

August 2022 Risk Registry

Action

Update

Background

In an effort to continually monitor the existing risks to the bulk power system (BPS) and manage the efforts of the ERO Enterprise to actively identify and address new threats, NERC created a Risk Registry. This registry overlaps some with the risk profiles identified in the latest ERO Reliability Risk Priorities Report (RISC report) and other risks identified in past reports and assessments, but the Risk Registry focuses on reporting current risks to the BPS, not just emerging ones.

This Risk Registry identifies public ERO Enterprise “tasks” to address current risks to the BPS. The most critical and high priority tasks currently address extreme natural events, security threats, and inverters. Future versions of the Risk Registry will be used as project/resource management tool, and it will eventually include a risk prioritization that is reviewed with RISC. NERC is providing this status update as part of the August 18, 2022, Board open meeting as an informational item. NERC leadership will be available to answer any questions on the progress of the Risk Registry as needed during the meeting.

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

NERC Risk Registry

August 2022

RELIABILITY | RESILIENCE | SECURITY



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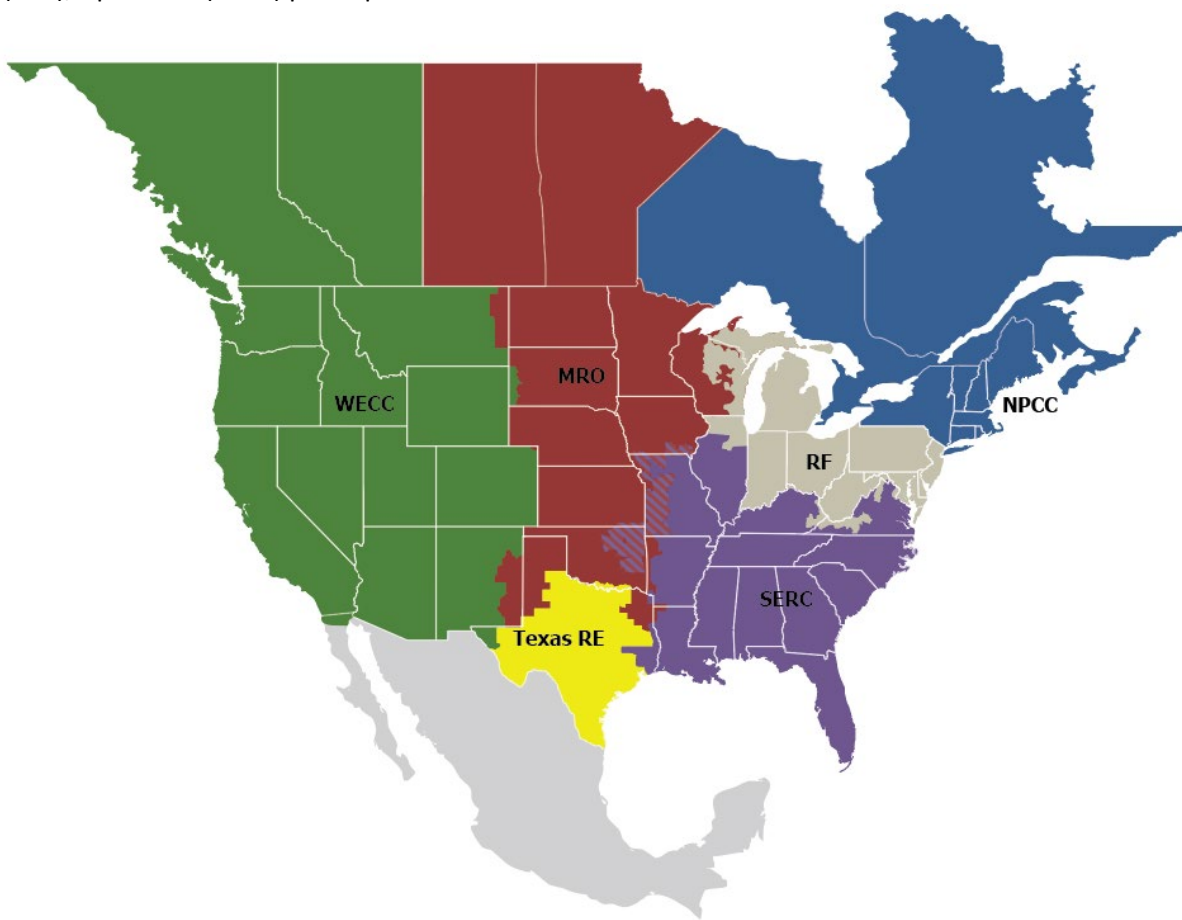
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Preface

Electricity is a key component of the fabric of modern society and the Electric Reliability Organization (ERO) Enterprise serves to strengthen that fabric. The vision for the ERO Enterprise, which is comprised of the North American Electric Reliability Corporation (NERC) and the six Regional Entities (REs), is a highly reliable and secure North American bulk power system (BPS). Our mission is to assure the effective and efficient reduction of risks to the reliability and security of the grid.

Reliability | Resilience | Security
Because nearly 400 million citizens in North America are counting on us

The North American BPS is made up of six RE boundaries as shown in the map and corresponding table below. The multicolored area denotes overlap as some load-serving entities participate in one RE while associated Transmission Owners (TOs)/Operators (TOPs) participate in another.



MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
Texas RE	Texas Reliability Entity
WECC	WECC

Executive Summary

The Risk Registry is a culmination of inputs from various sources that report on NERC-supported efforts.¹ The efforts or “tasks” are the result of identified risks to the BPS. There is some overlap with other documents.² The Risk Registry focuses on current and projected risks while other reports may have different time horizons.



The Risk Registry also groups tasks by Risk Profiles. The Reliability Issues Steering Committee (RISC) established the Risk Profiles. The Risk Profiles include Security Risks, Extreme Natural Events, Critical Infrastructure Interdependencies and Grid Transformation. The majority of the tasks fall under Grid Transformation and Security. Although Critical Infrastructure Interdependencies is a profile, very few items are being actively monitored in this category via the Risk Registry.

¹ This report does not contain any non-public information or information that cannot be shared outside of the ERO Enterprise, nor does this report contain any information on initiatives or projects that have not started. All tasks listed are “in progress.” Future iterations of this report will include resource allocations and will be used as a project management/reporting tool.

² State of Reliability, Seasonal Assessments, Long Term Reliability Assessment, and RISC ERO Reliability Risk Priorities Report

Introduction

Background

To continually monitor the existing risks to the BPS and manage the efforts of the ERO Enterprise to actively identify and address new threats, NERC is working with the Reliability Issues Steering Committee (RISC) to create and refine a Risk Registry. This registry will align with the risk profiles identified in the latest RISC [ERO Reliability Risk Priorities Report](#) (RISC report), but the Risk Registry will focus on activities addressing current and emerging risks.

The Risk Registry currently provides an inventory of risks identified through various stakeholder inputs that include industry outreach, the ERO Enterprise (including the NERC Board of Trustees), RISC, and stakeholder committees. The Risk Registry will provide the basis for risk prioritization that will be developed with the RISC .

