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NIST Identifies Five "Foundational" Smart Grid Standards

For Immediate Release: October 7, 2010

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The Commerce Department's National Institute of Standards and Technology (NIST) has advised the Federal Energy Regulatory Commission (FERC) that it has identified five "foundational" sets of standards for Smart Grid interoperability and cyber security that are ready for consideration by federal and state energy regulators.

The standards, produced by the International Electrotechnical Commission (IEC), focus on the information models and protocols important to efficient and reliable grid operations as well as cyber security.

In a letter to FERC Chairman Jon Wellinghoff, NIST's national coordinator for Smart Grid interoperability, George Arnold, said the standards "are essential to uniform and interoperable communication systems throughout the grid and will accommodate the evolution of the grid and the integration of new technologies."

In the Energy Independence and Security Act (EISA) of 2007, Congress directed NIST to coordinate development of communication protocols and other standards to achieve an interoperable Smart Grid —a nationwide electric power system that enables two-way flows of energy and information. Under EISA, once it determines sufficient consensus has been achieved, FERC is charged with instituting rulemaking proceedings to adopt the standards necessary to ensure Smart Grid functionality and interoperability.

The five families of IEC standards will further efforts to achieve efficient and secure intersystem communications, among other FERC priorities identified in the commission's July 16, 2009, Smart Grid Policy Statement. These standards will be updated as Smart Grid requirements and technologies evolve.

The standards and their functions are:

- IEC 61970 and IEC 61968: Providing a Common Information Model (CIM) necessary for exchanges of data between devices and networks, primarily in the transmission (IEC 61970) and distribution (IEC 61968) domains.
- IEC 61850: Facilitating substation automation and communication as well as interoperability through a common data format.
- IEC 60870-6: Facilitating exchanges of information between control centers.
- IEC 62351: Addressing the cyber security of the communication protocols defined by the preceding IEC standards.

To determine whether a standard was ready for consideration by regulators, NIST took a number of factors into account, including the maturity of the standard, the resolution of previously identified issues by its Smart Grid Interoperability Panel, and a satisfactory review of cyber security requirements.

The five IEC standards were among the 25 Smart Grid-relevant standards identified as "ready for implementation" in the *NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0*, which was issued in January 2010. However, these specifications required a cyber security review that could not be completed until NIST finalized its initial *Guidelines for Smart Grid Cyber Security*, which were published in early September 2010.

NIST anticipates that the release of future standards identified as ready for consideration by regulators—as well as by other Smart Grid stakeholders—also will be organized according to Smart Grid functions and domains of application, such as bulk generation, transmission or customer premises.

NIST's standards-coordination activities are supported, in part, by the U.S. Department of Energy, the lead agency for federal Smart Grid efforts.

For more information, visit "NIST-identified Standards for Consideration by Regulators, Release 1.0," and NIST's letter to FERC Chairman Jon Wellinghoff.

To read summaries of each of the five standards identified for consideration by regulators, go to: http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/NISTStandardsSummaries

To read the cyber security review, go to: http://collaborate.nist.gov/twiki-sggrid/pub/SmartGrid/CSCTGStandards/StandardsReviewPhase-1Report.pdf

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The National Institute of Standards and Technology (NIST) is an agency of the U.S. Commerce Department.

Date created: October 7, 2010 | Last updated: October 7, 2010   Contact: **Webmaster**