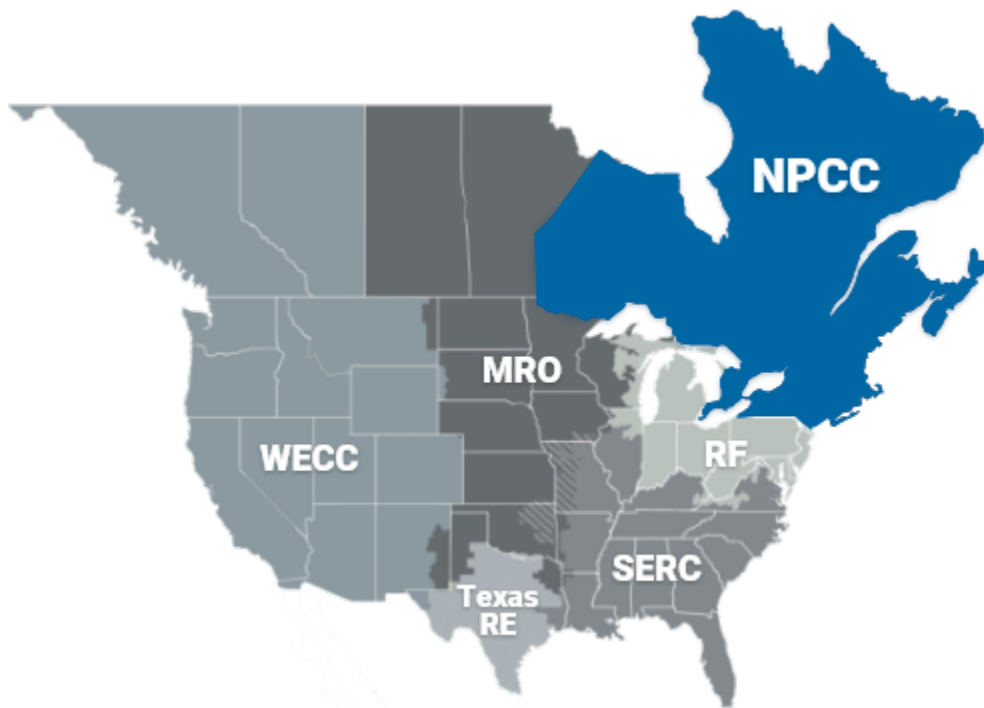




Northeast Power Coordinating Council, Inc.

Strategic Plan

2023 – 2026



Updated as a result of BOD discussions on October 26, 2022

Public



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Introduction

As a part of the Electric Reliability Organization (ERO) Enterprise (NERC and the six Regional Entities), NPCC is committed to the collective vision of a highly reliable and secure North American bulk power system (BPS). NPCC's specific role in support of the overall ERO Enterprise mission is to assure the effective and efficient reduction of risks to the reliability, resilience, and security of the international BPS within Northeastern North America. A summary of the 2023 ERO Areas of Focus is included in Appendix A.

This NPCC Strategic Plan looks ahead to position NPCC to accommodate anticipated structural changes in the electricity industry, growing reliability interdependencies, growing ERO obligations and expectations, and evolving reliability challenges and opportunities. The plan is intended to ensure that NPCC's future planning efforts, resource and budget determinations, and reliability assurance efforts are in the public interest.

Organizational Overview

NPCC is a 501(c)(6) not-for-profit corporation in the state of New York responsible for promoting and improving the reliability of the international, interconnected bulk power systems in Northeastern North America through (i) the development of Regional Reliability Standards and compliance assessment and enforcement of continent-wide and Regional Reliability Standards, coordination of system planning, design and operations, and assessment of reliability (referred to as Regional Entity activities), and (ii) the establishment of Regionally-specific criteria, and monitoring and enforcement of compliance with such criteria (referred to as Criteria Services activities).

The NPCC Region covers nearly 1.2 million square miles and is populated by more than 56 million people. NPCC U.S. includes the six New England states and the state of New York. NPCC Canada includes the provinces of Ontario, Québec, and the Maritime provinces of New Brunswick and Nova Scotia. NPCC has executed either a Memoranda of Understanding or an Agreement with the particular Canadian provincial regulatory and/or governmental authorities in New Brunswick, Nova Scotia, Ontario, and Québec. From a net energy for load perspective, NPCC is approximately 44% U.S. and 56% Canadian and approximately 68% of all Canadian net energy for load is within the NPCC Region.

