Testimony of Mason W. Emnett
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Federal Energy Regulatory Commission
Before the Technology and Innovation Subcommittee
Of the Committee on Science and Technology
United States House of Representatives

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Mr. Chairman and members of the Subcommittee:

My name is Mason Emnett, and I am the Associate Director of the Office of Energy Policy and Innovation at the Federal Energy Regulatory Commission (Commission). I appear before you as a staff witness; my testimony does not necessarily represent the views of the Commission or any individual Commissioner. Thank you for the opportunity to appear before you today to discuss the progress of standards development towards smart grid interoperability and modernization of the nation's electricity transmission and distribution system.

The Chairman of the Commission, Jon Wellinghoff, most recently testified about the benefits of smart grid technologies and the status of the agency's work on smart grid standards on March 23, 2010, before the Energy and Environment Subcommittee of the House Committee on Energy and Commerce. Today, I will focus on the Commission's efforts to support the development of smart grid standards, its role in adopting standards, and its work to incentivize investment in smart grid technologies.

Development of Smart Grid Standards

In the Energy Independence and Security Act of 2007 (EISA), Congress enacted several requirements related to development of a smart grid. Among other things, EISA directs the National Institute of Standards and Technology (NIST) to coordinate the

development of a framework to achieve interoperability of smart grid devices and systems. In furtherance of this responsibility, NIST has engaged in significant outreach to identify standards for potential inclusion in a smart grid interoperability framework, leading to the publication in January 2010 of the Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0 (Framework).

To provide input into the development of the NIST Framework, the Commission in July 2009 issued a Smart Grid Policy Statement that, among other things, discussed smart grid functions and characteristics that could help address challenges to the reliable operation of the transmission system. In response to the need for action on these challenges, the Commission identified areas that deserved high priority in the smart grid standards development process. These areas include two cross-cutting issues, system security and inter-system communication, and four key grid functionalities: wide-area situational awareness, demand response, electric storage and electric vehicles.

The Commission explained that addressing these priorities would help to expedite the development of functions that are important to federal energy policy. For example, wide-area situational awareness will provide tools that can improve reliability. Demand response and electric storage will support initiatives that have emerged in many states such as integrating renewable generation to permit utilities to meet state-mandated renewable portfolio standard requirements. Electric vehicles will help reduce our dependence on foreign oil, and will also have favorable environmental impacts. NIST embraced these priorities in drafting its Framework, and added two additional priorities for standards: advanced metering and distribution system automation.

In order to ensure broad support for these priorities, staff from NIST and the Commission have engaged in individual and coordinated outreach with standards development organizations from the telecommunications, internet, and power industries to discuss framework development and the respective roles of each agency in the

standards development process. NIST also released a draft of its Framework in September 2009 to provide an opportunity for public comment and collaboration with the Commission prior to finalizing the document. Based on this feedback, NIST's Framework identified 75 interoperability standards that are applicable, or are likely applicable, to the ongoing development of smart grid technologies and applications. The NIST Framework also outlines the priority areas identified by both the Commission and NIST in the smart grid standards development process. In particular, sixteen Priority Action Plan areas were created to address gaps in standards that are critical for the interoperability of the smart grid.

In addition, NIST has provided for continuing stakeholder input into the smart grid standards development process through formation of the Smart Grid Interoperability Panel (SGIP), a public-private partnership of 22 stakeholder groups supporting NIST in the ongoing coordination, acceleration and harmonization of standards development for the smart grid. The Governing Board of this Panel was elected and tasked with maintaining a broad perspective regarding the NIST interoperability framework and providing recommendations to NIST. Within the SGIP are two standing committees and one permanent working group to support NIST on particular issues. One standing committee has responsibility for outlining the architecture needed to realize the smart grid vision. The second committee addresses testing and certification of vendor products and systems for conformance with smart grid standards and for interoperability.

The working group within the SGIP addresses matters related to the security of the smart grid, including reviewing standards to determine the level of cyber security present and determining whether each identified standard meets appropriate security requirements. This working group has released two drafts of an Interagency Report on Smart Grid Cyber Security Strategy and Requirements in September 2009 and February 2010, and is currently reviewing comments on the latest draft. The report addresses risks,

vulnerabilities, threats, and impacts, and provides guidance related to smart grid cyber security.

Although the Commission is not a formal member of the SGIP or its Governing Board, Commission staff has attended meetings of both, as well as many meetings regarding work on the Priority Action Plans. Commission staff is also actively involved in the work of the cyber security working group, as the Commission recognizes that inadequate cyber security could threaten the health of the bulk power system.

Adoption of Standards by the Commission

As defined by EISA, the Commission's responsibility to review a smart grid interoperability standard is triggered once the Commission is satisfied that NIST's work has led to sufficient consensus. At such time, the Commission is directed to institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to ensure smart grid functionality and interoperability in interstate transmission of electric power and regional and wholesale electric markets.

