



March 23, 2009

## FERC Issues “Smart Grid” Proposed Policy Statement and Action Plan

On March 19, 2009, the Federal Energy Regulatory Commission (FERC) issued a Proposed Policy Statement and Action Plan<sup>1</sup> articulating its policies and near-term priorities to help modernize the interstate transmission system through the development of “smart grid”<sup>2</sup> technologies. In the Proposed Policy Statement, FERC sets forth proposed processes for adopting smart-grid interoperability standards developed through the work of the National Institute of Standards and Technology (NIST), standards development organizations, and industry participants. FERC suggests that these standards be consistent with FERC’s requirements regarding reliability, cybersecurity, and inter-system communication and coordination, as well as promote the development of four smart-grid functionalities (wide-area situational awareness, demand response, electric storage, and electric transportation). FERC also proposes an interim rate policy, which would apply until the necessary interoperability standards are adopted, to permit recovery of the costs of smart grid investments, provided that the applicants comply with FERC’s requirements regarding reliability and cybersecurity, minimize the risk of stranded costs, and provide specified information to the Department of Energy (DOE).

FERC requests comments on the Proposed Policy Statement. Such comments are due May 11, 2009, *i.e.*, 45 days after publication of the Proposed Policy Statement in the *Federal Register*.

### I. Background

FERC explains that its interest and responsibilities regarding smart grid development derive from (1) its authority over the rates, terms and conditions of transmission and wholesale sales in interstate commerce under Section 205 of the Federal Power Act (FPA), (2) its responsibility for approving and enforcing mandatory reliability standards for the bulk-power system in the United States under Section 219 of the FPA, and (3) its responsibilities under Section

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1305 of the Energy Independence and Security Act of 2007 (EISA)<sup>3</sup> to adopt smart-grid interoperability standards and protocols. Specifically, Section 1305(a) of EISA directs NIST to coordinate the development of a “framework that includes protocols and model standards to achieve the interoperability of smart grid devices and systems.”<sup>4</sup> Section 1305(d) provides that, once FERC is satisfied that NIST’s work on particular protocols or standards has led to “sufficient consensus,” FERC is to “institute a rulemaking proceeding to adopt such standards and protocols as may be necessary to insure smart-grid functionality and interoperability in interstate transmission of electric power, and regional and wholesale electricity markets.”<sup>5</sup>

## II. Smart Grid Interoperability Standards Development

FERC intends to implement its responsibilities for adopting the interoperability standards as follows. First, NIST will recommend standards that have resulted from NIST’s coordination with standards development organizations<sup>6</sup> and technical experts, and FERC will initiate rulemakings as individual or suites of standards achieve sufficient consensus. Further, FERC will take an active role in helping to ensure that the participants in the NIST process effectively prioritize and sequence future standards development efforts. FERC invites comments as to what factors it should consider in determining whether there is “sufficient consensus” on interoperability standards, how FERC should identify and stage the adoption of successive waves of interoperability standards, and whether there should be some formal process for parties to seek FERC guidance if negotiations on certain interoperability standards reach an impasse.

FERC states that it is particularly interested in the development of standards to address challenges to the FERC-jurisdictional bulk-power system and proposes to accelerate certain aspects of the interoperability standards process in light of the substantial funding for smart grid technologies in the American Recovery and Reinvestment Act (ARRA).<sup>7</sup> The Proposed Policy Statement does not mandate that NIST or regulated entities use any particular standards, but it does identify a number of existing standards that should be further developed or harmonized in order to adapt or extend them to address FERC’s priorities, as described below.

### A. Cybersecurity and Reliability

According to FERC, the fact that a smart grid would permit two-way communication between the electric system and a much larger number of devices located outside of controlled utility environments requires that even more attention be given to the development of cybersecurity standards. Therefore, FERC proposes to advise NIST to undertake the necessary steps to assure that each standard and protocol that is developed as part of its interoperability framework is consistent with the overarching cybersecurity and reliability mandates of EISA, as well as existing reliability standards approved by FERC pursuant to Section 215 of the FPA. Further, FERC proposes to make consistency with cybersecurity and reliability standards a precondition to its adoption of smart grid standards through FERC rulemaking proceedings.



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FERC proposes two overarching principles regarding security. First, an entity subject to FERC-approved reliability standards, such as the Critical Infrastructure Protection Reliability Standards, must ensure that it maintains compliance with those standards during and after the installation of smart grid technologies.<sup>8</sup> Second, to the extent that they could affect the reliability of the bulk-power system, smart grid technologies must address, the following considerations: (1) the integrity of data communicated; (2) the authentication of the communications; (3) the prevention of unauthorized modifications to smart grid devices and the logging of all modifications made; (4) the physical protection of smart grid devices; and (5) the potential impact of unauthorized use of these smart grid devices on the bulk-power system.

### **B. Inter-System Communication and Coordination**

In the Proposed Policy Statement, FERC cites an urgent need to further develop a common semantic framework and software models for enabling effective communication and coordination across inter-system interfaces. FERC proposes to identify standards for common information models for inter-system interfaces as a high priority for accelerated development, in particular, the core group of “Common Information Model” standards initiated by the Electric Power Research Institute. FERC does not mandate that NIST or regulated entities use these particular standards; instead, it identifies these and other existing standards that should be further developed or harmonized in order to adapt or extend them to facilitate communication and coordination.

### **C. Priority Functionalities**

FERC also seeks comments on the following four smart-grid functionalities that its preliminary analysis indicates will be most significant in addressing the bulk-power system challenges and should be given priority in the standards development process.

#### **1. Wide-Area Situational Awareness**

“Wide-area situational awareness” is the visual display of interconnection-wide system conditions in near real time at the reliability coordinator level and above. FERC suggests that the development of this functionality can rely on the NASPInet work undertaken by the North American SynchroPhasor Initiative (NASPI), with appropriate cybersecurity protections, and that regional transmission organizations should take a leadership role in coordinating the NASPI work with the member transmission operators. In addition, FERC proposes that the NIST process should identify the software and systems that would be most useful to system operators in addressing transmission congestion and reliability

#### **2. Demand Response**

FERC suggests three areas in which NIST should focus its efforts in developing interoperability and communication standards for demand response. First, a series of demand response “use cases”<sup>9</sup> should be



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developed, with a focus on use cases for dispatchable demand response load reductions to address loss or unavailability of variable renewable generation resources and the potential for dispatchable demand response to increase power consumption during over-generation situations. Second, FERC encourages efforts to standardize the interfaces between systems on the customer premises and utility systems, such as the Open Automated Demand Response standard under development for the interface between the utility and large commercial customers. Finally, FERC encourages NIST and industry to work together to harmonize the various standards for customer meters.

### 3. Electricity Storage

FERC observes that the more widespread deployment of electricity storage technologies would present an important means of addressing some of the difficult issues facing the electric industry. FERC notes that there are a number of new types of electricity storage technology under development, and that while they have not yet been widely deployed, it may nevertheless be appropriate to encourage the identification and standardization of electricity storage use cases and suggests that existing standards can be the starting point for interoperability standards development for distributed energy resources.

### 4. Electric Transportation

FERC notes that if new electric transportation options such as plug-in hybrids become widely adopted in the near future, maintaining the reliable operation of the bulk-power system will require some level of control over when and how electric cars draw electricity off of the system. FERC encourages NIST to focus on the development of appropriate standards, or extensions to relevant existing standards, to provide at least the minimum communications and interoperability requirements that are necessary to permit some ability for distribution utilities to facilitate vehicle charging during off-peak load periods, such as the Society of Automotive Engineers' draft standards that address communications and price signals for demand response.

## III. Interim Rate Policy

Finally, FERC proposes an interim rate policy for recovery of the costs of smart grid investments. Specifically, FERC proposes to accept rate filings, including single issue rate filings, submitted under Section 205 of the FPA to recover the costs of smart grid deployments involving jurisdictional facilities, provided that the following showings are made. First, an applicant must show that the reliability and security of the bulk-power system will not be adversely affected by the deployment at issue. The applicant would have to show how it will maintain compliance with these standards during and after the installation of smart grid technologies, so that the reliability and security of the bulk-power system is not affected. Also, the applicant must address data integrity, authentication, etc. as set forth above in Section II.A.

