers