

NERC

NORTH AMERICAN ELECTRIC
RELIABILITY CORPORATION

Planning Committee

2017-2020 Strategic Plan

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RELIABILITY | ACCOUNTABILITY



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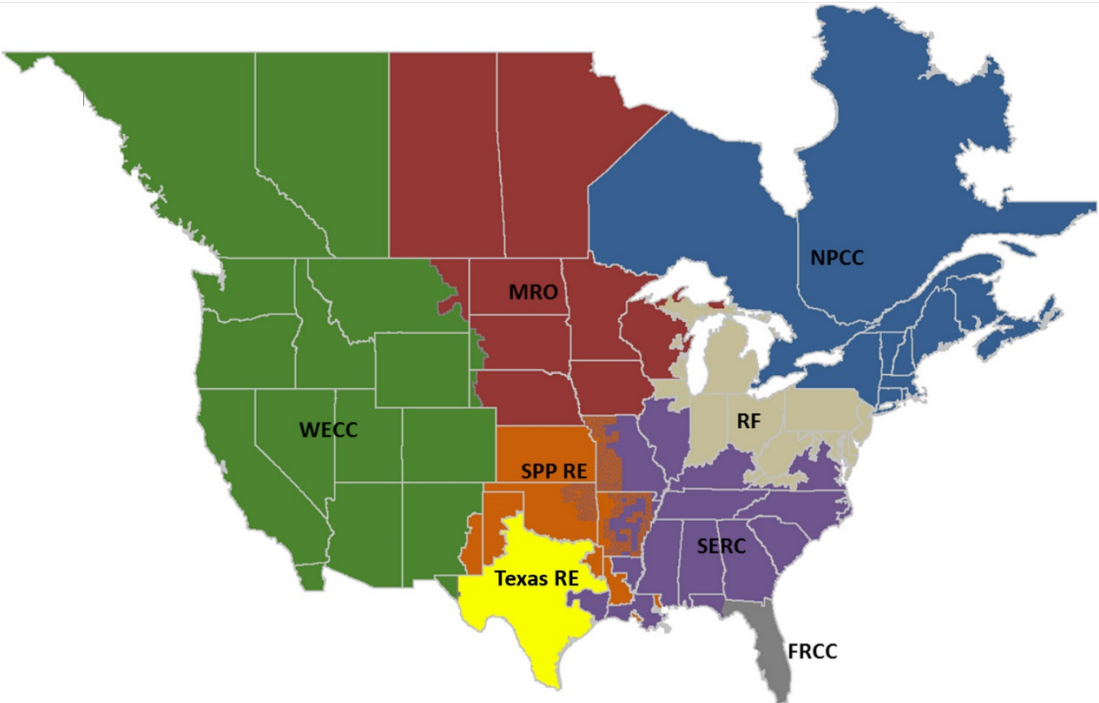
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Preface

The North American Electric Reliability Corporation (NERC) is a not-for-profit international regulatory authority whose mission is to assure the reliability and security of the bulk power system (BPS) in North America. NERC develops and enforces Reliability Standards; annually assesses seasonal and long-term reliability; monitors the BPS through system awareness; and educates, trains, and certifies industry personnel. NERC’s area of responsibility spans the continental United States, Canada, and the northern portion of Baja California, Mexico. NERC is the Electric Reliability Organization (ERO) for North America, subject to oversight by the Federal Energy Regulatory Commission (FERC) and governmental authorities in Canada. NERC’s jurisdiction includes users, owners, and operators of the BPS, which serves more than 334 million people.

The North American BPS is divided into eight Regional Entity (RE) boundaries as shown in the map and corresponding table below.



The North American BPS is divided into eight RE boundaries. The highlighted areas denote overlap as some load-serving entities participate in one Region while associated transmission owners/operators participate in another.

FRCC	Florida Reliability Coordinating Council
MRO	Midwest Reliability Organization
NPCC	Northeast Power Coordinating Council
RF	ReliabilityFirst
SERC	SERC Reliability Corporation
SPP RE	Southwest Power Pool Regional Entity
Texas RE	Texas Reliability Entity
WECC	Western Electricity Coordinating Council

Introduction

The Planning Committee, in accordance with its charter, will develop and maintain a strategic plan and an associated Work Plan to carry-out the functions of the committee. This strategic plan will be revisited as needed to maintain alignment with the NERC Electric Reliability Organization (ERO) Enterprise [Strategic Plan](#). As changes to the ERO Enterprise Strategic Plan become necessary, the PC will modify their strategic plan accordingly. The PC strategic plan provides a clear focus for the efforts in the 3-year timeframe and promotes alignment of related activities, including:

- Conforming with priorities of the NERC ERO Enterprise, federal, state, and provincial regulators, and the Electricity Sub-Sector Coordinating Council (ESCC);
- Providing a technical foundation for reliability issues;
- Efficiently using PC resources.

The PC leadership serves as a member to the NERC Reliability Issues Steering Committee (RISC). The RISC serves as an advisory group to the NERC Board of Trustees. The RISC supports identification of risks to the reliable operation of the BPS and provides input on managing those risks through release of the “ERO Reliability Risk Priorities” report. The PC representative on the RISC has responsibility to share the RISC recommendations with the PC and ensure that the PC strategic plan addresses issues identified in the RISC “ERO Reliability Risk Priorities” report. At the same time PC will also provide feedback and guidance to RISC on any new emerging issues or new trends identified in the NERC reliability assessments that needs further attention.

Mission, Vision, and Guiding Principles

Vision

A highly reliable and secure North American bulk power system.

Mission

To identify, prioritize, and assure effective and efficient mitigation of risks to the reliability and security of the North American bulk power system.

Goals

The ERO Enterprise has five goals to help it to successfully carry out its mission.

Goal 1: Risk-responsive Reliability Standards

Goal 2: Objective and risk-informed compliance monitoring, enforcement, and organization certification and registration

Goal 3: Identification and mitigation of significant reliability risks

Goal 4: Identification and assessment of emerging risks

Goal 5: Effective and efficient ERO Enterprise operations

Core Values and Principles

The following core values and principles guide the conduct and behavior of all involved in the ERO Enterprise.

Accountability and Independence

- Be accountable for maintaining the public trust and fulfilling responsibilities delegated to an international ERO.
- Be impartial, independent of special interests, and impervious to improper influence.
- Balance the need for independent regulatory judgment with the need to involve those with expert knowledge and experience in reliability matters.

Responsiveness

Act in a timely manner on the basis of unfolding events, emerging reliability risks, and the needs of the public interest and stakeholders.

Fairness and Inclusiveness

- Be open and transparent.
- Provide access for clear communication with stakeholders.
- Ensure interests of all reliability stakeholders, including costs imposed on registered entities and the public, are duly considered and balanced.

Innovation and Adaptation

- Continuously assess and prioritize ERO Enterprise goals.
- Embrace change and encourage new ideas that contribute to effective, efficient reliable operations.

Excellence and Efficiency

- Promote the active participation of the best technical experts.
- Strive for excellence and efficiency in all aspects of ERO Enterprise business operations.
- Make informed decisions regarding efficient use and allocation of resources.

Integrity and Ethics

- Maintain the highest levels of professional competency and ethics.
- Maintain respectful relationships.
- Protect the security of confidential information.

Guiding Principles

The following principles continue to guide the PC's processes and activities in the future:

- Deliver technically sound and accurate analyses, assessments, and recommendations;
- Identify critical emerging issue and trends that could potentially have reliability impacts in near term and long term.
- Maintain a reliability focus over the planning horizon that can inform all relevant entities;
- Ensure the facts are unbiased by the advocacy of policy matters;
- Promote coordination effectiveness across the NERC ERO enterprise;
- Ensure continued provision of high levels of expertise, technically sound conclusions, and timely results/deliverables;
- Align the PC mission with the priorities of the NERC ERO enterprise including the ERO reliability risk priorities;
- Ensure the PC structure, processes and procedures, and its working relationships with other technical standing committees and groups remain focused on the highest priorities for reliability within the ERO enterprise;
- Ensure PC resources are efficiently used
- Continually prioritize the work plan of the PC and its subgroups to address the most important issues and deliverables in a timely fashion.

Areas of Strategic Focus

The PC recognizes the need and benefit of focusing on the following strategic activities, while maintaining an ongoing strategic focus on alignment with the NERC ERO Enterprise Strategic Plan and goals, including the top priority issues of the ERO. The PC and its sub-groups provide the oversight, guidance, and leadership essential to address these areas of strategic focus efficiently and comprehensively, and ensure technical accuracy, with the objective of enhancing bulk system reliability. Further, the PC recognizes the need to strengthen the ties between the technical committees to ensure expertise is leveraged and amplified thereby increasing the relevance and value of the technical committee results to bulk power system reliability.

1. Reliability Assessments

ERO Strategic Plan: Goals 3, 4

Related Risk Profiles:

- #1: Changing Resource Mix
- #2: Bulk-Power System Planning
- #3: Resource Adequacy and Performance
- #7: Extreme Natural Events

Perform periodic reliability assessments (i.e., Long-Term Reliability Assessment, and special assessments), assure technical accuracy and completeness of results, and endorse approval of assessments to the BOT.

- The PC will provide assistance in assessment and review of the technical elements of summer and winter assessments, the annual Long-Term Reliability Assessment, and any other special assessments.
- The PC will maintain communications and coordination with the Operating Committee (OC) to ensure a system operating perspective is carefully considered in planning analyses and reliability assessments.
- The PC will prioritize, review, and approve scenario analyses and special assessments, considering alignment with [NERC ERO enterprise strategic objectives](#) and [ERO reliability risk priorities](#). The PC will provide recommendations to proceed with scenarios or other special assessments that require further analysis. This will be a methodical annual process that will provide the technical foundation for addressing key reliability issues facing the industry and the ERO.
- The PC will support the development of the tools needed for effective data collection and validation for long-term and special reliability assessments, system models, and databases supporting reliability performance assessments.
- The PC will support the ongoing review and maintenance of the Reliability Assessment Guidebook.

2. Emerging Issues and Reliability Concerns

ERO Strategic Plan: Goals 3, 4

Related Risk Profiles:

- #1: Changing Resource Mix
- #2: Bulk-Power System Planning
- #3: Resource Adequacy and Performance
- #7: Extreme Natural Events

- #8 *Physical Security Vulnerabilities*
- #9: *Cybersecurity Vulnerabilities*

Identify emerging bulk power system reliability issues, address issues in reliability assessments, and address other issues as assigned by the BOT. The PC will support the strategic initiatives within the NERC ERO Enterprise, including the key reliability issues the topics identified below. The PC will incorporate observations and findings of the OC and the Critical Infrastructure Protection Committee (CIPC) in the PC identification and evaluation of emerging issues.