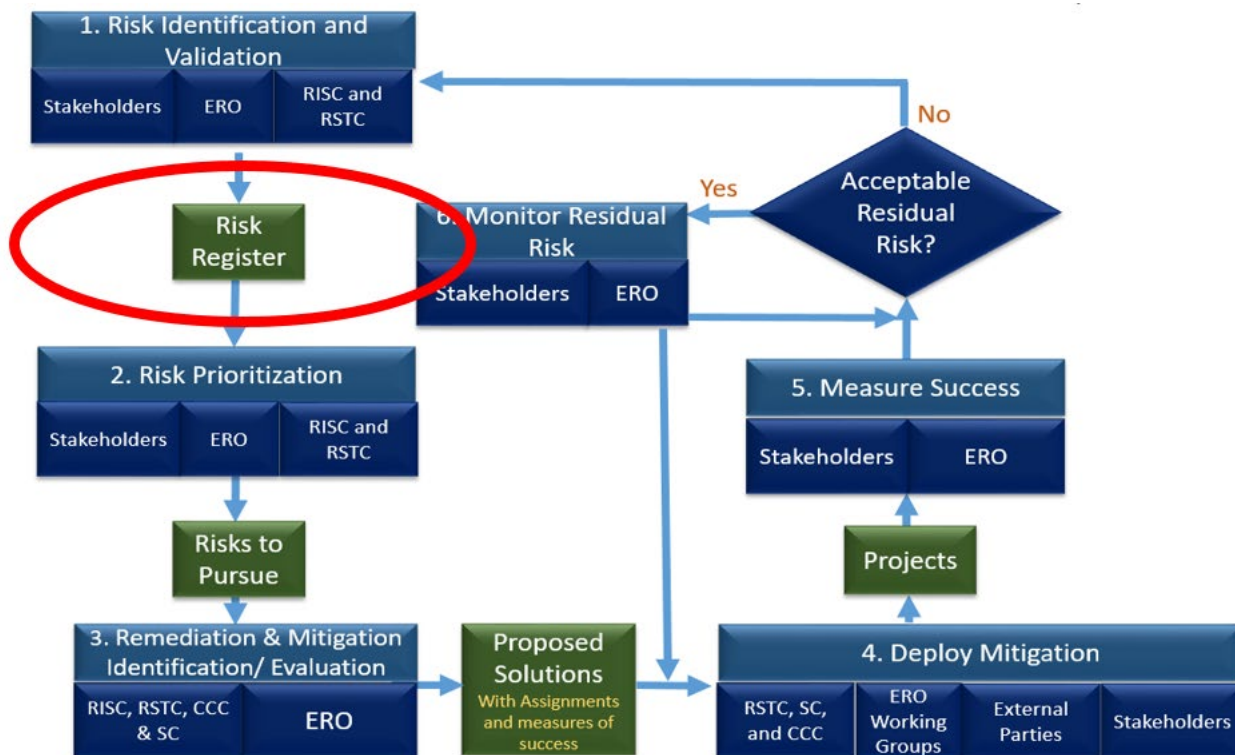


Figure I. Risk Management Flow Chart/Model

The Risk Registry provides an inventory of all of the critical and high priority projects NERC is supporting, and will track the effort to assess, mitigate, or monitor³ the known risks to the BPS.

³ Assess refers to items modeling, planning, simulation, and data gathering stages. Mitigate refers to items that require industry or ERO Enterprise actions, and monitor refers to items that may transition to a mitigation depending on the analysis and status of the risks.

Chapter 1: Critical and High Priority Tasks

Risk Registry

The Risk Registry is organized by “tasks” that are identified as projects or efforts by NERC departments or one of the standing committees. The tasks are further broken down by Risk Profiles (as defined in the RISC report),⁴ Risk Registry priority,⁵ Risk Stage,⁶ and task type.⁷

Review of Critical and High Priority Tasks

The critical “Risk Categories” are: 1) energy adequacy, 2) cyber security, 3) extreme natural events (namely cold weather preparedness), and 4) inverters.⁸ Any tasks in the risk registry that addressed these areas were given a “Critical” or “High” priority to be included in the Risk Registry. **Figure 1.1** represents all tasks that were in progress at the end of 2021.

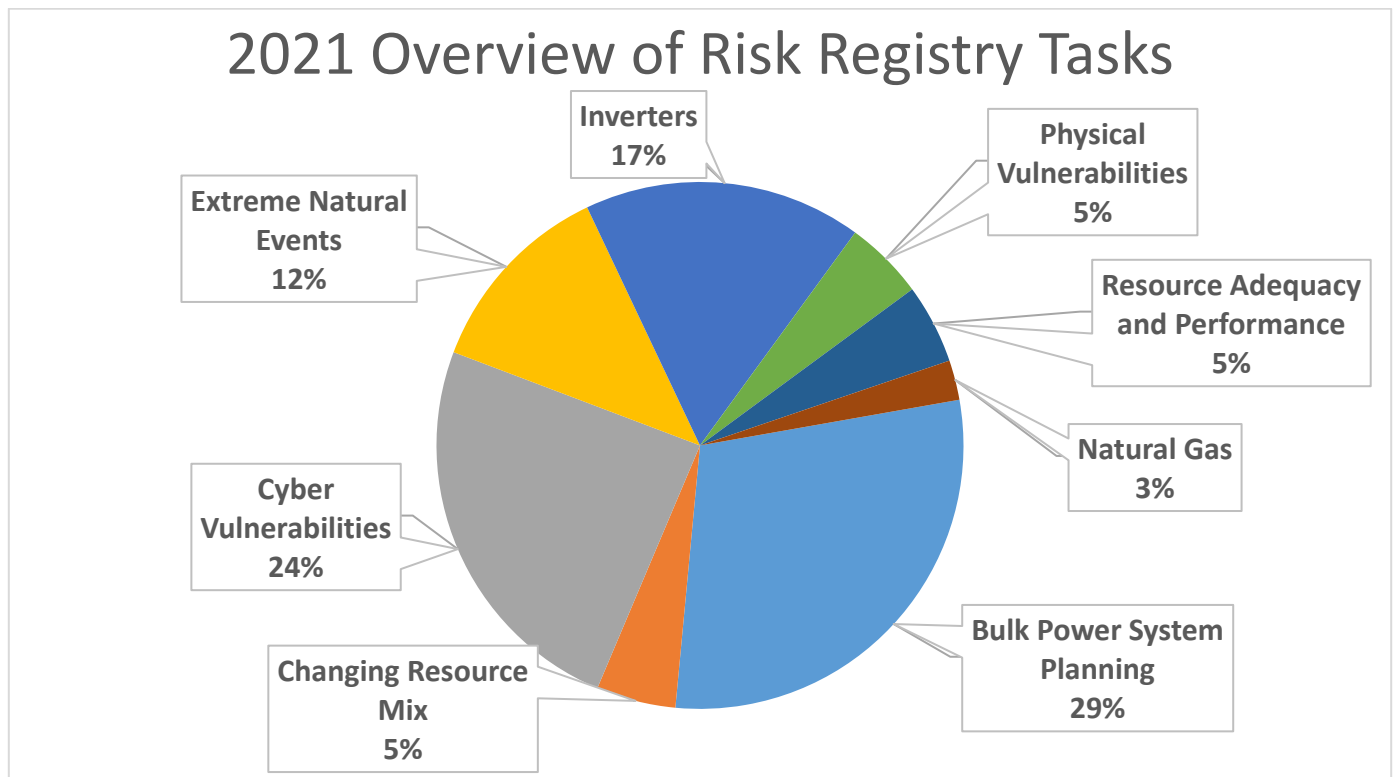


Figure 1.1: Review of 2021 Critical and High Priority Risk Registry Tasks

2022 Overview

Several projects were completed by year-end 2021, but numerous projects have also commenced in 2022 and subsequently been added to the Risk Registry. Several of the items that have recently been added to the Risk Registry are projects to address the recommendations that came out of the 2021 joint inquiry by FERC, NERC, and the Regional

⁴ Critical Infrastructure Interdependencies, Extreme Natural Events, Grid Transformation, and Security Risks (Cyber and Physical risks).

⁵ Critical, High, and Normal.

⁶ Assess, Mitigate, and Monitor.

⁷ Analysis, Assessment, Collaboration, Coordination, Data Collection, Event, Guidance, Implement, Lessons Learned, Outreach, Practice Guide, Reference Document, Reliability Guideline, Report, Review, SAR/RFI, Standard Project, Webinar, White Paper, and Workshop.

⁸ These risk categories were established based off annual work priorities and recent events.

Entities to address the outages in Texas and parts of the central United States.⁹ Most of these cold weather items have been assigned to several subcommittees of the Reliability and Security Technical Committee (RSTC), and these new projects represent the largest change in the number of projects generally in the Risk Registry.

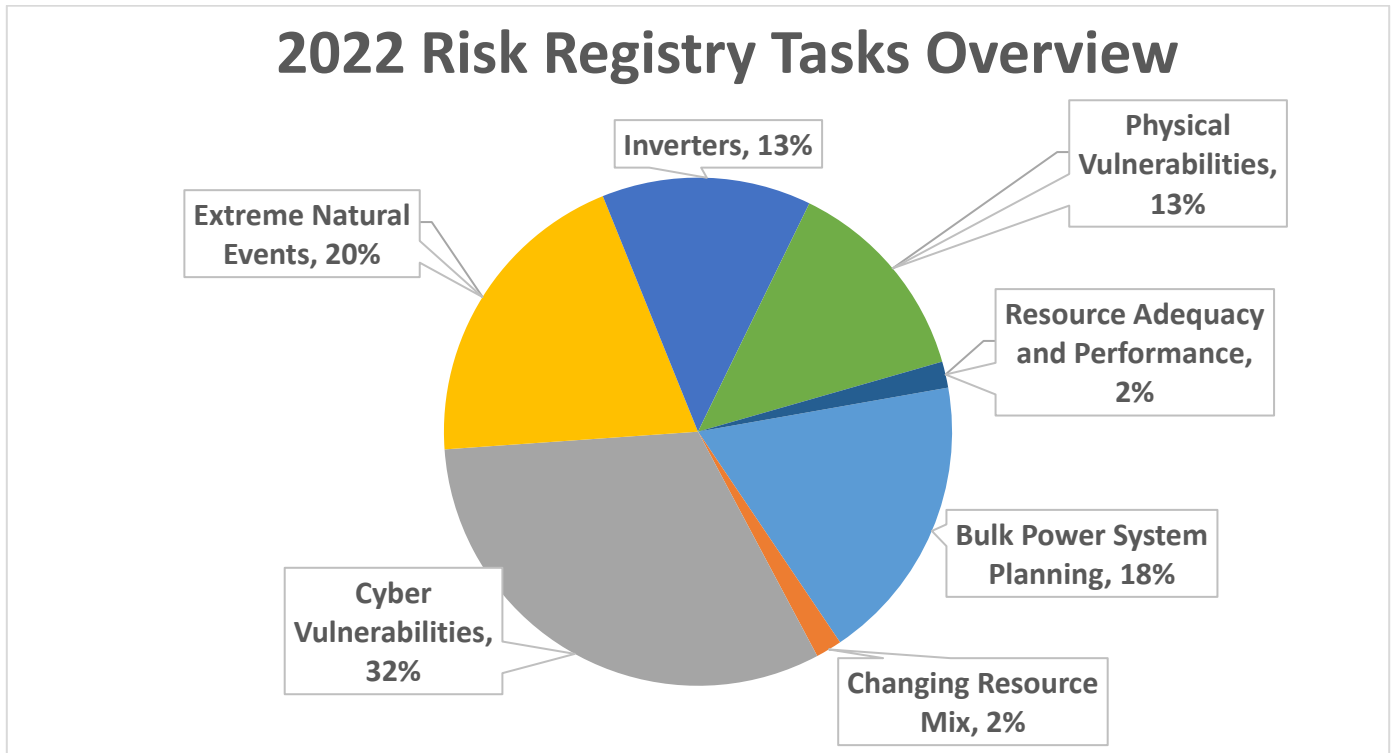


Figure 1.2: Overview of Current 2022 Critical and High Priority Risk Registry Tasks

Security Risks (Physical and Cyber Security)

The second largest jump in number of projects are in the Risk Profile for Security Risk, which includes both Cyber and Physical security threats to the BPS. There were 10 tasks for Security Risks at the end of 2021, and now there are currently 30 tasks listed as critical or high priority.

⁹ Available at: [The February 2021 Cold Weather Outages in Texas and the South Central United States | FERC, NERC and Regional Entity Staff Report | Federal Energy Regulatory Commission.](#)

