

## Data Privacy for Smart Meter Data: A Scenario-Based Study

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Smart electric meters capture data on household energy usage at frequent intervals and transmit that data to utility companies, who use the data to automate meter reading and billing, respond to outages and to manage grid operations. Smart meters comprise one key technology element in an overall strategy to modernize the nation's energy infrastructure. The data from smart meters are also shared with customers to monitor and control their own energy use. Data collected over time can be used to forecast demand, understand customer behavior and develop new services or pricing plans. These data can also serve as a basis for customer privacy concerns that in turn may hamper the adoption of smart meter technology by utilities. This project investigates the attitudes, concerns, practices, and policies on both sides of this equation with an eye towards creating solutions that give utility customers confidence about the protection of their data, while offering utilities the methods they need to encourage widespread adoption.

Smart meter data also can potentially be used to identify the use of specific appliances by their unique electronic load signature and infer household activities from that data. This raises a number of legal issues, such as who owns the data, whether utilities can share it with third parties, under what conditions authorities can access the data, and how data is protected from hackers.<sup>1</sup> These issues have been publicized by groups such as Stop Smart Meters, which offered the following publicity statement:

"Do you value civil liberties and the right to privacy? When a 'smart' meter is installed, your utility has access to a treasure trove of information about your electricity usage,

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<sup>1</sup> Congressional Research Service, 2012. <http://www.fas.org/sgp/crs/misc/R42338.pdf>

compromising your privacy. Depending on the regulatory protections—and enforcement of those rules—in your state, they will be able to sell this information to a series of corporations and the government.”<sup>2</sup>

Utility companies often acknowledge the privacy issues associated with smart meters and yet only some include privacy provisions in their smart metering plans. Yet smart meter privacy is an evolving concern as utilities and third parties find new opportunities to collect and analyze meter data. Legal challenges have been made against utilities over smart meter installation, and some municipalities have banned smart meter deployment. Beyond responding to immediate challenges to deployment, utilities also must earn and maintain public trust, especially if and when data breaches occur. Policymakers and regulators likewise have a role in ensuring adequate privacy protections.

Balancing the complex dynamics between utilities, their customers, regulators, and policymakers requires a nuanced understanding of beliefs and attitudes about smart metering technologies and privacy. In this project we use samples of smart meter data obtained in cooperation with the Pecan Street Research Institute ([pecanstreet.org](http://pecanstreet.org)) to develop a series of realistic privacy scenarios. The scenarios show a range of plausible consumer privacy outcomes based on analysis of smart meter data. In turn, we use these privacy scenarios as the basis of attitudinal and behavioral data collections with samples of typical utility customers. Finally, we use our analysis of the consumer behavior and attitude data as a basis for interviews with key utility industry informants, seeking their reactions and offering them recommendations for addressing consumer concerns.

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<sup>2</sup> Stop Smart Meters, undated. <http://stopsmartmeters.org/why-stop-smart-meters/>