- **Changing resource mix** – The change to the resource mix is accelerating due to fuel costs, subsidies, and federal, state, and provincial policies. Transmission planners, Balancing Authorities, and system operators of the BPS may not always have sufficient time to develop and deploy plans to mitigate reliability considerations with various resource additions and retirements.
- **Bulk Power System Planning** – BPS planning is transitioning from centrally planned and constructed resources based on forecasted load growth and reliability projects to more reactive, rather than proactive, planning based on the integration of new resources and technologies driven by policies and incentives. Due to the lack of visibility, certainty, and speed that these resources are being integrated in some areas, planners currently may lack the ability to update or create system models and scenarios of potential future states to identify system reliability needs. Planners may not have sufficient time to implement mitigation plans or reliability upgrades to address likely scenarios, driving the need for more real-time operating procedures.
- **Physical Security Vulnerabilities** – Intentional damage, destruction, or disruption to facilities can cause localized to extensive interconnection-wide BPS disruption potentially for an extended period.
- **Asset Management and Maintenance** – As the system ages and operations are modified, asset management programs also change. Failure to properly commission, operate, maintain, prudently replace, and upgrade BPS assets, such as those nearing their end-of-life, could result in more frequent and wider-spread outages that are initiated or exacerbated by equipment failures or protection and control system failures.
- **Loss of Situational Awareness** – Information sharing will be vital for visibility and a complete understanding of the impacts and contributions of distributed energy resources to the BPS. Inadequate situational awareness can be a precursor or contributor to BPS events. Loss of situational awareness can also occur when control rooms are not staffed properly or operators do not have sufficient information and visibility to manage the grid in real-time. Additionally, insufficient communication and data regarding neighboring entity's operations is a risk as operators may act on incomplete information.
- **Human Performance and Skilled Workforce** – The BPS is becoming more complex, and as the industry faces turnover in technical expertise, it will have difficulty staffing and maintaining necessary skilled workers. In addition, inadequate human performance (HP) makes the grid more susceptible to both active and latent errors, negatively affecting reliability. HP weaknesses may hamper an organization's ability to identify and address precursor conditions to promote effective mitigation and behavior management.
- **Cyber Security Vulnerabilities** – Exploitation of cybersecurity vulnerabilities can potentially result in loss of control or damage to BPS-related voice communications, data, monitoring, protection and control systems, or tools. Successful exploitation can damage equipment, causing loss of situational awareness and, in extreme cases, can result in degradation of reliable operations to the BPS, including loss of load.

- **Extreme Natural Events** – Severe weather or other natural events (e.g., hurricanes, tornadoes, protracted extreme temperatures, GMDs, floods, earthquakes, etc.) are one of the leading causes of outages. Severe weather can cause BPS equipment damage, fuel limitations, and disruptions of voice and data communications, which can cause loss of load for an extended period.

3. Technical Planning Analyses

ERO Strategic Plan: Goals 3, 4

Related Risk Profiles:

- #1: Changing Resource Mix
- #2: Bulk-Power System Planning
- #3: Resource Adequacy and Performance
- #7: Extreme Natural Events
- #8 Physical Security Vulnerabilities
- #9: Cybersecurity Vulnerabilities

Develop technical analyses, model validation, and key reliability areas, resulting in technically accurate and comprehensive reports addressing areas of concern (e.g., misoperations of protection systems, FIDVR, variable generation, smart grid, etc.). Provide recommendations that address the reliability risks identified through an annual State of Reliability report. Provide oversight, guidance, direction, and technical expertise to address key planning related issues and interconnection-wide concerns.

The PC supports the technical analyses of the bulk power system, the data, and models required for these analyses, and the development of reports that highlight the result. These technical analyses will examine current industry concerns, interconnection-wide modeling concerns, emerging issues, and other topics related to planning and operation of the bulk power system, including observations and concerns of the OC and the CIPC. This includes the PC providing oversight and guidance to understand/provide recommendations addressing frequency response, system protection, and model validation efforts. Past examples of reports generated by technical analyses are Fault Induced Delayed Voltage Recovery, Integration of Variable Generation into the Bulk Power System, Reliability Implications of Smart Grid Technologies, Reliability Issues of Climate Change Initiatives, Potential Impacts of Environmental Regulations, Essential Reliability Services, and Accommodating Increased Dependency on Natural Gas for Electric Power.

The PC will recommend specific steps to reduce the reliability risks identified from the technical analyses. These recommendations will be used to inform industry on trends, root causes, model development, prioritization needed on development of reliability standards and revisions, and emphasis needed in compliance programs.

4. Standards Input

ERO Strategic Plan: Goal 1

Related Risk Profiles:

Provide technical expertise, research, and feedback to the Standards Committee on projects that have planning-related impacts, provide foundational technical efforts that support the key reliability planning-related standards development (formal and informal standard development), coordinate effectively with the Standards Committee to maintain alignment on priorities of related PC efforts, and provide reliability risk information for prioritization of proposed reliability standards. **(Goal 1)**

The PC will provide technical support in the development of planning-related performance-based Reliability Standards in order to expedite development, improve technical content and foundation, improve clarity and certainty, and identify emerging technical matters suitable for the development of Reliability Standards. This includes development of technical foundation reports, analyses, and assessments or the development of technical justification for Standard Authorization Requests for a new or revised Reliability Standard. Other efforts, such as providing subject-matter experts for informal development of new or revised Reliability Standards and requests for technical research should be supported by the PC within a timely manner.