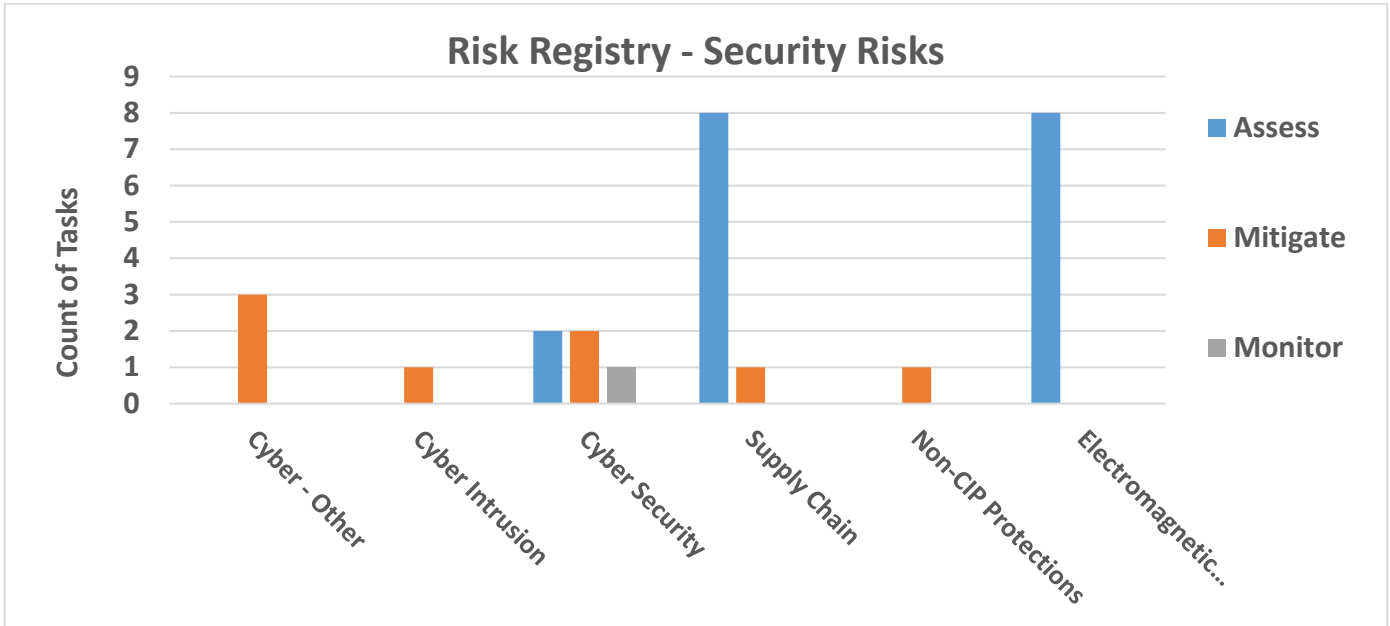
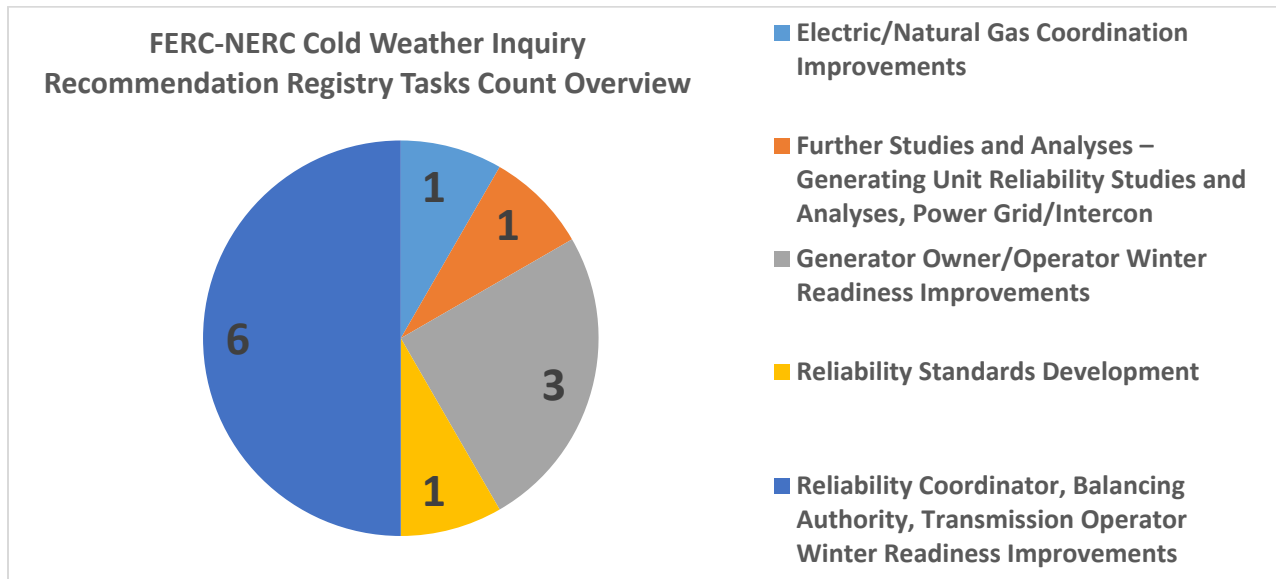


Figure 1.3: Number of Critical and High Priority Tasks by Security Risks (RISC Profile)

Extreme Natural Events/Cold Weather Preparedness

As noted above several projects have been added to the RSTC workplan to address the joint inquiry stemming from the 2021 winter outages.



Inverters

The current tasks or efforts in progress for inverter-based resources (IBR) ranked with a critical or high priority are below:

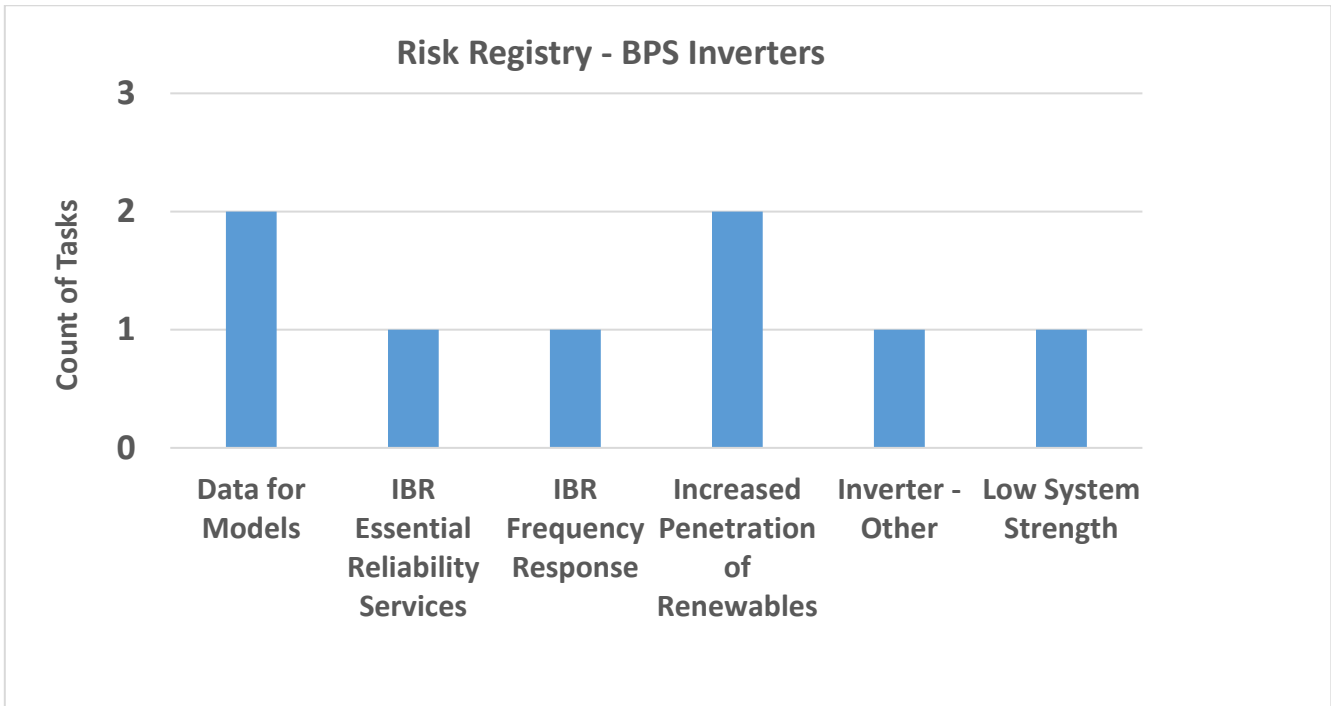


Figure 1.4: Number of Critical and High Priority Tasks for Inverters (Risk Category)

Chapter 2: Risk Profile Tasks

Risk Profile Tasks

The Risk Registry also groups the tasks by RISC’s Risk Profiles: Critical Infrastructure Interdependencies, Extreme Events, Grid Transformation, and Security Risks (Cyber and Physical risks). The tasks are categorized to represent the objectives of each item on the Risk Registry.

The Grid Transformation includes the shift away from conventional synchronous central-station generators toward a new mix of generation resources, fuel sources, and fuel delivery. Extreme Events include extreme events such as wildfires, extreme temperatures, large storms, and geomagnetic disturbances (GMD) that can have widespread impacts. Security Risks encompass threats that leverage physical or cyber vulnerabilities to compromise other portions of the BPS. Critical Infrastructure Interdependencies highlight the need for utilities to rely on other sectors in order to operate.

