

POSITION STATEMENT

Technology Evolution and Electric Market Reform

Approved by the IEEE-USA
Board of Directors (20 November 2022)

Introduction and Rationale

Many new technologies have been introduced in recent years that have the potential to reduce the cost of electricity to consumers, improve grid reliability and resilience, enhance national security, and protect the environment. Integration of these technologies into the existing electric grid and related wholesale and retail electric markets depends a great deal upon a regulatory structure that recognizes both the opportunities and the potential disruptive effects of the technologies.

The current electricity regulatory and market structure in the US is highly fragmented. Operation of wholesale electric markets is under federal jurisdiction. Retail electric markets are under state jurisdiction. There are local and regional variations in technical requirements, business rules and incentives throughout the US. While no single set of specific recommendations will apply universally across the country, all the markets must nevertheless evolve and adapt. When regulating authorities and rules committees use existing administrative processes but fail to recognize the diversity and complexity of the markets, resulting policies or regulations may have unintended consequences.

Recommendations

Applying certain core principles may be beneficial as new technologies alter the electric landscape. Implementing the core principles presented by the recommendations would involve a great number of players but the core principles are intended to provide a framework that each regulating authority or rules committee can use to underlie the adaptation of their market rules as the grid technology evolves. To that end, IEEE-USA provides the following recommended core principles to help improve the reliability and efficiency of the nation's electric energy markets:

Harmonize regional wholesale and local retail market rules in a complementary manner to support reliability and innovation: Regional wholesale electric markets and locally regulated retail markets do not operate in isolation from each other. Market rules at both levels must promote both reliability and economic efficiency to ensure effective and efficient dispatch of generation in real-time and to anticipate and relieve transmission constraints when they arise. Harmonized markets also provide a better framework for identifying and implementing technology opportunities.

Improve price transparency in both regional wholesale markets and at the retail level: Without accurate price signals¹, markets do not work well, efficiency is not optimized, and technical innovation may be improperly valued. Electric markets are no different than others in this respect. Market pricing should provide signals that encourage efficiency, reduce cost, and maintain reliability. Where transparent regional wholesale electric markets do not exist, states should reconsider their formation or create local retail pricing mechanisms to achieve comparable price transparency as currently provided by RTOs using Locational Marginal Pricing.

Use stakeholder processes² in wholesale markets to evolve market rules. Respect existing reliability standards processes: Stakeholder processes should continue or expand as needed consistent with national, regional, and state requirements. These stakeholder processes can help minimize unintended consequences arising from implementation of new technology and related regulatory actions. Regulators and policy makers should fully utilize and not arbitrarily bypass these stakeholder processes to inform proposed changes in regulations affecting either reliability or market operation.

Explicitly consider unintended market consequences when promulgating not only market rules, but also environmental and other regulations: While regulations may be based upon good and desirable public policy objectives, they can have unintended consequences in markets. A wide range of regulatory decisions by policymakers affects deployment of new technology. Regulatory entities should consider how proposed regulations will affect electric price formation, efficiency of grid operation, and the behavior of market participants to help minimize unintended consequences including adverse reliability, environmental or business outcomes.

This statement was developed by the IEEE-USA Energy Policy Committee and represents the considered judgment of a group of U.S. IEEE members with expertise in the subject field. IEEE-USA advances the public good and promotes the careers and public policy interests of the nearly 150,000 engineering, computing and allied professionals who are U.S. members of the IEEE. The positions taken by IEEE-USA do not necessarily reflect the views of IEEE, or its other organizational units.

¹ A **price signal** is information conveyed to consumers and producers, via the **price** charged for a product or service, which provides a **signal** to increase or decrease supply or demand.

² Organizations such as NERC and RTOs have defined formal processes for engagement. Stakeholders are anyone with a stake in operation or financial outcome related to operation of the electric grid. Simply stated they are producers, users, buyers, sellers, and grid operators. Stakeholders also participate in regulatory proceedings and litigation.