Coordination will be required to make such efforts efficient and to address those areas with the highest priority to the NERC ERO enterprise with focused efforts. The PC will complete a review to determine which of the Reliability Standards or research for Reliability Standards the PC should address. A prioritization will be developed of the standards that need to be addressed by the PC and its subgroups, and assignments will be made to subgroups to efficiently support the development of performance based Reliability Standards or revisions.

5. Performance Metrics

ERO Strategic Plan: Goal 4

Related Risk Profiles:

- *#3: Resource Adequacy and Performance*

Provide direction, technical oversight, and feedback on the NERC Adequate Level of Reliability (ALR) metrics and reliability indicators.

The PC will provide technical insight and advice into the development and improvement of reliability metrics, and adopt a set of reliability performance measures to benchmark and assess the effectiveness of the NERC ERO enterprise and the industry, in order to guide and provide insight, trends, and emerging risks associated with these efforts. The development of reliability performance indices and metrics and data requirements will be coordinated with the OC. This includes:

- Developing ALR metrics and the State of Reliability report;
- Aligning the ALR with the Standards Committee Reliability Principals
- Aligning the development of integrated metrics with the ALR;
- Developing the risk matrix/index (i.e., System Risk Index);
- Developing an integrated platform for availability data systems for transmission, generation, and demand response; and
- Development of analysis of system performance and equipment performance, to be documented annually in a State of Reliability report and in periodic updates on NERC's website.

6. Event Analysis

ERO Strategic Plan: Goal 4

Related Risk Profiles:

- *#3: Resource Adequacy and Performance*

Support disturbance reporting and event analysis activities, leading to an emphasis on providing sound lessons learned and insights to the industry to enhance reliability. **(Goal 3)**

The PC will provide technical insight and expertise into the event analysis process, in coordination with the OC. The process currently includes conducting the following activities:

- Review and report on the results of individual events and lessons learned from those events, as well as any longer-term trends;
- Recommend actions needed to other ERO programs ;
- Facilitate and support, within the industry, the exchange of information for event lessons learned, applicable reports, and trends stemming from event analysis;
- Identify any emerging issues;
- Recommend the development and validation needs to ensure ability to duplicate real time events;
- Recommend any action related to frequency response and other system performance characteristics in order to lessen the risk to reliability; and
- Review high level corrective action plans and validation of these plans.

7. NERC Alerts

ERO Strategic Plan: Goal 4

Related Risk Profiles:

- *#3: Resource Adequacy and Performance*

Support the review and deployment of requests for industry actions and informational responses. Provide technical expertise as input for alerts. To address the need to provide a vehicle for the industry expertise to support NERC's dissemination of industry Alerts the PC will:

- Support the coordinated action of NERC's technical committees (OC, CIPC, and PC).
- Establish a PC process and functional organization approach to timely address technical input for pending alerts.
- Identify and maintain an effective approach to identify individuals with the planning-related technical expertise needed to evaluate, refine, and distribute alerts.
- Review Alerts and assign appropriate individuals to coordinate with the other NERC technical committees and assist in developing recommendations to industry and essential actions.
- Coordinate activities related to Alerts within all subgroups of the PC.

8. Guidelines and Technical Reports

ERO Strategic Plan: Goal 4

Related Risk Profiles:

- *#2 Bulk-Power System Planning*
- *#3: Resource Adequacy and Performance*

Develop guidelines, white papers, technical reports, and reference documents to address emerging reliability issues and industry concerns related to system planning.

The PC will develop and produce planning-related Reliability Guidelines (per the NERC Rules of Procedure and the PC Charter) to support improvement in reliability. Reliability Guidelines are documents that suggest approaches or behavior in a given technical area and may be adopted by a responsible entity in accordance with its own facts and circumstances. The PC will also develop white papers, technical reports, and reference documents, as needed, to address emerging issues and industry concerns related to system planning. The PC will coordinate with the OC to ensure a system operating perspective is incorporated in Reliability Guidelines and technical reports. The PC will initially focus on the following areas:

- Transmission system protection (protection system and relay operations);
- Frequency response;
- Model validation; and
- Probabilistic and risk-based reliability assessments.