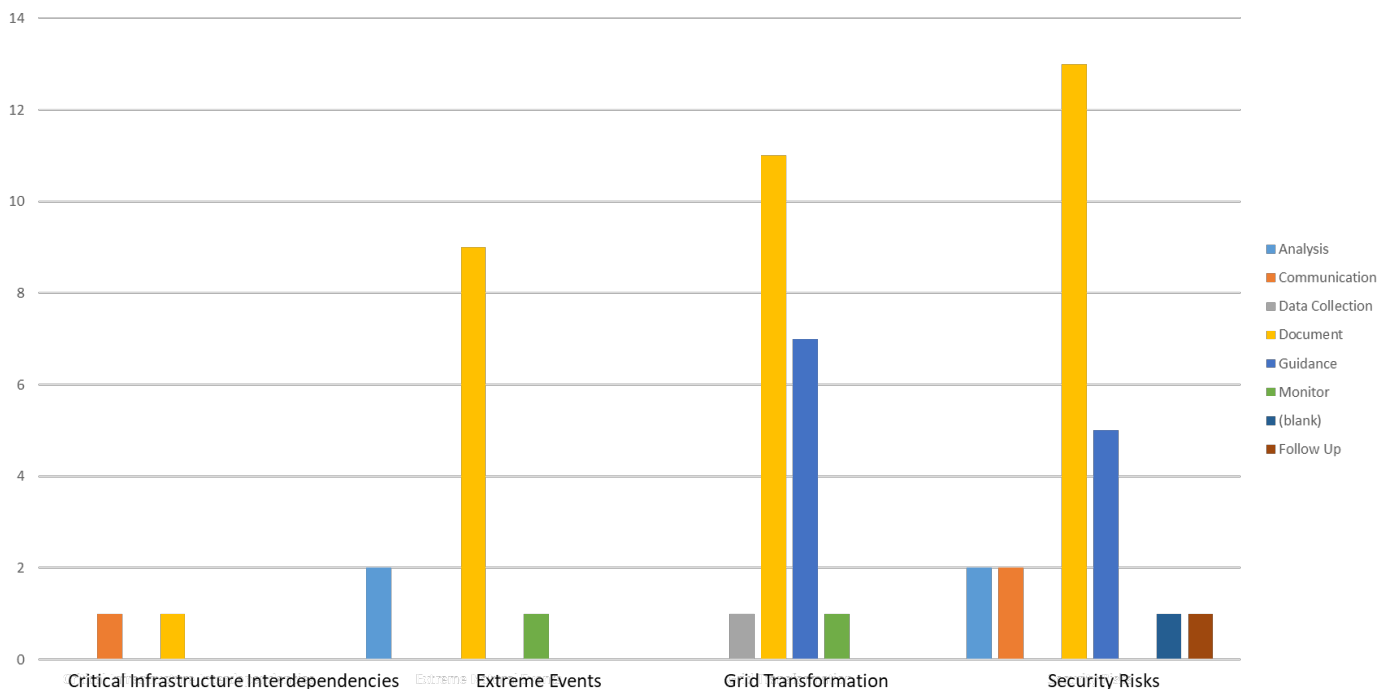


Figure 2.1: Number of Critical and High Priority Tasks by Risk Profiles

Table 2.1: Risk Registry by Risk Profiles

Critical Infrastructure Interdependencies	Extreme Events	Grid Transformation	Security Risks
Partner with National Labs on Supply Chain risks	Cold Weather REC 9 - Winter Season Reserve Margin Input and Assumptions	5-White Paper: BPS-Connected IBR and Hybrid Plant Capabilities for Frequency Response	BES Cyber System Information in the Cloud - project report
Project 2016-02 Modifications to CIP Standards	Cold Weather REC 10 - Assess Impact of Changes to Load Shedding Plans on Seasonal Reliability	8-Reliability Guideline: Recommended Approach to Interconnection Studies for BPS-Connected Inverter-Based Resources	BPS Performance Expectations for electromagnetic pulse (EMP) events
	Cold Weather RECS 20 and 25 - Assess Information from Transfer Studies and System Studies on Reliability of Planned System	A1 - Reliability Guideline Review: Tranche 2	C10 - White Paper: Security Risks Posed by DER and DER Aggregator
	Cold Weather REC 24 - Analyze the Potential BPS Reliability Impacts of Federal and State/Provincial Entity Actions to Address Natural Gas Supply Limitations to Generators in Extreme Cold	A2 - Reliability Guideline Review: Tranche 3	Coordination with Other Sectors about Electromagnetic Pulse (EMP) issues and activities
	EGWG Follow up #8 on the February 2021 Cold Weather Grid Operations	C2-Reliability Guideline: Communication and Coordination Strategies for Transmission Entities and Distribution Entities regarding Distributed Energy Resources	Electromagnetic Pulse (EMP) Research Gaps
	ERATF/RTOS Follow up #12 on the February 2021 Cold Weather Grid Operations	C6-NERC Reliability Standards Review White Paper	Hardening Equipment to mitigate effects of Electromagnetic Pulse (EMP)
	ERATF/RTOS Follow up #23 on the February 2021 Cold Weather Grid Operations	C9 Reliability Guideline Review: Tranche 3	Identifying Assets that are critical to recovering from an electromagnetic pulse (EMP) event
	Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination	ERATF - 2021 RISC Report Recommendations	Industry and Public Education about electromagnetic pulse (EMP) threats

Table 2.1: Risk Registry by Risk Profiles

Critical Infrastructure Interdependencies	Extreme Events	Grid Transformation	Security Risks
	Project 2022-03 Energy Assurance with Energy-Constrained Resources	M6-Modeling Distributed Energy Storage and Multiple Types of DERs	Monitor and report research and development efforts pertaining to electromagnetic pulse (EMP) threats
	Review intermittent Generation to Improve Load Forecasts	Project 2020-02 Transmission-connected Dynamic Reactive Resources	Periodic Review of Supply Chain Security Guidelines
	RISC Cold weather Recommendation 22 – SPCWG	Project 2020-05 Modifications to FAC-001-3 and FAC-002-2	Project 2020-03 Supply Chain Low Impact Revisions
	RS Review of Load Forecasting Impact on BAs	Project 2020-06 Verifications of Models and Data for Generators	Project 2020-04 Modifications to CIP-012-1
		Project 2021-04 Modifications to PRC-002-2	Reduce the number of critical facilities
		S4B-White Paper: DER Impacts to UVLS Programs	Reliability Guideline: Cyber Intrusion Guide for System Operators
		S5-White Paper: Beyond Positive Sequence RMS Simulations for High DER Penetration Conditions	Respond to directives and requests of the NERC RSTC
		Section 1600 Data Request for GADS	Security Guideline: Open Source Software
		Standards Committee Engagement	Security Guideline: Risk Management Lifecycle
		Technical Report: Energy Transition to Higher Penetrations of Inverter-Based Resources	Security Guideline: Secure Equipment Delivery
		V2-Reliability Guideline: DER Forecasting Practices and Relationship to DER Modeling for Reliability Studies	Security Guideline: Vendor Risk Management Lifecycle

Table 2.1: Risk Registry by Risk Profiles

Critical Infrastructure Interdependencies	Extreme Events	Grid Transformation	Security Risks
			Security or implementation guidance to support development of Reliability Standards
			Tools and Methods for assessing Electromagnetic Pulse (EMP) vulnerabilities
			Tools to support internal controls initiatives
			Utility Essential Security Practices Whitepaper
			Whitepaper: Zero Trust for OT Cybersecurity

Chapter 3: Next Steps

NERC will collaborate with the RSTC and other committees to add additional tasks identified as emerging risks or tasks to track as part of this process. The Risk Registry will be updated periodically, and future versions will be reviewed by the RISC as the risk prioritization is developed.