Second, the filing must show that the applicant has minimized the possibility of stranded investment in smart grid equipment by designing for the ability to be upgraded. In general, this means that applicants



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should follow the principles of the Gridwise Architecture Council Decision-Maker's Interoperability Checklist,<sup>10</sup> in particular (1) reliance to the greatest extent practical on existing, widely adopted and open interoperability standards; and (2) where feasible, reliance on systems and firmware that can be securely upgraded readily and quickly.

Third, FERC proposes to require the applicant to share information with the DOE Smart Grid Clearinghouse, as provided for in the ARRA. This information includes any internal or third party evaluations, ratings and reviews, and detailed data and documentation regarding any improvements in the measurement of demand response resources, increases in the quantity of demand response resources, improvements in the ability to integrate variable renewable generation resources, greater system efficiencies through reduction of transmission congestion and loop flow, support for distributed energy resource infrastructure and enhanced utilization of energy storage.

FERC also proposes to accept requests for incentive rate treatments such as accelerated depreciation and abandonment authority (whereby an applicant is assured of recovery of abandoned plant costs if the project is abandoned for reasons outside the control of the public utility) specifically tied to smart grid deployments under FERC's FPA Section 205 authority.

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<sup>1</sup> *Proposed Policy Statement and Action Plan*, 126 FERC ¶ 61,253 (2009) (Proposed Policy Statement).

<sup>2</sup> According to FERC, "smart grid" development involves the application of digital technologies to the grid to enable real-time coordination of information from generation supply resources, demand resources, and distributed energy resources, which will bring new efficiencies to the electric system through improved communication and coordination between utilities and with the grid, translating into savings in the provision of electric service. The smart grid concept envisions a power system architecture that permits two-way communication between the grid and essentially all devices that connect to it, ultimately all the way down to large consumer appliances, which will be able to respond automatically to customer-selected price or dispatch signals delivered over the smart grid infrastructure.

<sup>3</sup> Pub. L. No. 110-140, 121 Stat. 1492 (2007).

<sup>4</sup> EISA § 1305(a) (to be codified at 15 U.S.C. § 17385(a)). EISA contemplates that, in developing these protocols and standards, NIST will solicit "input and cooperation" from FERC, the DOE's Office of Electricity Delivery and Energy Reliability, the Smart Grid Task Force (established pursuant to Section 1303 of EISA), and "other relevant Federal and State agencies," as well as from interested private entities "including but not limited to" the Gridwise Architecture Council, IEEE (formerly known as the International Electrical and Electronics Engineers), the North American Electric Reliability Corporation (NERC), and the National Electrical Manufacturer's Association. *Id.*

<sup>5</sup> EISA § 1305(d) (to be codified at 15 U.S.C. § 17385(d)).

<sup>6</sup> FERC notes that the EISA specifically names the IEEE and the National Electrical Manufacturers Association, and that other relevant organizations include the International Electrotechnical Commission, the American National Standards Institute,

Deutsches Institut für Normung, the International Organization for Standardization, and the International Telecommunication Union.



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<sup>7</sup> Pub. L. No. 111-5, Title IV, Subpart A (2009). ARRA includes \$4.5 billion for the Smart Grid Investment Program, a federal matching grant program for regional demonstration projects to address the transmission needs of different geographical regions and for states to implement smart grid demonstration programs. See K&S Client Alert: Federal Stimulus Act: Provisions Affecting the Energy Sector.

<sup>8</sup> FERC notes that many smart grid installations will need to be on the responsible entity's list of critical assets to be protected under the NERC Critical Infrastructure Protection Reliability Standards.

<sup>9</sup> According to FERC, the "use case" is a concept from the software and systems engineering communities whereby a developer, usually in concert with the end user, attempts to identify all of the functional requirements of a system. Each "use case" essentially describes how a user will interact with a system to achieve a specific goal.

<sup>10</sup> See *Gridwise Architecture Council Decision-Maker's Interoperability Checklist Draft Version 1.0*, available at: [http://www.gridwiseac.org/pdfs/gwac\\_decisionmakerchecklist.pdf](http://www.gridwiseac.org/pdfs/gwac_decisionmakerchecklist.pdf).

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