

Harvard Electricity Policy Group: Smarting from Resistance to Smart Grids

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Smart Meter Support

- The Texas Legislature recognized the benefits that can accrue from smart meters, expressly supporting the deployment of smart meters in Texas, and directed the PUCT to develop a non-bypassable surcharge to recover costs associated with the deployment of smart meters.
- HB 2129 (2005): “In recognition that advances in digital and communications equipment and technologies, including new metering and meter information technologies, have the potential to increase the reliability of the regional electrical network, encourage dynamic pricing and demand response, make better use of generation assets and transmission and generation [sic] assets, and provide more choices for consumers, the legislature encourages the adoption of these technologies by electric utilities in this state.”
 - “The commission shall establish a nonbypassable surcharge for an electric utility or transmission and distribution utility to use to recover reasonable and necessary costs incurred in deploying advanced metering and meter information networks to residential customers and nonresidential customers”
 - “All meter data, including all data generated, provided, or otherwise made available, by advanced meters and meter information networks, shall belong to a customer, including data used to calculate charges for service, historical load data, and any other proprietary data

Further Smart Meter Support

- HB 3693 (2007): “[I]t is the intent of the legislature that net metering and advanced meter information networks be deployed as rapidly as possible to allow customers to better manage energy use and control costs, and to facilitate demand response initiatives.”

Smart Meter Rulemaking

- Project No. 31418: Adopted May 10, 2007, PUC Rule 25.130
 - Set the functionality requirements for smart meters and process for cost recovery.
 - “The commission concludes that a minimum threshold of technical capability of advanced meters should be met in order to receive cost recovery under the surcharge mechanism.”
 - “The commission agrees...that in order for advanced meters to qualify for the surcharge, those meters should provide all of the benefits intended by the statute and rule. The commission also agrees...that minimum standards should be set for customers to benefit from AMI in the most cost-efficient manner.”
- Smart Meter functionality set out in 25.130(g), includes:
 - automated or remote meter reading,
 - two-way communications,
 - remote disconnection and reconnection,
 - the capability to provide direct, real-time access to customer usage data,
 - means by which the REP can provide price signals to the customer, and
 - the capability to provide 15-minute or shorter interval data

Smart Meter Deployment

- Docket No. 35718, Oncor
 - Oncor estimated a total capital investment of \$686 million, operating and maintenance expenses of \$153 million, and estimated savings of \$176 million of meter reading savings and \$28 million of ad valorem tax savings.
 - Cost to residential customers of \$2.21/month.
- Docket No. 35639, CenterPoint
 - CenterPoint estimated a total capital investment of \$639.6 million, operating and maintenance expenses of \$207.9 million, and estimated savings of \$120.6 million.
 - Cost to residential customer of \$3.24 for 2 years, then \$3.05/month.
- Docket No. 36928, AEP
 - AEP estimated a total capital investment of \$269.71 million, operating and maintenance expenses of \$159.77 million, and estimated savings of \$121.76 million.
 - AEP TCC: \$3.15/month for two years, \$2.89/month for next two years, then \$2.26/month for remainder of surcharge period.
 - AEP TNC: \$3.15/month for two years, \$2.77/month for next two years, then \$2.35 for remainder of surcharge period.
- Docket No. 38306, TNMP: Filed on May 26, 2010 (Ongoing)

Smart Meter Deployment

- As of August 31, 2010, over 1,900,000 smart meters have been deployed in ERCOT. Over 6 million smart meters will be deployed by the end of 2013.
 - Oncor: 1,251,838
 - CenterPoint: 615,518
 - AEP: 78,705
- The joint web portal, www.smartmetertexas.com, is used by consumers, REPs, and TDUs to track and manage energy use.
- Consumers can use the information provided by smart meters to help reduce their energy use and take part in new pricing or demand response programs.
- Several REPs are offering products and services that utilize smart meter functionality, such as energy monitoring, time-of-use pricing, or pre-paid service.
- A recent Rolling Stone article lists smart meters as a “sure bet” of ways to “cool the planet.”

Pressure Against Smart Meters

- The Commission received complaints from many customers for higher-than-average electric bills in the first few months of 2010. Many customers believed that the increase in their bills were due to smart meters.
- Several state legislators also reacted, sending letters to the Commission:
 - State Senator Troy Fraser: “[T]hey question whether their extremely high electric bills are due to weather or the installation of the new smart meters...I request that the [PUC]...order the companies to cease installation of smart meters until independent testing of the meters and software can be conducted.”
 - State Representative Barbara Mallory Caraway: “I am requesting that the [PUC] cease any further deployment of the smart meters to households until the investigation as to the accuracy and effectiveness of this technology can be resolved.”
 - State Representative Robert Miklos: “In the best interests of my constituents, I respectfully request a suspension of Smart Meter deployment until the investigation is complete.”

Independent Testing of Smart Meters

In response to the complaints that smart meters were over-charging customers, the PUC contracted with Navigant Consulting to evaluate smart meters deployed by Oncor, Centerpoint Energy, and AEP Texas. (PUC Project No. 38053)

- Meter testing:

- Bench testing of 2000 “new inventory” pre-deployment smart meters and 2000 “deployed (ACTIVE) smart meters” for accuracy review and mobile field testing of smart meters that are currently in service in the Oncor service territory for accuracy review.

- Side-by-Side testing of 75 deployed (ACTIVE) smart meters (25 Oncor, 25 CenterPoint, 25 AEP) removed from service tested against 75 deployed (ACTIVE) conventional meters (i.e., electromechanical) for accuracy and testing approximately 50 meters at a time (25 smart meters and 25 conventional meters) in an environmental chamber.

- Navigant also:

- Reviewed historic customer usage.

- Analyzed customer complaints.

- Evaluated utility smart meter processes, procedures and controls involving system hardware and software.

- Tracked the accuracy of information transmitted from a smart meter to its final destination (meter-to-bill).

- Sampled customer (conventional meter) usage to compare information and identify any inconsistencies with customer accounts that have smart meters.

- Conclusion:

- The study concluded that smart meters are more accurate than traditional electromechanical meters, finding 2 inaccurate smart meters out of 5,627 tested, for an **accuracy rate of 99.96%**. The study also identified ways for the transmission and distribution utilities to ensure more accuracy in data communications.

- The observed increase in electric use was primarily due to the severity of the Texas winter and the significant increase in heating degree days.

Preparing for Electric Vehicles

- Project No. 37953: Investigation of issues related to electric vehicles.
- Use of EV/PHEVs can help lower emission of pollutants, utilize less fossil fuels as the amount of wind generation in Texas grows, and help address energy security issues by reducing the amount of imported oil.
- Powering a car on electricity would result in 93 percent less smog-forming volatile organic compounds and 31 percent less nitrogen oxide emissions than powering a car on gasoline.
- Operating costs of plug-in cars are likely to be significantly lower than those of gasoline-powered cars. Electricity costs three to five cents per mile with average electric rates, or the equivalent of \$0.75 to \$1.25 per gallon of gasoline.



Questions?

For this and other presentations, go to

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and follow the link for Chairman Smitherman.