Appendix A: Raw Data

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
5- Cold Weather REC 9 - Winter Season Reserve Margin Input and Assumptions	<p>Workplan item to address Cold Weather Inquiry Report recommendation 9.</p> <p>RAS will use the FERC NERC RE Staff Joint Cold Weather Outage Inquiry Report findings related to winter reserve margin inputs and assumptions to inform the 2022-23 and 2023-24 NERC Winter Reliability Assessments (WRAs). Specifically, RAS, with support from the NERC Probabilistic Assessment Working Group (PAWG), will:</p> <ul style="list-style-type: none"> • Enhance WRA request materials to collect information about Assessment Area inputs, assumptions, and best practices for determining anticipated resources, peak loads, managing resource and demand uncertainty, and anticipated winter reserve margins; • Analyze assessment inputs, reported anticipated reserve margins for winter seasons, and observations from the Joint Inquiry report; and; • Assess adequacy of resources to meet winter peak conditions and scenarios. <p>Findings will be included in future WRAs.</p>	Extreme Natural Events		Critical	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
5-White Paper: BPS-Connected IBR and Hybrid Plant Capabilities for Frequency Response	White paper on utilizing the full capabilities of inverter-based resources and hybrid plants for providing frequency response.	Grid Transformation	https://www.nerc.com/comm/PC/Pages/Inverter-Based-Resource-Performance-Task-Force.aspx	Critical	Mitigate
6- Cold Weather REC 10 - Assess Impact of Changes to Load Shedding Plans on Seasonal R	<p>Workplan item to address Cold Weather Inquiry Report recommendation 10.</p> <p>RAS will collect and analyze information on changes to rotating, manual load shedding plans and the potential effects these changes may have on mitigating impacts to firm load during energy emergencies in wide-area, long-duration extreme cold events. Findings will be included in future WRAs. RAS will coordinate collection and analysis with the RTOS.</p>	Extreme Natural Events		Critical	Assess
7- Cold Weather RECS 20 and 25 - Assess Information from Transfer Studies and System Studies on Reliability of Planned System	<p>Workplan item to address Cold Weather Inquiry Report recommendations 20 and 25. RAS will collect information, analyze, and report on results of the following system studies performed by NERC entities that are relevant to seasonal or long-term reliability:</p> <ul style="list-style-type: none"> • Bi-directional seasonal transfer studies between adjacent operating entities, including identified constraints that are anticipated in extreme weather events spanning multiple RC/BA areas. (RAS will coordinate collection and analysis with the RTOS) 	Extreme Natural Events		Critical	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	<ul style="list-style-type: none"> Transfer studies identifying constraints between sub-areas or load pockets. (RAS will coordinate collection and analysis with the RTOS) ERCOT studies to evaluate additional links between ERCOT and other interconnections in mitigating energy emergencies or improving black start capabilities 				
8- Cold Weather REC 24 - Analyze the Potential BPS Reliability Impacts of Federal and State/Provincial Entity Actions to Address Natural Gas Supply Limitations to Generators in Extreme Cold	<p>Workplan item to address Cold Weather Inquiry Report recommendation 24.</p> <ul style="list-style-type: none"> RAS will collect and analyze information for use in future LTRAs on potential BPS reliability impacts of Federal and State/Provincial entity actions to address natural gas supply limitations to generators in extreme cold conditions and/or scenarios. 	Extreme Natural Events		Critical	Assess
8-Reliability Guideline: Recommended Approach to Interconnection Studies for BPS-Connected Inverter-Based Resources	Focused guidance on improving the study process for BPS-connected inverter-based resources, particularly with increasing penetrations of these resources and the growing complexity of performing sufficient studies to ensure BPS reliability.	Grid Transformation	https://www.nerc.com/comm/PC/Pages/Inverter-Based-Resource-Performance-Task-Force.aspx	Critical	Mitigate
A1 - Reliability Guideline Review: Tranche 2	The Analysis team to combine the three DER modeling reliability guidelines to submit a single guideline per the RSTC's Triennial review approved in December 2021.	Grid Transformation		High	Mitigate

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
Reliability Guideline Review: Tranche 3	The Analysis team to combine the DER Model verification and DER Data collection reliability guidelines to submit a single guideline per the RSTC's Triennial review approved in December 2021	Grid Transformation		High	Mitigate
BES Cyber System Information in the Cloud - project report	An overview of the processes and outcomes from a review of an entity's Microsoft Azure BCSI in the Cloud tabletop exercise	Security Risks		High	Mitigate
BPS Performance Expectations for electromagnetic pulse (EMP) events	Establish performance expectations for all sectors of the BPS regarding a predefined electromagnetic pulse (EMP) event.	Security Risks		High	Assess
C10 - White Paper: Security Risks Posed by DER and DER Aggregator	Follow up White Paper on the security risk posed by DER and DER aggregator. Covers both physical and cyber related impacts.	Security Risks		High	Assess
C2-Reliability Guideline: Communication and Coordination Strategies for Transmission Entities and Distribution Entities regarding Distributed Energy Resources	Develop recommended strategies to encourage coordination between Transmission and Distribution entities on issues related to DER such as information sharing, performance requirements, DER settings, etc.	Grid Transformation	https://www.nerc.com/comm/PC/Pages/System-Planning-Impacts-from-Distributed-Energy-Resources-Subcommittee-(SPIDERWG).aspx	High	Mitigate
C6-NERC Reliability Standards Review White Paper	White Paper reviewing NERC Reliability Standards and impacts of DER.	Grid Transformation	https://www.nerc.com/comm/PC/Pages/System-Planning-Impacts-from-Distributed-Energy-Resources-Subcommittee-(SPIDERWG).aspx	High	Mitigate

