

Grid Modeling of Dynamic Energy Loads and Resources (Grid MODEL) Act of 2024

Purpose

To improve reliability and adequacy of the bulk power system by ensuring key uncertainties in generation, transmission, energy storage systems, and loads are included in resource adequacy modeling and integrated resource planning.

Background, Problem Statement, and Need

- Utilities, regional transmission organizations, and independent system operators use long-term integrated resource planning to develop a generation portfolio that meets bulk-power reliability requirements at minimum cost for their service area (e.g., NERC [BAL-502-RF-03](#)).
- The North American Electric Reliability Corporation (NERC) annually assesses seasonal and long-term reliability, but standards are needed to improve guidelines (NERC [2016](#), [2018](#)) and accommodate increasing uncertainties in future weather, generation resources, and loads.
- In addition, long-term reliability planning and resource-adequacy modeling are inconsistent across regions. Best practices and rigorous methods are required while accommodating the unique resources and needs in different regions to ensure reliability of the bulk-power system in light of a rapidly changing mix of resources and loads.¹

What the Bill Does

This bill requires the Federal Energy Regulatory Commission to work with NERC to develop one or more reliability standards requiring rigorous methods (based on best-practices) for long-term reliability planning and resource-adequacy modeling of the bulk power system that honor key uncertainties such as:

- Generation
 - Variable generation resources, weather, degradation, correlated outages, costs
- Transmission
 - Congestion, thermal overload, dynamic line ratings, weather, costs
- Energy Storage
 - Round-trip efficiency, degradation, weather, distributed energy storage, costs
- Loads
 - Weather, timing and changing mix of loads (electrification of transportation, industry, home appliances)

Results of the modeling will be used, in part, to achieve the following:

- Quantify desired reliability metrics (e.g., loss of load expectation (LOLE), expected unserved energy (EUE), effective load carrying capability (ELCC), planning reserve margin, cost) to assist in determining the optimal resource portfolio for a given region or service area
- Identify the most important modeled parameters and processes that can be further characterized to improve the modeling and determination of the optimal resource portfolio

Questions? Please contact Cliff Ho (Clifford_Ho@heinrich.senate.gov, 202-617-0609) or Anaïs Borja (Anaïs_Borja@heinrich.senate.gov, 202-430-7880).

¹ The American Clean Power Association filed a petition with the Federal Energy Regulatory Commission to hold a technical conference on this topic ([Utility Dive, Aug 25, 2023](#))