

Smart Grid Standards Adoption:  
Staff Update and  
Recommendations

Item No. A-3  
July 15, 2010

Mr. Chairman, Commissioners, good morning. Today we are pleased to update the Commission on smart grid developments and present staff recommendations for the process to adopt smart grid interoperability standards.

Since the Commission's issuance of the July 2009 Smart Grid Policy Statement, staff has attended many of the National Institute of Standards and Technology (NIST) conferences and worked closely with NIST to gain a better understanding of NIST's roles and responsibilities in developing standards, and has met with industry to communicate Commission priorities and emphasize the importance of industry participation in the standards development process. Based on these interactions, staff has developed several recommendations for the way in which the Commission can discharge its responsibilities pursuant to Energy Independence and Security Act Section 1305(d) to adopt smart grid interoperability standards. Our recommendations are based on the best information to date. As the standards development process continues to evolve, staff may recommend to the Commission additional or revised processes.

In today's presentation, we give a brief review of the requirements of the EISA, the Commission's Policy Statement, and NIST activities as relevant to the staff recommendations for the process by which the Commission should adopt smart grid interoperability standards. We then turn to staff's recommendations.

## EISA Section 1305

- FERC's role, section 1305(d)
  - "At any time after the Institute's work has led to sufficient consensus in the Commission's judgment, the Commission shall 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."

Section 1305 of EISA defines the roles of both FERC and NIST as they relate to the development and adoption of smart grid standards. Subsection 1305(d) defines the Commission's role. This subsection reads as follows:

"At any time after the Institute's work has led to sufficient consensus in the Commission's judgment, the Commission shall 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."

## The Smart Grid Policy Statement

- Priority areas
  - Cross cutting issues
    - System security (cyber and physical security) standards development and harmonization
    - More effective communication and coordination across inter-system interfaces
  - Key smart grid functionalities
    - Wide-area situational awareness, demand response, energy storage, and plug-in electric vehicles

On July 16, 2009, the Commission issued a Smart Grid Policy Statement that, among other things, identified cross-cutting issues and key grid functionalities that deserve high priority in the development of smart grid standards. The two cross-cutting issues are system security and inter-system communication. The four key grid functionalities are: wide-area situational awareness, demand response, electric storage and electric vehicles. NIST and the smart grid community have accepted the Commission's prioritization and augmented it with two additional priority areas: advanced metering and distribution system automation.

## NIST Work Since the Policy Statement

- Issuance of Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0
- Creation of Smart Grid Interoperability Panel

Following a year of outreach and opportunities for public comment, NIST issued in January 2010 a Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0 (Framework). The Framework identified 75 interoperability standards that are applicable, or are likely applicable, to the ongoing development of smart grid technologies and applications. The Framework also identified priority action plans for addressing gaps in smart grid standards needed to fulfill the priorities established by NIST and the Commission.

As NIST moves forward to address these gaps and the development of other smart grid standards, it will rely on the Smart Grid Interoperability Panel (SGIP), a public-private partnership representing a broad range of stakeholders, many of whom have not previously been involved in the electric industry.

Importantly, and consistent with the Commission's Policy Statement that cyber-security issues be a priority, a Cyber Security Working Group (CSWG) was established within the SGIP. That group will review mature, applicable standards identified in the NIST Framework to determine the level of cyber security present and whether each identified standard meets appropriate security requirements.

## Staff Recommendations for Processing Standards

- Notification via letter to the Commission by NIST
- NIST posts standards as ready for consideration
- Commission initiates rulemaking process

Based on recent discussions with NIST staff, we expect that the first group of standards may be available for consideration by the Commission by late summer. This group may include emerging technology standards that impact both transmission and distribution level facilities.

When NIST considers a group of standards ready for consideration by the Commission, those standards will be posted on the NIST smart grid website and NIST will inform the Commission by letter of the posting.

Staff recommends that the Commission at that time initiate a rulemaking proceeding, as directed in EISA, to consider the standards identified by NIST as ready for consideration. Because the first group of standards is not likely to address all key priorities identified by NIST and the Commission, Staff anticipates continuing development of new standards and modification to existing standards to address these priorities, with additional notifications from NIST on a regular basis. As such, staff recommends that the Commission periodically initiate rulemaking proceedings in response to postings of new smart grid interoperability standards by NIST.