Current Environment

Significant changes in resource mix (some due to regulatory and/or legislative initiatives related to de-carbonization), a proliferation of fast-acting digital protection and control technologies, increased integration of distributed energy resources (DER) and variable energy resources (VER), integration of inverter based resources, increased system load due to electrification, and the retirement of fossil fired dispatchable generation are rapidly changing the reliability assurance landscape. The proliferation of DER creates jurisdictional challenges as the line blurs at the system interfaces between distribution, sub-transmission, and bulk power transmission which will affect the coordination of system planning, design, and operations. Additionally, aspects of both cyber and



physical security are critical and central concerns in maintaining a reliable BPS. These changes in the electricity industry ecosystem have introduced new risks into the reliability equation and have impacted how NPCC measures BPS reliability moving forward. This will require NPCC to adapt in order to remain an effective provider of Regional Entity and Criteria Services reliability activities and functions while maintaining a culture that is transparent, objective, and effective.

Core Values

NPCC's independence and objectivity serve the public interest by promoting and advancing bulk power system reliability through its various roles as a Regional Entity, a Compliance Enforcement Authority, and a member of the ERO Enterprise. Innovation and collaboration with its members and stakeholders are key resources for NPCC's role as a reliability assurance organization. The following core values govern the conduct and activities of all NPCC employees, members, and participants which align with NERC's value drivers.

Fairness and Inclusiveness

- Maintain a fair, respectful culture where individuals and groups contribute, collaborate, and thrive
- Value diversity and work collaboratively to provide equitable opportunities for all
- Treat each other with respect and seek to understand complementary roles

Integrity, Ethics, and Compliance

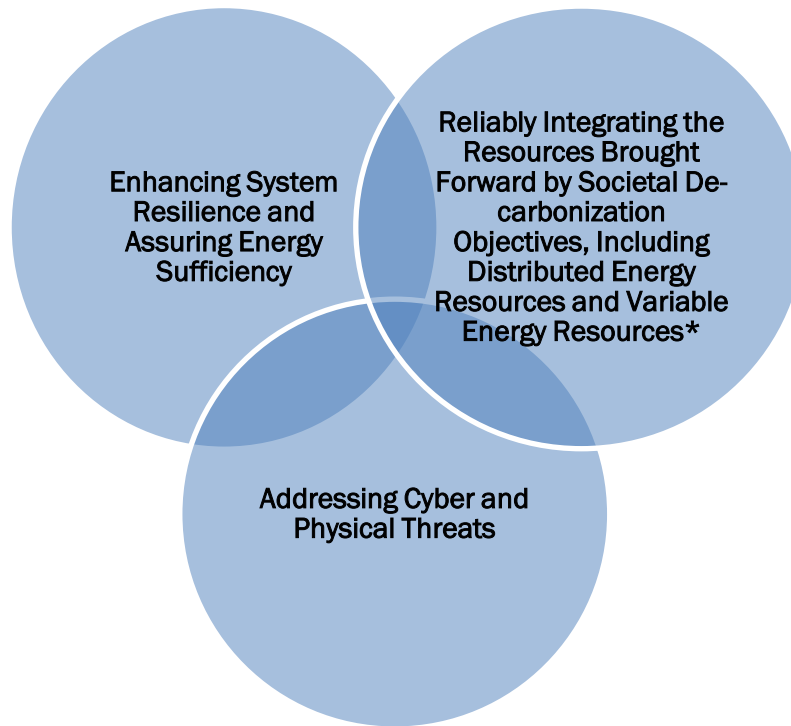
- Act in a manner that is consistent with the highest levels of professional and ethical conduct
- Carry out activities and responsibilities with unwavering independence, impartiality, and objectivity
- Steward responsible and transparent management of finances and resources

Accountability, Adaptability, and Innovation

- Collaborate effectively with ERO and stakeholder subject matter experts to create innovative tools and approaches
- Harness technical and analytical ability to proactively address future challenges
- Maintain an external presence that educates and promotes a culture of reliability excellence and accountability in order to deliver accurate, impactful, and meaningful messages, outreach, and results

Strategic Reliability Focus Areas

As a result of the Board's September 2022 Strategic Sessions which were informed by industry discussions, ERO highlighted priorities, and input from NPCC Member representatives, the previously identified major emerging challenges remain as the Strategic Reliability Focus Areas for the 2023 – 2026 NPCC Strategic Plan.