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
C9 Reliability Guideline Review: Tranche 3	<i>The Coordination team to review the BPS Reliability Perspectives on the Adoption of 1547-2018 reliability guideline per the RSTC's Triennial review approved in December 2021.</i>	Grid Transformation		High	Mitigate
Coordination with Other Sectors about Electromagnetic Pulse (EMP) issues and activities	Develop guidance for the electricity industry about coordinating with interdependent utility sectors	Security Risks		High	Assess
EGWG Follow up #8 on the February 2021 Cold Weather Grid Operations	February 2021 Cold Weather Grid Operations: Final Findings and Recommendations, FERC, NERC and Regional Entity Joint Staff Inquiry	Extreme Natural Events		Critical	Mitigate
EGWG Follow up #8 on the February 2021 Cold Weather Grid Operations	February 2021 Cold Weather Grid Operations: Final Findings and Recommendations, FERC, NERC and Regional Entity Joint Staff Inquiry	Extreme Natural Events		Critical	Mitigate
Electromagnetic Pulse (EMP) Research Gaps	Support additional research to close existing knowledge gaps into the complete impact of an EMP event to understand vulnerabilities,	Security Risks		High	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	develop mitigation strategies, and plan response and recovery efforts				
ERATF - 2021 RISC Report Recommendations	1.5 The RSTC should develop methods, processes, tools, metrics, and/or standard authorization requests that are needed to address energy security	Grid Transformation		Critical	Mitigate
ERATF/RTOS Follow up #12 on the February 2021 Cold Weather Grid Operations	February 2021 Cold Weather Grid Operations: Final Findings and Recommendations, FERC, NERC and Regional Entity Joint Staff Inquiry	Extreme Natural Events		Critical	Mitigate
ERATF/RTOS Follow up #23 on the February 2021 Cold Weather Grid Operations	February 2021 Cold Weather Grid Operations: Final Findings and Recommendations, FERC, NERC and Regional Entity Joint Staff Inquiry	Extreme Natural Events		Critical	Mitigate
Guidance documentation on Supply Chain Risk Management	Develop and maintain security guidelines or other products to help industry mitigate the threats posed by supply chain vulnerabilities	N/A		Critical	Assess
Hardening Equipment to mitigate effects of Electromagnetic Pulse (EMP)	Support efforts to design equipment specifications for the electric sector utility industry that address EMP hardening and mitigation strategies	Security Risks		High	Assess
Identifying Assets that are critical to	Develop guidance to the industry on how to identify and prioritize hardening of assets	Security Risks		High	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
recovering from an electromagnetic pulse (EMP) event	that are needed to maintain and restore critical BPS operations				
Industry and Public Education about electromagnetic pulse (EMP) threats	Develop (or reference) educational material about EMPs and their impact to intelligent electronic devices and BPS reliability to inform industry and general public	Security Risks		High	Assess
Inter-Entity Short Circuit Model	Technical paper on the challenges of updating inter-entity short circuit models	N/A		Critical	Assess
M6-Modeling Distributed Energy Storage and Multiple Types of DERs	SPIDERWG will dig into technical considerations of modeling distributed energy storage, specifically distributed battery energy storage (D-BESS). The group will also consider how to model multiple types of DERs, including D-BESS and distributed solar PV (D-PV). Lastly, the group will focus on forecasting and dispatch assumptions for D-BESS. SPIDERWG will determine the level of guidance or reference materials needed once discussions begin. Task to be coordinated with Studies sub-group.	Grid Transformation	https://www.nerc.com/comm/PC/Pages/System-Planning-Impacts-from-Distributed-Energy-Resources-Subcommittee-(SPIDERWG).aspx	High	Assess
Monitor and report research and development efforts pertaining to electromagnetic pulse (EMP) threats	Communicate to the industry via technical workshop and/or other methods the current status of research pertaining to EMP and EMP-related national security initiatives that impacts the BPS	Security Risks		High	Assess
Partner with National Labs on Supply Chain risks	Continue work with the National Labs through a partnership to identify vulnerabilities and develop mitigation practices. The Supply Chain security risks to the industry are significant and growing. A partnership between the SCWG and the	Critical Infrastructure Interdependencies	Critical	Assess	Partner with National Labs on Supply

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	National Labs will coordinate the important work of both groups to reduce risk to critical infrastructure. The skills and expertise of the National Labs can continue the development journey for documents of the SCWG.				Chain risks
Periodic Review of Supply Chain Security Guidelines	Supply Chain Security Guidelines have been developed for industry and are scheduled for periodic reviews.	Security Risks		Critical	Assess
Project 2016-02d Modifications to CIP Standards	The Version 5 Transition Advisory Group (V5 TAG) transferred issues to the Version 5 SDT that were identified during the industry transition to implementation of the Version 5 CIP Standards.	Critical Infrastructure Interdependencies	Project Page	Critical	Mitigate
Project 2020-02 Transmission-connected Dynamic Reactive Resources	Dynamic reactive resources used to provide Essential Reliability Services (ERS) in the BES include generation resources (rotating machine and inverter-based) as well as transmission connected dynamic reactive resources (power-electronics based). Existing Reliability Standards for verifying the capability, modeling and performance of dynamic reactive resources are only applicable to Facilities comprising generation resources.	Grid Transformation	Project Page	Critical	Mitigate
Project 2020-03 Supply Chain Low Impact Revisions	This project will address the NERC Board resolution adopted at its February 2020 to initiate a project to modify Reliability Standard CIP-003-8 to include policies for low impact BES Cyber Systems to: (1) detect known or suspected malicious communications for both inbound and outbound communications; (2) determine when active vendor remote access sessions	Security Risks	Project Page	Critical	Mitigate

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	are initiated; and (3) disable active vendor remote access when necessary.				
Project 2020-04 Modifications to CIP-012-1	The purpose of this project is to address a directive issued by the Federal Energy Regulatory Commission (FERC) in Order No. 866 to develop modifications to the CIP Reliability Standards to require protections regarding the availability of communication links and data communicated between the bulk electric system Control Centers.	Security Risks	Project Page	High	Mitigate
Project 2020-05 Modifications to FAC-001-3 and FAC-002-2	The NERC Inverter-based Resource Performance Task Force (IRPTF) undertook an effort to perform a comprehensive review of all NERC Reliability Standards to determine if there were any potential gaps or improvements based on the work and findings of the IRPTF. The IRPTF identified several issues as part of this effort and documented its findings and recommendations in a white paper. The "IRPTF Review of NERC Reliability Standards White Paper" was approved by the Operating Committee and the Planning Committee in March 2020. Among the findings noted in the white paper, the IRPTF identified issues with FAC-001-3 and FAC-002-2 that should be addressed.	Grid Transformation	Project Page	Critical	Mitigate
Project 2020-06 Verifications of Models and Data for Generators	Standards Authorization Request (SAR) for MOD-026-1 and MOD-027-1 regarding dynamic model verification. MOD-026-1 and MOD-027-1 require, among other things, GOs to provide verified dynamic models to their Transmission Planner (TP) for the purposes of power system planning studies.	Grid Transformation	Project Page	Critical	Mitigate

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	<p>Both standards contain language that is specific to synchronous generators and is not applicable to inverter-based resources (IBRs). For example, sub-requirement 2.1.3 in MOD-026-1 states that each verification shall include "model structure and data including, but not limited to reactance, time constants, saturation factors, total rotational inertia..." The standards should be revised to clarify the applicable requirements for synchronous generators and IBRs. For example, total rotational inertia should not be required for IBRs, while voltage ride-through control settings should only be required of IBRs and not synchronous generators.</p> <p>Additionally, to some degree, all dynamic model parameters affect the response of a represented resource in dynamic simulations performed by power engineers. Accurate model response is required for the engineers to adequately study system conditions. Hence, it is crucial that all parameters in a model be verified in some way. However, a significant number of parameters in the models are not verified in the typical verification tests used to comply with MOD-026-1 and MOD-027-1. For example, the test currently used to comply with MOD-026-1 does not verify the model parameters associated with voltage control behavior during large disturbance conditions.</p>				

