Harnessing and Using Big Data

By Lisa V. Wood, executive director of The Edison Foundation Institute for Electric Innovation and vice president of The Edison Foundation.

The digitized electric grid is here and billions of data points are transmitted multi-directionally across secure communication channels 24/7. There are many successful examples of real-time or near real-time data analytics providing huge value in the financial and telecom sectors. And now, this abundance of data and associated enabling technologies can support real-time analytics in the electric utility industry.

But the key question is not how to collect and process data, but how to use it in a way that will benefit both utilities and their customers. To tackle this challenge, utilities across the nation are engaging with technology companies to unlock this value. In addition, both utility companies and their technology partners must collectively do a better job of articulating a relatively common and clear vision to regulators about how this data crunching will translate into improved customer engagement and utility operations.

In January, the Institute for Electric Innovation met with electric utility CEOs and leading technology company executives to discuss improving grid operations through data analytics, with an emphasis on challenges, opportunities, and results that deliver value to the utility and its customers.

"The challenge looms as to how to systematically transform a huge and growing reservoir of data into sustained benefits," said Dan Yates, CEO and founder of Opower. "The value of smart grid investments for utilities and their customers isn't simply about collecting and processing data, but ultimately about putting the data to good use."

Immediate opportunities for utilities and their technology partners exist in the areas of: faster outage restoration through more accurate pinpointing of outage and asset risk; field work optimization; reliability-centric and predictive asset management; leveraging advanced metering infrastructure sensory and communication channels; grid investment planning and cost management; and customer service optimization tied to improving customer engagement and satisfaction.

With a growing reservoir of data in the United States from over 50 million smart meters and thousands of digital sensors across the grid, traditional utility data sources need to be harnessed to bring operational and cost improvements to this expansive and valuable infrastructure.

Speed-to-Value

Extracting value from the most abundant grid devices—the millions of smart meters already deployed—is one of the first focus areas for utilities.

"McKinsey estimates the value to be gained through data analytics at $300 per meter per year," said Ed Abbo, president and chief technical officer for C3 Energy. In the quest for speed-to-value, C3 is working with Baltimore Gas and Electric on a top-down revenue protection analysis focused on meter tampering, unbilled energy delivery, and other forms of revenue losses.

In Illinois, smart grid legislation requires Commonwealth Edison (ComEd) to reduce bad debt, kilowatt-hours lost to inactive consumption, and unaccounted for energy. Data analytics allow ComEd to deliver on the legislated metrics, become more efficient, and provide reliable service to its customers at the lowest possible cost.

"Educate us," said Commissioner Colette Honorable, president of the National Association of Regulatory Utility Commissioners. "Regulators want utilities to succeed."

It is essential for utilities to engage their regulators and to show how new technologies or processes affect the time/cost/value calculus for customers and the network. When balancing affordability, reliability, and new capabilities, educational briefings on new technologies are fundamental for the success of the utility and the ability of the regulator to make prudent decisions that support innovation. EP

The Edison Foundation Institute for Electric Innovation focuses on advancing the adoption and application of new technologies that will strengthen and transform the power grid. The Institute's members are investor-owned electric utilities that represent about 70 percent of the U.S. electric power industry and are committed to an affordable, reliable, secure, and clean energy future.