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Smart Grid Interoperability Panel

Thursday, December 23, 2010

SGIP Governing Board Approves Key Standards: Internet Protocols (PAP 1) and Electric Vehicles (PAP 11)

The SGIP Governing Board today (December 20, 2010) approved three key sets of standards, the first to emerge from the Priority Action Plan (PAP) teams. The Board's approval signifies that these standards are now ready for inclusion on the SGIP Catalog of Standards, where they will guide the development of an interoperable Smart Grid.

"The SGIP Governing Board's approval of these standards marks a significant step forward for the Smart Grid," says NIST's George Arnold, the National Coordinator for Smart Grid Interoperability. "PAP 1 defines the suite of Internet protocols (IP) that will be used in the Smart Grid, providing a key foundation for communications network interoperability. The electric vehicle charging standards recommended by PAP 11 will facilitate growing use of electric vehicles without overloading the grid."

The Standards

The three standards receiving Board approval are the following:

- "Internet Protocols for the Smart Grid." This document describes a set of key protocols needed to set up an Internet network for Smart Grid applications. The core set specifies the use of IPv4, IPv6, TCP, and UDP in networks composed of common WAN technologies and IEEE LANs including Ethernet (IEEE 802.3), Wi-Fi (IEEE 802.11), and Wireless PAN (802.15.4), plus the service protocols used in operating those networks. (For more details, see the IETF website: http://tools.ietf.org/html/draft-baker-ietf-core-11).

- "SAE J1772™ Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charge Coupler." This standard concerns the physical connector used to plug an electric vehicle into an AC charging station. It specifies such details as the dimensions, functions, and configurations of the vehicle inlet and mating conductor. (For more details, visit the SAE International website: http://standards.sae.org/j1772_201001).

- "SAE J2836/1 Use Cases for Communication Between Plug-in Vehicles and the Utility Grid." This standard establishes use cases, which specify the electronic information the vehicle will exchange with the grid. This information could include, for example, the identity of the specific vehicle and owner, the location of the charging station, the amount of electricity used, and the price of the electricity at different times of day. (For more details, visit the SAE International website: http://standards.sae.org/j2836/1_201004).

The PAP Process

Both PAP 1 ("Role of IP in the Smart Grid") and PAP 11 ("Common Object Models for Electric Transportation") met for the first time in August 2009. Over the past 17 months, these groups have met regularly in face-to-face meetings, on conference calls, and through extensive e-mail and wiki collaborations. On each team, technical experts from relevant stakeholder groups reviewed requirements; explored gaps, issues, and overlaps affecting interoperability; and worked closely with the appropriate standards organization—IETF for PAP 1 and SAE International for PAP 11.

The recommendations from each PAP then went through additional reviews from the standing committees on Architecture and on Cyber Security. Only after this extensive process—an open and consensus-based process, in keeping with SGIP's philosophy—was the Governing Board prepared to consider approval.

John McDonald, chair of the SGIP Governing Board, said, "We have many diverse stakeholders involved in the process. So it's especially rewarding to see the hard work of these various working groups reaching fruition. Step by step, we are moving forward towards an interoperable Smart Grid."

The PAP 1 and PAP 11 teams are just two of the many different PAP teams, now numbering 18, that are working with standards organizations and reviewing standards affecting various elements of the Smart Grid. Because each standards organization (including Standards Developing Organizations, Standards Setting Organizations, and User Groups) has its own expertise, process, and vocabulary, the output of each PAP will be a recommendation that takes the appropriate format—whether that be a standard, protocol, recommended practice, use case, document, or request for comments.

The SGIP does not, itself, set the standards. The role of the SGIP is to coordinate these various outputs to ensure the interoperability of the Smart Grid.

Several of the other PAP teams are nearing completion of their work, and the Governing Board will be considering those recommendations in the coming weeks. It is anticipated that the final step of this SGIP process, following the votes by the Governing Board, will be the presentation of standards to the full SGIP membership for approval to place the standards on the SGIP Catalog of Standards.

For up-to-date information on all the PAP teams, SGIP members are encouraged to visit the Priority Action Plan web page on NIST Smart Grid Collaboration Wiki (also known as the "TWiki," http://collaborate.nist.gov/twiki-sggrid/bin/view/SmartGrid/PriorityActionPlans).

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