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
Project 2021-04 Modifications to PRC-002-2	Standards Authorization Request (SAR) for PRC-002-2 addressing disturbance monitoring updates. The purpose of PRC-002-2 is to have adequate data available to facilitate analysis of BES disturbances. Requirements R1 and R5 specify where sequence of events recording (SER) and fault recording (FR) data, and where dynamic Disturbance recording (DDR) data, respectively, are required in the Bulk Electric System (BES). Formal Comment Period was posted on June 9, 2022 and open through July 25, 2022 for phase one. Ballot Pools Forming through July 8, 2022.	Grid Transformation		Critical	Mitigate
Project 2021-07 Extreme Cold Weather Grid Operations, Preparedness, and Coordination	The primary purpose of this project is to address reliability related findings from the Federal Energy Regulatory Commission (FERC), NERC, and Regional Entity Joint Staff Inquiry into the February 2021 Cold Weather Grid Operations. The project scope will address nine recommendations for new or enhanced NERC Reliability Standards proposed by the report.	Extreme Natural Events	Project Page	Critical	Mitigate
Project 2022-03 Energy Assurance with Energy-Constrained Resources	This project will enhance reliability by requiring entities to perform energy reliability assessments to evaluate energy assurance and develop Corrective Action Plan(s) to address identified risks. Energy reliability assessments evaluate energy assurance across the Operations Planning, Near-Term Transmission Planning, and Long-Term Transmission Planning or equivalent time horizons by analyzing the	Extreme Natural Events	Project Page	Critical	Mitigate

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	expected resource mix availability (flexibility) and the expected availability of fuel during the study period.				
Reduce the number of critical facilities	Collaborate with SITES and other relevant groups to develop approaches to planning, models and simulations that will reduce the number of facilities that meet the criteria to be considered critical to reliability.	Security Risks	https://www.nerc.com/comm/RSTC/Pages/default.aspx	High	Mitigate
Reliability Guideline: Cyber Intrusion Guide for System Operators	Reliability Guideline: Cyber Intrusion Guide for System Operators (Approved by the Operating Committee on June 5, 2018)	Security Risks		Critical	Mitigate
Review intermittent Generation to Improve Load Forecasts	In performing their near-term load forecasts, Balancing Authorities should analyze how intermittent generation affects their ability to meet the peak load (including the effects of behind-the-meter intermittent generation) (for the entire footprint as well as sub-regions, such as MISO South and SPP's southern region), especially if peak load cannot be met without variable resources. Balancing Authorities should consider performing a 50/50 or 90/10 forecast for renewable resources three-to-five days before real time. (Winter 2022-2023)	Extreme Natural Events		Critical	Assess
RISC Cold weather Recommendation 22 – SPCWG	The SPCWG will review PRC-006-5 and determine if there is a need to make a change to PRC-006-5 to account for time based underfrequency generation tripping	Extreme Natural Events		Critical	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	and provide a recommendation on what those changes could entail by August 12, 2022.				
RS Review of Load Forecasting Impact on Bas	Balancing Authorities should have staff with specialized knowledge of how weather impacts load, including the effects of heat pump backup heating and other supplemental electric heating. Balancing Authorities should also broaden the scope of their near-term (seven-days prior to real-time) load forecast to include multiple models and sources of meteorological information to increase accuracy and should consider regional differences within their footprints. (Winter 2022-2023)	Extreme Natural Events		Critical	Assess
S4B-White Paper: DER Impacts to UVLS Programs	Short white paper on potential impacts of DERs on UVLS program design; leverage work of PRC-010 standards review (C6 task).	Grid Transformation	https://www.nerc.com/comm/PC/Pages/System-Planning-Impacts-from-Distributed-Energy-Resources-Subcommittee-(SPIDERWG).aspx	High	Mitigate
S5-White Paper: Beyond Positive Sequence RMS Simulations for High DER Penetration Conditions	<i>Considerations for high penetration DER systems and the need for more advanced tools (e.g., co-simulation tools) for studying DER impacts on the BPS.</i>	Grid Transformation	https://www.nerc.com/comm/PC/Pages/System-Planning-Impacts-from-Distributed-Energy-Resources-Subcommittee-(SPIDERWG).aspx	High	Mitigate
Section 1600 Data Request for GADS	NERC RoP GADS Section 1600 Data Reporting to collect and analyze GADS data: <ul style="list-style-type: none"> Conventional - relevant design data and enhanced event reporting Wind - connected energy storage and event reporting 	Grid Transformation	Section 1600 Data Requests	Critical	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
	<ul style="list-style-type: none"> Solar - plant configuration, performance and event data as well as equipment outage detail 				
Security Guideline: Open Source Software	Revise/update content; add metrics; place on RG/SGTemplate Q3/Q4 2022	Security Risks		Critical	Assess
Security Guideline: Risk Management Lifecycle	Revise content, add metrics; place on RG/SGTemplate Q3/Q4 2022	Security Risks		Critical	Assess
Security Guideline: Secure Equipment Delivery	Revise content; add metrics; place on RG/SGTemplate Q3/Q4 2022	Security Risks		Critical	Assess
Security Guideline: Vendor Risk Management Lifecycle	Revise content and add metrics; place on RG/SG Template Q3/Q4 2022	Security Risks		Critical	Assess
Security or implementation guidance to support development of Reliability Standards	Support for standard development teams that request information or collaboration to address security issues	Security Risks		Critical	Assess
Standards Committee Engagement	SPIDERWG Coordination subgroup task to provide technical support to Standards Committee Projects from SARs that originated in SPIDERWG.	Grid Transformation		High	Assess
Technical Report: Energy Transition to Higher Penetrations of Inverter-Based Resources	Continuation of "Tabled Issues" . Discussion of IRPTF and NERC activities beyond those captured in the PRC-024-2 White Paper, as documented in the white paper. Discussion, analysis, and recommendations for continued improvements to inverter-based resource performance and NERC standards	Grid Transformation	https://www.nerc.com/comm/PC/Pages/Inverter-Based-Resource-Performance-Task-Force.aspx	Critical	Assess

Table A.1: Risk Registry Details For All Tasks In-Progress

Task Name	Description	RISC Profile	External Link	Risk Registry Priority	Risk Staging
Tools and Methods for assessing Electromagnetic Pulse (EMP) vulnerabilities	Support development of tools and methods (and make available) for system planners and equipment owners to use in assessing EMP impacts on the BPS.	Security Risks		High	Assess
Tools to support internal controls initiatives	Ongoing task to support industry users by providing tools and resources for addressing security controls and relevant compliance outcomes.	Security Risks		Critical	Monitor
Utility Essential Security Practices Whitepaper	Develop guidance that addresses security protections for utility technologies that are not subject to compliance with the CIP Reliability Standards. Examples of those technologies include inverters, synchro-phasers, natural gas SCADA, etc. (Resources aligned with Electric-Gas Working Group (EGWG))	Security Risks		Critical	Mitigate
V2-Reliability Guideline: DER Forecasting Practices and Relationship to DER Modeling for Reliability Studies	Guidance providing how forecasting practices are linked to DER modeling for reliability studies. DER forecasting practices are important for accurately representing the correct amount and type of DER, particularly at an aggregate level representation for BPS studies.	Grid Transformation	https://www.nerc.com/comm/PC/Pages/System-Planning-Impacts-from-Distributed-Energy-Resources-Subcommittee-(SPIDERWG).aspx	High	Mitigate
Whitepaper: BES Operations in the Cloud	Breakdown concepts. Explain risks and challenges. Provide guidance and recommendations for adoption. Address cybersecurity and CIP compliance.	Grid Transformation		Critical	Assess
Whitepaper: Zero Trust for OT Cybersecurity	Define. Identify benefits, risks, challenges. Illustrate architecture. Provide guidelines and recommendations for adoption and CIP considerations.	Security Risks		Critical	Mitigate