

Energy Reliability Assessment Working Group

Scope Document

Updated October 2023

Purpose

Electricity is fundamental to the quality of life for nearly 400 million citizens in North America. Electrification and the advancement of renewable energy resources continues as energy policy at the federal, province, state, provincial and local levels is providing incentives and targets for resource changes and end-use applications of electricity, coupled with new technology are contributing towards greater electrification of transportation and heating. The Bulk Power System (BPS) is undergoing unprecedented changes that require a rethinking of generating capacity, energy supply, and load serving needs.

Layered into this environment, there is evidence that industry is facing fuel uncertainty in certain instances. For example, natural gas fueled resources may, depending on the contract for fuel acquisition,¹ be subject to fuel curtailment or interruption during peak fuel demands in some areas. Additionally, natural gas pipeline designs and how generators interconnect with these pipelines can vary, resulting in significantly different impacts on generators and the BPS under natural gas pipeline disruption scenarios. Furthermore, variable energy resources require that there are sufficient flexible energy resources available to quickly respond to off-set ramping requirements in some areas. To some extent, the impacts can be mitigated with the supply and geographical diversity from renewable and smaller distributed resources. However, these uncertainties are already causing many system operators to consider scheduling, optimization, and commitment of resources over a multi-day time frame. Replacing the existing generation fleet with energy-limited resources requires industry to consider capacity requirements, energy resources, and fuel availability by extension. Even if sufficient capacity is available, a level of certainty in the delivery of fuel is required to ensure that energy is available to support demand. These circumstances are anticipated to continue as the BPS continues to evolve.

The Energy Reliability Assessment Working Group (ERAWG) is assigned the responsibility to (i) facilitate ongoing assessment of energy-related risks and (ii) identify potential responsive measures associated with unassured energy supplies.² Such considerations include the timing and inconsistent output from variable renewable energy resources, fuel location, and volatility in forecasted load that can result in insufficient amounts of energy on the system to serve electrical demand. The ultimate goal of the ERAWG is to make recommendations to ensure the reliable operation of the BPS throughout the year.

¹ Contracts here should be considered in the broadest sense. Namely, beyond just firm/interruptible natural gas, there is the need for logistics of natural gas and fuel oil acquisition, transportation, and delivery in a timely fashion to address emerging and projected energy requirements.

² Some examples: lack of firm natural gas transportation, pipeline maintenance or disruption, compressor station failures, and/or emission limitations on fossil fuels. All resources have some degree of fuel uncertainty due to unavailability, including coal (onsite stock-piles can be frozen) and nuclear (during some tidal conditions affecting cooling intake).

Roles and Activities

The *Ensuring Energy Adequacy with Energy-Constrained Resources*³ white paper that was reviewed by the Reliability and Security Technical Committee (RSTC) in 2020 identified energy availability concerns related to the operations, the operations planning, and the mid- to long-term planning time frame. This has also been a source of discussion within the industry, resulting in volumes of derivative work products, including an ongoing effort to update NERC Standards to address energy-related risks. Future considerations related to the reliability of energy are more complex and consider use of utility and non-utility assets in different manners as compared to a historical view. In order to effectively accommodate that type of conversation, the industry needs to assess the current processes and expectations to ensure the “basics” are covered. The RSTC assigned responsibility to the ERAWG to carry out the following continuing activities in its role of obtaining stakeholder engagement and feedback:

- For the planning, operations planning, and operations time horizons, support the performance and coordination of energy reliability assessments and identify potential areas for improvement of tools and methods that can identify the right mix of resources to ensure sufficient amounts of energy are available for the following:
 - To serve demand
 - To provide for Essential Reliability Services (i.e., frequency, ramping, and voltage)
 - To ensure the required energy can be delivered from the source to the end user
- Provide information to industry on energy reliability issues
- Support industry readiness and success on this topic
- Foster, coordinate, and facilitate activities of industry and RSTC sub-groups around the issues, risk, and potential mitigations or course corrections
- Gather industry feedback around recommended solutions that are actionable by either registered entities or industry groups (membership forums, trade associations, and technical committees, etc.)
- Evaluate options for industry outreach
- Develop suggested recommendations related to the issues
- Present work outcomes to the RSTC for awareness
- Determine appropriate path for recommendations to be considered and action taken

The ERAWG will report its work and deliverables to the RSTC, and the RSTC maintains ultimate responsibility for decisions and recommendations to NERC.

³ https://www.nerc.com/comm/RSTC/AgendaHighlightsandMinutes/RSTC_Meeting_Agenda_Package_Sept_15_2020_ATTENDEE_PUBLIC.pdf

Advancing the above concepts with industry requires discussions with appropriate NERC technical committees. In addition, the following actions may be initiated:

- Coordinate developments of energy reliability assessment activities with industry working groups.
- Subject matter experts may be assembled (e.g. task forces or working groups) to develop the following:
 - The technical foundation for energy assurance and assessment in each of the three time horizons.
 - Ways to identify the levels of energy that are required to meet the operational needs.
 - The tool specifications needed to incorporate energy considerations into planning, operational planning, and operations assessments.
- Engage industry research and development organizations (e.g. Electric Power Research Institute, United States Department of Energy, Natural Resources Canada, and national laboratories, etc.) to validate the technical foundation(s) and development of the tool(s), metrics, and methods.
- Coordinate studies and plans with adjacent Balancing Authorities to identify enhanced collaborative regional support.
- Evaluate the NERC standards for omissions to address fuel assurance and resulting energy limitations for the planning timeframe.

Deliverables

The ERAWG may develop the following deliverables based on the aforementioned activities:

- Reliability guidelines, technical reference documents, or white papers related to risks associated with unassured energy supplies.
- Analysis of current or developing tools and metrics being performed across North America that are related to energy reliability assessments.
- Revise or update technical documents previously developed by the group, as deemed necessary.

Membership

The ERAWG membership will include members who have technical or policy level expertise in the following areas:

- Resource Adequacy
- Fuel procurement for electric generation
- Electric and fuel infrastructure operations
- Fuel supply and delivery chains
 - NERC staff coordinator(s)
 - Liaison to RSTC
 - Leadership

- The ERAWG will have a chair and a vice chair appointed by the RSTC chair.
- Observers
 - The ERAWG chair may invite observers to participate in meetings. Observers may actively participate in the discussion and ERAWG deliverables.

Meetings

The ERAWG meetings will be scheduled based on workload as determined by the members. Meetings may also occur in conjunction with the regular RSTC meetings. The ERAWG meetings will be open to other participants.