



Section 8008 Voluntary Model Pathways for Modernizing the Electric Grid

Recommendations for the U.S. Department
of Energy

OCTOBER 2022

Executive Summary

The ability to transform the electric grid to meet resilience, reliability, decarbonization, and equity goals will require coordinated strategies beyond those that exist today. Policymakers, regulators, industry partners, market participants, and energy consumers must all be engaged, and coordination efforts must be streamlined to allow policymakers to focus on priorities across the industry. Policy frameworks must enable collaborative efforts that advance modernization to meet consumer needs, identify barriers for underserved communities, and deliver benefits while, at the same time, adhering to industry standards for security and reliability.

Section 8008(a)(3) of the Consolidated Appropriations Act of 2021 aims to support this goal and requires that the U.S. Department of Energy (DOE), in consultation with a Steering Committee, initiate the development of voluntary model pathways for modernizing the electric grid. The Electricity Advisory Committee (EAC) was designated as the appropriate body to serve as the Steering Committee, with additional representation from the Federal Energy Regulatory Commission and DOE National Laboratories.

The goal of this effort is to outline a path forward, including priorities that will shape the technical discussions and solutions contributing to a grid which meets the needs of the future. It acknowledges the complex inter-state as well as state-federal jurisdictional boundaries and at the same time respecting that the North America electric grid is interconnected. While the recommendations on a path forward do not prescribe specific technical solutions, they do anticipate driving and/or accelerating necessary conversations that will lead to more informed voluntary policy decisions.

Voluntary model policy pathways will provide a wide range of policymakers with targeted resources that facilitate a rational transition to a decarbonized, resilient electric grid while ensuring safe, reliable power and equitable and just outcomes.

Findings

The Steering Committee undertook a scenario-based approach in order to understand the most important matters to be addressed in the pathways discussion. Key findings are:

- Greater **industry coordination** across the transmission, distribution, and behind-the-meter domains as well as customer engagement is needed for a reliable and efficient energy transition.
- A **robust and well-planned transmission system** is necessary to support a cost-efficient and equitable energy transition to more renewable resources and electrification.

- A **distribution network** that better enables: distributed energy resources and energy storage utilization; evolving business, industry, and market structures; convergence with transportation and building infrastructures; and electrification. This includes a distribution network that supports the interoperability and the efficient addition of centralized and decentralized assets.
- Incorporation of **flexibility and resilience** into grid operations and design is necessary.
- A glide path to the grid of the future requires the cost and availability of **new technologies** encourage widespread adoption.

Recommendations

The Committee developed the following recommendations to forge a path forward. While the recommendations are meant to address impediments to a more robust energy future, it is important to note that many important and relevant conversations are already underway. To that end, the committee recommends the following, in order of priority:

1. Coordination

- a. Develop and vet operational coordination framework guidelines that consider the roles and responsibilities of all participants and system requirements under all situations.
- b. Develop a process that provides an avenue for industry leaders, regulators and policy makers to ascertain where critical conversations are occurring on topics to prevent duplication of efforts across the industry.
- c. Consider and educate industry leaders on the grid demand and utilization impacts of the energy transition to zero carbon emissions. This should include consideration of the pace of carbon footprint changes in other sectors as well as the impacts on the load factor.

2. Transmission Planning

Develop a holistic, higher-level planning capability at a regional, interregional, bulk power system and/or national level that evaluates and incorporates plausible future scenarios and potential reliability and economics options to inform state and regional planners and policymakers.

3. Distribution System Planning

Develop a shared understanding of strategies for building out distribution systems to meet demands. Provide technical assistance where required to facilitate reliable, fair and equitable integrated distribution planning processes.

4. Resilience

Establish formal methods for defining and incorporating resilience into integrated planning processes that can balance priorities across several objectives.

5. Flexibility

Review and develop gap analyses across the industry on flexibility metrics needed to assure reliability and a future with more intermittent and other resources. Develop a common language and business case for needed assets and educate key decisions makers.

6. Advanced Technological Capabilities

Increase efforts to educate regulators and address interoperability gaps/standards. This also includes providing technical assistance where required, as well as educating utilities (and their regulators) on how advanced technologies have been used reliably in the US and abroad.

These recommendations can apply to one or many of the findings discussed. The recommendations boil down to increased levels of coordination, education, and technical support from DOE to educate and assist policy advisors and regulators, who can in turn make more informed decisions to advance the necessary policies that will lead to a transformed, resilient, and reliable electric grid for consumers.