

NIST releases test framework for upgrading smart electrical meters

July 11 2012

Next-generation "smart" electrical meters for residential and commercial buildings will have computerized operating systems just as laptops or mobile devices do. On July 10, 2012, the National Institute of Standards and Technology (NIST) published its first-ever draft guidelines* to help utility companies test their procedures for upgrading meters securely from a remote location.

The draft publication offers a generic set of testing criteria to help any utility determine whether its method of upgrading meters conforms with the security and functionality requirements in the National Electrical Manufacturers Association (NEMA) Standard for Smart Grid Upgradeability. [NIST](#) and the Smart Grid Interoperability Panel identified the need for meter upgradeability requirements as a high priority calling for immediate attention, and NEMA led the effort to develop a standard set of these requirements on a rapid schedule.

[Smart meters](#), like other components of "[smart power](#) grids," will permit two-way exchange of data with other grid-connected devices, relaying information such as power prices, outage alerts and grid errors. Power companies likely will have different means of making sure the [firmware](#)—operating software stored on updatable memory chips—remain up to date, so the [draft guidelines](#) offer a test framework that includes test procedures, detailed steps for conducting the test, reviewing results, and producing records to assess and report on these results.

"Companies will be able to tailor these generic test criteria to their own

systems," says Marianne Swanson, senior advisor for Information Security at NIST. "To make it an effective framework, we made sure that it contains consistent, repeatable tests they can run, producing documentation that contains adequate, accurate information regardless of the individual system."

Swanson emphasizes that the use of the testing framework is strictly voluntary, and says that NIST will work to enhance this framework as comments on the draft come back.

"We will be working with the Department of Energy, including Oak Ridge National Laboratory (ORNL), and also Electrosoft Services Inc., to utilize an existing upgrade management system that ORNL developed, and that now NIST can test," she says. "We will be using the comments as well as lessons learned during the test implementation to update the guidelines. We will also be sharing all this information with ANSI, which would like to use the NEMA standard and these guidelines as seed documents for a for a future NEMA-published ANSI standard."

Swanson adds that while the official comment period for the guidelines will run only for 30 days, the team anticipates that the development of the testing framework will continue up until publication of the document's final version in April 2013. Interested parties can contact NIST in the interim with further recommendations.

More information: Copies of Advanced Metering Infrastructure Smart Meter Upgradeability Test Framework (NISTIR 7823), are available at [csrc.nist.gov/publications/dra ... raft_nistir-7823.pdf](http://csrc.nist.gov/publications/drafts/raft_nistir-7823.pdf)

Provided by National Institute of Standards and Technology

Citation: NIST releases test framework for upgrading smart electrical meters (2012, July 11)
retrieved 11 May 2024 from <https://phys.org/news/2012-07-nist-framework-smart-electrical-meters.html>

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