NERC
NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Essential Reliability Services Task Force (ERSTF) Scope

Background

Essential Reliability Services (ERS) are the elemental 'reliability building blocks' from resources (generation and demand) necessary to maintain Bulk Power System (BPS) reliability. ERS are operational attributes from conventional generation, such as providing reactive power to maintain system voltages and physical inertia to maintain system frequency, necessary to reliably operate the BPS. In contrast, retirement of conventional generation in near future across many areas in North America, coupled with increasing variable generation installation can adversely impact the availability of ERS unless due considerations are given in planning and operations.

There are many factors that contribute to the need for reassessing reliability services. To include a few; variable renewable generation such as distributed, and utility scale solar, and wind generation, retirement of conventional power plants with substantial inertial response capability, increase use of demand response to address load relief, and the change in the operational landscape with integration of renewables and new technology that is used in conjunction with them, like energy storage. The proposed levels of commitment to renewable variable generation is one component of an ongoing shift in resource mix. It is imperative that power system planners and operators understand the potential and cumulative reliability impacts associated with large scale integration of variable generation, an overall capacity reduction in larger base-load generation, increased participation from demand resources and distributed generation, and a more evident increase in reliance on natural gas-fired generation.

As larger amounts of variable generation are added to the system, they have strong potential to displace the traditional large, rotating machines and the operating characteristics those machines and the ancillary benefits to system reliability that these units provided. Variable generation, in particular, has different operating characteristics and responds differently to changes in frequency and voltage on the system. Beyond capacity and energy characteristics, essential reliability services (ERS), such as inertia, frequency response, and voltage control, must be maintained across a given system to ensure reliable operation. These along with other characteristics or functions make up a suite of Essential Reliability Services or ERS.

To meet the needs of the future Bulk Power System, maintaining sufficient ERS will include a mix of market approaches, technology enhancements, and reliability rules or other regulatory rule changes. While the solution sets will likely be different in various regions, it may be necessary for regulators to make appropriate adjustments to market rules and reliability standards that will ensure reliable operation of the BPS.

Purpose

The ERSTF has a multi-faceted purpose that includes developing a technical foundation of ERS; educating and informing industry, regulators, and the public about ERS; developing an approach for tracking and trending ERS; formulating recommendations to ensure the complete suite of ERS are provided and available; and providing guidance necessary for operating a reliable grid. More specifically, the ERSTF will reconcile a collection of analytical approaches for understanding potential reliability impacts as a result of increasing variable resources and how those impacts can affect system configuration, composition, operation and the need for increased ERS. The ERSTF will include membership from existing technical subcommittees and working groups to strengthen the task force platform, and thus producing results which will maintain, enhance, and sustain reliable operation of BPS.

Activities

1. Develop a technical reference document (primer) on ERS. The primer can be used as a reference manual for regulators and policy makers to inform, educate, and build awareness on the reliability ramifications of the elements essential for the reliability of the BPS.
2. Develop an approach and framework for the long-term assessment of essential reliability services to supplement existing resource adequacy assessments. The approach should include a series of metrics that can be continually measured for further evaluation.
    a. Assess impacts on ERS due to increase in variable generation along with retirements of base generation. Articulate how each region is impacted by this scenario.
3. Develop specific recommendations for practices and proposed requirements, including potential reliability standards, that cover the transmission and generation planning, operations planning, and real-time operating procedures.
4. Compose a technically sound guidance document incorporating ERS in operations and operational planning. With retirement of base load generation plants, integration of variable resources and increased use of demand response for load relief; the operational landscape has changed and is projected to continue for near future. Operations personnel will face different methods and modes of operations; for e.g. with increased transmission line construction to accommodate renewable resources, increased number of reactive support devices are installed on the system to compensate for variability of renewables and voltage support. This philosophy and implementation is different from traditional operations with base load generators providing majority of voltage and reactive support.

Based on the work plan generated in this first phase of activity, the OC and PC will determine follow-on activities to support technical committee recommendations, implementation of enhanced reliability assessment approaches, and/or technical guidance to standard drafting teams.

Membership

NERC requests industry's subject experts to continue their efforts and add additional members as needed, with final selection agreed to by the officers of the Planning Committee and Operating Committee. Members must be willing to commit their time to participate in the task force discussions and contribute to writing the final report.

The task force is comprised of the following:

- Co-chaired (OC/PC)
- One representative from each Region
- At least one representatives from the NERC Planning Committee
- At least one representatives from the NERC Operating Committee
- One member-at-large representing Canada
- Additional members can be added:
  - At the request of the Planning and/or Operating Committee sector representatives, or
  - As needed by the NERC coordinator
- One member of the Reliability Assessment Subcommittee (or designated liaison)
- One member of the System Analysis and Modeling Subcommittee (or designated liaison)
- One member of the Resources Subcommittee (or designated liaison)
- One member of the Frequency Working Group (or designated liaison)
- NERC staff coordinator(s)
- Governmental members include, but not limited to:
  - Federal Energy Regulatory Commission
  - United States Department of Energy
  - National Energy Board, Canada

Participation of additional industry subject matter experts may be requested to support task force activities.

The task force co-chairs will be appointed by the chairs of the NERC Planning Committee and Operating Committee. Representation on this task force follows established Planning Committee and Operating Committee guidelines for participation.

Members are appointed by their Region or electric industry sector for two-year terms, without limit to the number of terms. Any Region or electric industry sector may name an alternate representative(s) who may attend task force meetings.

Order of Business

In general, the desired, normal tone of the task force business is to strive for constructive technically sound solutions which also achieve consensus. On the relatively few occasions where that desired outcome cannot be achieved, the task force will defer to a determination by the Planning and Operating Committees to settle the issue. If any strong minority opinions develop, those opinions may be documented as desired by the minority and forwarded to the PC and OC Chair for future meeting consideration.

Reporting

The task force is responsible to the Planning and Operating Committees for the completion of work associated with the scope items outlined above. Final work products of the task force will be approved as necessary by the Planning and Operating Committees and, if necessary, by the NERC Board of Trustees. The task force chairs will periodically apprise the Planning Committee, Operating Committee, and Board of Trustees, as required, on the task force's status, activities, assignments, and recommendations.

Meetings

Weekly to biweekly conference calls can be expected. Additionally, two to three open in-person meetings per year may be needed.

Approved by the NERC Planning Committee: March 5 , 2014

Approved by the NERC Operating Committee: March 5 , 2014