*Bulk power system reliability and security will need to keep pace with increased system load that will result from the electrification that is required to support decarbonization goals

I. Enhancing System Resilience and Assuring Energy Sufficiency

Background

Enhancing System Resilience: Resilience can be considered to consist of four components:

1. Robustness – the ability to withstand disturbances by supporting operations in a more secure state
2. Resourcefulness – the ability to detect and manage a crisis as it unfolds
3. Rapid recovery – the ability to get services back as quickly as possible in a safe, coordinated, and controlled manner
4. Adaptability – the ability to identify and incorporate new lessons from events

NPCC works with its stakeholders to perform ongoing periodic reviews of the more-stringent NPCC Regional Reliability Criteria to address emerging reliability issues to ensure the resilience of the international interconnected bulk power system in Northeastern North America.

NPCC supports the development and revision of NERC Reliability Standards that serve to ensure a resilient BPS by posturing and protecting the BPS from a planning, operations, and maintenance perspective.



NPCC Staff implements risk-based compliance monitoring engagements, conducts assessments of internal controls, performs outreach and education on high-risk focus areas, provides recommendations and suggests best practices, assesses noncompliance mitigation plans, and issues enforcement actions. These actions serve to drive resiliency by influencing the registered entity to remain sustainable from a compliance and security perspective.

Assuring Energy Sufficiency: As increasing amounts of renewable resources are added to the energy mix, there is still a need for sufficient dispatchable generation to remain within the NPCC footprint. During extreme weather, which is becoming more common, there is risk that the natural gas infrastructure capacity may not be adequate to deliver all the natural gas needed during the winter months to serve both Local Distribution Company gas residential heating load and gas-fired electric generation. The effect and risk of gas unavailability is magnified if the solar and wind energy is not available (due to transmission constraints and/or lack of wind and sunlight) although the total capacity of those variable resources exist physically. NPCC's future energy sufficiency is further challenged as coal, oil, and nuclear fueled power plants are planned for retirement in the near future. The incorporation of battery energy storage, wind, solar, and other variable energy resources (especially those that are inverter based) along with sophisticated load management programs and emerging technologies also adds complexity to resource adequacy planning and operational planning due to less predictability of the availability of the energy to the variable resource.

Targeted Reliability Activities

To support enhancing system resilience and assuring energy sufficiency within Northeastern North America, NPCC will need to focus its efforts on:

- Supporting NERC and ERO activities to develop resilience metrics.
- Identifying and assessing common mode failure and single points of disruption scenarios involving communications, water, and other interdependent critical infrastructure sectors.
- Leading the identification of the opportunity to revise NPCC Reliability Criteria and communicating that opportunity to the NPCC members.
- Assuring sufficient real-time awareness of DER/VER resource availability and capability and that there are contingency plans when energy limitations affect the resource.
- Performing rigorous and thorough risk-based compliance engagements while influencing and educating registered entities and stakeholders.
- Enhancing processes and criteria for the evaluation of the maturity of registered entity controls, assessment of the risks, and evaluation of the mitigations of noncompliance issues.
- Working with NPCC Members and gas industry organizations, in partnership with State and Provincial regulators, evaluating the sufficiency of energy conservation plans to support energy security and resource adequacy.
- Assessing gas-electric interdependencies.



- Supporting the NERC Standards Development Process to identify reliability gaps where NERC Reliability Standards can be developed or enhanced to include aspects system resilience and energy sufficiency.

Outcomes

- NERC Reliability Standards and NPCC Directories are clear, timely, effective in mitigating risks to reliability, and consider cost-effectiveness/impact.
- The CMEP program promotes a culture of reliability excellence through risk-informed compliance monitoring, assessments of controls, mitigation, enforcement, certification, and registration.
- The NPCC Region has sufficient dispatchable generation and/or operational plans that support reliable operations as variable renewable resources are added to the energy mix.

II. Reliably Integrating the Resources Brought Forward by Societal De-carbonization Objectives, Including Distributed Energy Resources (DER) and Variable Energy Resources (VER)

Background

States and Provinces within the NPCC Region have enacted aggressive de-carbonization laws in an attempt to reduce global warming while maximizing the use of new, efficient, and clean electricity generating technologies. This will significantly modify the sources, the characteristics, and the location of future electricity production along with introducing deliverability challenges. Electrification, especially in the transportation and building sectors, will play a large role in meeting societal decarbonization goals. As a result, the electric system connected load will increase to support an overall reduction to the carbon footprint. Utility operations and planning methodologies will need to keep pace concurrently with both the changing resource mix and the increasing connected loads.

The DER/VER that continue to penetrate the electric system represent both potential enhancements to reliability and potential emerging risks to reliability. The electric system has historically been planned, designed, and operated from a resource capacity to load perspective. Correctly understanding the relationship between DER/VER and transmission system performance (while being sure to understand the risk and potential impact offered by inverter-based resources) will allow increased accuracy of planning models, enhance reliability, and promote effective interoperability and reliable operation.