9. Modeling Accuracy

ERO Strategic Plan: Goal 4

Related Risk Profiles:

- #2: *Bulk-Power System Planning*
- #3: *Resource Adequacy and Performance*

Assess data and modeling needs to ensure quality planning and operating data are used across each interconnection. The PC will assess data and modeling needs to ensure quality planning and operating data are used across each interconnection. Accurate modeling is critical to ensuring assessments identify true reliability concerns. The PC will coordinate with interconnection modeling entities to promote modeling quality and fidelity through processes, procedures, and guidelines and make both steady state and dynamic model recommendations that address technology changes and model detail requirements.

Other Key Activities of the Committee

Overview

The following items represent the key activities of the PC's strategic plan:

- Integrate changes and enhancements associated with the strategic plan into the PC Charter.
- Provide effective oversight and guidance for the key reliability areas under the PC, including the ERO's top priority reliability issues that align with the PC's responsibilities.
- Provide greater transparency and policy input into the finalization of the emerging issues, which then feed the respective assessments, scenarios, and special studies.
- Integrate the interaction/processes with the standards development foundational work efforts, including ranking, prioritization, and completion of the technical work.
- Initiate efforts to formulate, in concert with the other standing committees, a process that validates/deploys Alerts, other than urgent/essential actions, prior to dissemination.
- Validate the organizational alignment is consistent with effective and efficient utilization of resources to consistently achieve the highest reliability value results. The PC will complete a review of the organization of the PC and its subgroups to ensure that the PC is properly organized to accomplish the mission described in this strategic plan.
- Promote a learning organization perspective that considers the plan–operate-adjust-plan cycle and incorporates all perspectives in analyzing and enhancing the reliability performance of the bulk power system.
- Align the PC Work Plan with the strategic objectives, and subgroup responsibilities, with an overall objective of prioritizing deliverables in the PC work plan.
- Identify emerging risk in Long Term Reliability Assessment and Special Assessments due to regulatory changes and integration of new technology.

While these strategic plan elements are the logical extension of the next most immediate efforts to implement, an overarching goal remains to formulate these into a workable, sequenced plan, in which the highest priority elements are pursued initially. Further, the initiation of these elements are considered supplemental and complementary to the essential mission elements that are expected to continue to be effectively executed as provided below:

Annual Activities

- Oversee annual and short term special reliability assessments when applicable, which include providing input into the scenario analyses as part of the reliability assessments.
- Identify emerging issues to be addressed in reliability assessments for the NERC ERO enterprise.
- Determine ongoing trends for system and equipment reliability, highlighting areas for improvement and measuring system reliability performance. Issue an annual State of Reliability report to document assessment.
- Perform technical analyses and produce reports on emerging and standing issues that relate to the bulk power system on schedules that provide timely responses to support the ERO enterprise. Provide technical oversight, insight, and guidance to support efficiently addressing the following efforts: frequency response, system protection, model validation, and probabilistic and risk-based reliability assessments.
- Provide technical expertise, analysis, and feedback to SARs that have planning-related impacts. This includes review of the reliability standards development projects to determine the priority and how the PC can expedite the development and approval of new and revised reliability standards.

- Oversee the technical elements of the ALR and Risk Matrix/Curve (i.e., System Risk Index), assess the ongoing system/equipment trends, and provide timely responses to NERC ERO enterprise groups.
- Reliability Issues Steering Committee (RISC) - Provide direction, technical oversight, and feedback on issues that are nominated to this group and provide input to this group on emerging risk issues. Provide technical basis for risk-informed prioritization efforts. Continuously work in a concerted and collaborative manner with Operating Committee and Critical Infrastructure Protection Committee to identify any long term planning issue that could potentially quickly be a near term reliability issue due to a fast and rapidly changing dynamic system.