As part of such a rulemaking proceeding, staff recommends that the Commission propose to adopt all standards identified by NIST as ready for the Commission's consideration. Staff also recommends that the Commission seek public comment on issues related to those standards, including whether each standard satisfies EISA subsection 1305(d).

## Staff Recommendations on Criteria for Standards

- Determinations to be addressed in a rulemaking for each standard
  - Whether sufficient consensus has been reached;
  - Whether the standard is necessary for smart grid functionality and interoperability in interstate transmission of electric power and regional and wholesale electricity markets; and
  - Whether there are known cyber security issues with the standard.

With regard to the evaluation of standards in a rulemaking proceeding, staff has identified three areas of consideration for each standard consistent with subsection 1305(d) of EISA. These are: demonstration of sufficient consensus; demonstration that the standard is necessary for smart grid functionality and interoperability in interstate transmission of electric power and regional and wholesale electricity markets; and a showing of no known cyber security risk.

## Sufficient Consensus

- In general, requirements of the NTTAA should be met
  - Consideration of standards from voluntary, private consensus standards bodies
  - Openness, balance of interest, due process, an appeals process, and a consensus process
  - ANSI accreditation may establish NTTAA compliance

The first criterion, sufficient consensus, is a threshold criterion; EISA instructs the Commission to use its judgment to determine if sufficient consensus has been reached as a result of NIST's process.

Staff recommends that the Commission generally rely on the National Technology Transfer and Advancement Act (NTTAA) as guidance in determining sufficient consensus, along with comments received in the rulemaking proceeding. The NTTAA is the principal Federal law regarding the use of standards by the Federal government.

The implementing regulations for the NTTAA state that voluntary consensus bodies are defined by the attributes of openness, balance of interest, due process, an appeals process, and a consensus process. In many cases, standards development processes accredited by the American National Standards Institute (ANSI) may establish compliance with the NTTAA.

## Functionality and Interoperability for Transmission & Markets

- For functionality and interoperability, rely on:
  - Abstracts provided by NIST to aid in regulatory review of each standard posted for consideration
  - Previously published documents
- For smart grid operations in “interstate transmission...and regional and wholesale markets,” consider public comments

With regard to whether a standard is necessary for smart grid functionality and interoperability, staff recommends that the Commission generally rely on reports and other documents prepared by NIST for this demonstration. NIST has stated that it intends to coordinate the development of additional technical information on individual standards and specifications to support their evaluation and potential use for regulatory purposes; this technical information will be available on NIST’s public website. Staff has worked closely with NIST staff to ensure that this supplementary information provides information necessary for the Commission’s rulemaking process. Documents provided by the SGIP may provide additional information regarding these issues for consideration in future Commission rulemaking proceedings.

As mentioned earlier, staff recommends that the Commission propose to adopt all standards identified by NIST as ready for consideration. Staff also recommends that the Commission seek comments in the proposed rule on whether each standard is necessary for the operation of the smart grid in “interstate transmission of electric power, and regional and wholesale electricity markets” and consider these comments as a basis for the final determination on this matter.



## Cyber Security Review


- Rely primarily on the work of the Cyber Security Working Group
  - Forthcoming CSWG Interagency Report on smart grid cyber security will include guidelines
- The Commission can also use staff's own assessment

The Commission also noted in the Policy Statement that “[b]ecause cybersecurity becomes a concern whenever one system communicates with another, it is important to focus from the outset on cybersecurity as an essential feature of the design of interoperability standards.” [P 40]. NIST responded to this inherent relationship of interoperability and cyber security by establishing the CSWG.

The CSWG is composed of security professionals and representatives from federal and state agencies, private security firms, and the information technology, communications and power industries. It has been working for a year on developing cyber security requirements and guidelines for the smart grid. It is scheduled to issue a final report by the end of July on the cyber security needs for the smart grid. The CSWG will analyze individual standards using the report's cyber security requirements. This analysis will become part of the technical information that will be posted on NIST's public website.

Staff recommends that the Commission look to the work of the CSWG, as well as rulemaking comments, to inform its consideration of cyber security measures. The Commission may also choose to conduct a staff cyber security analysis. In addition, NERC will continue to play an important role with respect to cyber security measures and concepts.

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As the smart grid standards development process continues to evolve, we will keep the Commission apprised, including whether there is the need for additional or revised processes from what we recommend today. This concludes our presentation; we are happy to answer any questions.