The Commission explained in the Policy Statement that it understood this mandate to give it authority to adopt a standard that will be applicable to all electric power facilities and devices with smart grid features, including those at the local distribution level and those used directly by retail customers, as long as the standard is necessary for the purpose identified in EISA. The Commission noted, for example, that two-way communications are a distinguishing characteristic of smart grid devices on both the transmission and distribution systems. Such two-way communication capability is essential to the smart grid vision of interoperability, allowing the transmission and distribution systems to communicate with each other and affecting the security and functionality of each other. Consequently, the Commission found that EISA grants it the authority to adopt standards that relate to distribution facilities and devices deployed at

the distribution level, if the Commission finds that such standards are necessary for smart grid functionality and interoperability in interstate transmission of electric power, or in regional and wholesale electric markets.

In addition, the Commission stated in the Policy Statement that it will require a demonstration of sufficient cyber security protection for a standard to be adopted. This consideration is consistent with EISA's inclusion of cyber security as a characteristic of a smart grid,[1] EISA's identification of cyber security as a "smart grid function,"[2] and EISA's requirement for the Department of Energy (in consultation with the Commission, the Department of Homeland Security, and the Electric Reliability Organization certified by the Commission) to study and report on the potential impact of deployment of Smart Grid systems on the security of the Nation's electricity infrastructure.[3]

The Commission noted in the Policy Statement, however, that adoption by the Commission of a standard under EISA does not make the standard mandatory, nor does EISA give the Commission authority to require the development of a smart grid standard. To the extent the Commission might wish to make any smart grid standards mandatory, its authority to do so must derive from other statutory authority, such as the Federal Power Act. For example, the Commission has the authority under section 215 of the Federal Power Act to approve and enforce reliability standards developed by the North American Electric Reliability Corporation. The Commission also has the authority under sections 205 and 206 of the Federal Power Act to establish the rates, terms and conditions of wholesale sales and interstate transmission of electricity, including the incorporation into federal regulations of business practice standards developed by the North American Energy Standards Board. Although there is the potential for some overlap in the adoption

[1] EISA section 1301(2).

[2] EISA section 1306(d)(5).

[3] EISA section 1309(b).

of smart grid standards under EISA and review of reliability or business practice standards under the Federal Power Act, these sources of jurisdiction are distinct and the Commission has interpreted EISA as not changing the scope of its jurisdiction.

The Commission also explained in the Policy Statement that adoption of a smart grid standard by the Commission under EISA does not alter any state jurisdiction that may exist to require compliance with smart grid standards. To that end, the Commission has recognized that states have an interest in the functionalities of smart grid technologies and encouraged states to actively participate in the standards development process to ensure that their perspectives are represented. The Commission expressed in the Policy Statement an expectation that its adoption of national standards should enhance, not limit, the policy choices available to each state.

To support an active dialogue with the states on these issues, the Commission has formed a federal-state collaborative with the National Association of Regulatory Utility Commissioners to address issues related to smart grid and demand response. This body has received substantial input from a variety of smart grid stakeholders on a range of issues, including smart grid interoperability standards, consumer access to and privacy of data, potential smart grid benefits, and potential new business models and regulatory approaches. By coordinating consideration of these issues, the Collaborative provides a forum to identify how smart grid development can benefit consumers and to address the concerns of regulators regarding grid security and functionality.

Incentivizing Smart Grid Investment

The Commission also has sought to encourage the development of smart grid applications by providing rate incentives to early-adopters of smart grid technologies. In its Policy Statement, the Commission established an interim rate policy to apply during the period prior to adoption of interoperability standards by the Commission. The

Commission expressed concern that waiting for all technical issues to be resolved before beginning investment in smart grid deployment would frustrate the development of smart grid standards. The Commission concluded that smart grid resources deployed with appropriate protections during the interim period prior to the Commission's adoption of interoperability standards could instead increase our body of knowledge and ultimately assist the standards development process.

During this period, the Commission will allow recovery of Commission-jurisdictional smart grid-related costs if four demonstrations are made. These four demonstrations are (1) the smart grid facilities will advance the policy and goals of section 1301 of EISA, (2) the smart grid facilities will not adversely affect the reliability and cybersecurity of the bulk-power system, (3) the applicant has minimized the possibility of stranded investment in smart grid equipment, and (4) the applicant agrees to provide certain information to the Department of Energy Smart Grid Information Clearinghouse.

With regard to the fourth demonstration, the Commission recognizes the benefit of DOE implementing a Smart Grid Information Clearinghouse to collect information about the results of the smart grid grant and demonstration programs that have been funded by the *American Recovery and Reinvestment Act of 2009*. This information can help federal and state regulators as they make decisions on smart grid filings from electric utilities, providing knowledge gained from pilot projects, lessons learned about the impact of investments, and best practices. Commission staff has worked with DOE and other stakeholders to help define the precise data that should be collected, and the Commission has sought to supplement that data by requiring applicants for rate recovery of smart grid costs to provide relevant information to the Clearinghouse.

Conclusion

In conclusion, the smart grid effort has benefited from the active participation of many industry segments in NIST's standards development process. The Commission remains committed to continued cooperation among NIST, other federal agencies, state regulators, industry representatives, consumer representatives, and other interested entities in order to realize the successful deployment of innovative, efficient and secure smart grid technologies.

Thank you again for the opportunity to appear before you today. I would be happy to answer any questions you may have.