Targeted Reliability Activities

To support reliably integrating resources brought forward by societal de-carbonization objectives, including distributed and variable energy resources, NPCC will need to focus its efforts on:



- Expanding probabilistic assessments incorporating energy sufficiency and transmission security metrics to better understand the frequency, duration, and magnitude of potential future power supply shortfalls due to more intermittent distributed and variable resources on the grid.
- Enhancing the review and coordination of distributed energy resource local requirements and the identification of potential inconsistencies between State and Provincial regulatory rules and continuing enhancement of a Regionally consistent DER guidelines document.
- Reviewing and revising, as required, NPCC Directories to address reliability contributions and challenges of changing technologies.
- Identifying Northeast specific emerging reliability risks such as system blackstart and automatic under-frequency load shedding.
- Enhancing modeling, analysis, and operational coordination capabilities for DERs, variable energy resources, energy storage systems, and micro-grids.
- Surveying and assessing the various subregional DER/VER modeling approaches for best practices and/or consistency.
- Identifying opportunities for enhancing provision of essential reliability services by DER and VER through advanced digital technologies.

Outcome

Prevention and mitigation of bulk power system reliability risks due to the increase in DER/VER and the increased connected load that will support meeting societal decarbonization goals.

III. Addressing Cyber and Physical Threats

Background

Attacks to both cyber and physical systems can undermine the electric industry's security by inflicting damage, destruction, or disruption to electric facilities and operational situation awareness. These attacks are becoming more targeted and can also impact other critical sectors such as transportation, health services, fueling, communications, and water.

The exposure and risk of such attacks are enhanced due to the ever-increasing digitalization of data processing activities (e.g., cloud-computing, quantum computing, increased virtualization, and third-party hosting) that do not align with the current suite of NERC CIP Reliability Standards.

Targeted Reliability Activities

To support addressing cyber and physical threats within Northeastern North America, NPCC will need focus its efforts on:

- Enhancing interactions with agencies (e.g., NERC E- ISAC, DHS, DOE, Natural Resources Canada, and Federal, State and Local Law Enforcement) to foster a more efficient working model for information and intelligence sharing.



- Providing an avenue for education and best practices to support the security and resilience of operational technology (OT) systems.
- Contributing to the identification of cybersecurity protection and advanced data management requirements associated with next generation substation designs (digital substations) to enhance operational technology (OT) resilience and maximize future grid security.
- Participating in the NERC BPS Security and Grid Transformation and the RSTC's Security and Technology Enablement Subcommittee activities to evaluate possible future BPS reliability risks caused by physical and cyber threats and seek opportunities to better integrate important security topics into RSTC Technical Groups.
- Expanding regional support for and interaction with the E-ISAC and as well as parallel Canadian information sharing efforts to facilitate actionable information sharing within Northeastern North America.
- Continuing to enhance NPCC IT's security posture and data loss prevention procedures against the NIST Cyber Security Framework.
- Integrating the use of the new ERO Align Tool and Secure Evidence Locker to enhance the security of registered entity compliance data and evidence.

Outcome

Prevention and mitigation of cyber and physical security risks through active stakeholder engagement and information sharing of current threats and vulnerabilities, security workshops, and development of good industry practice guides.



Appendix A

The 2023 ERO Areas of Focus and Work Plan Priorities were approved on November 16, 2022 by the NERC BOT. [NERC Strategic Documents](#)

2023 ERO Areas of Focus
Energy: Tackle the challenge of grid transformation; climate change-driven, extreme weather; and inverter performance issues
Security: Move the needle by focusing on supply chain, Information Technology (IT) and Operational Technology (OT) system monitoring, cyber-informed grid planning and design, and evolution of the Critical Infrastructure Protection (CIP) standards
Agility: Tool the company to be nimbler in key areas, particularly standards development, internal operational processes, technical deliverables, revisit the FERC settlement restrictions, and explore alternate funding mechanisms
Sustainability: Invest in ERO systematic controls, eliminate single points of failure, strengthen succession planning, and ensure robust cyber security protections for all systems

ERO 2023 Work Plan Priorities

- Reliability Assessments
- Reliability Standards
- Registration
- Event Analysis
- Engineering
- E-ISAC
- BPS Risk Mitigation
- Corporate Risk Reduction
- Talent Management
- State/Provincial Outreach
- Process Improvement and Efficiency